# Effects of mobility management with communications campaigns in CIVITAS MIMOSA

**Abstract:**

Mobility management as soft policy receives more and more attention and establishes its position in the canon of instruments for sustainable urban transport policies. This paper presents a short theoretical background on how to achieve behaviour change towards more sustainable modes drawing on the self-regulation theory, also applied as MAXSEM model. Within CIVITAS initiative many measures implemented and evaluated in European cities are of the "soft measure" kind. The analysis of case studies in CIVITAS MIMOSA, a project in the CIVITAS II phase (2008-2012), shows that the implementation of soft measures/mobility management marketing often does not use the potential to the full extent. Five case studies are presented and analysed regarding their fit to the MAXSEM model and effects as measured by the cities: 1) Utrecht UB-pass (job ticket) implementation, 2) Utrecht carsharing/carpooling information campaign, 3) Tallinn knitting graffiti bus to enhance public transport image, 4) Funchal orienteering event and 5) Gdansk clean stop action. The examples illustrate both the very widespread problematic understanding of planning and implementing campaigns by cities in Europe often neglecting the behaviour change research results and already available knowledge. However, promising approaches that could lead to successful behaviour change are outlined. Recommendations are given how already available knowledge could be integrated better in the planning and evaluation process tapping the real potential of communication campaigns for promoting sustainable mobility.

**Keywords:** mobility management, awareness raising campaigns, evaluation, CIVITAS

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# 1 Introduction

Mobility management as soft transport policy receives more and more attention and establishes its position in the canon of instruments for sustainable urban transport policies. Soft measures can be defined as policy interventions that aim to change travel behavior by changing beliefs, attitudes, values and cognitive skills without changing travel options (Jones & Sloman, 2006). Soft policy measures are also referred to as voluntary change measures, psychological and behavioral strategies or mobility management tools (Bamberg et al, 2011). Categories of soft measures are education/awareness, participation/consultation, information/advice/marketing and planning/coordination as outlined by MIDAS (2008). Hard measures, on the other hand, can be defined as policy interventions that aim at modifying the objective environment (Bamberg, Fuji, Friman & Gärling, 2011). Those can be categorized as constructional activities (e.g. new bike lane) and restrictions/regulations (e.g. car parking restrictions). Often the soft measures enhance the effectiveness of hard measures. For instance it is not only important that the public transport system has been improved by better services but people also need to be informed about that.

**How to achieve behaviour change – the theory**

Mobility management is not a new approach – experiences have been made with the concept around the world during the last 15 years and are accessible at a platform on European level called EPOMM (European Platform of Mobility Management; see: www.epomm.org).

How can intended behavior change towards more sustainable mobility be achieved? The first psychological theory that was applied to explain mobility behavior change was the norm-activation model by Schwartz (1977); later the very popular theory of planned behavior by Ajzen (1991) was successfully used to explain behavior change intention. Recent developments are towards a joint model: the self-regulation theory with its stages of the process of voluntarily behavior change (Bamberg et al 2011). Bamberg et al (2011) argued that soft transport policy measures have a major influence on the perception of objective environment and finally decision making and travel choice (see Figure 1). Also soft transport policy measures and hard transport policy measures are influencing and supporting each other.
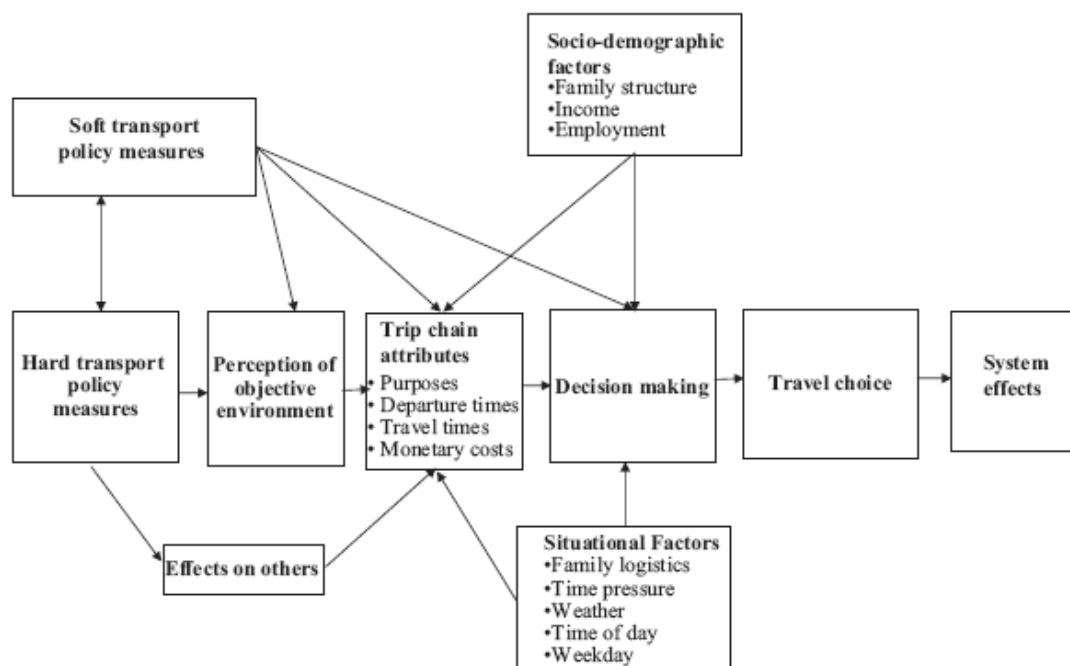


