TravelSmart® Suburbs
Regional Pilot
Townsville
Final Report
Queensland Transport
Tender Number MR 22/03

TravelSmart® Suburbs Regional Pilot - Townsville

FINAL REPORT

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Submitted by

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# CONTENTS

**EXECUTIVE SUMMARY** ..................................................................................................................... 1

**1: INTRODUCTION** .......................................................................................................................... 3

  1.1 Project delivery in Townsville ................................................................................................. 3

**2: BACKGROUND** ............................................................................................................................ 4

  2.1 Study Objectives ....................................................................................................................... 4

  2.2 Area Profile .............................................................................................................................. 4

  2.3 Demographics .......................................................................................................................... 6

  2.4 Project Design .......................................................................................................................... 7

  2.5 Office Establishment ............................................................................................................... 8

  2.6 Staff ......................................................................................................................................... 8

  2.7 Database .................................................................................................................................. 8

**3: METHODOLOGY** ........................................................................................................................... 9

  3.1 Introduction to Methodology .................................................................................................... 9

  3.2 Individualised Marketing methodology .................................................................................... 9

    3.2.1 Contact Phase .................................................................................................................. 11

    3.2.2 Segmentation Phase ......................................................................................................... 11

    3.2.3 Motivation Phase .............................................................................................................. 11

    3.2.4 Information Phase ........................................................................................................... 12

    3.2.5 Convincing Phase ............................................................................................................. 12

  3.3 Implementation of Individualised Marketing .............................................................................. 13

  3.4 Evaluation methodology ......................................................................................................... 15

  3.5 Implementation of travel surveys ............................................................................................ 16
EXECUTIVE SUMMARY

Queensland Transport contracted Socialdata Australia to conduct the 2003 TravelSmart® Regional Suburbs Pilot – Townsville project. The primary objective of this project was to apply the individualised marketing technique (IndiMark®) developed by Socialdata, and applied in Brisbane (2001), and to demonstrate that travel behaviour change can be achieved at the household level in a regional centre. This is the first regional project in Australia.

IndiMark® is based on intensive targeted marketing and communication techniques, which empower people to change their travel behaviour by promoting the use of walking, cycling and public transport as alternatives to the car. It uses personal contact with households to identify those willing and able to reduce their car use before providing them with personalised information on alternative modes and incentives to try them out. It has proved to be highly successful in achieving shifts in mode from the car, and these shifts are proving to be sustainable in the longer term.

This voluntary travel behaviour change program, implemented in Perth, Western Australia, has achieved significant success in reducing the number of car driver only trips without constraining people’s mobility. Based on the successful application of this technique in Perth, a Suburbs Pilot was trialled in the area of Grange, Brisbane in 2001. The audited results from the 2001 Suburbs Pilot individualised marketing application in Brisbane are:

- 6 % increase in walking
- 16 % increase in cycling
- 33 % increase in public transport use
- 10 % decrease in vehicle kilometres travelled.

Queensland Transport’s purpose for the Townsville pilot project was to see whether the results from the 2001 Brisbane project could be replicated in a regional urban area.

This final report presents the development and implementation of the TravelSmart® - Individualised Marketing pilot conducted in Townsville by Socialdata Australia during June / July 2003 and presents the results of the project. It makes an assessment of travel behaviour change based on the findings of the ‘before’ survey (conducted in May 2003) compared to the ‘after’ survey, conducted shortly after the marketing campaign in September 2003.
The evaluation process consisted of household travel surveys (with an expected response rate of at least 70%) conducted with the target group, and a control group, before and after the marketing intervention. This design enables Socialdata Australia to present statistically robust results, measuring the behaviour change resulting from the TravelSmart® campaign alone, and excluding the effects of seasonal factors or other transport measures.

The Townsville Project Working Group developed a high-quality individualised marketing package to be offered to households taking part in the Townsville TravelSmart® pilot project. This consisted of a range of local travel information, TravelSmart®-branded incentives and rewards for regular users of environment friendly modes, together with the offer of further advice and assistance for households on walking, cycling and public transport.

The evaluation conducted to date indicates strongly that the Townsville TravelSmart® pilot project has been successful in achieving significant changes in personal travel behaviour. A detailed analysis has been conducted by Socialdata Australia on the findings of the ‘after’ survey (completed in October 2003) and a comparison made with those of the ‘before’ survey.

