PTP-Cycle

PERSONALISED TRAVEL PLANNING FOR CYCLING

# Final evaluation report

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Authors: Kristof Devriendt & Freya De Muynck
Affiliation: Traject NV

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# 1 Executive summary

This evaluation report presents the results from the monitoring and evaluation of the PTP-Cycle method implemented within the PTP-Cycle project which ran from April 2013 to March 2016

The objectives of evaluation were to firstly monitor the impact and effects of the personalised travel advice method. Secondly, the evaluation also defined the context factors which play a role, the barriers and drivers that influence the implementation process and the outcome of the project. These elements are discussed in the 'good practice and lessons learnt guide'.

Implementation results were evaluated on three levels in the project, based on the MaxSem method: the process level, attitude level and behavioural level. The evaluation was based on the monitoring of quantitative indicators, which were converted into performance indicators. To let partners easily implement these important indicators, a standard evaluation framework was developed.

To measure both the short term and long term results of the approach used data was collected in three stages: baseline, short term and long term (after one year).

The results of the quantitative indicators were also used to measure the impact of the project: what is the impact of a PTP-Cycle project, towards a participant and towards society?

## 1.1 Process level: How many PTPs were delivered?

On the process level, results are based on the overall performance of all six implementation sites.

The size of the target groups for each partner is outlined in the below table:

| Partner | City | Residential | Workplaces | Universities | In the field | Total |
|---|---|---|---|---|---|---|
| Antwerp | Antwerp | | 9600 | 5776 | 1224 | 16.600 |
| Burgos | Burgos | 10.000 | | | 2000 | 12.000 |
| Sustrans | Greenwich | 5000 | | | 1000 | 6000 |
| Sustrans | Haringey | 5000 | | | 1000 | 6000 |
| UIRS | Ljubljana | | 1000 | 5000 | 2000 | 8000 |
| Riga | Riga | 1000 | | 2000 | 2000 | 5000 |
| **Totals** | | **21.000** | **10.600** | **12776** | **9224** | **53600** |

**Table 1: Overview of PTPs target groups**

The estimation was made at the beginning of the project that 70% of the target group could be contacted. From that group, 70% would receive personalised travel advice, which would result in the total delivery 27.944 PTPs.

At the end of the project, 47.823 PTPs were delivered (nearly twice as much as the original goal), which resulted in 65.700[1] people who contacted by the project.

| Partner | City | Residentials | Workplaces | Universities | In the field | Total |
|---|---|---|---|---|---|---|
| Antwerp | Antwerp | | 8467 | 13.672 | 1150 | 23.289 |
| Burgos | Burgos | 5038 | | | 2090 | 7128 |
| Sustrans[2] | Greenwich | 2175 | | | 443 | 2449 |
| Sustrans | Haringey | 7193 | | | 1017 | 8000 |
| UIRS | Ljubljana | | 126 | 2642 | 1289 | 4057 |
| Riga | Riga | 128 | | 690 | 1703 | 2521 |
| Totals | | 14.534 | 8593 | 17004 | 7313 | **47823** |

**Table 2: Number of PTPs delivered**

[1] Based on an average household seize of 2.23 persons

2 In a smaller number of these cases, meaningful engagements with households might have been made, but no PTP pack requested. Please note that all subsequent analysis on Greenwich and Haringey data has been conducted on households which received a pack only.

## 1.2 Effects of the project

The objective of the project was to take a tried and tested approach to behaviour change, and to prove the approach was transferable across a number of sites and audiences, to many different counties, and is a cost effective way to realise a measured modal shift away from the car and towards cycling.

Personalised Travel Planning provides tailored information directly to the individual on sustainable mobility options through a one to one discussion with a PTP adviser. The travel advisers uses open questions to understand the individuals needs and interests to provide tailor-made solutions. The personal and direct approach means that the user is more likely to act on the sustainable travel information.

As we know from previous research, mobility behaviour change is not a one step process, and can take a lot of time. Therefore a shift in attitude is equally important as a modal shift.

Results provided below are based on the participants which were followed during one year. Results from the second phase are to find further on in the report.

**Results provided in this section are absolute changes. Further in the report on section 2.8 relative changes are also given.**

### 1.2.1 Overall modal shift

#### *1.2.1.1. General journeys*

General journeys are average, everyday made journeys, except those with the purpose of home to work (these were questioned separately).

Four partners questioned respondents on general journeys: Burgos, Riga, Haringey and Greenwich[3].

After one year the modal split from partners combined on general journeys show an increase in cycling and walking journeys:

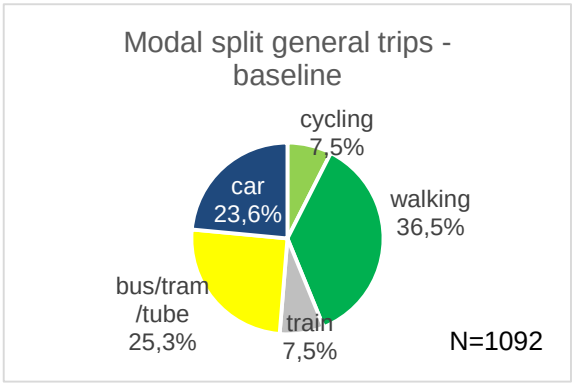
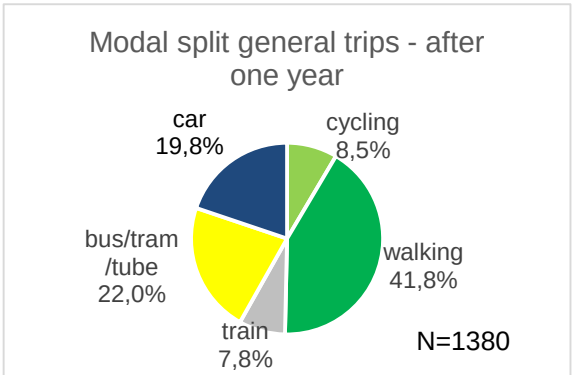
| Baseline | Long term |
|---|---|
|  |  |

Table 3: Modal shift of all partners combined on general trips

3 In Haringey and Greenwich respondents were asked about their travel habits on trips less than 5 miles in a typical week.

#### 1.2.1.2. Home to work journeys

Four partners questioned respondents about their travel habits on their journey from home to work:: Burgos, Riga, Antwerp and Ljubljana.

The same trend for general journeys can be noticed for journeys from on home to work journeys. Only here we see a clear increase of cycling journeys, and a smaller increase in walking trips:

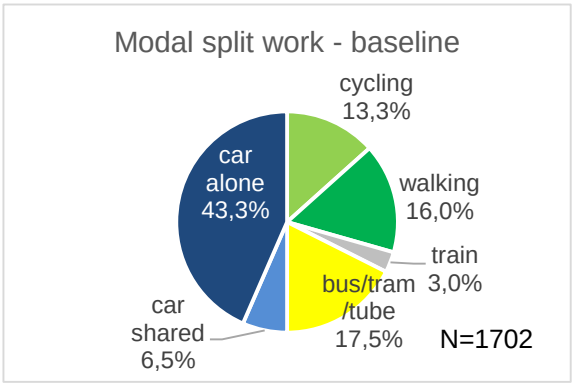
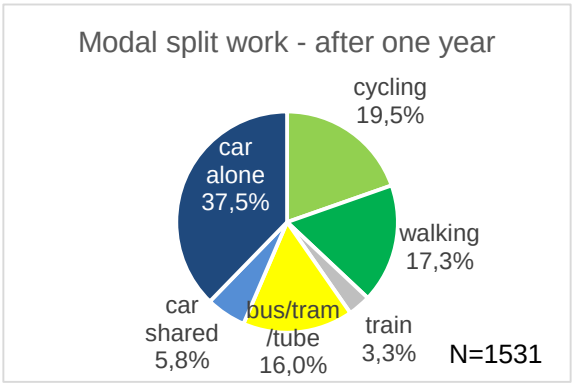
| Baseline | Long term |
|---|---|
|  |  |





Table 4: Modal shift of all partners combined on home to work journeys

### 1.2.2 Overall attitudinal shift

Four partners questioned respondents during the surveys on their attitudes towards car use and use of sustainable transport modes: Antwerp, Burgos, Ljubljana and Riga. Although these partners targeted different groups (employees and households), we have provided combined results.

Greenwich and Haringey asked this question on long term follow up only. Such results therefore give a snap shot of attitudes at the follow up stage only, and have been included in the individual commentary on these areas later in the report.

These results are based on the respondents from the first phase, which were questioned at the beginning of the project, and after one year.

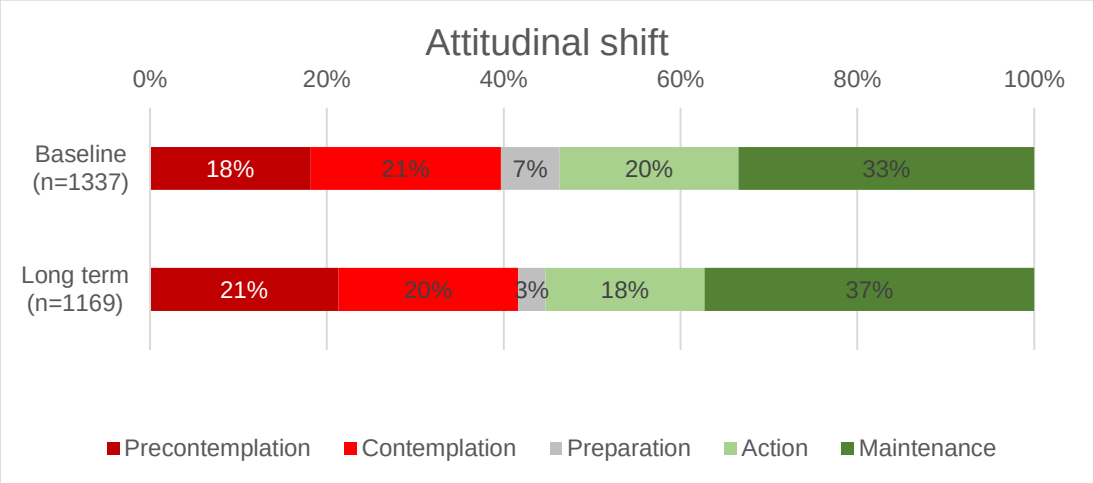



**Figure 1: Overall attitudinal shift**

The combined results of partners show that the maintenance category has increased after one year, and that the group of respondents which are more in favour of car use has remained at the same level.

Results per partner are given in sections 2.6.3; 2.6.4 and 2.6.5.

### 1.2.3 Maintenance of travel behaviour

At four sites (who participated in the first phase of the project), respondents were questioned during the long term survey on how likely they were to maintain their travel behaviour change.

For Haringey and Greenwich, the question was asked in relation to the specific journeys changed. Riga posed the question a bit different from other partners.

Results show that most of respondents are positive, and confident that they will maintain their new travel behaviour.

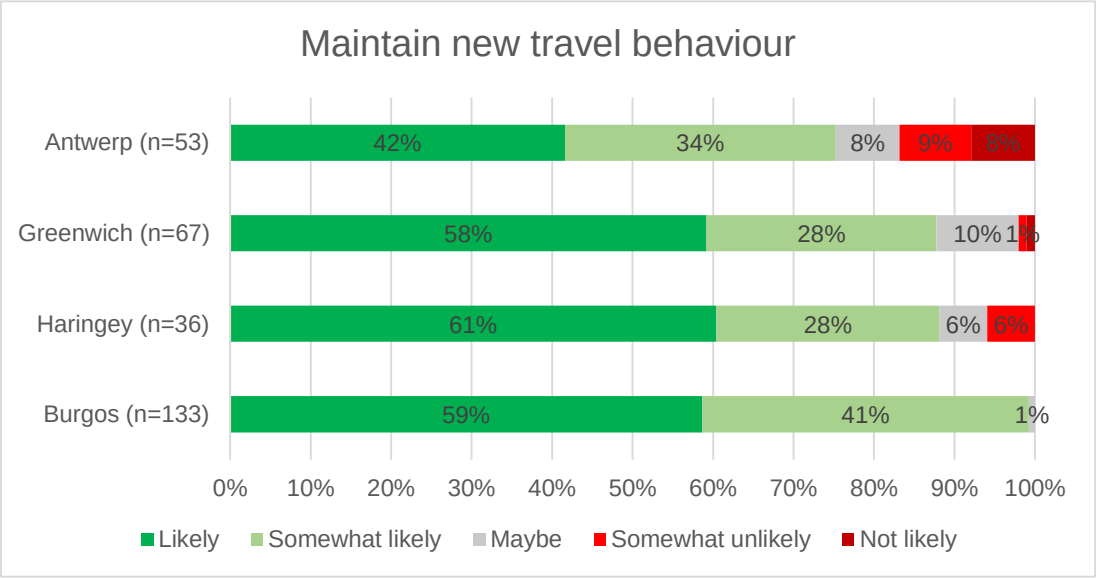



**Figure 2: Maintenance of new travel behaviour**

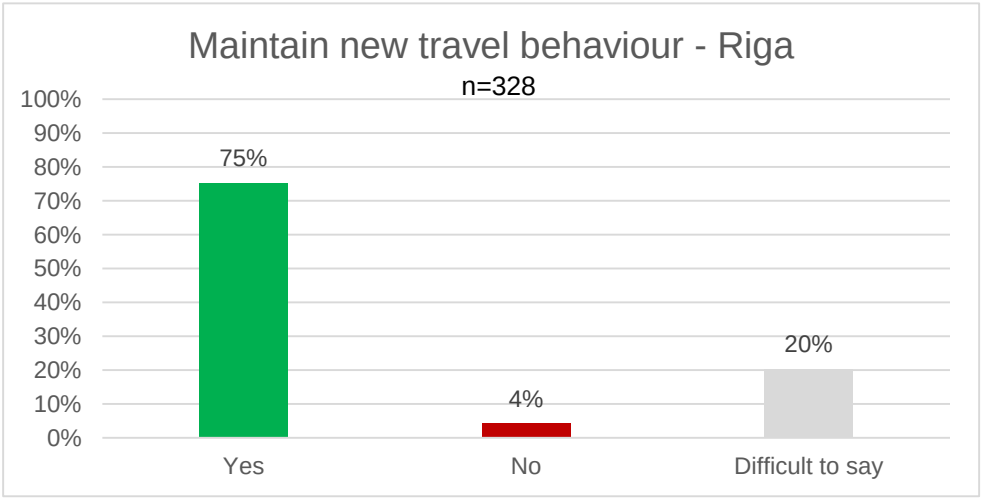



**Figure 3: Maintenance of new travel behaviour – Riga**

### 1.2.4 Conclusion of results

The overall results of the project show that the method works in different countries, although sometimes adapted to local characteristics. The implementation partners focused on different target groups, and achieved mainly positive results, which also proves the method works towards different target groups.

The partners tested the method – which was developed to convince households – on employees, students at university and visitors of events. They all bumped into barriers – one partner more than another – but developed methods to solve the barriers.

Depending on each target group and local circumstances, partners used different methods to survey participants.

Riga, Burgos, Haringey and Greenwich surveyed households, and questioned participants face to face. Face to face interviews allowed to go more 'in deep' on why a person had changed (or not had changed his or her travel behaviour).

Antwerp and Ljubljana surveyed employees, and used online surveys, because this was a cost efficient method. They achieved good response results as well. One must keep in mind that because of the cooperation of the company, there is a stronger commitment of participants in companies than from households, which were interviewed door to door.

Riga, Antwerp and Ljubljana also surveyed university students. Surveys were done online, but also face to face; depending on the occasion.

Last but not least, visitors of events were questioned face to face, at the event. The huge difference between the PTPs towards households, students and employees and visitors, was that the latter category were more 'snapshots': respondents were questioned if they would come next time by bike; while the first categories were surveyed at two, or three moments in time.

However, we can conclude that the methodology is applicable towards different target groups, and that each method has its pros and cons.

The modal shift results combined of all partners on general journeys show small, but positive results towards cycling and walking. The modal share of car use decreases. The graphs show us that on general journeys (which have different purposes), a large majority of trips is already done by sustainable travel modes.

On home to work journeys, the project achieved an increase of 6% on cycling trips, of all partners combined. This shows us that there is potential on cycling for home to work journeys everywhere in Europe.

Home to work trips are routine journeys, on which it is difficult to change your travel habits. Nevertheless, the results of the project show that the method can be used in companies to convince employees to travel on a sustainable way to their work.

Concerning attitudinal shift, the goal of the project was to focus on those who were doubting to use a sustainable transport mode, or expanding their use of one. The graph of combined partners shows us that the project succeeded on the second part: respondents who were already travelling from time to time via a sustainable travel mode, have increased their use of them.

At the end of the project, respondents were also asked if they would maintain their behaviour. Results show us that a large majority of them are confident that they will maintain, which already shows us a part of the 'legacy' of PTP.

**Results per partner can be found further on in the report.**

## 1.3 Impact of the project

The results achieved by the implementation partners leads to several effects: direct, indirect and external.

The direct benefits are the changes in modal splits of target groups and the changes in attitudes. These results are discussed per target group and per partner further in the report in detail.

The indirect benefits discussed in this report are the health benefits. To calculate these, the HEAT tool developed by the WHO is used. The HEAT tool allows to monetarize the benefits on health of your project.

Results of the HEAT tool:

| Partner | Benefit to cost on cycling |
|---|---|
| Antwerp (workplaces) | 5,09:1 |
| Burgos (households) | 4,87:1 |
| Ljubljana (workplaces) | 1,91:1 |
| Riga (households) | 1,78:1 |

Table 5: Results of the HEAT tool per partner

The PTP-project also has an effect on absenteeism. Based on data from the WHO, we calculated the monetary benefits of a reduction in sick days caused by an increase in cycling:

| Partner | Cost reduction before | Cost reduction after one year |
|---|---|---|
| Antwerp (workplaces) | €128.497 | €160.925 |
| Burgos (households) | €151.504 | €172.851 |

| | | |
|---|---|---|
| Riga (households) | €989 | €1013 |
| Ljubljana (workplaces) | €2306 | €2570 |

**Table 6: Cost reduction in sick days per partner**

The project also resulted in some external benefits for society:

- A reduction of 8 car kilometres was realised by participants which were followed during one year
- Partners realised a reduction of 1031 tonnes CO2
- A reduction of 401.000 litres of car fuel was realised by participants which were followed during one year.

# 2 Introduction

## 2.1 About the project

The overall objective of PTP-Cycle is to take a tried and tested approach to behaviour change, build it into a trans-national framework of delivery, and realise a significant modal shift away from car use and towards cycling. It has energy efficiency objectives at its core.

Personalised Travel Planning (PTP) uses engaging and social marketing methods and applies them to a segmented audience in order to capture the interest and empathy of the individual. This understanding of the individual's interests and travel needs, combined with the direct contact by the PTP adviser means that the user is more likely to act on the sustainable travel information of alternative mode incentives offered: In this case, by shifting from private car use to cycling.