**Figure 1: A general conceptual framework by Bamberg et al 2011, p. 230**

Further Bamberg et al (2011) outlined the self-regulation theory´s hypothesized stages of the process of voluntary behavioral change and their determinants that also were applied in the MAX project (Carreno &

Welsch, 2006) with its 4 phases, called MAXSEM (see Figure 2). The MAXSEM provides a "blueprint" for the development of stage-based soft-policy interventions. We consider this psychological model for a behaviour change process as the most promising theoretical based model at the moment that also provides useful links to applications in practice. It describes the stages in the process the individual walks through when a desired behaviour (such as public transport use instead of the private car) will be performed. Knowledge about in which stage the target group of a campaign is, is essential to select the most effective communication strategy/soft policy. "In the *pre-contemplation* stage the task is to choose among competing wishes such that one becomes a binding goal. This is referred to as goal setting…. The task in the *contemplation* stage is to choose the most suitable means for reaching the goal. People retrieve from memory the personal consequences (attitude) associated with different optional behaviors as well as the perceived difficulty in performing them (perceived behavioural control). Weighing the pros and cons of the different options results in a behavioural intention. …In the *preparation stage* a plan for implementing the behavioural intention is formed. By specifying when, where, and how to implement the intention, people are ready to perform the new behaviour when encountering the appropriate situation. …In the *maintenance stage* people evaluate what they have achieved and decide whether further action is necessary. They do this by comparing the goal with the achieved outcomes. At this stage it is important to exert self-control to prevent relapses into the old behavior." (Bamberg et al, 2011, p. 232)
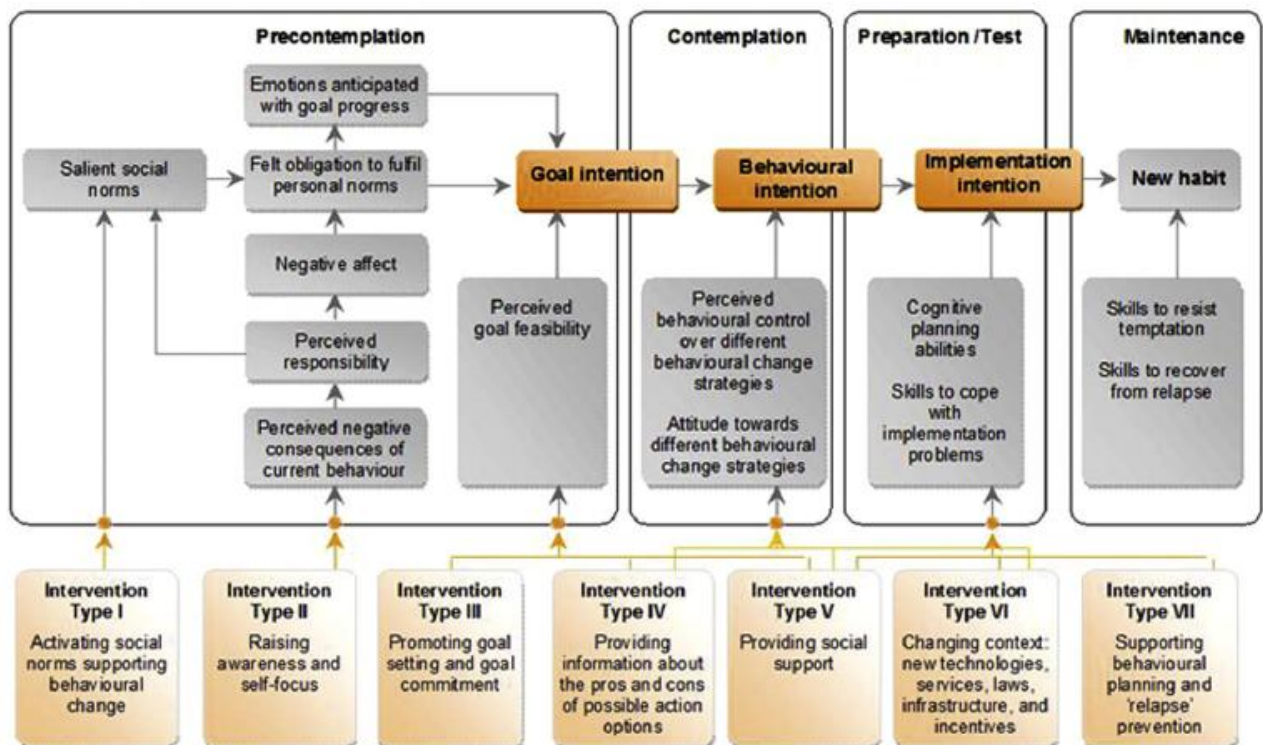


**Figure 2: Self-regulation theory´s hypothesized stages of the process of behavioral change and their determinants (Bamberg et al, 2011, p. 232) similar to MAXSEM Model**

Different types of interventions need to be designed for the different stages in the process. The first step is to activate social norms supporting behavioural change (Type I) and then raise awareness and self-focus (Type II) to achieve a goal intention. One goal could be to use less the private car. To achieve or support the shift from the pre-contemplation phase towards the contemplation phase interventions like promoting goal setting and goal commitment (Type III), providing information about pros and cons of possible action (Type IV) and providing social support (Type V) are appropriate. In the contemplation phase again interventions from type IV and V but also intervention like changing contexts: new technologies, services, laws, infrastructure and incentives (Type VI) help to make progress towards the next phase. In the preparation/test phase apart from interventions type V and type VI also interventions supporting behavioural planning and "relapse" prevention (Type VII) are necessary.