These results are expressed across the whole population, not just the households taking an active part in IndiMark®, and the results achieved an 8% reduction in car driver trips, with these trips changing to walking (up 26%), cycling (up 15%) and public transport (up 13%). Vehicle kilometres decreased from 17.7 kilometres per car per day to 16.2 kms, a relative reduction of 9%. Measured by the number of trips, walking proved to be the most important mode for change.

Overall, the analysis shows that small individual changes in travel behaviour resulted in significant aggregated effects. The combined modal share of walking, cycling and public transport increased from 13% to 16%, and motorised private modes decreased from 87% to 84%. Furthermore, the data indicate that these results were achieved without affecting people’s overall mobility in terms of their activities outside the home, travel time and number of trips per day.

These results clearly underline the potential of IndiMark® as a tool for reducing car traffic and promoting the use of other travel modes on a large-scale in Townsville. Socialdata Australia confidently expects these results to be replicated in future projects and strongly recommends that this methodology be adopted for a wider roll-out across Queensland.
1 INTRODUCTION

Queensland Transport is committed to reducing car as driver trips in Queensland. If people could be encouraged to use alternative modes of travel for just a few of these trips, this would make a huge difference to transport systems and the environment. By reducing our reliance on cars, traffic congestion would decrease, the air quality would improve, there would be less road trauma, and people would be fitter and healthier.

The TravelSmart® Suburbs Regional Pilot - Townsville directly addresses many of the transport challenges arising from three of the Whole of Government Priorities.

☑ Better Quality of Life - the Pilot demonstrates that a viable alternative to car travel for many people in urban areas exists without constraining people’s mobility.

☑ Valuing the Environment - the Pilot demonstrates that it is possible to minimise the impacts of transport on the natural and urban environments (decreases in air and noise pollution and greenhouse emissions) by reducing single occupant vehicle use and increasing the use of the more environmentally friendly alternatives of public transport, walking and cycling.

☑ Strong Government Leadership - the Pilot demonstrates that Queensland Transport is taking the lead in setting and meeting the Government’s transport agenda through the development of low-cost high-benefit innovative solutions.

Individualised Marketing, as an integral part of TravelSmart®, aims to improve the perception of the community towards environment friendly modes – public transport, walking and cycling, and to inform and motivate people about these modes.

1.1 Project delivery in Townsville

The TravelSmart® pilot project, which commenced in May 2003, was managed by Socialdata Australia as the principal contractor to Queensland Transport.

Socialdata Australia co-ordinated the Individualised Marketing campaign including home deliveries and conducted the travel surveys and data analysis.

The Project Working Group, which consisted of representatives from Queensland Transport, Townsville City Council, Sunbus, The Department of Health and TTSBUG, provided input throughout, including the provision of all the marketing information and incentives.
2 BACKGROUND

2.1 Study Objectives

The aim of this TravelSmart® pilot project was to demonstrate the effectiveness of Individualised Marketing (IndiMark®) as a tool for changing personal travel behaviour in the regional centre of Townsville.

The behaviour change pilot was applied to a trial area of 500 households in Townsville. Its purposes were to:

- Verify the results obtained from the successful Queensland application of the technique in Brisbane and determine its applicability to Queensland regional urban conditions;
- Increase the knowledge base of QT officers and selected key stakeholders regarding the operation of voluntary travel behaviour change programs; and
- Provide information and data to assist QT officers and stakeholders determine the best mix of voluntary travel behaviour change and other travel demand management techniques for implementation in the future.

A control group was used for evaluation purposes and to allow for any influences outside of the application of the Individualised Marketing technique to be accounted for (e.g. season and weather changes, special events).

2.2 Area Profile

The target area for the Townsville pilot project was selected in consultation with Queensland Transport and Townsville City Council. The control group was randomly selected from the rest of Townsville.