The PTP-Cycle project proved that this mechanism is transferable to many types of sites and audiences (residential areas, universities and workplaces), to many different countries and is a cost effective way of reducing GHG emissions, energy consumption and urban congestion whilst improving public health and economic development.

## 2.2 Work programme

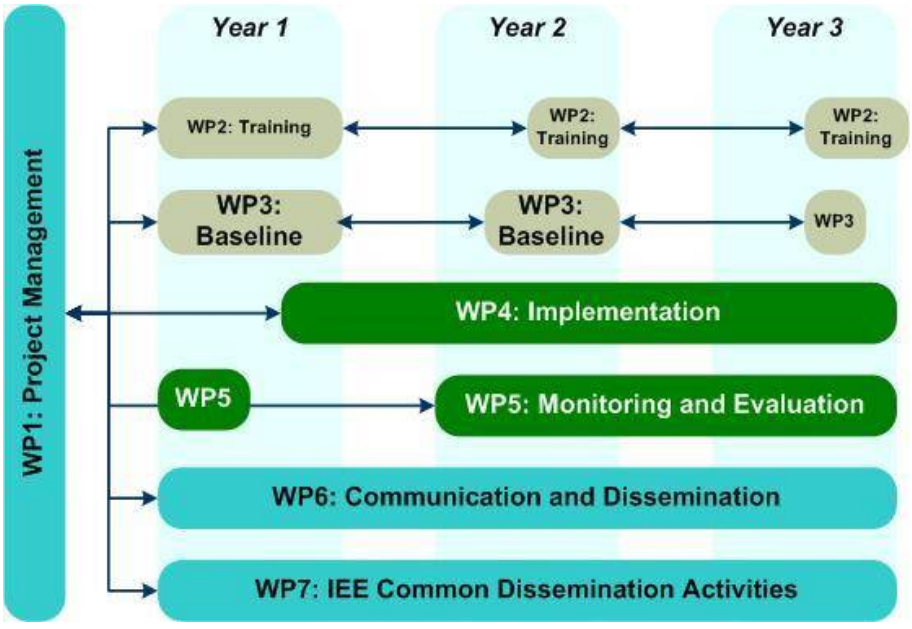



Figure 4: Work programme of the PTP-project

## 2.3 Performance indicators

In order to evaluate the action undertaken during the project lifetime and beyond, some specific performance indicators at a project level have been formulated. These performance indicators focus on relative change.

The performance indicators to measure the attitudinal and behavioural change towards cycling in every city are:

- → Minimum 50% attitudinal shift towards cycling and away from car use
- → Minimum 20% modal shift increase in cycling in each site
- → Minimum 10% modal shift reduction in car use
- → Minimum 10% increase in walking (secondary impact to be measured)

The performance indicators were monitored during the implementation phase in every city.

## 2.4 Evaluation on three levels

The evaluation of PTP-Cycle happens on three levels: process evaluation, evaluation of the attitudinal change and evaluation of the behavioural change.

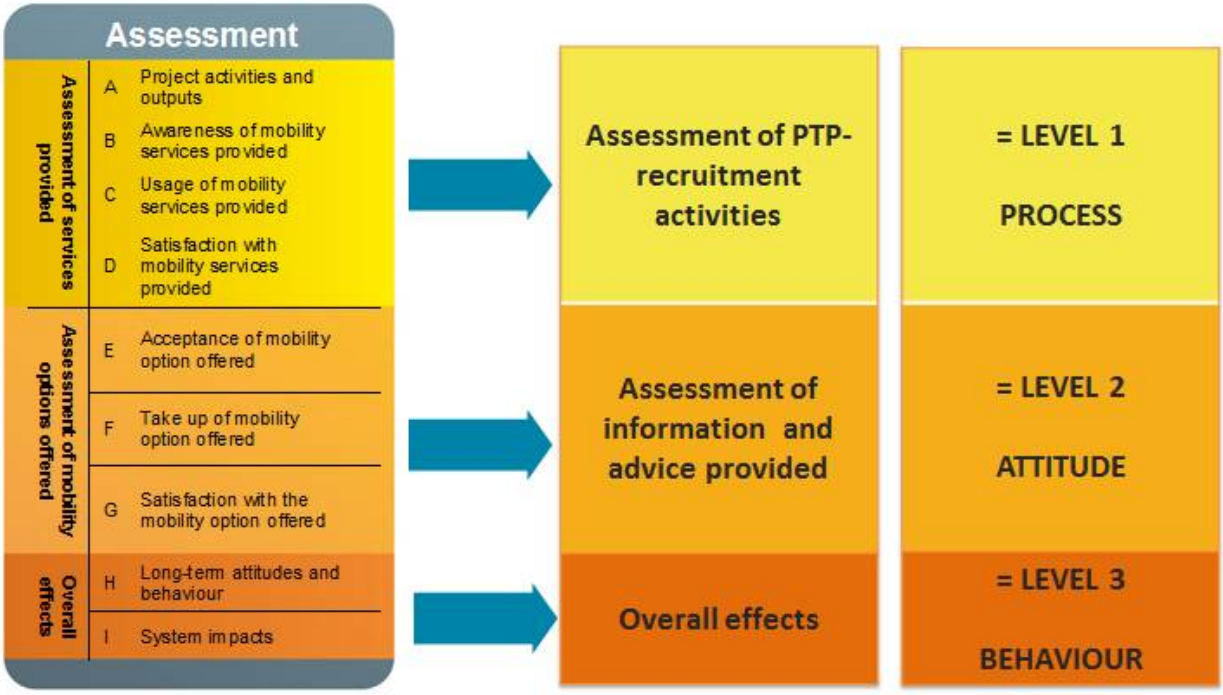



**Figure 5: Scheme of evaluation PTP Cycle on three levels**

The first level is the assessment of the services provided. The process of preparing and giving the personalised travel advice is examined. At this level the "technical process" is described and quantified. Everything that happens between the start of the campaign till the end of the campaign comes under this level (chapter three).

The second level of evaluation is monitoring the attitudinal change that can be provoked by the quality of the mobility option that is offered.

The third level of evaluation focuses on the long-term impact of the action. The final aim of the PTP-Cycle project is to increase the number of trips undertaken by bike, i.e. behavioural change.

To evaluate the given input by the partners, tools developed during the Max-project on Successful Travel Awareness Campaigns and Mobility Management Strategies were used.

## 2.5 Methodology

### 2.5.1 MaxSumo

MaxSumo is an evaluation methodology (based on a Swedish method called SUMO), that offers an opportunity to effectively plan, monitor and evaluate mobility projects focusing on behaviour change. As such the methodology is perfectly suited for evaluating the PTP-Cycle objectives. A key characteristic of MaxSumo is that the often complex process of behavioural change is divided into smaller steps that can be monitored and evaluated successively. Therefore deviations in the process can be quickly identified and corrected.

The methodology has been successfully used in several mobility management projects in the Netherlands, Belgium and other countries.

### 2.5.2 MaxSem: attitude

**MaxSem** is another product of the Max-project. MaxSem is a theoretical model designed to explain individual's modal choice decisions. It is generally acknowledged that in many instances a change in mobility behaviour does not occur as a one-step process but can be viewed as a series of transitional stages (or steps) which individuals progress through in order to reach the final stage of behavioural change (i.e. less or non-car use).

MaxSem offers a validated theoretical framework describing the behavioural change process and explains individuals' readiness to change travel mode by categorising them in one of four stages:

**Stage 1: Pre-contemplation**. Individuals in this stage typically make most of their trips by car and are quite happy with the way they currently travel (i.e. as car drivers). At the moment, they have no wish, or desire to change to another mode, or feel that it would be impossible for them to do so at the present time.

**Stage 2: Contemplation**. Individuals in this stage also typically make most of their trips by car, but are not as content with their current travel behaviour as the pre-contemplators. They would like to reduce their level of car use and change to another way of travelling (mode), but at the moment are unsure of which mode to switch to, or perhaps don't have enough confidence to do so.

**Stage 3: Preparation / Action**. Individuals in this stage also typically make most of their trips by car, but have decided which mode they intend to switch to for some or all of their trips, have the confidence to do so and may have already tried this new mode for some of their trips.

**Stage 4: Maintenance.** Individuals in this stage typically make most or all of their trips by non-car alternatives (public transport, walking, cycling etc.). These can either be people who do not own or have access to a car for their trips (and therefore are already dependent on non-car modes for travelling), or people who do own/have access to cars but for various reasons use them only for some of their trips, very infrequently, or not at all.

As the figure below shows, the four stages can be seen as a series of steps leading to the final step of permanent behavioural change.

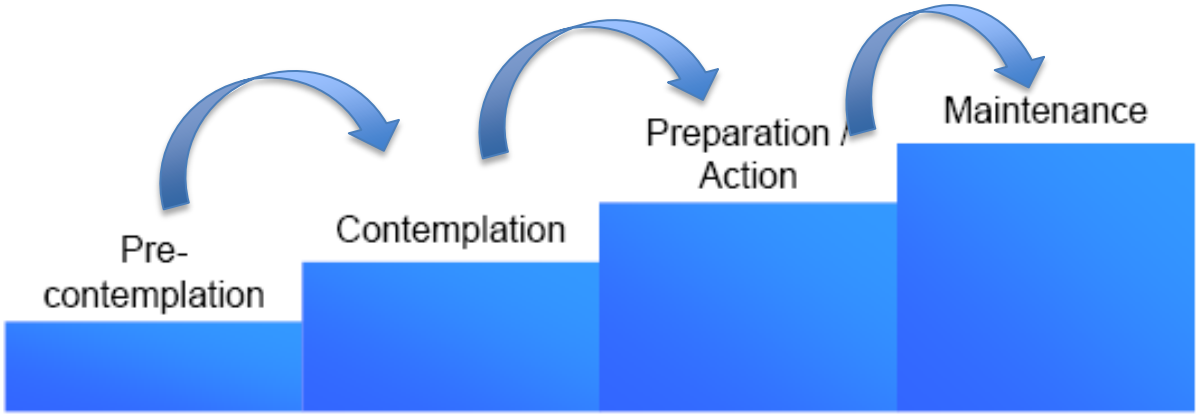



**Figure 6: MaxSem stages towards permanent behavioural change**

The different stages as explained above were converted into the following statements:

| | |
|---|---|
| “Currently I use a car for majority of trips. I am happy with my travel habits and don`t see a reason for changing them.” | Pre-contemplation |
| “Currently I use a car for majority of trips. I would be happy to reduce car use, but that is impossible due to current situation.” | Contemplation |
| “Currently I use a car for majority of trips. I have been thinking about reducing the use of a car, but I don`t know how to start with it.” | Preparation |
| “Currently I often use a car, but sometimes I travel differently (public transport, cycling, …). I am planning to reduce car use in the future.” | Action |
| “Although I have access to car, I usually use a different travel mode for most of my trips.” | Maintenance |

**Table 7: Statements related to attitude stages**

### 2.5.3 Modal split

Modal split is calculated as following: the dispersion of the total amount of trips per transport mode. Modal shift is thus the change in the dispersion of the total amount of trips per transport mode.

However, we can check the difference in modal split between the baseline measurement and the short term evaluation. To make the comparison possible between the two measures, the following premise must be kept in mind: **the total amount of journeys made does not change.**

The modal shift is calculated by applying the method of linear extrapolation on the short term evaluation. Thus a comparison between the baseline measurement and short term evaluation is possible.

Results are provided in percentages.

## 2.6 Evaluation results of PTP-Cycle

The PTP-project consisted of two phases. During both phases, each implementation partner targeted different groups: households, workplaces, universities and visitors at events[4].

Participants of the first phase were questioned on three occasions: at the beginning (baseline survey), after a couple of months (short term survey), and after one year (long term survey). Participants of the second phase were questioned at two moments: at the beginning and after a couple of months. These methods were applied to see what impact the PTP-Cycle method had on the short term and on the long term.

### 2.6.1 Timing – overview phases

| Partner | City | Residentials | Workplaces | Universities | In the field |
|---|---|---|---|---|---|
| Antwerp | Antwerp | | October 2014 – January 2015 (phase 1)<br>April/May 2015 – January 2016 (phase 2) | May 2015 – January 2016 | |
| Burgos | Burgos | April-May 2015 (phase 2) | | | |
| Sustrans | Greenwich | June/September 2014 – November 2015 | | | |
| Sustrans | Haringey | June/September 2014 – November 2015<br>May/September 2015 – October 2015 (phase 2) | | | |
| UIRS | Ljubljana | | April 2014 – May 2015 | April – June 2015 (phase 2) | |

[4] Further in the report results of surveys conducted on visitors of events are referred to as 'in the field' results.

| | | | | | |
|---|---|---|---|---|---|
| Riga | Riga | March 2014 – September 2015 | | September 2014 – May 2015 | |

**Table 8: Timing of delivery of PTPs**

### 2.6.2 Legend

To understand the following graphs, each transport mode has been given a colour:

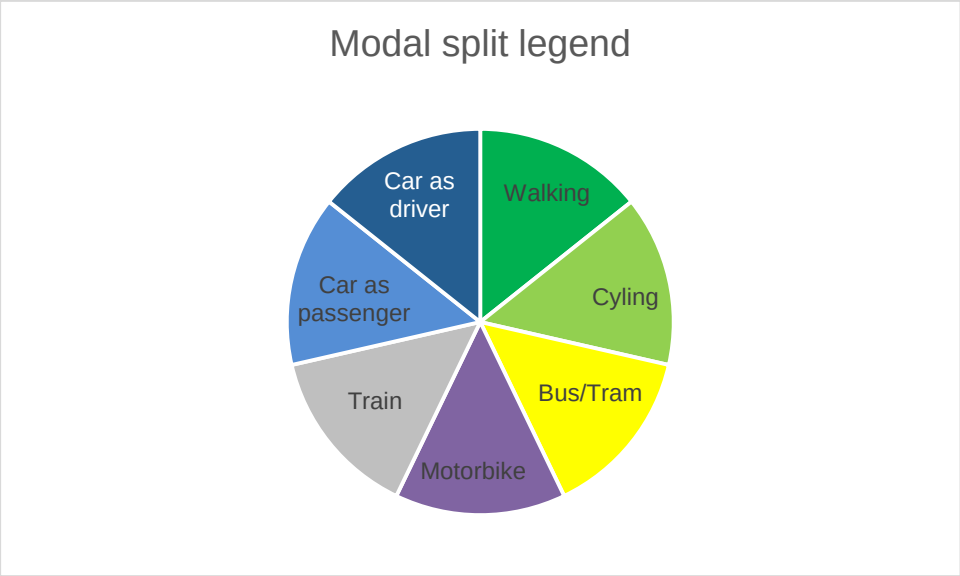



**Figure 7: Modal split legend**

Implementation results of the project are firstly described per target group, and then per partner. This makes it possible to compare results between implementation partners.

Three elements are important to stress out at the beginning of this section:

- The qualitative analysis is not included in this report. The lessons learnt, best practices and recommendations by partners are described in the best practices and lessons learnt guide ( Deliverable 5.4).
- Questionnaires used by partners were as standardised as possible. An important caveat to make is that the results from Haringey and Greenwich on modal split cannot be fully compared to the results from others, because they only focused on ‘trips under 5 miles made in a typical week, as this was where Sustrans was specifically targeting behaviour change’.
- Results mentioned in the following sections are ‘absolute changes’.

### 2.6.3 Workplaces

#### *2.6.3.1. Summary*

*Context*

Implementation partners Antwerp and Ljubljana surveyed employees over the period of one year. Antwerp targeted employees from 7 companies and Ljubljana focused on staff from 4 faculties from the city's university.

*Methodology*

The city of Antwerp started with contacting the management committees of the involved companies. When an agreement on the delivery of PTPs was reached, an information session was organised for the employees. People, who were interested, could sign up for a face to face interview.

UIRS had to approach the target group in a more personal way: first via mail, then via a telephone call; those who were interested could then sign up for a face-to-face interview.

Both partners used an online survey to collect answers from respondents.

*Main results*

After one year, both partners achieved positive results on the modal shift towards cycling. Respondents from Antwerp cycled 4% more compared with one year ago, whilst respondents from Ljubljana cycled 5% more.

Both reduced their car use: in Ljubljana a decrease was noted of 9%, in Antwerp car use diminished by 2%.

The behavioural shift seems to be in line with the attitudinal shift on both sites. In both Antwerp and Ljubljana the group of respondents who are more in favour of sustainable transport modes for their journeys is increasing.

Concerning the comparison with the control group data, different conclusions are drawn for the sites: the control group in Antwerp evolves in the same direction: an increase in cycling and decrease in car use, whereas the control group of Ljubljana increases its car use, and only slightly increases its cycling trips.

#### 2.6.3.2. *Focus on Antwerp*

Timing:

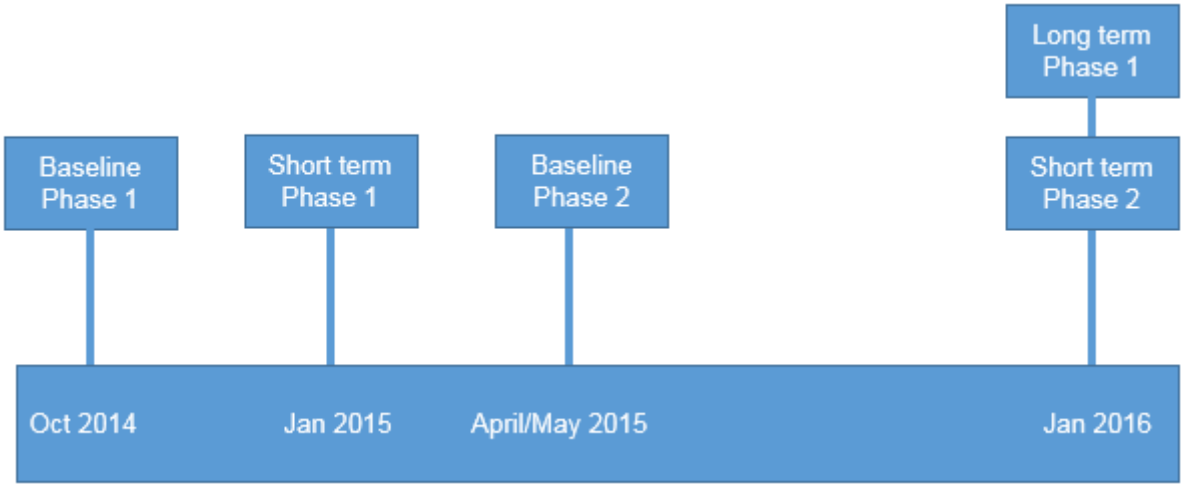



**Figure 8: Timing of surveys towards employees in Antwerp**

Background:

Antwerp is the second largest city of Belgium, and capital of the province bearing the same name. Antwerp has approximately 500.000 inhabitants. A recent survey showed that 36% of the inhabitants use their bicycle to go to work.