## Effects of soft-policy transport measures

There are several attempts to analyse the effects of soft transport policies (e.g. Richter, Friman & Gärling, 2011; Brög et al., 2009; Cairns et al 2008; Chatterjee & Bonsall, 2009). Möser & Bamberg (2008) argued that since available evaluation studies use weak quasi-experimental designs it is hard to determine the effectiveness of soft policy transport measures. However, Möser and Bamberg (2008) conducted a meta-analysis of 141 studies (main sources were Cairns et al, 2002; Cairns et al, 2004; Ker, 2003, GORS, 2005 and Steer Davies Gleave, 2003) evaluating three types of soft transport policy measures: travel planning/travel awareness campaign/ public transport marketing, work travel plans and school travel plans. They found an effect of 0.15 in size, which would mean, translated to the original metric, an increase in non-car use from 39% to 46% by soft transport policy measures.

Thus, there is evidence that soft policy measures work but it is not really clear why (causal mechanism behind it) and how big the effects are. The chances for successful and effective implementation can be enhanced with a better understanding of the mechanisms and the success factors of soft policies. The MAXSEM model provides a good frame for that. Now practical implementation should apply and test the model and thereby achieve better effects and verify or even enhance the theoretical model behind the mechanism of voluntary behaviour change towards more sustainable mobility.

## CIVITAS and CIVITAS MIMOSA as application fields

**CI**ty – **VITA**lity – **S**ustainability is the slogan of CIVITAS, an initiative co-financed by the European Commission and coordinated by cities: it is a program "of cities for cities". Within CIVITAS, cities are living 'laboratories' for learning and evaluating. It offers the possibility for cities to test new innovative solutions in urban transport policies and planning. Evaluation is mandatory and a precondition for learning from the results. Currently, more than 210 cities across Europe are part of the CIVITAS community (see also www.civitas.eu). The initiative finds itself in its third phase of implementation: CIVITAS I started in early 2002, CIVITAS II in early 2005 and CIVITAS PLUS in late 2008 within the 7th Framework Research Program.

In CVITAS II, 70 out of 200 measures implemented in 12 cities could be categorized as soft measures. Within three main types of measures - Mobility Management, Alternative Car Use and Walking and Cycling - a wide spectrum of measures was covered such as mobility agencies, mobility plans, mobility marketing, eco driving, carpooling, car sharing, cycle lanes, bike-bus, rental bikes and safety (GUARD, 2010). The conclusion by GUARD (2010) was that

- smart schemes had a marked and often measurable impact,
- the mobility agencies resulted in higher awareness concerning sustainable transport modes,
- mobility plans and marketing were successful in reducing private car trips, especially when actions were targeted at specific groups,
- successful measures were accompanied by parallel measures which made car less attractive (e.g. parking charges or access restrictions).
- Car pooling and car sharing can support a new culture of car use.
- People using carpool and shared cars do so by choice, so schemes should be tailored to their needs.
- Building cycle lanes and parking facilities leads to an increase in cycle flows.
- Strong and very visible promotion of cycling helps to change the minds of planners and politicians.

Despite those glamorous/glossy results, the more detailed analysis of evaluation in CIVITAS II measures (GUARD, 2010) reveal that there are some stated effects of the mobility management marketing measures but often they cannot be disentangled from the effects that infrastructure measures had and that the evaluation design does not hold the necessary conditions to derive valid conclusions. For instance control group designs were rarely used, often just before-after tests in quasi-experimental conditions were conducted. Thus, the measures implemented within CIVITAS so far proves the lack of valid evaluation studies for soft transport policy measures as already argued (Möser & Bamberg, 2008; Fujii et al., 2009).

The recent progressive theoretical developments resulting in MAXSEM model would allow conducting more successful mobility marketing campaigns if transfer to practice is successful. First attempts were made within CIVITAS MIMOSA. This project is part of the third CIVITAS round called CIVITAS PLUS (2008-2012). Co-financed by the European Commission the cities of Bologna (Italy), Funchal (Portugal), Gdansk (Poland), Tallinn (Estonia) and Utrecht (The Netherlands) implement 69 measures aiming at sustainable urban mobility. In all cities more than one measure can be categorised as mobility marketing aiming at awareness raising for more sustainable mobility options such as public transport, biking, walking or car sharing. The results of selected sample measures are presented as case studies in the following chapter.

## 2  Soft Measures in CIVITAS MIMOSA and their effects

The basis for any of these interventions is the 'intention' to change on the part of the individual and it is an important pre-requisite to understand this. 'The self-regulation theory ' posits that behavioural change is a transition through a time-ordered sequence of stages reflecting the cognitive and motivational difficulties people encounter. All too often, interventions in CIVITAS MIMOSA were designed without any consideration for where people are at in the change process and frequently aimed at those who have not even embarked on this journey and so fell on deaf ears. Whether at the stage of problem awareness and the associated feelings of responsibility, or evaluating the pros and cons of the new behaviour, or formulating a plan and acting on it, it is important that the intervention is aimed at the right phase. Understanding readiness to change helps to focus resources on those who are most likely to change.