The project area consisted of the suburbs of:

- Mundingburra
- Hermit Park
The main boundaries of the target area, as shown on the map below, were as follows:

- Boundary Street
- Ross River Creek / Ross River
- Hodel Street
- Sweet Street
- Mabin Street
- Thompson Street
- Armit Street
- Fulham Road
- Balls Lane
- Charter Towers Road
### 2.3 Demographics

#### Age (%) by Suburb

<table>
<thead>
<tr>
<th></th>
<th>Hermit Park</th>
<th>Mundingburra</th>
<th>Target Area Av.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 14</td>
<td>17.3</td>
<td>18.0</td>
<td>17.7</td>
</tr>
<tr>
<td>15 - 24</td>
<td>19.4</td>
<td>16.3</td>
<td>17.9</td>
</tr>
<tr>
<td>25 - 44</td>
<td>33.3</td>
<td>25.1</td>
<td>29.2</td>
</tr>
<tr>
<td>44 - 64</td>
<td>19.7</td>
<td>20.7</td>
<td>20.2</td>
</tr>
<tr>
<td>65 +</td>
<td>10.3</td>
<td>19.9</td>
<td>15.1</td>
</tr>
</tbody>
</table>

#### Employment (%) by Suburb

<table>
<thead>
<tr>
<th></th>
<th>Hermit Park</th>
<th>Mundingburra</th>
<th>Target Area Av.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full-time</td>
<td>65.5</td>
<td>65.5</td>
<td>65.5</td>
</tr>
<tr>
<td>Part-time</td>
<td>31.7</td>
<td>31.7</td>
<td>31.7</td>
</tr>
<tr>
<td>Unemployed</td>
<td>9.9</td>
<td>9.9</td>
<td>9.9</td>
</tr>
</tbody>
</table>

Median household income per week for Hermit Park and Mundingburra: $600 - $699

#### Average Household Size

<table>
<thead>
<tr>
<th></th>
<th>Hermit Park</th>
<th>Mundingburra</th>
<th>Target Area Av.</th>
</tr>
</thead>
<tbody>
<tr>
<td>HH size</td>
<td>2.2</td>
<td>2.4</td>
<td>2.3</td>
</tr>
</tbody>
</table>
2.4 Project Design

- Townsville -

**PROJECT DESIGN**

**Before study**
- Mail-back household survey of travel behaviour
- Sample: 904 households (net); Target and Control group
- Response rate: 73%
- Time of survey: May 2003

**Individualised Marketing campaign**
- Sample: 580 households (gross)
- Period of implementation: June - August 2003

**After study**
- Mail-back household survey of travel behaviour
- Sample: 831 households (net); Target and Control group
- Response rate: 81%
- Time of survey: August/September 2003

The TravelSmart® Suburbs Regional Pilot - Townsville commenced with a 'before' survey in May 2003, which was completed in June 2003. The ‘before’ survey was conducted using a target group (Mundingburra and Hermit Park) and a control group (the rest of Townsville).

Households were segmented into households that were interested (Group ‘I’) in receiving information and/or changing behaviour, households that were already users of environmentally friendly modes of transport (Group ‘R’), and those households that were not interested (Group ‘N’). The households that were in ‘I’ group, and ‘R’ group with information needs, were mailed a list of available information (referred to as the “Service Sheet”) from which they could select items pertinent to their needs. Once these Service Sheets were sent back to Socialdata Australia, the information was delivered to the household in individualised packages. The ‘after’ survey was conducted in October 2003, using respondents from the ‘before’ survey.
2.5 Office Establishment

The Socialdata Australia office was established near the project area at Unit 1 / 61 Camp Street in Mundingburra and this was the operational centre for the entire project. Additional phone lines and a superior computer system were installed to facilitate the smooth running of the project. The office was situated in the middle of the target area and had adequate space for efficient and accurate collation of materials.

2.6 Staff

Casual Staff were hired at various points of the project to augment the full-time Socialdata Australia team.

2.7 Database

Socialdata Australia was given a prepared list of addresses based on the Townsville City Council’s ratepayers database from which the households were randomly selected. The households for the Target group were randomly chosen from the Mundingburra and Hermit Park areas, whilst the Control group was randomly selected for the rest of Townsville (excluding the City of Thuringowa).

These households were cross-referenced, firstly, with the latest telephone CD-ROM (April 2003) and then extensively on the White Pages telephone directory web-site to obtain the most up-to-date information available.
3 METHODOLOGY

3.1 Introduction to Methodology

The methodology used for the TravelSmart® marketing intervention in Townsville was the IndiMark® process, as developed by Socialdata and used in more than 100 large-scale voluntary travel behaviour change projects and around 60 pilot projects around the world. The evaluation surveys used a mail-back 7-day travel diary design, again developed by Socialdata and used successfully in more than 15 countries.