The city participated in the project due to large infrastructure works which started in 2015, and are causing disruption to commuting journeys in the city.

Antwerp cooperated with several companies during the project (see annex A). Over the period of one year, Antwerp achieved an increase of 4% in cycling trips from home to work: from 22% to 26%. A slight decrease of 2% in car alone trips are also recorded: from 44% to 42%. When comparing the achieved results with the Antwerp control group, we notice a similar increase in cycling (from 12% to 16%), and decrease in car use (from 59% to 55%).

| Baseline | Long term |
|---|---|

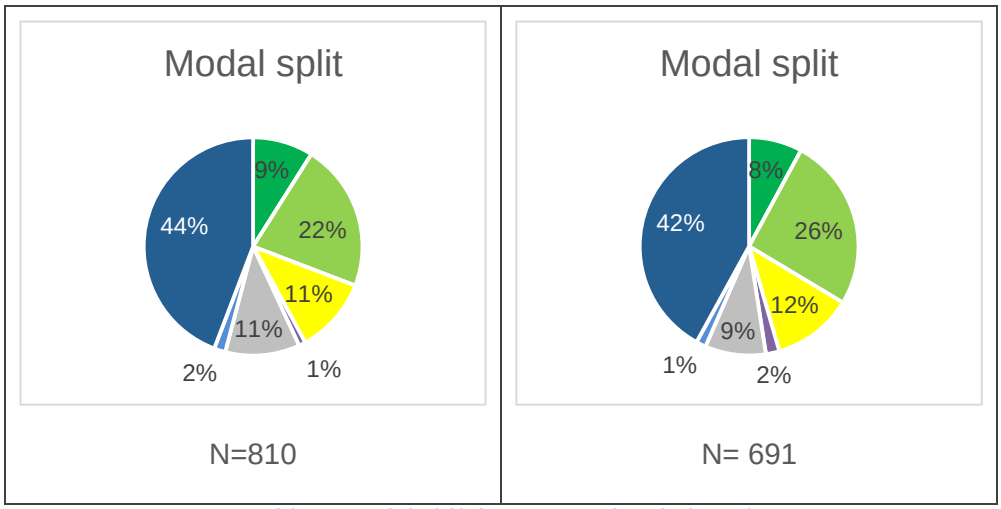



Table 9: Modal shift in Antwerp (workplaces)

On attitude towards using a car or more sustainable transport modes, we see a small shift away from the more contemplating attitudes towards attitudes who indicate that respondents are more willing to use sustainable transport modes and reflect on their travel behaviour.

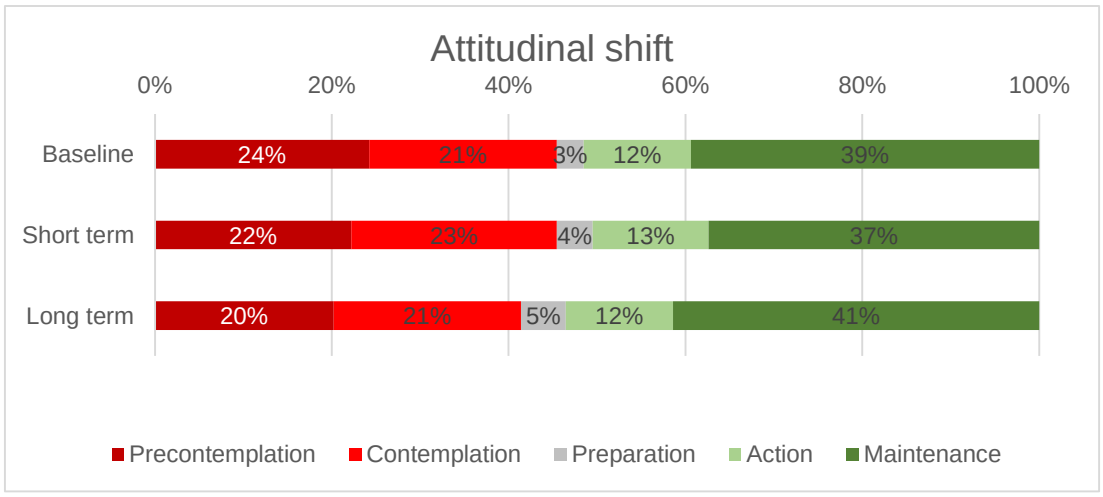



Figure 9: Attitudinal shift in Antwerp (workplaces)

Conclusion: Antwerp realised an impressive increase in cycling use among employees of the participating companies. Respondents are also agreeing more with attitudes which are in favour of sustainable transport modes.

During the second phase of the project, the city of Antwerp gave personalised travel advice to a second group of companies. In the companies targeted in the second stage, there was no increase in cycling, even a decrease. However, the survey shows a small increase in walking and public transport trips.

| Baseline | Short term |
|---|---|

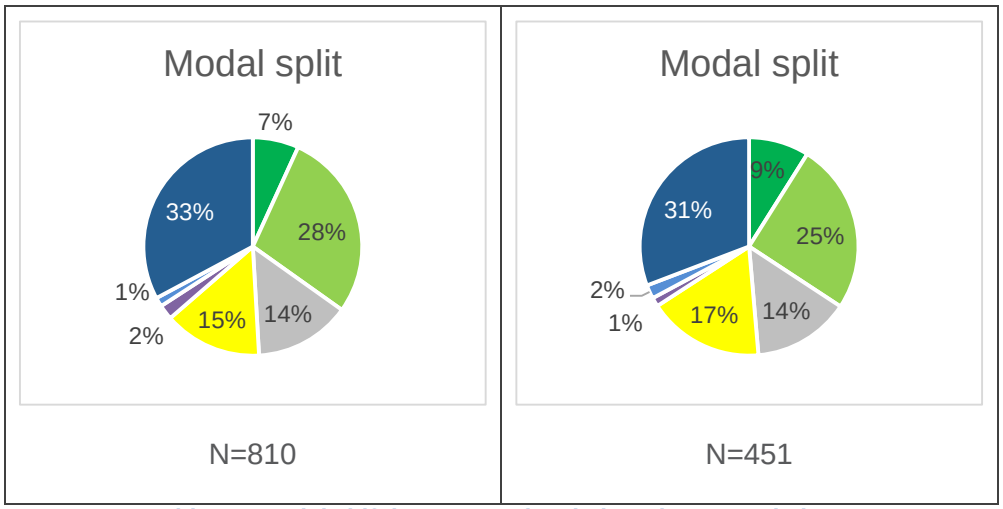



Table 10: Modal shift in Antwerp (workplaces) – second phase

The results from the attitude question are quite surprising. Although a small increase in walking and public transport journeys can be seen from the behavioural data, the attitude question shows that a group of respondents have changed their attitude from being more in favour of sustainable travel modes, towards the car. A possible explanation can be that the average home work distance is greater among the respondents of the long term survey than among respondents from the baseline survey.

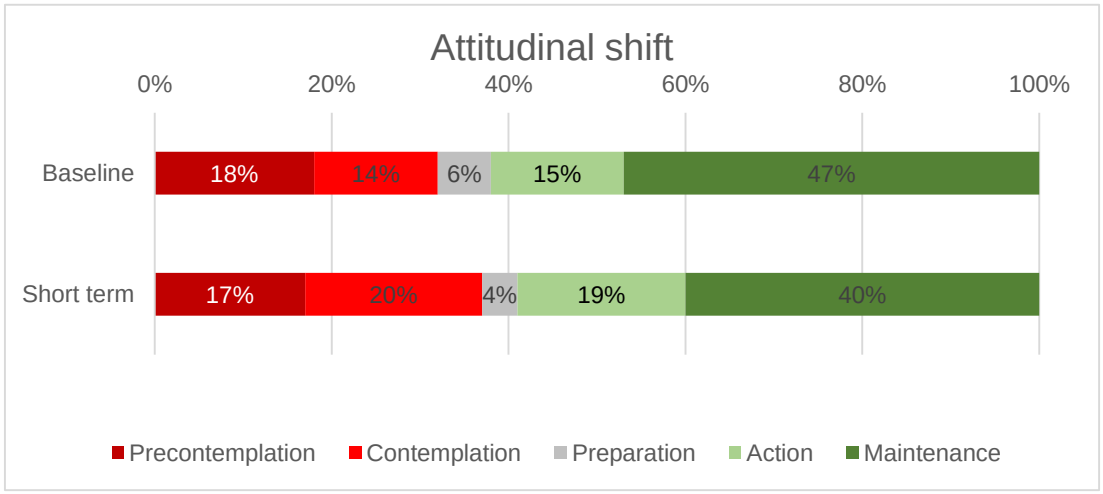



Figure 10: Attitudinal shift in Antwerp (workplaces) – second phase

Conclusion: Results from the second group of workplaces are a bit surprising, and in contrast with the results from the first group. Not only did they decrease their cycling journeys, they also tend be more in favour of car use than before the PTP-project.

#### 2.6.3.3. Focus on Ljubljana

Timing:

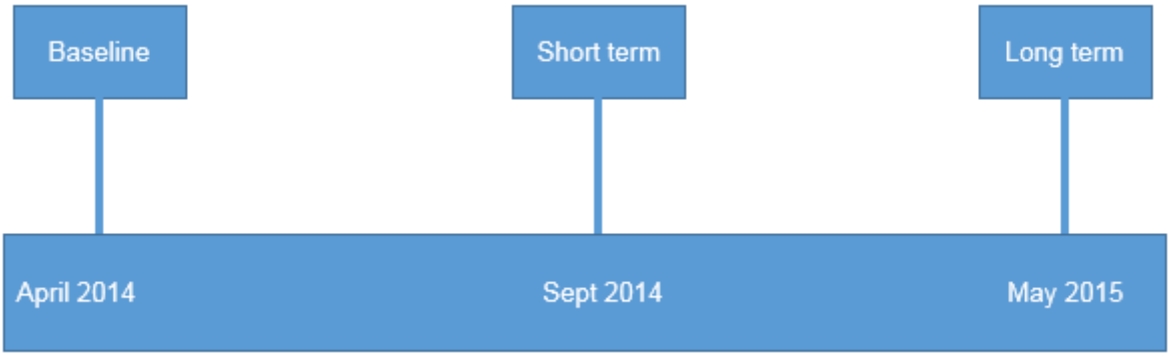



Figure 11: Timing of surveys towards employees in Ljubljana

Background:

Ljubljana is the capital city of Slovenia. The city has approximately 280.000 inhabitants. Cycling has a modal share of 10%. For one faculty included in the project a travel plan was already developed in 2011. The huge challenge for the team was to reach out to everyone within the target group, which was not easy, because of the heterogenic target group: part time and full time academic staff, technical support and other employees in supporting facilities.

Ljubljana also achieved good results on home to work journeys. Their target group were the employees from four university faculties (see Annex A). Over the year, the employees performed 5% more cycling trips from home to work: from 15% to 20%. They also reduced their car trips by 9%, from 51% to 42%, while the control group of Ljubljana increased its car trips, from 51% to 58%. However, it needs to be said that the control group also increases its cycling use (+2%, from 15% to 17%).

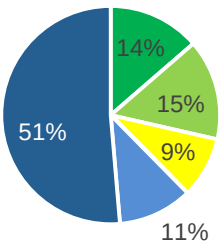
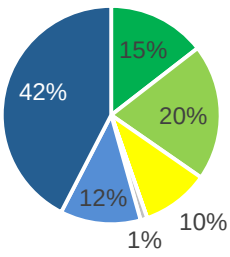
| Baseline | Long term |
|---|---|
| Modal split<br>  <br> | Modal split<br>  <br> |
| N=105 | N=42 |

Table 11: Modal shift in workplaces (Ljubljana)

On attitudinal shift, respondents which already had a positive attitude towards sustainable transport modes, shifted even further. The group of respondents who doubted they would change their travel behaviour has decreased and have shifted towards being users of sustainable transport modes.

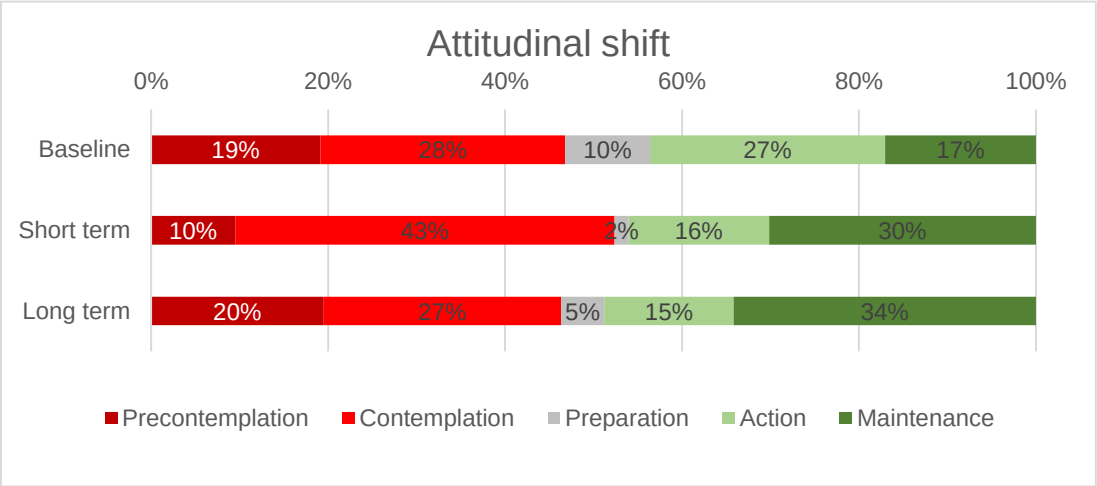



**Figure 12: Attitudinal shift in workplaces (Ljubljana)**

Conclusion: The PTP-project in Ljubljana achieved very good results: not only did they achieve an increase of 5% in cycling, but also a decrease of 9% in car use. The attitude of many respondents was already positive towards sustainable transport modes, but nonetheless a clear shift towards sustainable transport modes can be noticed.

### 2.6.4 Households

#### *2.6.4.1. Summary*

*Context*

Four city partners delivered PTP to households: Burgos, Riga, and the London Boroughs of Haringey and Greenwich. Partners Burgos and Riga questioned respondents about their general journeys and their journeys from home to work..

Greenwich and Haringey questioned all households on all trips less than 5 miles made in a typical week.

Burgos also questioned two target areas of households.

*Methodology*

All partners used the classic PTP-Cycle approach, as developed by Sustrans; the “knocking on doors” approach. The first step was to inform the neighbourhood that the area was targeted for a PTP-Cycle project. The second step was to divide the area in different batches, and then start knocking on doors.

Burgos and Riga both experienced problems with approaching residents living in apartment blocks. Burgos decided to launch a marketing campaign promoting the project, and Riga worked via subcontractor consultants.

The notable difference in the methodology used when delivering PTP to households is the use of trained travel advisers. Delivery of PTP in a residential area is an intensive, time consuming methodology, which requires a team of skilled travel advisers.

Detailed information on how partners approached neighbourhoods and what they learned from the experience can be found in the best practices and lessons learnt guide (see deliverable 5.4).

*Main results*

The combined results from our four partner cities that delivered the PTP projects to households is that they yielded more positive results for walking journeys than cycling journeys.

However, there is one exception, in the city of Burgos results from their first phase of delivery shows an increase in cycling trips for general journeys (+4%) and home to work journeys (+16%). However, the results from the second group surveyed shows excellent results in the modal shift towards walking (+15%) with a small decrease in cycling (-2%).

The other implementation partners also achieved positive results in the modal shift towards walking. Riga increased walking trips to work by 4% (from 19% to 23%), Haringey achieved a 10% increase in walking journeys and Greenwich a 14% increase.

The attitude results are more diverse between partners. In Burgos, we can conclude that respondents from the first phase have slightly shifted attitudes which are more in favour of sustainable transport

mode. In the London Borough of Haringey and Greenwich respondents are recorded as highly in favour of sustainable transport modes. In Riga respondents were still more in favour of car use.

In Burgos, a clear attitudinal shift towards almost fulltime use of sustainable transport modes is recorded by respondents that participated in the second phase of delivery; the group that falls into the maintenance category increase by 13%.

#### 2.6.4.2. *Focus on Burgos*

Timing:

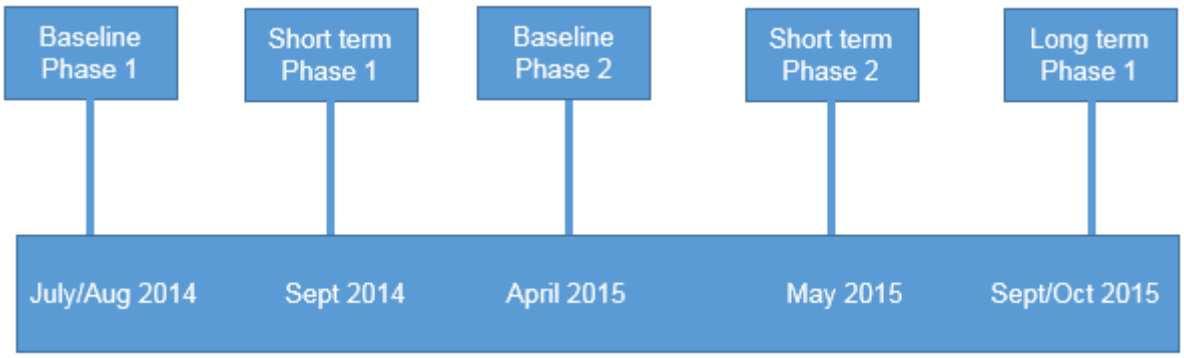



**Figure 13: Timeline of surveys towards households in Burgos**

Background:

Burgos is a city of approximately 180.000 inhabitants in the north of Spain. It has the second largest modal share of cycling in Spain. The target area is very lively, with all ages represented. It has a civic centre, which was used to promote the project. Respondents tend not to use the train for their travel journeys. Therefore the category of 'train' was changed into 'motorbike'.

The PTP-Cycle project achieved an increase of 4% in cycling on general journeys. Respondents of the control group did not change their travel behaviour. Compared to the control group, respondents from the PTP project tend to walk more but cycle less: the modal share of cycling in the control group is 18% (in baseline and long term).