McKenzie-Mohr, 2011, summarises two approaches to behaviour change as the Attitude Behaviour approach and the Economic Self Interest Approach. The former aims to bring about changes in behaviour by increasing public knowledge about an issue (such as climate change) and by fostering attitudes that are supportive of a desired activity such as taking the bus. Such approaches include information provision, distribution of brochures and, sometimes, media advertising. However, numerous studies already long time ago document that information-based programmes have little or no effect on behaviour. (Geller, E.S. 1981 ). A study into Healthy Eating campaigns came to the conclusion that public information campaigns should be accompanied by other interventions, as evaluation shows an impact on awareness and intention, but rarely on consumption patterns and health outcomes (Federico et al 2011).

The second approach – Economic Self Interest – provides evidence to the public that it is in their financial best interest to change (e.g installing insulation will save on energy bills). McKenzie-Mohr argues that these often fail to address the barriers to change so have not proved successful. Similar to this are campaigns that focus on 'saving the environment'. While Bamberg et al (2011) argue that 'car-use reduction appears to depend on pro-social motives' such as feeling responsible for harm to other people and feeling obliged to compensate, social norms (the behavioural standards seen as appropriate by one's social reference group) do not yet seem strong enough to influence pro-environmental behaviour in the majority of car users. Bamberg et al (2011) refer to the 'ideal or ought self' where a perceived discrepancy between the self and the ideal self results in felt obligation to bring current behaviour more in line with important 'self standards'. Research in CIVITAS MIMOSA cities shows that most people are already aware of climate change, global warming and the need for change, but that concern for the environment often scores poorly in comparison with other personal standards. It is these other personal standards that should form the basis for bringing about behaviour change.

Various approaches can be used to uncover and measure these personal standards and the discrepancy between self and the ideal self. One approach used in CIVITAS MIMOSA is Personal Construct Theory (Kelly, G. 1955, 1991) which is a theory of 'man the scientist' who develops hypotheses, tests and modifies or discards them, developing a network of 'constructs' or values along the way. This framework of personal constructs is what is used to construe events, situations and people and to make predictions about the future. We anticipate events using our construct systems and determine our behaviour accordingly. If our behaviour is invalidated our experiment has failed and so we experiment with new behaviour. The theory provides unique insight into

behaviour and how to influence behaviour change. Where people use similar constructs in similar ways, their thinking processes are similar. They effectively become a market 'psychographic segment' and we can define their personal characteristics for communications purposes.

Traditionally, CIVITAS cities have focused on the 'information' and 'arguments' approaches, as they are easy and cheap to implement. The channel used to publicise both the 'informational' and 'arguments' communications tends to be mobility events and roadshows where the attendees are for the main part already in favour of and/or practising sustainable mobility. Thus, we often end up 'preaching to the converted'. The challenge for CIVITAS MIMOSA cities was to reach the unconverted, identifying the stage of change of the target audience, uncovering values and motivations, understanding how they see themselves and how they would like to be seen. Armed with this information, a much more powerful intervention can be implemented which will fit with the values of the target audience, speak to them in their language and validate their choices.

In this sense, there are lessons to be learned from the commercial world where market research and media advertising are used to promote products. Marketing techniques are used to focus on the consumer, learn what they need and try to alter their preferences. However, Costanzo, Aronson, Pettigrew (1986) observed that these are small changes in behaviour and generally require no dramatic change in lifestyle unlike, encouraging individuals to engage in a new activity such as walk or bike to work. Altering behaviour is not as simple as promoting one product over another; it is much more complex, and such methods often ignore the effort required to bring about a dramatic change in lifestyle, failing to take into account cultural practices, social interactions and human values and feelings that affect behaviour. An improvement on this is the social marketing (Thøgersen, 2007). It is an approach which identifies specific target audiences, their values, language, motivations and barriers, and designs an intervention based on this knowledge and was used in some of the CIVITAS MIMOSA case studies.

## 2.1 Utrecht UB pass implementation

With 300 000 inhabitants the city of Utrecht is the fourth largest city in the Netherlands and is active in promoting sustainable mobility for many years. Challenged by a huge infrastructure construction project in the heart of the city centre, it became clear that even more people need to shift from private car use towards other modes to avoid total traffic chaos on Utrechts roads. Therefore an unique public-private cooperation was founded: Stichting Utrecht Bereikbar (Utrecht Accessible). A special pass (UB-pass / job ticket) was issued in 2008 that can be bought by companies for their employees. This UB-pass allows use of the public transport, park and ride facilities, public bikes (OV-fiets) and free Internet at hotspots. The target group was defined as commuters who usually take the car in the corridor of the planned road construction work.

Relating to MAXSEM model (Figure 2), this measure, aims clearly at the preparation stage for those users that were convinced to change their travel modes away from car. For users that were already using public transport for their trips, the UB-pass can be seen as an instrument to support the maintenance phase. They keep travelling by public transport and might be even testing multimodal trips by combining public transport with public bikes as the survey data tentatively suggests.

This measure was a great success when looking at the number of passes sold. Until the end of 2010 more than 17 000 UB-passes were provided. At the end of 2010 more than 400 companies in Utrecht and Nieuwegein participated. For the evaluation, three surveys were conducted with together more than 5000 UB-pass holders.