This section describes these methodologies, the rationale for using them and summarises keys outcomes from the early stages of the marketing process. Section 5 describes in more detail the substance of the marketing program, that is, personalised information packs, further services etc and the responses to these during the service phase.

3.2 Individualised Marketing methodology

The traditional approach to achieving modal shift has been through the provision of transport services and infrastructure, pricing, and longer-term land use policies. Although improvements in the transport system are necessary for increased use, they are of limited value if people are unaware of the system improvements. Soft policies are required to improve people’s perceptions of the infrastructure and services available in order to realise the full potential for behaviour change.

Socialdata has been at the forefront of travel behaviour research for 30 years. Its main focus is on research and marketing in the field of mobility behaviour and, in particular, in the combination of research and implementation. Socialdata’s research has shown that so-called ‘soft policies' can activate large potentials for travel behaviour change, often on the same scale as system measures.

As a direct result of this research, during the late 1980s Socialdata pioneered Individualised Marketing as a technique for changing personal travel behaviour, in particular to promote public transport. The IndiMark® process took as its starting point the recognition that opposition to the use of public transport was largely due to a lack of information and motivation.

The key elements of the Individualised Marketing process are to:
• Personally contact all target persons.
• Motivate them to think about their travel behaviour.
• Inform them about alternatives in their mode choice.

In general, Individualised Marketing means establishing a dialogue through an individualised, direct contact approach via a detailed step-by-step procedure as illustrated below:

The IndiMark® process involves several stages, each based on personal contact with the target households. This dialogue motivates people to consider and review their own travel behaviour in the context of their own lifestyle situations. People who are really interested in changing, are supported and encouraged, but the choice is always left to the individual.
3.2.1 Contact Phase

During the contact phase, all households / persons in a defined area are contacted. The aim in this phase is to collect information for the segmentation in phase two. In Townsville households of the target area were considered to have been ‘contacted’ once they had returned their response to the ‘before’ survey.

3.2.2 Segmentation Phase

In the segmentation phase, the information obtained from the ‘before’ survey allows ‘contacted’ persons / households to be divided into groups according to specific criteria. From those, three main groups are formed:

- Group ‘I’ (interested households) the ‘receptive’ households, are more likely to change and continue to use environmentally friendly modes with personal contact, motivation and information. This group is selected to receive the most attention.

- Group ‘R’ (at least one member of the household uses environmentally friendly modes regularly) benefit from encouragement and support, and they are rewarded with a small present.

  Group ‘R’ is distinguished between those who do not require further information ‘R without’, and ‘R with’, as some regular users may also need up-dated information.

- Group ‘N’ (not interested) receives no further contact. These are households who do not wish to participate, or have no interest, intention or possibility of using environmentally friendly modes.

3.2.3 Motivation Phase

Households, during the previous two phases, who showed an interest in using environmentally friendly modes more often and also a need for assistance with sourcing information, become the focus for all further attention.
A comprehensive list of available information (the "Service Sheet") is mailed to households so that all household members are able to discuss their specific needs. This aims to further motivate members of the household to think about their travel choices, to discuss this with others, and to choose only the information that is relevant to their situation. A ‘thank you’ letter for participating is also included.

A small incentive offer is included in the "Service Sheet" to encourage people to return their requests promptly, and a stamped addressed envelope is included to make it as effortless as possible for people to reply.

### 3.2.4 Information Phase

During this phase, the information that households requested by returning their "Service Sheet", is collated and individually packaged, addressed and delivered personally to the household. Small incentives are included in the information package for further encouragement.

### 3.2.5 Convincing Phase

Finally, in the convincing phase, specially selected households receive further services, if required, to help convince them to use an alternative mode.

Households are offered a home visit, from a public transport expert such as a bus driver, who can offer advice and answer questions from the resident on their local services. Areas which are often discussed, include the local bus/train service, where to access timetables, which tickets are the best value.

A special "Test Ticket" for a month’s free travel on public transport can also be provided. This allows the new user to try out the "system" for an extended period with the least amount of worry and effort.

Further support is also offered to households interested in taking up more walking and cycling.