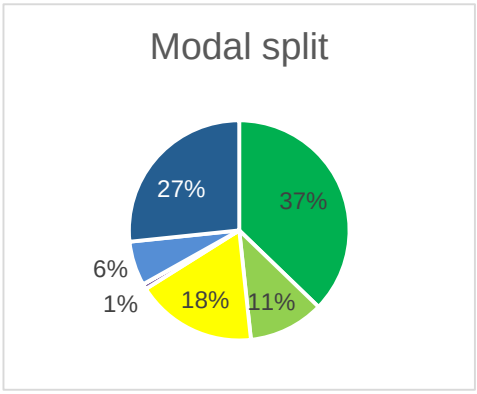
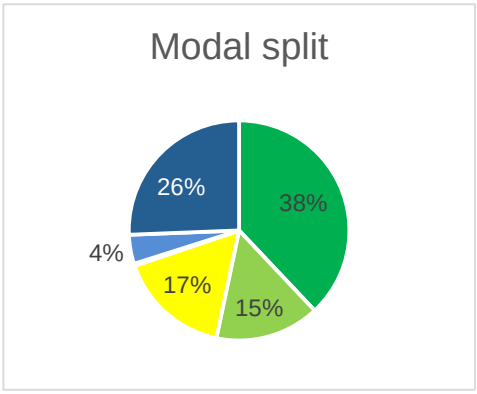
| Baseline | Long term |
|---|---|
|  |  |
| N=403 | N=389 |



**Table 12: Modal shift in Burgos on general journeys (households)**

Households in Burgos were also questioned about their home to work travel behaviour. The results of the project show a spectacular increase in cycling (from 8% to 24%) and a large decrease in car use (from 55% to 43%). The control group only slightly increased its cycling use (from 6% to 7%) and maintains a high level of car use (51%).

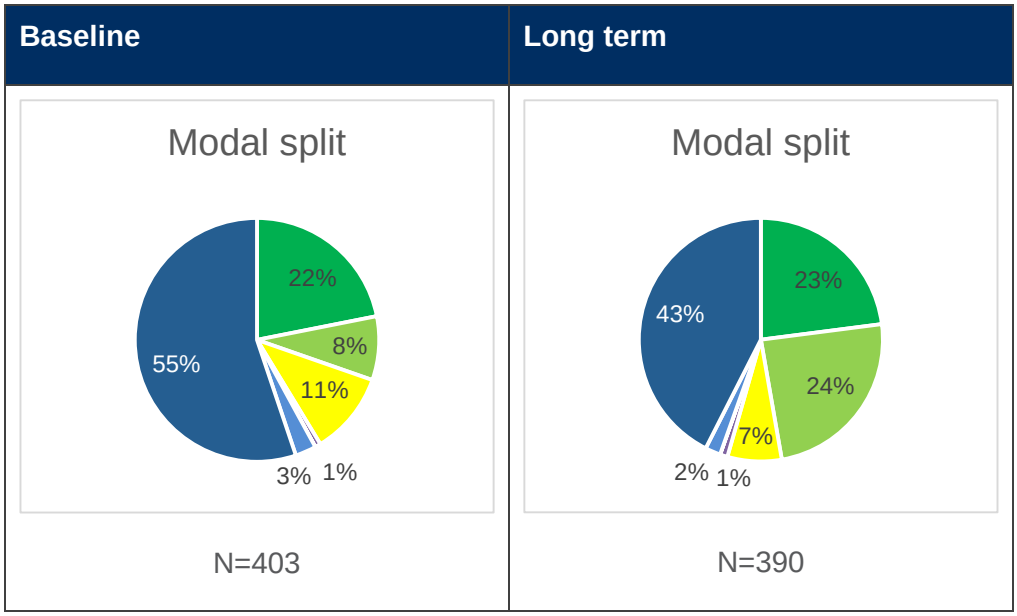



Table 13: Modal shift in Burgos on home to work journeys (households)

Over one year, respondents from the Burgos survey shifted their attitudes slightly (-3%) from pro car use to attitudes more in favour of sustainable transport modes. No clear differences with the control group are observed.

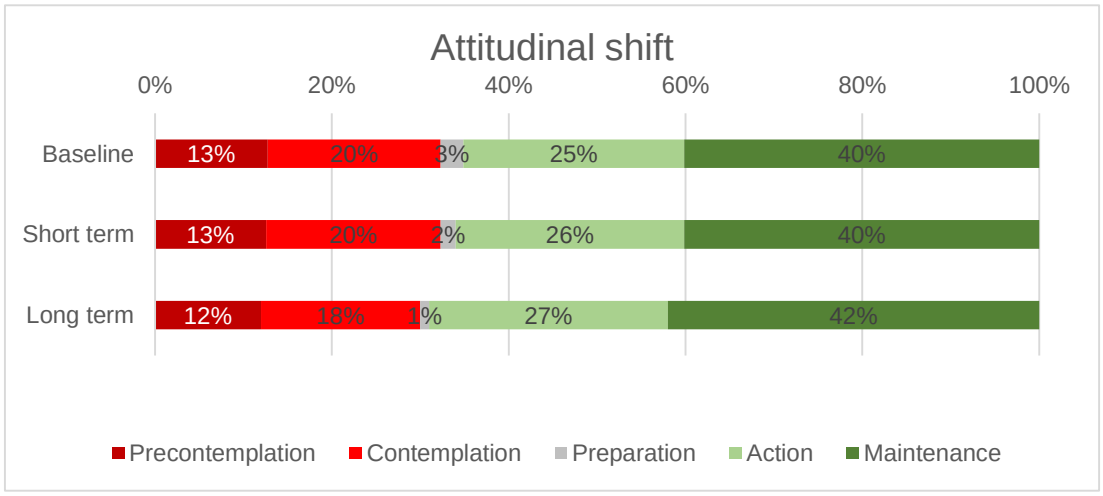



Figure 14: Attitudinal shift in Burgos (households)

Conclusion: Burgos is the second cycling city in Spain, which also shows in the results achieved in the project; an increase in general journeys and home to work journeys of cycling. On general journeys, the

respondents were already recorded as having a low level of car use compared with other partners. A significant decrease in car use can be seen on the home to work journeys: from 55% to 43%, while the control group level remains at 51%.

During the second phase of the project, Burgos surveyed a second residential area. Respondents strongly increased their walking trips (+15%), but decreased public transport and cycling trips. An explanation might be that the population of the second area has a larger share of elderly people.

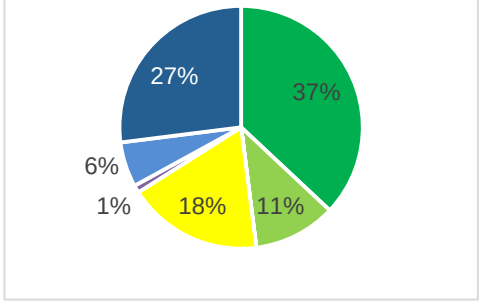
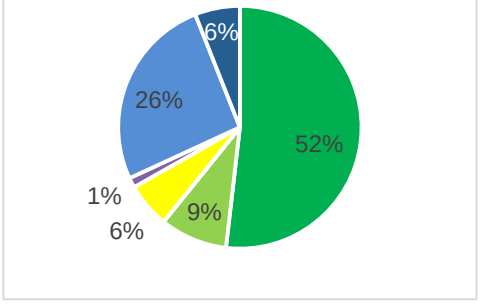
| Baseline | Short term |
|---|---|
|  |  |
| N=403 | N=256 |

Table 14: Modal shift on general journeys in Burgos (households) – second phase

As in the first phase, households were also questioned about their home to work behaviour before and after personalised travel advice. The data shows a positive result for walking (increase of 4% walking trips), but also a decrease in cycling trips (-3%).

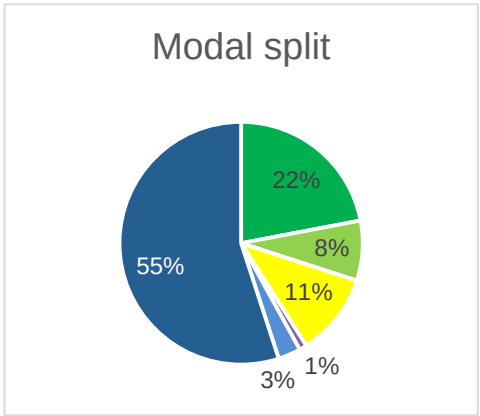
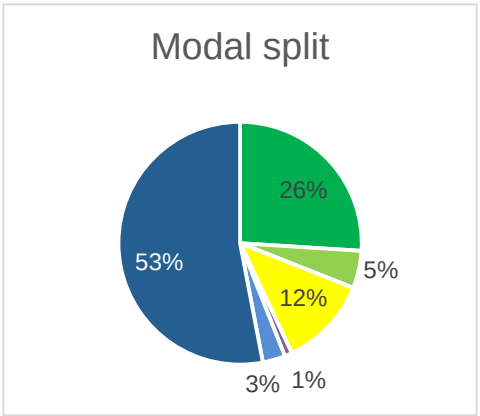
| Baseline | Short term |
|---|---|
|  |  |
| N=403 | N=256 |

Table 15: Modal shift on home to work journeys in Burgos (households) – second phase

On attitude a status quo is visible. It seems that respondents who were already in favour of sustainable transport modes (category 'action'), are now even more convinced, which is shown by the 13% increase in category "maintenance".

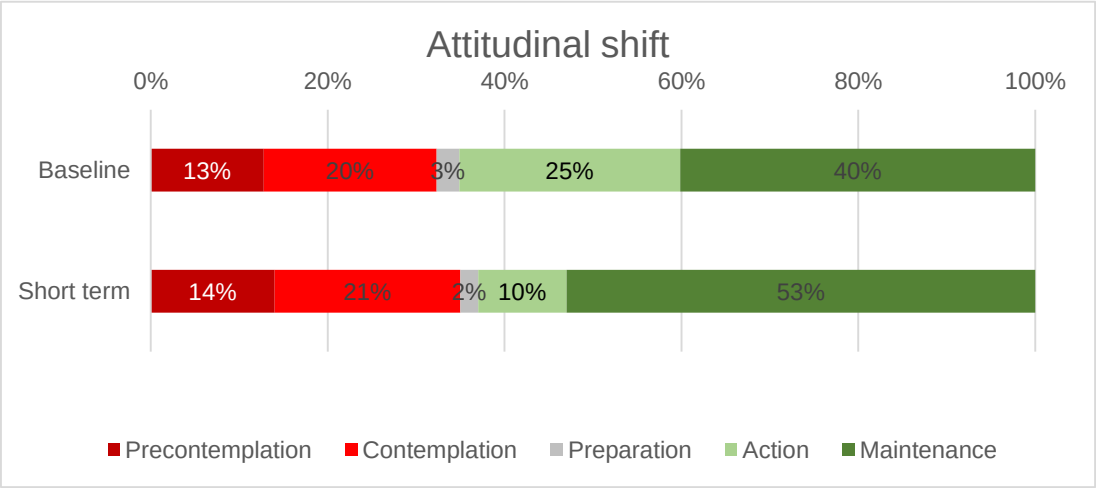



**Figure 15: Attitudinal shift in Burgos (households)- - second phase**

Conclusion: The short term results from the second group of targeted households have not resulted in the expected positive outcome: cycling decreased on general and home to work journeys. However results show a positive outcome for walking journeys: +15% on general journeys and +4% on home to work journeys.

### 2.6.4.3. Focus on Riga

Timing:

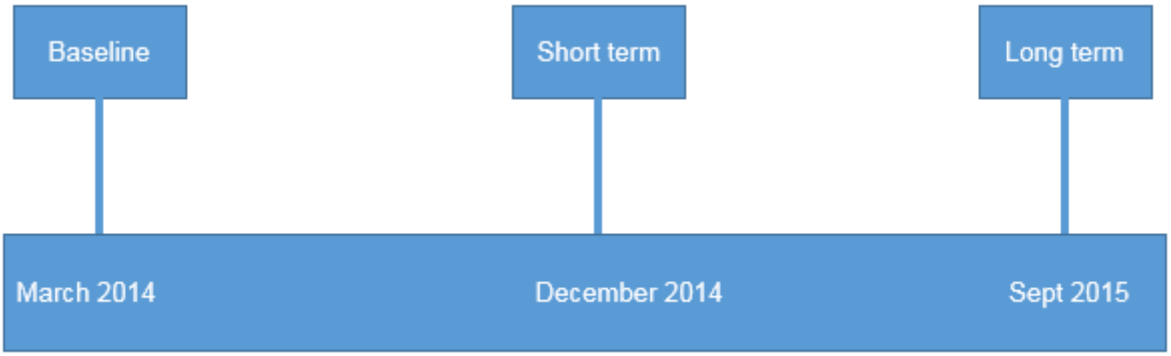



Figure 16: Timing of surveys towards households in Riga

Background:

Riga is the capital city of Latvia. It has approximately 645.000 inhabitants. In Riga, two boroughs close to the city were the target area of the PTP project: Jugla and Teika. They were chosen because of their good cycling infrastructure (segregated cycle tracks), and because of their very good accessibility by all means of public transport.

Although the survey was conducted in the same area, respondents are not the same. This means that results are not fully comparable.

When comparing with the respondents of the control group, we see the same shifts: small increase in cycling, decrease of public transport use and an increase in car use.

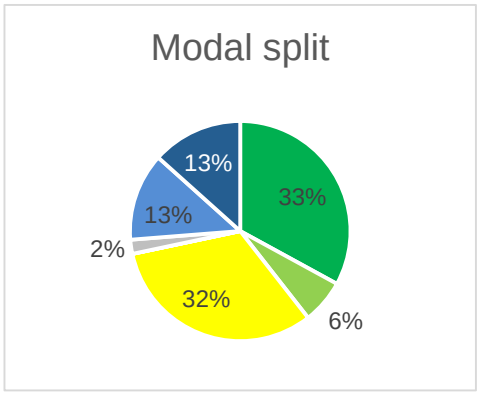
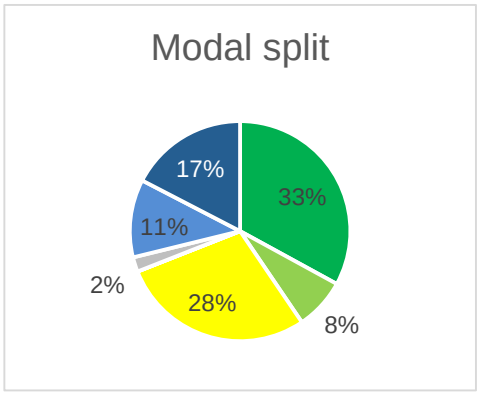
| Baseline | Long term |
|---|---|
|  |  |
| N=384 | N=408 |



Table 16: Modal shift in Riga on general journeys (households)

On home to work journeys, respondents tend to walk slightly more to work than a year before. Cycling remained at the same level and car use decreased a little. There are no specific differences with the control group.

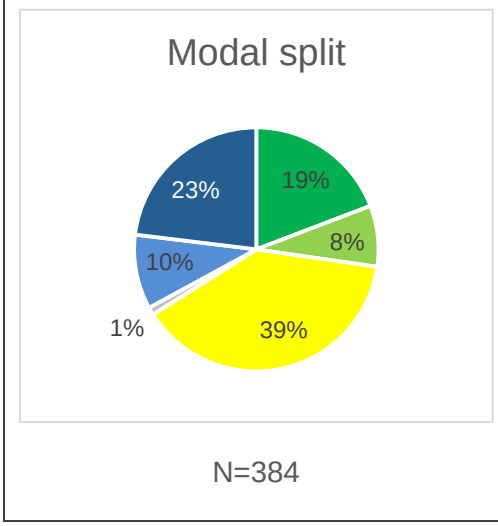
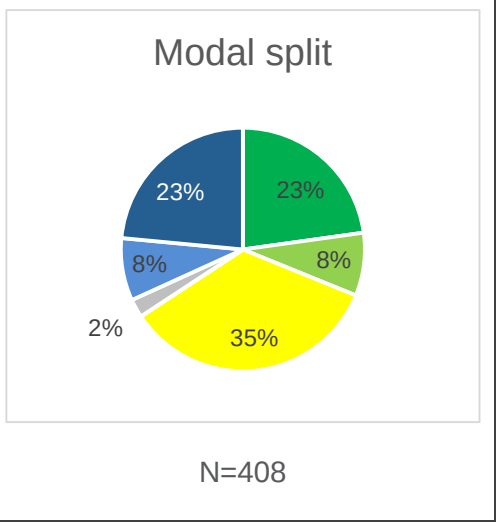
| Baseline | Long term |
|---|---|
|  |  |
| N=384 | N=408 |

**Table 17: Modal shift on home to work journeys in Riga (households)**

The respondents of the long term survey in Riga seemed to have an attitude which was more in favour of car use than the respondents of the baseline. The same accounts for the respondents of the control group surveys (33% say they use the car for the majority of trips and see no reason to change that). Nevertheless, the graph below shows that 50% of respondents are in favour of sustainable travel modes.

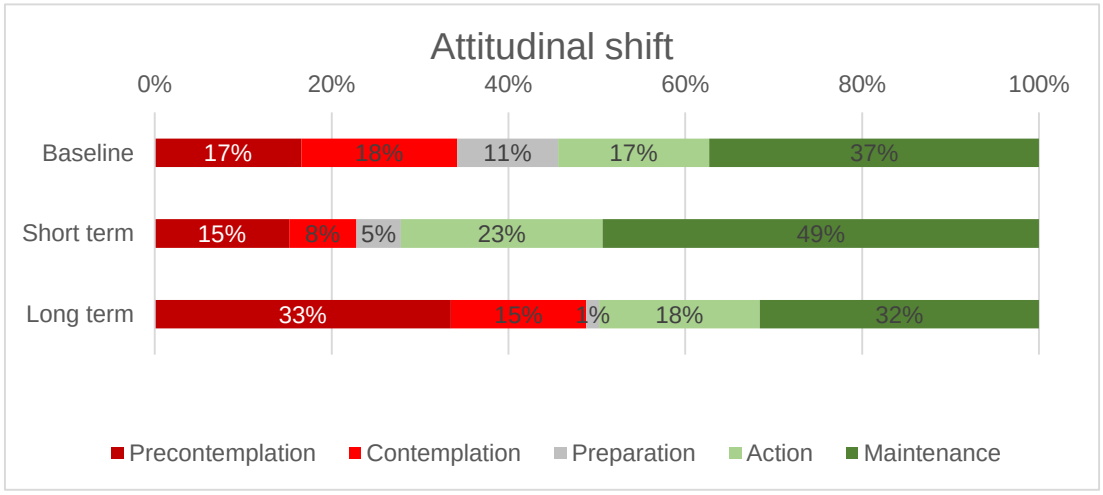



**Figure 17: Attitudinal shift in Riga (households)**

Conclusion: Although results cannot be fully compared in Riga, we can conclude that cycling use amongst the respondents is slowly increasing. Walking is a very popular transport mode: it accounts for one third of all general journeys. Public transport is also used by one third of the respondents, both for work journeys (35%) and for general journeys (28%).