The results available so far (through the local evaluation management team in Utrecht) present only a descriptive analysis of agglomerated data. It is known how many commuters used a car for their trip to work before the UB-pass implementation (37% in a sample of N=5833). But it cannot be seen in the data analysis so far whether exactly those persons changed to other modes as intended by the UB-pass. Reported are only the total frequency of public transport use (every day to 1-3 days per week: 62%, N=4213) and public bikes (daily: 2%, weekly: 3%, monthly: 72%, never: 72%, N=4213) of all persons in the sample after the UB-pass acquisition. A reanalysis of

the very comprehensive data is recommended to Utrecht and will hopefully be available soon. So far, the evaluation did not produce valid results.

Calculations of the city of Utrecht provided in interim evaluation reports assume that 1.100 fewer cars per day move on the roads that are affected by the large constructing works in the inner city. This number still needs to be proven by a solid analysis too. To add to the criticism on the evaluation approach it has to be said that there is no real baseline data available (the UB-pass holders only reported retrospectively on their travel modes before they got the UB-pass) and no control group was applied (how about the people that did not receive an UB-pass because their employer did not want to participate, maybe they also changed their behavior due to the marketing activities?).

The Utrecht UB-pass implementation applies knowledge regarding behaviour change mechanism well. There might be even more potential to improve the tool with a better evaluation approach.


## 2.2 Utrecht Carsharing/Carpooling information campaign

Utrecht car sharing measure aims at raising awareness of car sharing, removing prejudices against it by communicating the benefits, and improving the quality of public spaces by decreasing the amount of parking spaces. In this sense it is aimed at the pre-contemplation stage of change, with a goal of moving people through contemplation to action.

Although car sharing could be a way to decrease the pressure of parking space, it is not always well accepted by private car-owners in dense neighbourhoods. Building on the CIVITAS II finding that people using carpool and shared cars do so by choice, and that schemes should be tailored to their needs, Utrecht identified a new target market for car sharing: suburban residential areas where shared cars could replace the growing number of second cars. Research into these target groups was carried out by conducting an online survey. The main objective of the survey was to get a better understanding of potential car sharing users, the amount of people in that group, their motives and hesitations – divided into clear separate target groups. Also, the survey led to an estimation of the structural effects of car sharing on car use and car ownership. 1040 inhabitants of the Province of Utrecht who all have a driver's license responded to the survey.

This led to a segmentation of the population divided by region, age, life phase, education and values. The results were then translated to specific neighbourhoods and postal code areas. Some draft results include:

- 57% of the participants already are aware of the term car sharing.

- 6% are already actively car sharing, 10% consider car sharing attractive and 25% are neutral.

- People who are interested in car sharing or are already actively using car sharing are often: women, aged under 25, students, political left orientation.

- People who are not involved in car sharing yet think that car sharing:
    - would lead to lower costs (compared to having an own car),
    - would lead to not driving more kilometres than necessary and
    - is cheaper than renting a car.

The population segmentation shows five groups (Smart Agent, 2011):

- Post('late')-motorists: 14%.
  Not attached to a car. Progressive people who could tend to share one.

- Practical motorists: 29%. Attached to their own car. There is sympathy towards car sharing, but adapting could only be possible if the concept is wide spread.

- Naturally motorists: 21%
  Attached to their own car and the more traditional population.

- Rationalists 19%
  Not attracted to their car, but they don't know how it could be possible to live without it. Potentials for car sharing.

- Car lovers 17%. Driving a car is part of their identity. Adapting car sharing is a matter of changing the image of it.

The results of the research are used to select one or two neighbourhoods and target groups that have a high potential to use car sharing. In these areas a pilot on a specific car-sharing promotional campaign will be implemented in spring 2012.

Baseline measurements have been recorded to evaluate the impact of the campaign, they are:

1. The percentage of the households of the city of Utrecht that use a shared car

2. The number of users of shared cars

3. The awareness level of car sharing among residents

4. The number of parking spaces on the streets in the involved neighbourhoods

A control group will be used to compare the results from the targeted neighbourhoods in measuring awareness of car sharing (and recall of the campaign). The campaign will use the survey results about lifestyles and values of the target audience to draft the correct message(s) and the correct tone of voice to influence them and overcome prejudices.

This case study is a good example of an intervention using surveys and lifestyle research to determine the target audience and identifying which stage they are at on the MAXSEM model. The campaign will be specifically aimed at those at the Contemplation or Preparation/Test stage (Figure 2) who are not opposed to car-sharing, rather than targeting all comers with a non-specific campaign or 'preaching to the converted'.

## 2.3 Tallinn knitting graffiti bus to enhance public transport image

Tallinn is the capital of Estonia, situated on the Baltic Sea with almost 400 000 inhabitants. In the measure called mobility management and marketing activities directed at popularizing usage of active transport modes the objectives of Tallinn were among others to raise the satisfaction with public transport and improve the overall image of public transport in the urban area. One part of the measure, the knitting graffiti bus illustrates an innovative awareness raising and participatory event developed with the social marketing principles in mind and was accompanied by before and after evaluation survey.