For walking, households who indicated interest in further services on the Service Sheets are contacted to discuss the additional material available. Their individual selection of information is then sent to them by mail.

A ‘bike doctor’ service is offered to households interested in the cycling further service. An appointment is made for a trained Socialdata Australia staff member to visit the household to complete a checklist on the condition of their bikes and to offer any advice on cycle groups and events.
3.3 Implementation of Individualised Marketing

From returning their survey forms, 580 households were approached to participate in the IndiMark® phase of the project. A successful contact was defined as a survey response from a household that can be segmented as per the Individualised Marketing technique, that is, segmenting households into ‘Interested’, ‘Regular users’ and ‘Not Interested’.

The benefits of segmenting households using the Individualised Marketing method is that it makes it possible to identify households that are willing and able to change their mobility patterns at the earliest possible stage, and focus resources on this group. This ensures that households who are simply not interested or have no potential for change will not be contacted again, as it is highly unlikely that these households will be able to change their current travel behaviour.

The total of 580 households, segmented in the Townsville target area, were classified into three main groups ‘I’, ‘R’, and ‘N’. There were 292 households (51 %) in the ‘Interested / Interesting’ group, 87 (15 %) who were regular users of environmentally friendly modes and 201 (34 %) of households who were Not Interested / Not Interesting.
Group ‘R’ included 175 persons regularly using one or more environmentally friendly modes and did not require further information (‘R without’), and 28 persons who were regularly using public transport, walking or cycling, and who indicated a need for more information. There were 684 persons interested in further information (group ‘I’) and 463 persons who did not wish to be contacted again (group ‘N’).

The motivation and information phase focused attention on all households in the ‘I’ and ‘R with’ groups, that is the ‘Interested / Interesting’ and ‘Regular’ users of one or more of environmentally friendly modes with information needs.
Households were approached with the offer of ordering a wide range of information materials and further services if they required. A comprehensive list of available information was mailed to households offering a wide range of specific information on public transport, walking and cycling.

A reminder telephone call was made to households who had not returned their Service Sheet within a reasonable time.

317 individually packaged bags were delivered to households in the Mundingburra and Hermit Park areas.

3.4 Evaluation methodology

An important part of all IndiMark® projects is the extensive evaluation of results. As a pilot project, which aims to assess the potential of different techniques for application on a larger scale in Queensland, a detailed evaluation of the effects on travel behaviour will be of critical importance.

This means that:

- A design has to be used which is fully developed and has already proven its capability to provide reliable and valid results.
- Information about the mobility from all household members (without age-limit) is to be collected, because a marketing campaign can induce secondary effects. For example, one household member might be motivated to change from car to another mode and another household member might then decide to use the available car (instead of another mode).
- All travel patterns in a given time period (one sample day is normally enough) have to be collected, not only trips within the pilot area (because people might start the day with public transport in this neighbourhood and then consequently have public transport trips in totally different areas as well).

Socialdata has developed, applied and continuously improved such a survey design. It is the New KONTIV® Design¹, a mail-back technique using a one-day diary for all household members.

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members. The design is to collect information on individual activities performed at all out-of-
home destinations on a nominated travel day and this provides an accurate account on how, 
where and why residents travel (or did not travel).

It has been applied in more than 15 countries in the world with consistently high response 
rates and reliable and valid results. Successful large-scale projects in Western Australia and 
pilot projects in Brisbane, Melbourne and Adelaide have already demonstrated the survey 
design’s effectiveness.

### 3.5 Implementation of travel surveys

Households for the ‘before’ survey were randomly selected form the Mundingburra and 
Hermit Park areas. In May, a ‘before’ survey was conducted with positive results, 904 
households in the target and control groups returned their forms, resulting in a 73 % 
response rate.

To achieve this success, the households were approached using the following steps:

1. Announcement of the survey by a letter
2. The survey forms are mailed to households
3. Motivation of all households by phone
4. A first reminder letter is sent followed by another motivation phone call, if the 
   household does not respond within one week.
5. A second reminder letter is sent followed by another motivation phone call, if the 
   household does not respond within two weeks.

All returned questionnaires were checked for completeness and consistency and, if needed, 
households were phoned for clarification.

The control group, for the ‘before’ survey, was randomly selected from the rest of Townsville, 
excluding the City of Thuringowa. This group was not included in the marketing intervention.