#### 2.6.4.4. Focus on Haringey

Legend:

In the London Borough of Haringey and Greenwich a slightly different categorization of transport modes was used: motorbike is replaced with a more general category 'other'. As mentioned before, Haringey and Greenwich questioned respondents on trips less than five miles, made in a typical week.

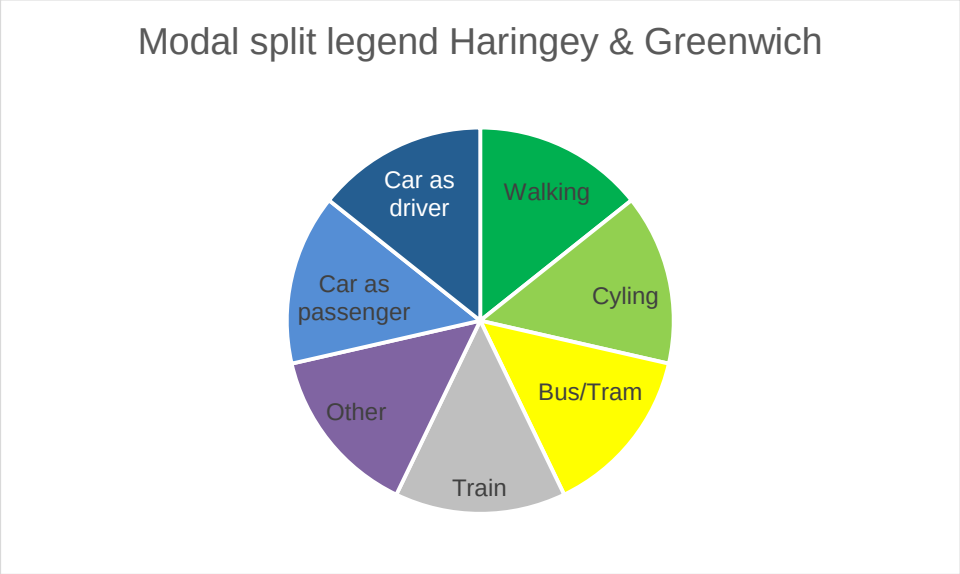



**Figure 18: Modal split legend of Haringey and Greenwich**

Timing:

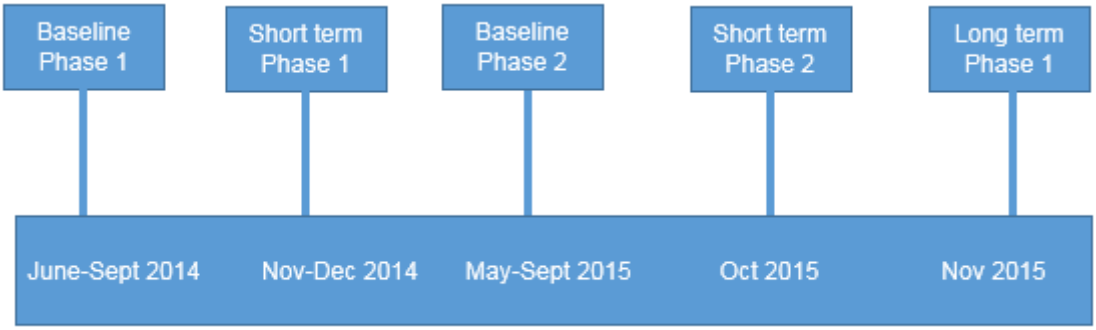



**Figure 19: Timing of surveys towards households in Haringey**

Background:

In the London Borough of Haringey they focused on delivering PTP to households. The project was implemented in Crouch End, an area known for its high levels of congestion and car ownership.

To know if the results of the project are asexpected, the borough local implementation plan (LIP) performance indicators[5] are used as context data. The modal share of cycling according to the LIP performance indicators is 3%. Respondents participating in the PTP-project have a modal share of 6%-7% cycling. The project also results in an increase of walking journeys after one year: + 10%.

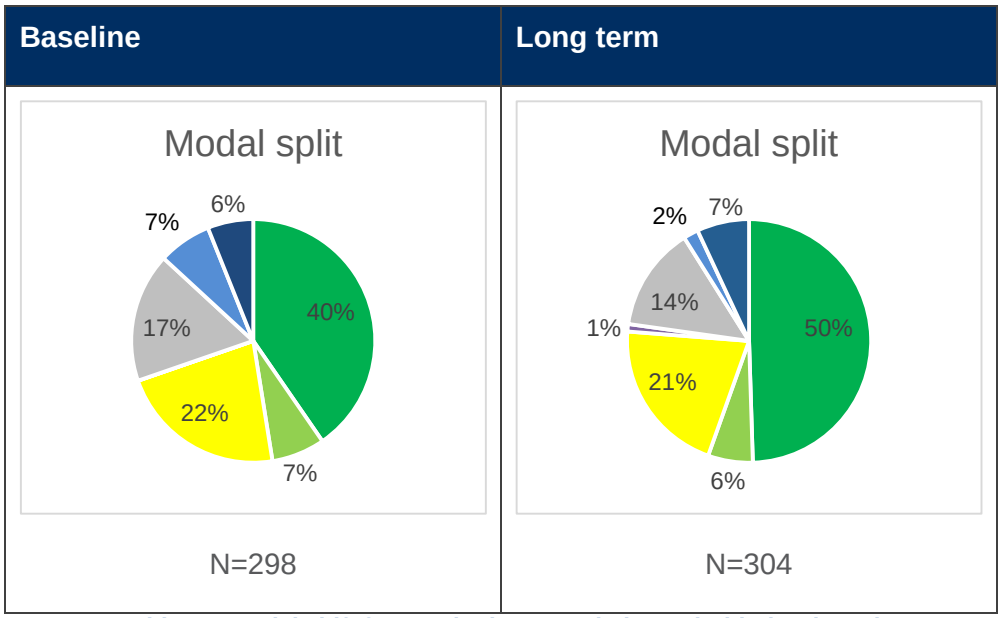



Table 18: Modal shift for regular journeys in households (Haringey)

At the end of the project respondents were questioned about their attitude towards car use. Results show that a large majority of the respondents are more in favour of using sustainable transport modes instead of the car.

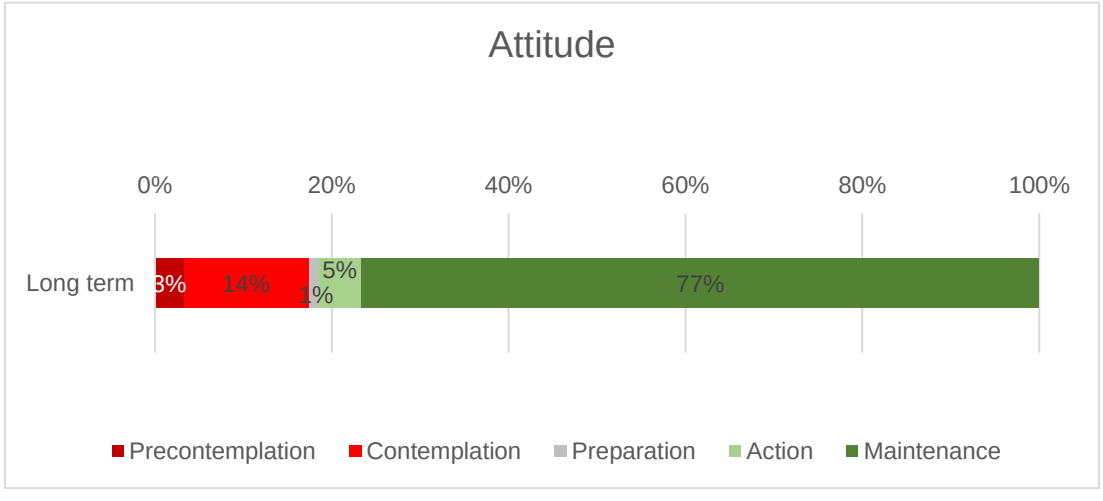



Figure 20: Attitude in households (Haringey)

[5] Source: Transport for London: borough local implementation plan performance indicators

Conclusion: The London borough of Haringey achieved good results towards walking: an increase of 10%. Although we have no comparison data on attitude, we see that respondents in the PTP-project are more in favour of sustainable travel modes.

Due to the resounding success of the first phase of delivery the London Borough of Haringey independently funded a second phase of delivery.

During the second phase in Haringey, PTPs were delivered in other parts of the borough: Harringay and the St Ann's Wards. The delivery of PTPs resulted in a small increase in cycling journeys (+1%), however, a significant increase in walking trips (+11%) has been realised.

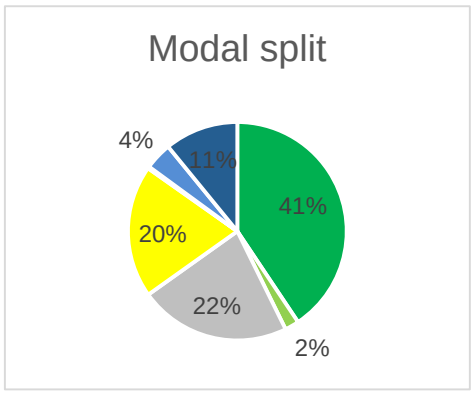
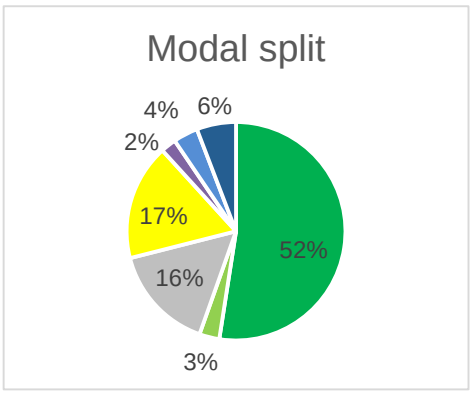
| Baseline | Short term |
|---|---|
|  |  |
| N=4229 | N=469 |

**Table 19: Modal shift in Haringey on general journeys (households) – second phase**

#### 2.6.4.5. Focus on Greenwich

Legend:

In Haringey and Greenwich a slightly different categorization of transport modes was used: motorbike is replaced with a more general category 'other'. As mentioned before, Haringey and Greenwich questioned trips less than five miles, made in a typical week.

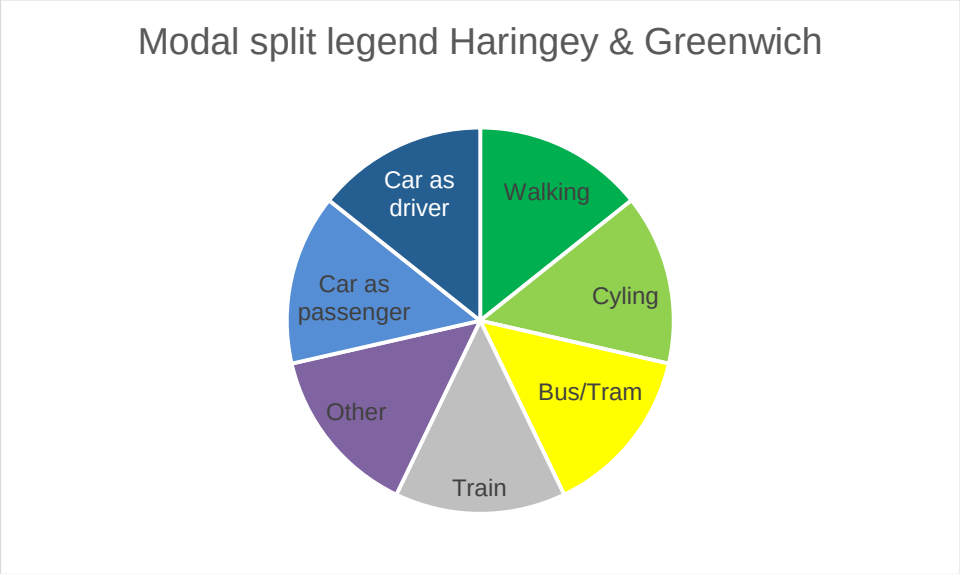



**Figure 21: Modal split legend of Haringey and Greenwich**

Timing:

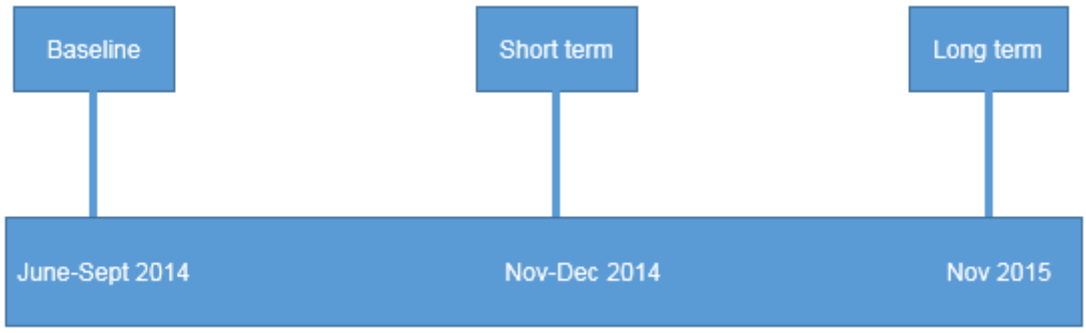



**Figure 22: Timing of surveys towards households in Greenwich**

Background:

The PTP-project in the Royal Borough of Greenwich was carried out in the Abbey Wood area. In recent years the borough has undertaken a number of initiatives to improve transport links connecting the borough to the rest of London.

The project achieved excellent results in the modal shift towards walking, with a 14% increase noticed. To know if the results of the project are to be expected, the boroughs local implementation plan (LIP) performance indicators[6] were used as context data: 44% travels by car, whilst here 9% uses the car as driver, and 3% as a passenger. Sustrans asked respondents about their transport modes on trips less than 5 miles made in a typical week.

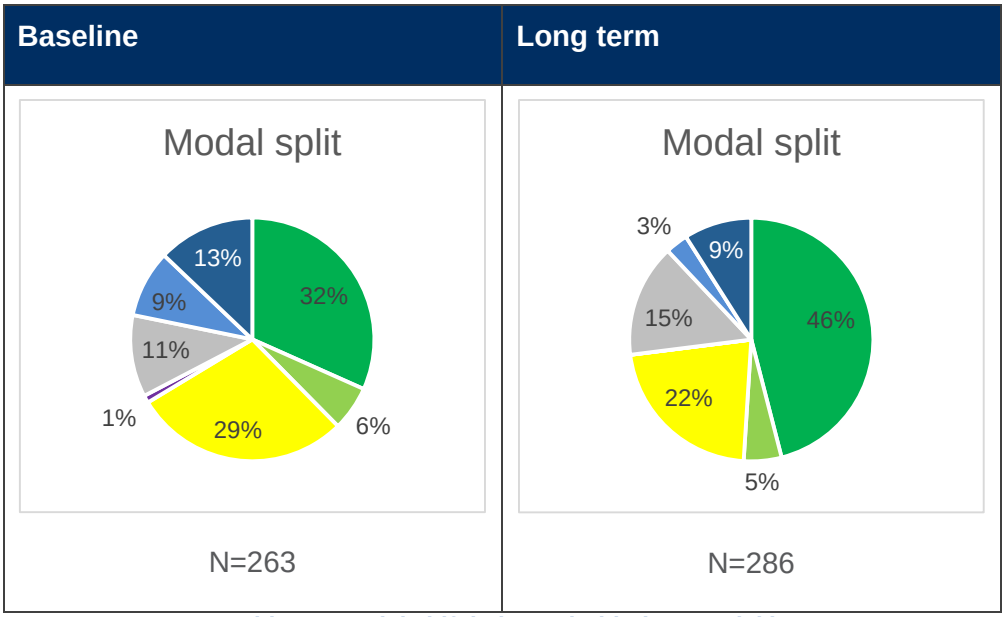



Table 20: Modal shift in households (Greenwich)

As with the borough of Haringey, respondents were questioned after one year on what their attitude is towards car use and sustainable transport modes. Results show that – as in Haringey – respondents are highly in favour of sustainable transport modes.

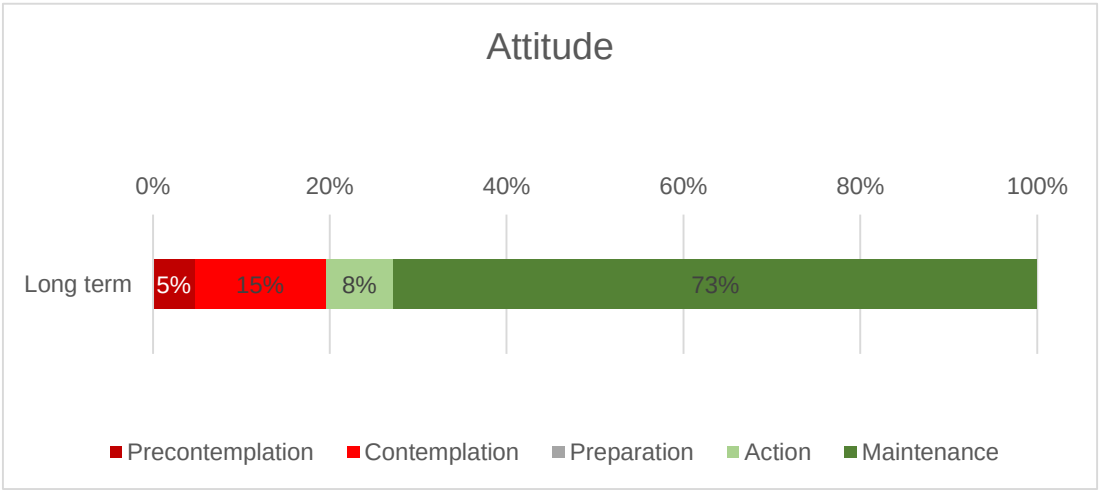



Figure 23: Attitude in households (Greenwich)

[6] Source: Transport for London: borough local implementation plan performance indicators

Conclusion: Respondents in Greenwich already used sustainable transport modes for a great deal of their journeys. . After one year, respondents increased their walking journeys by 14%. The results of the attitude question show us that Greenwich respondents are highly in favour of sustainable transport modes.

### 2.6.5 Universities

#### *2.6.5.1. Summary*

*Context*

Three implementation partners delivered the PTP-Cycle project to university students. Evidence shows that students are more likely to already use sustainable modes of transport than the car. Therefore the modal share for the amount of cycling, walking and public transport journeys was already quite high. Therefore the challenge for partners was to increase the modal shares even further.

*Methodology*

The partners used different methods to attract students to participate in the surveys. Antwerp approached students the same way they did with companies: by organizing information sessions where people afterwards could sign up for PTP interviews. Questionnaires and the delivery of PTP for students were undertaken online.

The team from Ljubljana tried to approach students via organising a prize draw. Again they noticed that getting responses was not that easy. The timing proved to be particularly important; the beginning of the new school year proved to be an excellent opportunity to deliver PTP. The survey was carried out via an online tool.