The first step was to identify the target audience for the communication campaign. Until now, Tallinn focused on holding information days to promote sustainable travel. But the participants at these events tended to be those already using sustainable modes. A better use of resources is to focus on those who are willing and able to change their behaviour; the first step is to identify them, their attitudes, motivations and values. Surveys conducted at the Smart Traveller Day in Tallinn in May 2010 – an open air event held in the main square to raise awareness of Mobility Management - revealed a segment of respondents who indicated that they were likely to change to more sustainable modes of travel (at the Contemplative Stage). People in this segment see themselves to be more creative and fashionable, interested in arts and culture and new technology, less materialistic, less conservative and more likely to take risks than those who say they will not change their travel behaviour (those still at the Pre-Contemplative stage).

Any campaign aimed at changing behaviour to more sustainable modes in Tallinn should bear these criteria in mind; promote sustainable travel in an unusual manner, risky and unconventional, with a focus on creativity/arts/culture, speaking the language of the target audience and incorporating their values. It is always

difficult to be heard above the masses of communications and people are subjected advertising every day, therefore the campaign also had to be attention-grabbing.

Within the activities of Tallinn European Capital of Culture 2011, Tallinn Bus Company implemented a "knitting graffiti" campaign in one bus. Volunteers were recruited to knit and the seats and hand rails were wrapped in knitting. The outside of the bus was covered in vinyl photos of knitting. The "knitting graffiti" or "yarn bombing" originated in the USA and has become a global contemporary culture. Knitting as hobby and as craft - Tallinn has a strong tradition of knitting as a handicraft - is seeing a rise in popularity.



**Figure 3: Tallinn knitting graffiti bus from outside and inside impression**

Prior to the implementation of the campaign, surveys were conducted with passengers on the bus to measure their satisfaction with the service quality. A follow up survey was conducted during the first week of the knitting installation and the results compared. Before and after samples were comparable since no significant differences appeared in gender distribution, age distribution and user frequency of public transport (see Table 1). A significant difference (on 5% level) was seen for non-captive rider share in the bus passengers: it increased from 23% to 36%.

**Table 1: Variables in the before and after survey for Tallinn knitting bus campaign**

|  | Before | After |
|---|---|---|
| N | 408 | 405 |
| Female | 64% | 63% |
| Age: 1. Under 18 years | 14% | 13% |
| 2. 18-29 years | 25% | 28% |
| 3. 30-40 years | 11% | 15% |
| 4. 41-49 years | 12% | 11% |
| 5. 50-65 years | 20% | 21% |
| 6. over 65 years | 18% | 13% |
| Non-captive riders (have car available and could have chosen that)* | 23% | 36% |
| User frequency: 1. 5-7 days a week | 58% | 58% |
| 2. 3-4 days a week | 23% | 23% |
| 3. 1-2 days a week | 10% | 11% |
| 4. 1-3 days a month | 6% | 4% |
| 5. Less frequently | 3% | 4% |

* significant on 5% level

In the comparing analysis of before and after data regarding the satisfaction and perception measured on a 5 point scale (1 - very dissatisfied to 5 - very satisfied) of the service positive effects were proven (see Table 2). The overall satisfaction with the bus increased significantly. Further the ventilation and seat comfort were

perceived as highly significantly more positive after the campaign implementation. Also leg room and space to move around, cleanliness of the seats and cleanliness of the floor were rated as more positive in the knitting bus.

**Table 2: Results from before and after survey for Tallinn knitting bus campaign**

| Item | Before (N=408) | After (N=405) |
|---|---|---|
| Lighting | 4.02 | 4.07 |
| Ventilation** | 2.80 | 3.11 |
| Seat Comfort** | 3.71 | 3.94 |
| Leg Room and Space to move around* | 3.50 | 3.65 |
| Cleanliness of the seats* | 3.46 | 3.59 |
| Cleanliness of the floor* | 3.54 | 3.66 |
| Cleanliness of the windows | 3.58 | 3.63 |
| The behaviour of other passengers | 3.63 | 3.67 |
| Sound | 3.58 | 3.65 |
| Overall satisfaction with the bus* | 3.88 | 4.00 |

** significant on 1% level, * significant on 5% level

The results showed that the perception of the bus changed and became more positive. Thus, the knitting bus succeeded in increasing the image for public transport at least with the public transport users. In that way it was effective in the maintenance phase of the MAXSEM model (Figure 2). This could be a bit of the puzzle on the way towards more attractive public transport and enhancing the perception of the environment "public transport vehicles". This perception is important when influencing travel choice (see Figure 1). The increased number of non-captive riders indicate, that the campaign probably could have been successful in attracting new (former) car drivers, thus aiming at people at the contemplation stage. However, a valid conclusion on that cannot be drawn due to lack of more comprehensive evaluation including non-PT user survey and control group. However, the evaluation method of this campaign reached high standards with before and after data collection and proper sample sizes.

## *2.4 Funchal orienteering event*

The city of Funchal (capital of the Island of Madeira, Portugal, around 100 000 inhabitants) planned and conducted within their measure "Awareness raising campaigns for sustainable mobility" several orienteering events. The general objective was to raise awareness for the importance of sustainable mobility and in particular to promote the use of other modes than the private car, namely walking and bus. A summary of the events conducted is shown in Table 3. The orienteering events are competition activities in which the participants have to venture themselves in the city, using maps in which they have to establish an efficient path, thereby experiencing that it is fun and easy to walk in the city.