Riga organised guest lectures where students could discuss mobility options and highlight solutions themselves. Guest lectures seemed to work better than setting up an information stand in the hall of the university building. The delivery of PTP and surveys was done via face to face conversations, and an online tool.

*Main results*

The surveys towards university students were all carried out during the second phase of the project. Therefore data comparison is limited to baseline and follow up data. Surveys show that the participating students already make the majority of their journeys towards campus/faculty via sustainable travel modes. The modal share of car trips is for each implementation site quite low.

In Antwerp, cycling remains at the same level: one third of all journeys are undertaken by bike. Besides this high level of cycling, participants increased their walking (+5%) journeys, and to a lesser extent train journeys (+2%).

Respondents of the baseline and follow up in Riga are not entirely the same group. Therefore the results are not fully comparable: baseline answers are retrieved via conversations and an online tool, whilst the follow up results were collected by a professional bureau performing surveys. This can explain the remarkable differences between the results.

The students from the university in Ljubljana increased their cycling (+3%) and public transport journeys (+8%), but at the expense of their walking journeys (-11%).

The attitude question shows that students are already in favour of sustainable transport modes. Important footnote: Riga and Ljubljana also added the option “do not own a car”: results show that the majority of students do not own a car; which can have an impact on a respondents view towards transport modes.

### 2.6.5.2. *Focus on Antwerp*

Timing:


**Figure 24: Timing of surveys towards students in Antwerp**

Background:

Antwerp carried out surveys and personalised travel advice at the same university where they questioned the staff. Antwerp has been choosing to target the inner city campuses of the Antwerp University, because – as well as employees in the inner city centre – all these students will be impacted by the road infrastructure works. Around (over all university campuses and polytechnic schools), 40.000 students study in the city of Antwerp.

The PTP-project aimed at students resulted in more than 13.000 personalised travel advice conversations. Students usually tend to be people who use sustainable travel modes frequently. The same accounts for the students from Antwerp University.

Results after six weeks show that respondents of the PTP survey increased their walking (+5%) and train journeys (+2%). Cycling remains more or less ot the same level.

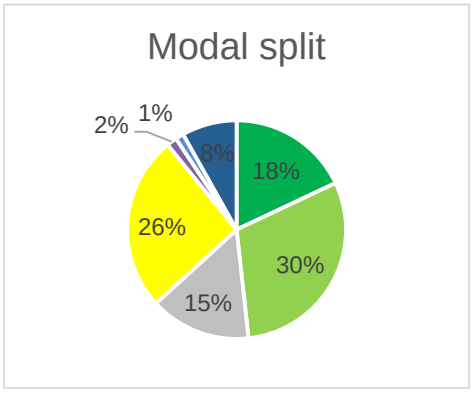
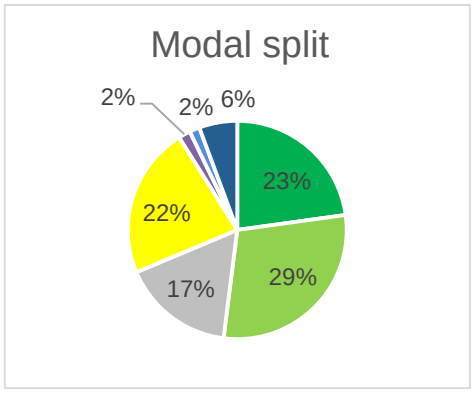
| Baseline | Long term |
|---|---|
|  |  |
| N=302 | N=176 |



**Table 21: Modal shift in Antwerp (universities)**

On attitudinal shift we can conclude that the majority of the students participating in the survey were already in favour of using sustainable transport modes. This number only increased in the follow up survey.

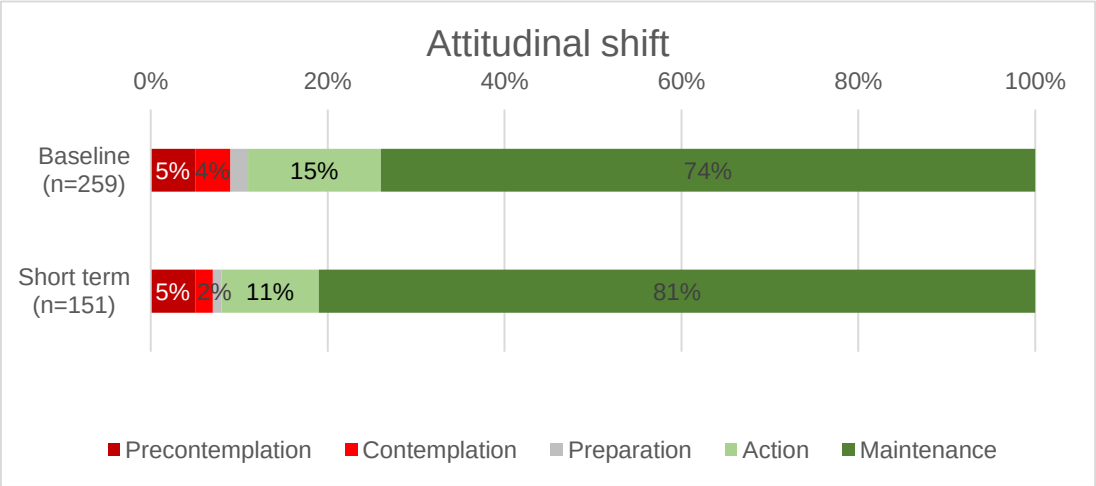



**Figure 25: Attitudinal shit at universities (Antwerp)**

Conclusion: The students from Antwerp University already used sustainable transport modes as their main mode of transport at the beginning of the project. After the delivery of the PTPs, we see an increase in walking and train journeys. Cycling remains on the same level. The attitudes towards car use and sustainable transport modes have only increased in favour of the last category.

#### *2.6.5.3. Focus on Riga*

Timing:


**Figure 26: Timing of surveys towards students in Riga**

Background:

In Riga, the PTP project managed to deliver 690 PTPs. To reach the initial target, the project team decided to extend the delivery of PTPs to students at universities located outside the original project area. They interacted with the students via special guest lectures. Students interested in cycling attended these lectures, and also proposed solutions to improve cycling conditions in Riga as well.

Because of the low response rate of the students studying in the project area, the team also had to survey respondents outside the target area. Therefore the results are not fully comparable: baseline

answers are retrieved via conversations and an online tool, whilst the follow up results were collected by a professional bureau performing surveys. This means there is a difference in respondents between the surveys.

Results of the surveys show that cycling levels significantly decreased (-9%), but that the public transport level significantly increased (+12%). These results can be linked to the difference in respondents.

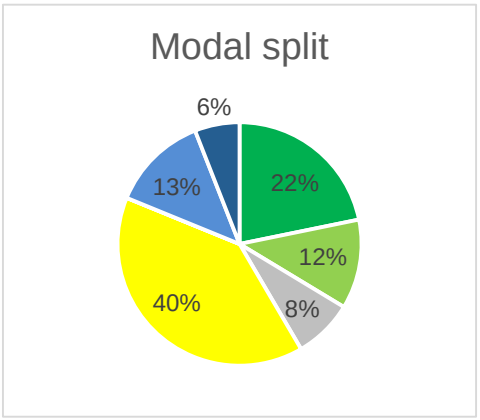
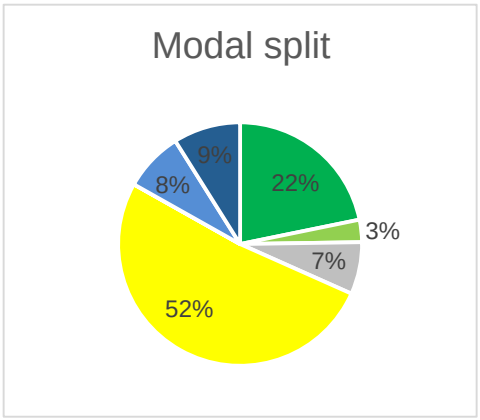
| Baseline | Long term |
|---|---|
|  |  |
| N=827 | N=907 |

Table 22: Modal shift at universities (Riga)

The attitudinal charts shows us that a number of the  of the respondents who were in the baseline were categorised as sometimes using more sustainable transport modes (‘action’) shifted towards using them most of the time (‘maintenance’)

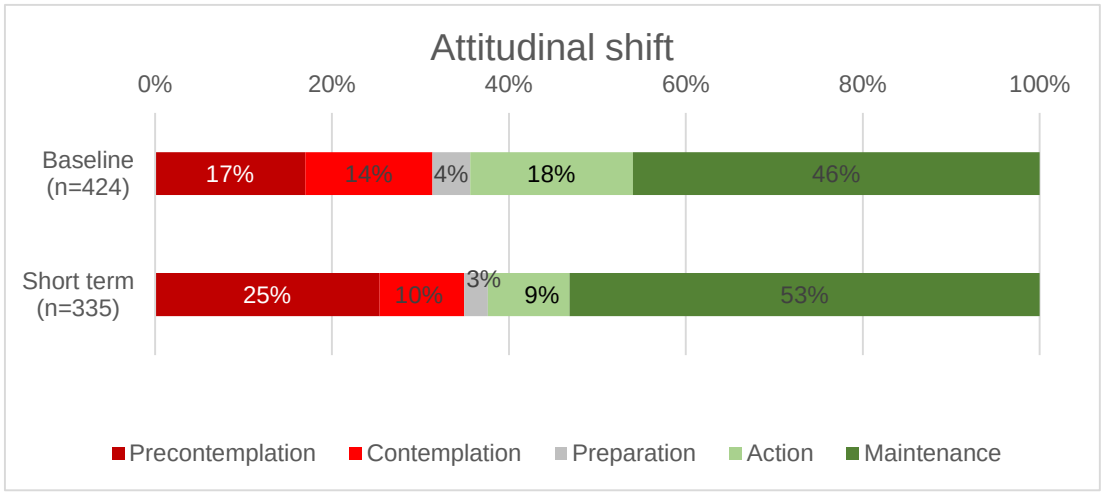



Figure 27: Attitudinal shift at universities (Riga)

Conclusion: The baseline survey of the students at participating universities in Riga show that they already travel using sustainable modes; with 81% of the not travelling by car. The follow up survey shows a similar distribution; only the cycling journeys seem to have shifted to public transport journeys.

#### 2.6.5.4. Focus on Ljubljana

Timing:


**Figure 28: Timing of surveys towards students in Ljubljana**

Background:

Ljubljana carried out surveys and personalised travel advice at the same university where they questioned the staff. The target group consisted of students living in the student residences on the campus. A preliminary analysis was performed, which showed that respondents were open to change travel mode, but kept using the car for their daily trips, just out of convenience.

Results of the surveys show that the majority of journeys undertaken are done by sustainable transport modes. The follow up survey shows that participating students shifted a number of their walking journeys in favour of cycling (+3%) and public transport (+7%).

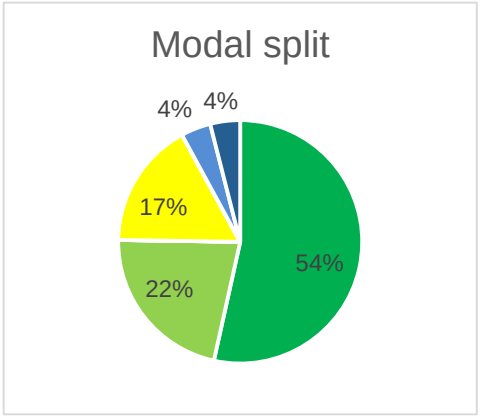
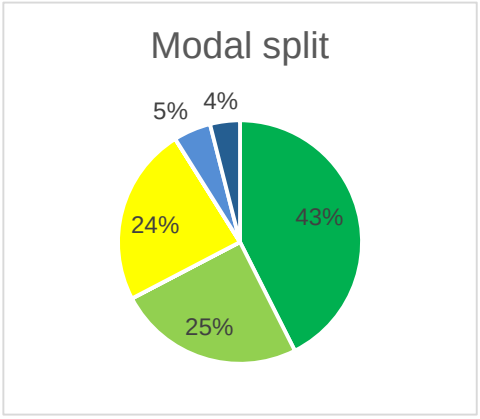
| Baseline | Long term |
|---|---|
|  |  |
| N=209 | N=320 |



**Table 23: Modal shift at universities (Ljubljana)**

Ljubljana participants slightly shifted their attitudes from being in favour of car use towards attitudes which are more positive on sustainable transport modes.

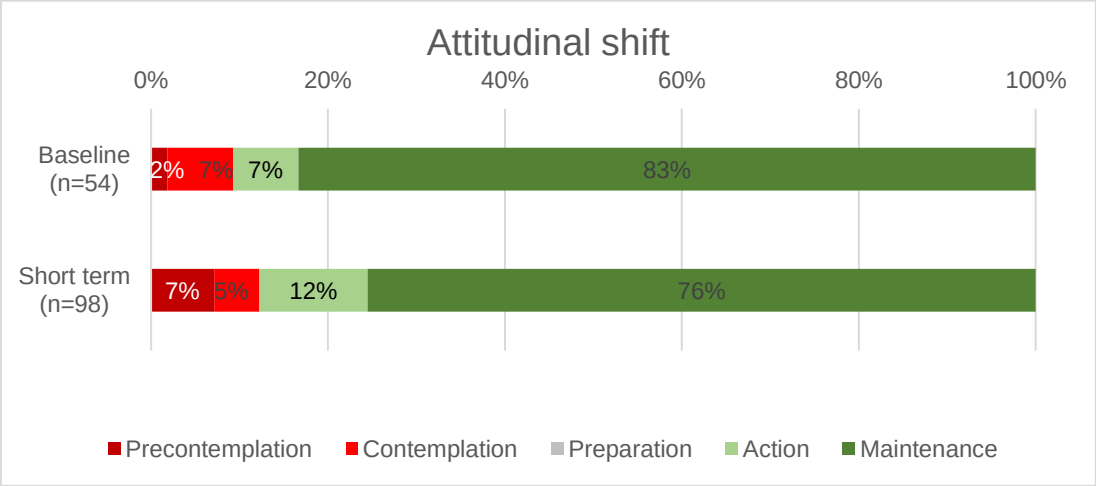



**Figure 29: Attitudinal shift at universities (Ljubljana)**

Conclusion: The participating students from the University of Ljubljana were already sustainable travel modes users. However, the PTP team managed to even increase the cycling and public transport share, while car use stays on the same low level.

## 2.7 Events

The delivery of PTP at events was used by all partner cities and provide highly successful. A list of the events can be found in annex B. Partners cities Rig and Ljubljana found that residents and students were often more open to engage in a PTP conversation than on the doorstep.

it was easier to approach respondents, then when contacting them at the doorstep, or at university.

Respondents were questioned how they came to the event, and if they would consider how they travelled to the next event they would attend.

The same legend was used to clarify the transport modes:

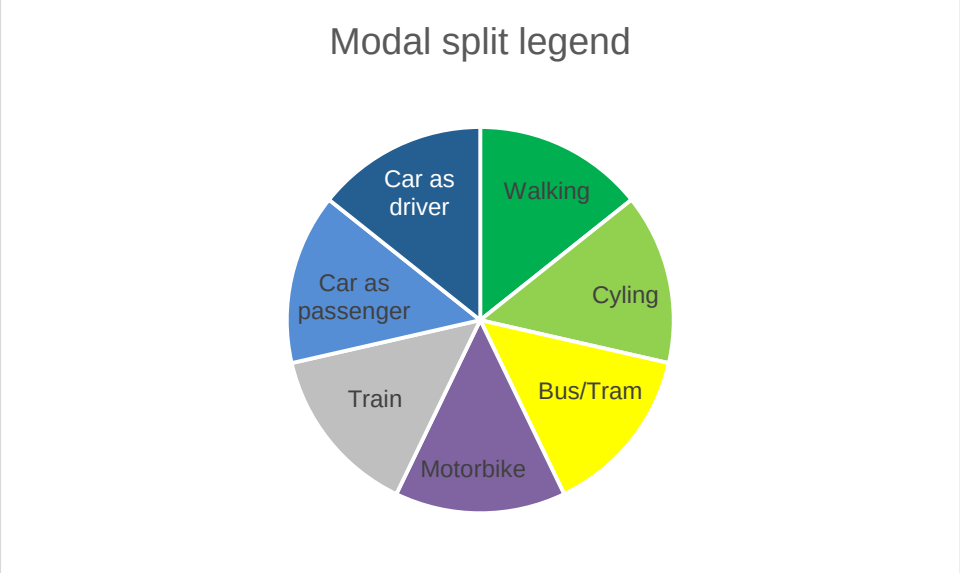



**Figure 30: Modal split legend**

Following statements were linked to the MaxSem stages:

| Statement | MaxSem stage |
|---|---|
| No, I do not see a reason why I should not come in another way than I did now | Pre-contemplation |
| No, because it is not possible for me to come in another way than I did now (because of distance) | Contemplation |
| Yes, I would like to come by bike but I do not know how to start (no information on bike routes) | Preparation |
| Yes, next time I plan to come by bike | Action |

**Table 24: Statements linked to MaxSem stages**

Implementation partners Burgos and Riga questioned respondents during the first and second phase of the project, while Ljubljana questioned visitors at events during the second phase.

Results from the first phase in Burgos and Riga showed that visitors at events already travelled using sustainable Regional differences are noticed as we see that respondents from Burgos travel more by foot, whilst in Riga one third cycles.

The positive results from the behavioural data continue on the attitude question: 70% of Riga respondents state that the next time they are attending an event they will travelby bike; this is an exceptional result. In Burgos, almost half of the respondents state that they will travel by bike next time.

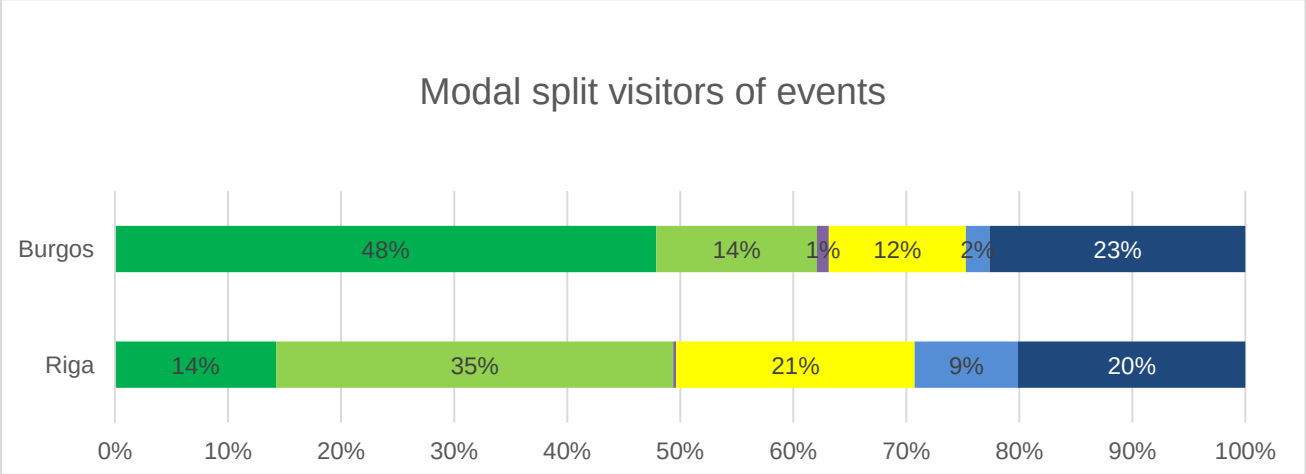



**Figure 31: Modal split visitors of events in Burgos and Riga – first phase**

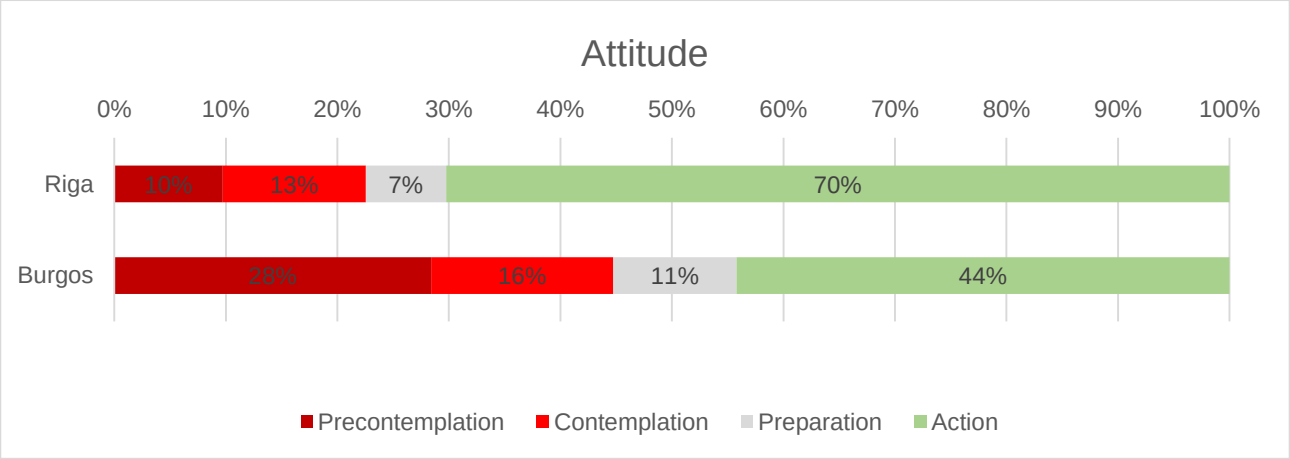



**Figure 32: Attitude of visitors towards coming by bicycle – first phase**

The results from the second phase in both Burgos and Riga are in line with the first phase. Respondents in Burgos tend to walk more to events, while in Riga the bicycle remains popular as well as public transport.

The respondents if Ljubljana also already travel using sustainable modes, but are more divided over three transport modes: walking, cycling and public transport.

The attitudinal results also confirm the behavioural results: again a majority of respondents in Riga confirm that the next time they  attend an event they will travel by bike, while in Burgos and Ljubljana the enthusiasm is lower.

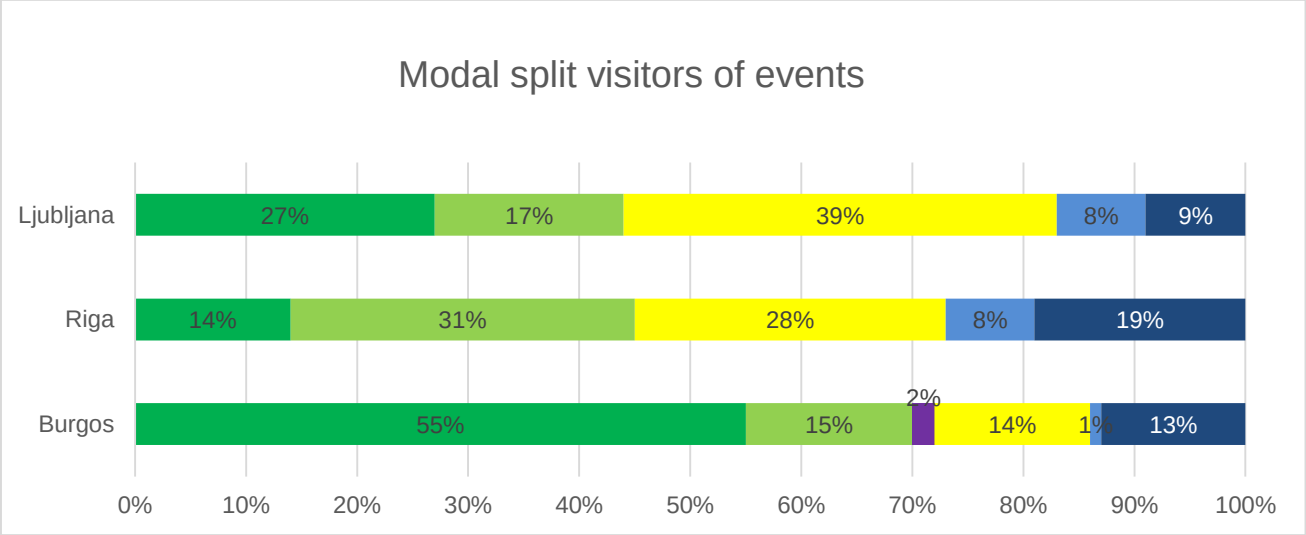



**Figure 33: Modal split visitors of events in Burgos, Riga and Ljubljana – second phase**

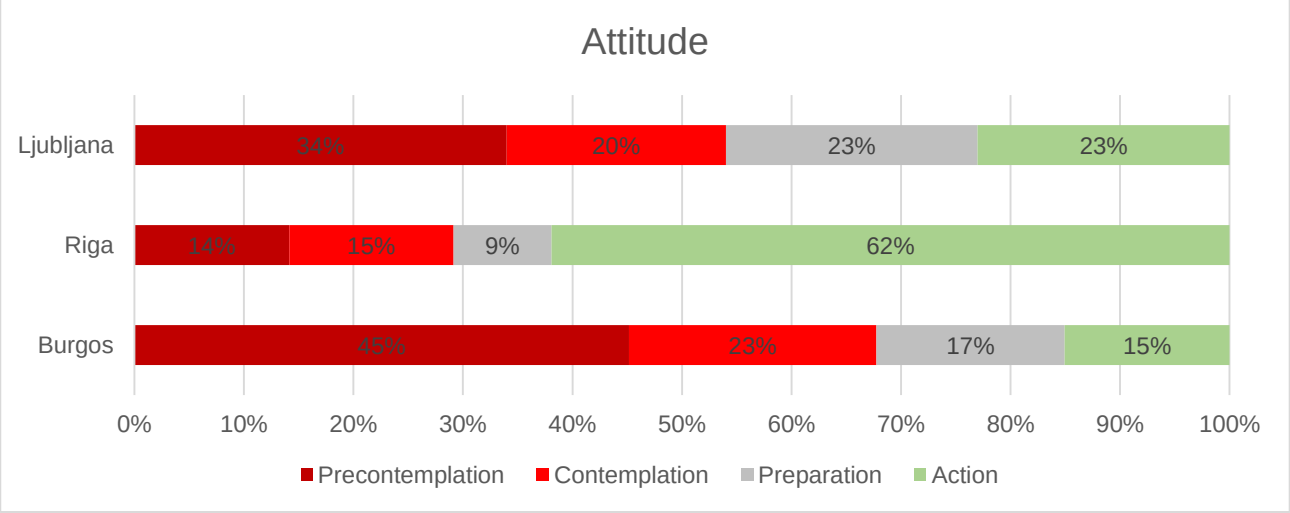



**Figure 34: Attitude of visitors towards coming by bike – second phase**

## 2.8 Score on performance indicators

At the beginning of the project, following performance indicators were outlined:

→ Minimum 50% attitudinal shift towards cycling and away from car use
→ Minimum 20% modal shift increase in cycling in each site
→ Minimum 10% modal shift reduction in car use
→ Minimum 10% increase in walking (secondary impact to be measured)

The scores outlined below are **relative changes** of results achieved. Absolute increases per target group and per partner can be found on the tables in section 2.6.3; 2.6.4 and 2.6.5.

### 2.8.1 Attitudinal shift

Four partners[7] questioned survey respondents on their attitude towards car use and sustainable transport modes, during the baseline and the long term.

Results show the relative increase or decrease in attitude level by comparing the baseline level with the long term level.

| Attitude level | Antwerp | Burgos | Ljubljana | Riga |
|---|---|---|---|---|
| Pre-contemplation | -19% | -6% | 2% | 102% |
| Contemplation | -1% | -11% | -3% | -13% |
| Preparation | 59% | -49% | -49% | -87% |
| Action | 7% | 8% | -45% | 6% |
| Maintenance | 5% | 6% | 101% | -15% |

**Table 25: Relative increase/decrease in attitude level per partner**

7 In Greenwich and Haringey, this question was asked at long-term follow-up only. Such results therefore give a snap shot of attitudes at follow-up only, and have been included in the individual commentary on these areas earlier in the report

### 2.8.2 Modal shift increase in cycling

#### *2.8.2.1. Home to work journeys*

Results of phase 1:

| Partner | City | Cycling level before | Cycling level after | Relative change |
|---|---|---|---|---|
| Antwerp | Antwerp | 21,9% | 25,8% | +18% |
| Burgos | Burgos | 8,5% | 24,4% | +187% |
| UIRS | Ljubljana | 14,8% | 20,2% | +36% |
| Riga | Riga | 8,1% | 8,4% | +3,4% |

Table 26: Results of cycling on home to work journeys – phase 1

Results of phase 2:

| Partner | City | Cycling level before | Cycling level after | Relative change |
|---|---|---|---|---|
| Antwerp | Antwerp | 28,1% | 25,3% | -9,7% |
| Burgos | Burgos | 8,5% | 5,2% | -39% |

Table 27: Results of cycling on home to work journeys – phase 2

#### 2.8.2.2. General journeys

Results phase 1:

| Partner | City | Cycling level before | Cycling level after | Relative change |
|---|---|---|---|---|
| Burgos | Burgos | 11,1% | 15,3% | +38,3% |
| Sustrans | Haringey | 7,5% | 5,8% | -22% |
| Sustrans | Greenwich | 5,7% | 5,1% | -12% |
| Riga | Riga | 6,1% | 7,8% | +16,6% |

Table 28: Results of cycling on general journeys – phase 1

Results phase 2:

| Partner | City | Cycling level before | Cycling level after | Relative change |
|---|---|---|---|---|
| Burgos | Burgos | 11,1% | 9,0% | -21,2% |
| Haringey | Haringey | 2,1% | 3,0% | +41,4% |

Table 29: Results of cycling on general journeys – phase 2

#### 2.8.2.3. Home to university journeys

| Partner | City | Cycling level before | Cycling level after | Relative change |
|---|---|---|---|---|
| Antwerp | Antwerp | 30,3% | 29,2% | -3,5% |
| UIRS | Ljubljana | 22,3% | 24,7% | +10,5% |
| Riga | Riga | 11,5% | 2,7% | -76,7% |

Table 30: Results of cycling on home to university journeys

### 2.8.3 Modal shift decrease in car use

#### *2.8.3.1. Home to work journeys*

Results phase 1

| Partner | City | Car use level before | Car use level after | Relative change |
|---|---|---|---|---|
| Antwerp | Antwerp | 44,2% | 42,1% | -4,8% |
| Burgos | Burgos | 55,2% | 42,7% | -22,6% |
| UIRS | Ljubljana | 51,0% | 42,5% | -16,7% |
| Riga | Riga | 23,0% | 23,5% | +1,9% |

**Table 31: Results of car use on home to work journeys – phase 1**

Results phase 2

| Partner | City | Car use level before | Car use level after | Relative change |
|---|---|---|---|---|
| Antwerp | Antwerp | 32,8% | 30,8% | -6,1% |
| Burgos | Burgos | 55,2% | 53,0% | -4,1% |

**Table 32: Results of car use on home to work journeys – phase 2**

#### 2.8.3.2. General journeys

Results phase 1:

| Partner | City | Car use level before | Car use level after | Relative change |
|---|---|---|---|---|
| Burgos | Burgos | 26,6% | 25,6% | 3,8% |
| Sustrans | Haringey | 6,5% | 6,6% | +1,4% |
| Sustrans | Greenwich | 12,8% | 8,6% | 32,4% |
| Riga | Riga | 13,3% | 17,4%% | +30,3% |

Table 33: Results of car use on general journeys – phase 1

Results phase 2:

| Partner | City | Car use level before | Car use level after | Relative change |
|---|---|---|---|---|
| Burgos | Burgos | 26,6% | 26,0% | 2,5% |
| Haringey | Haringey | 10,9% | 5,8% | 46,6% |

Table 34: Results of car use on general journeys – phase 2

#### 2.8.3.3. Home to university journeys

| Partner | City | Car use level before | Car use level after | Relative change |
|---|---|---|---|---|
| Antwerp | Antwerp | 8,1% | 5,6% | 30,5% |
| UIRS | Ljubljana | 4,0% | 4,0% | 0% |
| Riga | Riga | 6,0% | 9,0% | +50% |

Table 35: Results of car use on home to university journeys

### 2.8.4 Modal shift increase in walking

#### *2.8.4.1. Home to work journeys*

Results phase 1:

| Partner | City | Walking level before | Walking level after | Relative change |
|---|---|---|---|---|
| Antwerp | Antwerp | 8,9% | 7,9% | -11,8% |
| Burgos | Burgos | 21,9% | 23,0% | 5,2% |
| UIRS | Ljubljana | 13,5% | 14,5% | 7,1% |
| Riga | Riga | 19,2% | 22,8% | 18,8% |

**Table 36: Results of walking on home to work journeys – phase 1**

Results of phase 2:

| Partner | City | Walking level before | Walking level after | Relative change |
|---|---|---|---|---|
| Antwerp | Antwerp | 6,8% | 8,9% | 31,2% |
| Burgos | Burgos | 21,9% | 26,0% | 19% |

**Table 37: Results of walking on home to work journeys – phase 2**

#### 2.8.4.2. General journeys

Results phase 1:

| Partner | City | Walking level before | Walking level after | Relative change |
|---|---|---|---|---|
| Burgos | Burgos | 37,2% | 38,0% | 2,0% |
| Sustrans | Haringey | 40,0% | 50,0% | 25,0% |
| Sustrans | Greenwich | 32,1% | 46,4 | 44,6% |
| Riga | Riga | 33,0% | 33,0% | 0% |

Table 38: Results of walking on general journeys – phase 1

Results phase 2:

| Partner | City | Walking level before | Walking level after | Relative change |
|---|---|---|---|---|
| Burgos | Burgos | 37,2% | 52,0% | 38,9% |
| Haringey | Haringey | 40,6% | 52,5% | 29,1% |

Table 39: Results of walking on general journeys – phase 2

#### 2.8.4.3. Home to university journeys

| Partner | City | Walking level before | Walking level after | Relative change |
|---|---|---|---|---|
| Antwerp | Antwerp | 18,0% | 22,8% | 26,8% |
| UIRS | Ljubljana | 53,6% | 43,1% | -19,5% |
| Riga | Riga | 21,8% | 21,8% | 0% |

Table 40: Results of walking on home to university journeys

# 3 General conclusion

Results of the PTP-project are positive and show that the PTP-methodology is applicable across Europe, and towards a range of different target groups and sites. The varying results however show that the method has a different impact per target group and per site.

## 3.1 Antwerp

Before the project started, Antwerp already had a high modal split in favour of cycling for both general journeys and for journey to and from work.. Results show that the PTP project succeeded in further increasing the cycling share of home to work journeys (+ 4%), but did not for home to university trips.

We can conclude that the approach to engage employers in Antwerp was highly successful. The PTP team in Antwerp engaged in a clear agreement with the management of the company, before starting to apply the PTP-method. The team also developed specific mobility guides for each company. More details on their methodology can be found in the 'best practices and lessons learnt guide' and implementation plans; both are available on the project website.

When delivering PTP to students, the Antwerp team used a different approach: advice was given online, and not always face to face. In addition, it was noticed that a high proportion of students were already using sustainable modes of transport for their journeys to campus (only 8% comes by car), which makes it difficult to initiate a further sustainable modal shift.

## 3.2 Burgos

Burgos is Spain's second cycling city and achieved positive results in increasing the use of sustainable modes of transport for both general and work journeys. The PTP-approach of 'knocking on doors' seemed to work very well towards the first group of households: they increased their cycling trips on general journeys by 4%, and on home to work journeys by16%.

The first target area chosen by the PTP-team was identified as it was known to be open-minded towards new solutions and has a lively neighbourhood with a good working civic centre. It is important to note that Burgos used a number of marketing strategies to introduce the project to the neighbourhood; this proved very successful in encouraging engagement. Posters and leaflets were developed and distributed to supermarkets, churches and civic centres in the target area to alert residents in advance and to show photos of the travel advisers. As a results residents were more open to engaging with travel advisers and to provide access to buildings.

The second target area had a slightly different age mix, with a larger group of elderly residents. This might be an explanation for the increase in walking trips, and decrease in cycling trips.

## 3.3 Haringey & Greenwich

The PTP-Cycle project fits into both boroughs Local implementation Plans; which fit in a general programme that focusses on smart mobility, health and other societal subjects.

Both boroughs are known to have a rather lower share of car use, compared to other partners in the project. One of the most popular transport modes is public transport, which can be explained by the good links to the centre of London.

The methodology used proved to be very successful for walking: walking trips were significantly increased in both boroughs (Haringey +10% in the first phase; +12.5% in the second phase and Greenwich +14% - see section 2.6.4.4 and 2.6.4.5).

We can conclude that the respondents in the project were more open to shift their usual way of travelling into walking; and that public transport still remains a frequently used transport mode.

## 3.4 Ljubljana

In Ljubljana the PTP-team focused on employees and students. At the start of the project they quickly noticed that the original project methodology needed to be adapted to overcome the challenges they faced with very strict data protection laws in Slovenia and the restriction they had on ‘knocking in the door’ due to concerns by faculty management that it could cause disturbance to work. However,, the results still proved to be positive, the new method used (an email, followed by phone, then a pre-arranged meeting):proved to be time consuming, but effective with a 5% increase in cycling trips by employees realised.

The delivery of PTPs to students also yielded positive results with a shift from walking to cycling and public trips recorded.

As in Antwerp it was noticed that a high proportion of students were already using sustainable modes of transport for their journeys to campus.