**Table 3: Overview orienteering events in Funchal**

| No. | Date | Core activities | participants |
|---|---|---|---|
| 1 | July 2010 | Orienteering competition allowing youngsters and elderly to (re)discover urban landmarks (gardens, streets, alleys and monuments Survey | 155 |
| 2 | December 2010 | Orienteering competition within a wider geographical area Application of a CO2 emission calculator to compare orienteering trips made by car with (hypothetical) trips made by bus with the | 170 |

| | | aim to promote bus use | |
|---|---|---|---|
| 3 | July 2011 | Orienteering competition specifically tailored for older peoples Integrated in expo-energy exhibition | 50 |
| 4 | September 2011 | Orienteering competition included in mobility week Raffle for all participants Survey | 185 |
| 5 | July 2011 | CIVITAS orienteering contest attracted a wide range of participants (families, person in all ages) Raffle for all participants | Not known |
| 6 | September 2011 | Orienteering competition included in mobility week Raffle for all participants | 190 |

During the first event in July 2010 and the 4th event in September 2011 surveys with the participants were conducted. The results showed that the modal split of the participants changed towards more walking and bus use. Also the familiarity with the term/concept of "sustainable mobility" increased from 44% up to 64%. Since the orienteering event is only one part of a broader set of measures aiming at improving sustainable mobility and its awareness, it cannot be said that only the orienteering events showed this effect. It is more likely that the whole package of measures led to this positive increase in awareness.

However, we are not able to say whether this is a significant change since we do not have access to the original data. Further, we do not know whether the participants asked in the second survey already participated in the first one and whether those participants had participated in one or more orienteering events before that.

**Table 4: Results from two surveys on participants of orienteering events in Funchal**

| | July 2009 | September 2010 |
|---|---|---|
| Main type of transport used | | |
| Car | 65% | 52% |
| Walking | 14% | 25% |
| Bus | 16% | 19% |
| Familiar with the term/concept "sustainable mobility" | 44% | 64% |

There is another follow-up survey planned on the 7th orienteering event in summer 2012.

Assessing this orienteering event within the 4-stages model of MAXSEM, we have to conclude that there is not much known about the participants and the event was designed just as event without any specific focus on target groups. It could be seen as tool in the pre-contemplation phase to built up knowledge on alternatives like walking and bus (see also event 2 application of $CO_2$ emissions calculator). This case is an example of how mobility marketing can be done without any reference to a model or available knowledge.


## 2.5 Gdansk clean stop campaign

In Gdansk, a polish city with 458 000 inhabitants on the coast of the Baltic Sea, owning a car is a determinant of higher social status. Car ownership has grown from 430 per 1000 inhabitants to 626 per 1000 in the 10 years previous to CIVITAS MIMOSA (2008). In the 3 years leading up to 2008, the number of PT users decreased by 10,000. There has been little research on the level of awareness of the role played by private transport in climate change and global warming or on the willingness of residents to change their travel behaviour. A survey in 2010 showed that people would reduce private transport if the quality and reliability of public transport improved.

Mobility Management measures in Gdansk are based on the use of communication tools, in the area of advertising, information and publicity. They are thus aimed at increasing the awareness of inhabitants in building new habits and change of travel behavior. The Change Your City "Clean Public Transport Stops" campaign arose from the observation that public transport shelters were regularly covered with illegal adverts. The campaign organised in co-operation with a number of governmental and non-governmental organisations aimed

to increase the feeling of safety and security in public transport. It is based on the assumption that acts of crime and vandalism happen less frequently at clean, well lit and monitored stops; cleaner stops lead to increased levels of satisfaction and growth in passenger numbers.



**Figure 4: Advertisements boards installed during the "Clean Public Transport Stop" action beside Gdansk bus shelters (Photo: Malgorzata Ratkowska)**

Therefore it can be said that it was ultimately aimed at the Contemplation Stage in MAXSEM: people who may have considered changing their behaviour but were put off by the condition of public transport stops and shelters. Another aim was to change salient social norms and anti-social behaviour to encourage respect for public transport stops: bulletin boards were provided for people to post their adverts rather than on the shelters, and a clean-up campaign "Don't be ashamed to peel it off" was launched to engage residents in "looking after" the stops and shelters, reporting damage, removing illegal leaflets, posters and stickers, and generally becoming their wardens.

20 public transport stops were involved including both bus and tram shelters. A surveillance system (CCTV) was installed to monitor the stops and banners announced the impending campaign as well as outside advertising on a tram promoting the Change Your City concept.

Pre implementation surveys (face-to-face interviews at the stops) with 317 passengers produced the following results:

- 58% thought that bulletin boards were a good idea
- Perceptions of the appearance and cleanliness of public transport stops scored 3.01 on a scale of 1 (very polluted) to 5 (very clean).
- Feelings of security while waiting for public transport scored 3.5 on a scale of 1 (very dangerous) to 5 (very safe).

Post implementation surveys (face-to-face interviews at the stops) with 49 people so far (the face-to-face survey was put on hold due to icy temperatures in Gdansk) produced the following results:

- 63% thought that bulletin boards were a good idea
- Perceptions of the appearance and cleanliness of public transport stops scored 3.54 on a scale of 1 (very polluted) to 5 (very clean).
- Feelings of security while waiting were not measured

The campaign had a good impact on awareness; awareness of clean stops campaign increased to 49% , and awareness of CIVITAS MIMOSA project increased to 41%. The 'Change your city' campaign had the lowest increase although awareness of this was already high at 28% (see Table 5).

**Table 5: Campaign recall results face-to-face interviews pre and post to implementation of "clean public transport stop" action**

|  | Pre | Post |
|---|---|---|
|  | N=316 | N=49 |
| 'Clean stops' | 20% | 49% |
| 'Change your city' | 28% | 30% |
| 'CIVITAS MIMOSA' | 9% | 41% |

This case study demonstrates the necessity to plan the campaign very well in terms of timing (post surveys were halted due to very cold weather - the campaign would have been better held in the summer or autumn) and in terms of survey design (e.g. questions were not repeated so impact on perceptions of safety could not be evaluated). Due to lack of control group, and very little sample size in the after sample, the confidence in the collected data and results is not very high. Further, only people already using public transport were surveyed. Thus, no statement can be made based in the data on how the campaign influences non-public transport users (those who are in the contemplation phase). This case reflects that the problem with valid evaluation designs as outlined already in the introduction is a serious problem also in CIVITAS MIMOSA.

# 3 Summary

There are good scientific approaches available to explain behaviour change towards more sustainable modes. However, there is a gap between models such as MAXSEM and the practical applications in cites. The analysis of the CIVITAS MIMOSA cases (see also Table 6) shows that the model based development of mobility marketing measures is not a common approach yet. In some cases the target group was nicely taken into account but still the lack in evaluation prevent the link to the models post hoc. Because of knowledge deficits and false pragmatism ("We just want to DO anything NOW") the real potential of the behaviour change approaches has not been used so far to a wide extent. Moreover, the lack of proper evaluation prevents an effective demonstration of the impacts of the different approaches and blocks learning from the experiences and practical testing of the suggested theoretical model.

We recommend cities to plan campaigns with a model in mind (refer to MAXSEM for instance), doing detailed analysis of the objectives, determining the target group and researching the target group before kicking off a campaign. Recommendations include that the MAXSEM model should be communicated better to the relevant stakeholders and that target group definition and investigation as well as planning and conducting valid evaluation becomes the standard approach when planning communication campaigns for sustainable mobility. Further, it is recommended to incorporate from the very beginning evaluation into the planning process of measures because there is no second chance to collect before data. Before-after designs with control group are the gold standard of evaluation and allow drawing more valid conclusions on the effects of the implementation/campaign. It is very important to enable cities to design and implement effective campaigns (education, support, good practice) therefore already available guidelines such as TAPESTRY or MAX_SUMO need more dissemination. They provide valuable sources for cities that want to learn more about the effectiveness of measures and how to make them even more successful.

To summarise, mobility marketing is widely applied. Although, there are promising theoretical models that can be used to plan and implement measures the practise is not aware of this knowledge. This implies two core problems:

1) Mobility marketing measures implementation does not reach the potential that could have been reached when tapping the underlying behaviour change models (e.g. defining the target group and researching on which stage in the MAXSEM model the target group needs to be picked up) and

2) It becomes not obvious that there would be more potential since the evaluation approaches very often does not fulfil the standards for valid evaluation designs. This means also that the theory could neither be verified nor could it be improved.


When roads are planned and built often a cost-benefit analysis as a standardised approach to assess potential effects is mandatory. What is valid for hard measures to be successfully, should be valid to the same extent for soft measures: When planning a soft policy transport measure the MAXSEM model has to be the basis for the target group analysis, the planning of the measure and the selection of the most appropriate type of intervention.

This implies that in a city not only technicians but also personnel with social science, geography or planning background are a valuable resource. Apart from the theoretical behaviour change knowledge it is important also to strengthen the knowledge transfer into practice regarding valid evaluation designs. The CIVITAS community pays attention to this issue and a handbook on evaluation practice targeted at cities interested in evaluating their small transport policy measures is planned for 2013.

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**Table 6: Summary of CIVITAS MIMOSA case studies**

| | UB Pass | Car sharing | Knit graffiti bus | Orienteering | Clean stops |
|---|---|---|---|---|---|
| Measure number in CIVITAS MIMOSA | UTR 4.1 | UTR 6.2 | TAL 4.1 | FUN 4.1 | GDA 4.1 |
| Nature of the measure | Introducing a special mobility pass for employees in PPP model | Awareness raising campaign for car sharing | Awareness raising and participatory event | Awareness raising events | Campaign to involve people in keeping public transport stops clean |
| Aiming at stage in self-regulation model/MAXSEM | Preperation/Test and Maintenance | Contemplation and Preperation/Test | Contemplation and Maintenance | Contemplation | Contemplation and Maintenance |
| Intervention type (see also Figure 2) | VI | II, III, IV | I and V | I and II | I and V |
| Target group | Employees/commuters in Utrecht-West | Residents in suburban areas with carsharing/ Carpooling option | People in Tallinn likely to change to sustainable modes, public transport users | All, some focus in elderly and young people | all |
| Identify target audience - needs/values | yes | yes | yes | no | no |
| Evaluation approach | | | | | |
| Baseline surveys? | No, only retrospective reporting of travel behaviour before | yes | yes | No | Yes (but public transport users only) |
| Post imp/follow-up surveys? | yes | Not yet | yes | Yes | Yes (but public transport users only and too little sample) |
| Control group | no | planned | no | No | no |
| Relevant Behaviour change achieved? | yes | No results yet | Probably no | Cannot be judged | Not measured |

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