## 3.5 Riga

Riga delivered PTP to on households, students and to visitors at events. The team in Riga faced similar difficulties to that experienced in Ljubljana. In Roga direct communications with residents is not common practice and as such travel advisers faced challenged engaging households. An explanation in households might be that a lot of the respondents live in apartment blocks: they do not want to open the door to strangers, even if they have special identification cards or a uniform with the project logo.

As such the delivery of PTPs at events became a core element of the PTP-Cycle approach in Riga. During events people were open and willing to have a discussion or conversation with the travel advisers. This reflects in the results: one third of visitors at events travelled by bike (as well in the group of the first phase as the group of the second phase).

To attract students for a personalised travel conversation, the team in Riga decided to organise guest lectures in cooperation with the student organisations. They proved to be more successful than setting up an information stand in the hall of a university building.

# 4 Effects of personalised travel advice

## 4.1 Methodology

The benefit to cost ratio method is used to survey all the impacts caused by an increase in cycling.

There are many different aspects that can be taken into account when calculating the benefit to cost ratio.

The most common aspect is the financial effects (investment costs, tax, fees).

Several methods have been developed to also include social impact. There are numerous social impacts: pollution, congestion, safety, journey quality, time saving, labour market costs and environmental benefits.

To calculate these benefits, we use the methods developed by the UK Department for Transport. They calculate the total benefit to cost ratio of several key impacts: physical activity, absenteeism, journey quality, accident impact, environmental impact, indirect tax revenue and time saving.

Other organizations, such as Transport & Mobility Leuven, Decisio and TNO have also written reports on calculating the benefits of cycling and cycling infrastructure.

In the cost benefit analysis of the PTP-Cycle project, we will calculate the benefits of the personalised travel advice on the risk reduction of mortality, absenteeism at work, road safety and the environmental consequences.

Cost is defined as the expenses made per partner to deliver the personalised travel advices.

Costs are a direct effect of a measure (in this case, the delivery of personalised travel advice). Section 4.3 looks at the benefits of the project, and divides the benefits in three categories: direct, indirect and external benefits.

## 4.2 Cost per partner

Included in the cost per PTP were the following categories:

*Staff cost*

Staff costs included preparation, implementation and evaluation of the project.

*Marketing materials*

Marketing materials included gadgets to hand out, and promotion materials such as posters, flyers, etc.

*Other*

Other costs were organization of events, catering, etc.

Following table shows the cost per PTP for each partner. The cost per PTP was calculated by summing up all costs and dividing them by the amount of PTPs delivered per category.

| Partner | City | Residential | Workplaces | Universities | In the field |
|---|---|---|---|---|---|
| Antwerp | Antwerp | | €18,7 | €18,7 | €18,7 |
| Burgos | Burgos | €11,0 | | | €9,0 |
| Sustrans | Greenwich | €15,0 | | | €15,0 |
| Sustrans | Haringey | €14,0 | | | €14,0 |
| UIRS | Ljubljana | | €89,0 | €12,1 | €12,0 |
| Riga | Riga | €97,0 | | €13,5 | €5,3 |

**Table 41: Overview of cost per PTP per partner**

## 4.3 Benefits

The following benefits are all based on the results realised by the partners on the long term. To summarize:

- Antwerp workplaces
- Burgos residential
- Riga residential
- Ljubljana workplaces
- Haringey residential
- Greenwich residential

### 4.3.1 Indirect benefits

#### *4.3.1.1. Reduced mortality*

Active travelling leads to an increased reduction of mortality. The HEAT tool, developed by the WHO, can be used to estimate a change in the reduced risk of mortality due to an increase in cycling. There is a limited but no significant impact on the reduced risk of mortality as a result of the PTP project.

There are various ways to calculate the impact of the PTP-project on the reduction of mortality. Our calculations are based on following conditions:

- The total amount of journeys[8]
- The total amount of people affected by cycling
- Average distance[9]
- Estimation of cycled journeys[10]

The impact on the reduction of mortality was calculated for the long term results, because the HEAT tool is developed for health benefits, which are only visible over time. Comparing cost per partner with the health benefits, results in the following cost to benefit ratio for each partner:

8 The total amount of journeys does not change – see explanation on modal split calculation
9 Average distance was not questioned in Haringey and Greenwich. Therefore we cannot calculate the health benefits via the HEAT tool.
10 Estimation provided via the HEAT tool

| Partner | Benefit to cost on cycling |
|---|---|
| Antwerp | 5,09:1 |
| Burgos | 4,87:1 |
| Ljubljana | 1,91:1 |
| Riga | 1,78:1 |

Table 42: Benefit to cost ratio on cycling

The benefit to cost ratio is based on a five year build-up of benefits, with a 1 year build-up of uptake, and a discounting of 5% per year.

#### *4.3.1.2. Reduction of absenteeism*

Studies from WHO (2003) showed that people who tend to actively move every day, are less sick. According to the WHO, the impact of being active every day during a half hour, has an impact between 6% to 30% reduction on sick days.

After one year, the PTP-project reduced the amount of 'sick days' per person with 2, 2 days on average (over all partners).

Based on following parameters, a calculation was made of the estimated reduction in costs realised by the increased amount of people cycling:

- Amount of people cycling before and after which received PTP[11]
- Average sick days per country
- Labour rate per country
- WHO data

Attention: as the reduction of sick days varies from 6% to 30%, we decided to calculate the results based on the lowest value (6%).

Calculations were made for the implementation sites which delivered results after one year. The amount of delivered PTPs varies between partners. This explains the differences between Antwerp & Burgos on one hand, and Riga & Ljubljana on the other hand.

[11] The exact amount of people cycling was not provided in the Haringey and Greenwich data results

| Partner | Cost reduction before | Cost reduction after one year |
|---|---|---|
| Antwerp (workplaces) | €128.497 | €160.925 |
| Burgos (residential) | €151.504 | €172.851 |
| Riga (residential) | €989 | €1013 |
| Ljubljana (workplaces) | €2306 | €2570 |

**Table 43: Cost reduction in sick days**

### 4.3.2 External benefits

#### *4.3.2.1. Energy reduction*

Besides the personal benefits gained for each person participating in the PTP-project, the increase of cycling trips and decrease of car trips delivers also benefits for society.

- The implementation sites of the first phase succeeded in reducing their car kilometres with almost 8 million (7.931.000 to be precise). If the implementation sites of the second phase continue their sustainable travel behaviour, after one year they will realize a reduction of almost 8.5 million car kilometres (8.459.949 precisely).
- Less car trips means also less fuel consumption: a reduction of 401.000 litres[12] was realised during the first phase. If the implementation sites of the second phase continue their sustainable travel behaviour, after one year they will realize a reduction of 428.158 litres[13].

#### *4.3.2.2. Reduction of CO2 emissions*

One of the main goals of the project was to also reduce the emission of CO2: the implementation sites managed to reduce the amount of CO2 with 1031 tonnes, which means a reduction of 17,5% compared to the baseline results.

If the implementation sites from the second phase will keep up their sustainable travel behaviour, after one year they will have reduced their emission of CO2 with 1353 tonnes.

There are several goals to calculate the financial benefits of less car kilometres. One way is to calculate the reduction in cost based on the ETS price of a tonne CO2.

Following the European Energy Exchange, an energy trading platform, the current price for a ton of CO2 on the secondary market amounts €5,25[14]. Based on this price, we can conclude that the project during the first phase realized a reduction of € 257,25.

However, scientists agree that that the current price does not answer the real costs of CO2 emissions. How to calculate the 'real' costs is not easy. Many factors need to be taken into account. A recent study from the US government calculates the cost on $220 per tonne[15]. This would mean a reduction of €199.601 (based on USD/EURO currency rate exchange).

[12] Petrol and diesel

[13] See footnote 12

[14] More info: https://www.eex.com/en/market-data/emission-allowances/spot-market/european-emission-allowances#!/2016/04/06

[15] Source: http://www.nature.com/nclimate/journal/v5/n2/full/nclimate2481.html

Another method to calculate the reduction in cost is to look at the average external cost of CO2/ passenger kilometre. The TU of Dresden calculated an average price for EU-27 based on the study of CE Delft from 2011: 5 eurocent per kilometre[16]. This would mean a reduction of €396.550.

#### *4.3.2.3. Reduction of traffic noise*

Traffic noise also has an external cost to society. The technical university of Delft calculated in their overview of external costs of transport in Europe (2011)[17] the cost of traffic noise: €1,7/1000 passenger kilometres.

Based on this figure, the implementation sites of the first phase managed to save €13.500 after one year.

If the implementation sites from the second phase will keep up their sustainable travel behaviour, after one year they will have saved €14.381.

## 4.4 Conclusion

Looking at the calculations, we can conclude that the PTP-project succeeded in gaining benefits which are worth the cost. The benefit to cost ratio for risk reduction of mortality is calculated via the HEAT tool.

Results show that all partners succeeded in achieving a positive ratio.

This proves us that based on direct health benefits alone, the project is profitable. Thus we can conclude that the project as a whole has a positive benefit to cost ratio.

[16] Source: http://www.greens-efa.eu/fileadmin/dam/Documents/Studies/Costs_of_cars/The_true_costs_of_cars_EN.pdf , p39

[17] Source: http://ecocalc-test.ecotransit.org/CE_Delft_4215_External_Costs_of_Transport_in_Europe_def.pdf

## 4.5 Comparison with other cycle measures

In the field of cost benefit analysis, not many studies have been undertaken to look at cycling measures. This because there are a lot of factors on which there is no unity among scientists (e.g. value of time of cycling).

However, some studies have looked into the costs and benefits of cycling infrastructure.

### 4.5.1 Cycling bridge, Leidsche Rijn/Oog in Al – Decisio

Decisio[18] took a look at the costs and benefits of a cycling bridge. The cycling bridge is located at the Leidsche Rijn/Oog in Al, over the Amsterdam-Rijn canal.

The cost of the bridge amounts €14.3 million. Decisio developed three cases in which other investment costs of a school in the neighbourhood are included, or not. The third case is the most optimistic one, in which only the costs of the bridge are included.

Within this report, we decided to follow the third case study, and therefore only to look at the costs of the cycling bridge.

Decisio distinguishes also three different categories of benefits: direct, indirect and external.

Concerning direct effects, following elements are taken into account:

- Value of travel time, for cyclists and car users. Because of the bridge, the distance for cyclists would be reduced, thus allowing them to reach their destination faster. Decisio estimates an effect of increase in cyclists on a reduction in car users, thus creating less congestion for car users.
- Amount of cyclists who will use the bridge

Concerning indirect benefits, Decisio estimates following benefits:

- Labour productivity
- Reduced mortality
- Taxes on car use
- Grants for public transport

Concerning external benefits, Decisio monetarized the effects of:

- Reduction in noise
- Traffic safety

[18] Source: http://www.decisio.nl/wp-content/uploads/2014/11/MKBA-Fiets.pdf

- Reduction in emissions

In total Decisio estimated a total balance of €65 million (total cost of €16.4 million and total monetarized benefit of €81.5 million). Based on these data, they calculated a benefit to cost ratio 5.7:1

### 4.5.2 Wannsee route, Berlin

In 2005, a cycling route from the city centre of Berlin to Potsdam was constructed. In total €354.700 euro was used to construct the route (infrastructure and signing).

After the establishment of the route, the cycling traffic in this section increased with 50%. According to calculations, this amounted to an additional 230.000 passenger kilometres or 192.000 saved vehicle kilometres (occupancy rate of 1.2 on average).

To assess the health benefits, the Nationaler Radverkehrsplan took into account the operation period of infrastructure of the infrastructure (25 years) and signing (10 years), the changed car accident rates and the percentage of active cyclists. This leads to the following benefits: reduction in infrastructure costs, reduction in CO2 emissions and reduction in material damage caused by accidents.

Based on these figures, a cost-benefit ratio of 3.43:1 was calculated[19].

### 4.5.3 Bike sharing system in Pittsburgh

In 2012, a feasibility study on a bike sharing system for the city of Pittsburgh was performed at Heinz College[20].

The research time calculated all costs over a period of five years, and all net benefits.

Costs were projected $28.252.257, and included capital, operating costs, travel time and costs related to bicycle accidents.

Benefits were projected $ 31.882.257, and included fuel savings, user cost savings, travel time savings, congestion reduction benefits, environmental and public health benefits, and benefits related to a decrease in car accidents.

Based on these figures, a benefit to cost ratio over a period of five years of 1.12:1 was calculated.

### 4.5.4 Conclusion

Based on the calculations of the three other cycle measures, we can conclude that of those three the cycling bridge is the most profitable, and the bike sharing scheme the least. However, in the cycling bridge scenario, not all costs are incorporated (e.g. investment costs of school close to the bridge).

The unique characteristics of each location and cycling measure makes it very difficult to compare and define which solution is the best.

[19] http://www.nationaler-radverkehrsplan.de/en/transferstelle/downloads/cye-a-07.pdf

[20] http://bikepgh.org/wp-content/uploads/2012/11/BikeShareFinalReport.pdf

According to different mobility experts, cycling must be encouraged via a combination of different measures, hard (e.g. cycling infrastructure) and soft (e.g. the PTP-Cycle method). Therefore we conclude that the approach used within the PTP-project should be combined with ‘hard’ measures.

The partners within the project are applying this vision on mobility behaviour change as well, and are implementing infrastructure as an element in their transport policy.

# 5 Annex

A. List of participating implementation sites per partner

| Antwerp | Phase |
|---|---|
| 1. EANDIS (MOB GUIDE) (IR2) | 1 |
| 2. SECUREX (MOB GUIDE) (IR2) | 1 |
| 3. ANTWERP UNIVERSITY (MOB GUIDE) | 1 |
| 4. PSA (MOB GUIDE) (IR2) | 1 |
| 5. FACILICOM (MOB GUIDE) (IR2) | 1 |
| 6. FAVV (MOB GUIDE) (IR2) | 1 |
| 7. SD WORX (MOB GUIDE) (IR2) | 1 |
| 8. KDG (MOB GUIDE) (FR) | 2 |
| 9. DELA (MOB GUIDE) (IR2) | 2 |
| 10. AP Hogeschool (MOB GUIDE) (FR) | 2 |
| 11. KA EKEREN | 2 |
| 12. SCOUTS (MOB GUIDE) (FR) | 2 |
| 13. KBC (MOB GUIDE) (FR) | 2 |
| 14. Port of Antwerp (mob info) | 2 |
| 15. Antwerp Police (MOB GUIDE) (FR) | 2 |

| Antwerp | University |
|---|---|
| 1. Antwerp University | 2 |

| Burgos | Residential |
|---|---|
| 1. Burgos area (G3,G2) | 1 |
| 2. Burgos area (G3,G2) | 2 |

| Riga | Residential |
|---|---|
| 1. Jugla – Teika neighbourhood | 1 |

| Riga | Universities |
|---|---|
| 1. University in Jugla-Teika neighbourhood: Faculty of Economics | 2 |
| 2. University in Jugla-Teika neighbourhood: Faculty of Education | 2 |

| Ljubljana | Workplaces |
|---|---|
| 1. Faculty of Social Sciences | 1 |
| 2.Faculty of Education | 1 |
| 3. Faculty of Economics | 1 |
| 4. Faculty of Administration | 1 |

| Ljubljana | University |
|---|---|
| 1. Ljubljana University | 2 |

| Haringey | Residential |
|---|---|
| 1. Crouch End | 1 |
| 2. Harringay | 2 |
| 3. St Ann's Wards | 2 |

| Greenwich | Residential |
|---|---|
| 1. Abbey wood | 2 |

B. List of events per partner

| Antwerp | Events |
|---|---|
| 1. Scouts en Gidsen Vlaanderen (Boy and Girl Scout Center of Flanders) (MOB GUIDE) (FR) | 2 |
| 2. KA Ekeren (secondary school) | 2 |

| Burgos | Events |
|---|---|
| 1. City Centre Municipality Fiestas | 1 |
| 2. Leisure Centres | 1 |
| 3. University (Campuses) | 1 |
| 4. City Centre (European Mobility Week) | 1 |
| 5. School of Languages | 2 |
| 6. School of Languages | 2 |
| 7. City centre | 2 |

| Riga | Events |
|---|---|
| 1. Teika regenerator event Brivības avenue 356 | 1 |
| 2. ELKOR Family Sport Day | 1 |
| 3. Miera Street Festival | 1 |
| 4. Riga Cycling Marathon 2014 | 1 |
| 5. Latvian Ethnographic Open Air Museum Fair | 1 |

| | |
|---|---|
| 6. Midsummer (Līgo) Festival in Ķengaraga park | 1 |
| 7. 8th World Choir games | 1 |
| 8. Contemporary Crafts Festival in The Latvian Ethnographic Open Air Museum, | 1 |
| 9. Riga City Festival 2014 | 1 |
| 10. Miera Street Festival | 2 |
| 11. Latvian Ethnographic Open Air Museum Fair | 2 |
| 12. Museum night | 2 |

| Ljubljana | Events |
|---|---|
| 1. Freshman's at Faculty of arts | 2 |
| 2. Študentska arena – three day event for students – day 1 | 2 |
| 3. Študentska arena – three day event for students – day 2 | 2 |
| 4. Študentska arena – three day event for students – day 3 | 2 |
| 5. Students of geography (lecture + PTP) | 2 |
| 6. Healthy breakfast for students | 2 |
| 7. Škisova tržnica – big event for student organisations | 2 |
| 8. Running event for students | 2 |
| 9. Faculty for computer sciences | 2 |

| | |
|---|---|
| 10. Faculty for chemistry | 2 |
| 11. Freshman's at Faculty of arts | 2 |

| Haringey | Events |
|---|---|
| 1. Finsbury Park festival of cycling | 1 |
| 2. Hornsey Town hall smarter travel roadshow | 1 |
| 3. Money Wise | 1 |
| 4. Hornsey Town hall smarter travel roadshow | 1 |
| 5. Tottenham Green Fair | 1 |
| 6. Dr Bike Finsbury Park | 1 |
| 7. Dr Bike Finsbury Park | 1 |
| 8. Dr Bike Priory Park | 1 |
| 9. Dr Bike Priory Park | 1 |
| 10. Festival of Cycling 80 | 2 |
| 11. North & South Haringey Primary Schools 83 | 2 |
| 12. CA Beach Event 121 | 2 |
| 13. Wightman Road Mosque Event | 2 |

| Greenwich | Events |
|---|---|
| 1. Great Greenwich Get Together | 1 |
| 2. Dr. Bike | 1 |

| | |
|---|---|
| 3. Tour De France event | 1 |
| 4. Dr. Bike | 1 |
| 5. Staff Health and Wellbeing Day | 1 |
| 6. Workplaces event | 1 |
| 7. Dr. Bike | 1 |
| 8. Dr. Bike | 1 |
| 9. Asian Festival | 1 |
| 10. Workplaces event | 1 |