The ‘after’ survey was conducted from September to October 2003 using respondent 
households from the ‘before’ survey. From these, 831 households in the target and control 
groups returned their forms, which resulted in a high overall response rate of 81 %.
4 PRODUCT DEVELOPMENT

4.1 Introduction to product development

The Individualised Marketing package developed for the TravelSmart® Suburbs Regional Pilot - Townsville consisted of a range travel information materials and incentives for regular users, together with the offer additional, personalised advice for households on walking, cycling and/or public transport.

The materials and other services were listed on a Service Sheet, which was mailed to households during the service phase of the IndiMark® process. This enabled respondents to select which of the items they were interested in receiving, before a personalised package was assembled and hand-delivered to each household by the Sociadata Australia project team.

The rationale, for this method, was that households (already pre-selected in the contact phase on the basis that they were interested in receiving information on alternative travel modes) would each receive a package of materials and other services tailor-made to their individual needs. Experience shows that this is likely to lead to greater satisfaction with, and actual use of, the information and services provided.

Sociadata Australia estimated the likely demand for all information materials, gifts, incentives and further services, based on responses in previous Western Australian projects. Generous estimates were used to ensure that availability of sufficient materials and information could be guaranteed.

4.2 Information materials

A range of information materials were sourced and/or provided by Queensland Transport, Townsville City Council, Sunbus, the Department of Health, TTSBUG and Road Runners. A complete list is given in the table on the following page.
An initial checklist of sample materials based on IndiMark® projects, in Western Australia, was presented in the original project proposal. The final materials offered on the TravelSmart® Townsville Service Sheets were selected according to the following broad criteria:

- Relevance to local travel needs of households in the target area;
- Consistency with the overall aims of the program; and
- Availability in the quantities required and within project time-scales.

**Table 4.2.1 Information materials**

<table>
<thead>
<tr>
<th>ITEMS</th>
<th>PROVIDER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access Map</td>
<td>Townsville City Council / QT</td>
</tr>
<tr>
<td>TravelSmart® Get smart about how you get about brochure</td>
<td>QT</td>
</tr>
<tr>
<td>Hail and Ride Brochure</td>
<td>Sunbus</td>
</tr>
<tr>
<td>Townsville Sunbus Timetable</td>
<td>Sunbus</td>
</tr>
<tr>
<td>Cycle Shop Discount Cards</td>
<td>QT</td>
</tr>
<tr>
<td>Cycling Get smart about how you get about</td>
<td>QT</td>
</tr>
<tr>
<td>TTSBUG Cycling Facts Sheet</td>
<td>TTSBUG</td>
</tr>
<tr>
<td>Cycling A Guide for parents and Carers</td>
<td>QT</td>
</tr>
<tr>
<td>Townsville and Thuringowa BIKEWAYS MAP</td>
<td>TTSBUG</td>
</tr>
<tr>
<td>Just Walk it' brochure</td>
<td>Health Department</td>
</tr>
<tr>
<td>Road Runners Calendar of events</td>
<td>Road Runners</td>
</tr>
<tr>
<td>National Physical Activity Guidelines for Australians</td>
<td>Health Department</td>
</tr>
<tr>
<td>'Getting Started' Tips to being active safely and regularly</td>
<td>Health Department</td>
</tr>
</tbody>
</table>
4.3 **Incentives**

Various incentives were offered during the service phase of the Individualised Marketing process (see table below for details). All were included in the personalised information packs ordered by participating households.

**Table 4.3.1 Incentives and rewards offered during the service phase**

<table>
<thead>
<tr>
<th>Item</th>
<th>To whom offered</th>
<th>Rationale</th>
<th>How offered</th>
<th>Provider</th>
</tr>
</thead>
<tbody>
<tr>
<td>TravelSmart® / Townsville Calico shopping bag</td>
<td>All households ordering materials from the order form</td>
<td>To package materials, reinforce project identity and facilitate deliveries</td>
<td>During home deliveries</td>
<td>Queensland Transport</td>
</tr>
<tr>
<td>TravelSmart® Backpack</td>
<td>All households ordering materials from the order form</td>
<td>To encourage quick response to order form</td>
<td>On TravelSmart® Service Sheet</td>
<td>Queensland Transport</td>
</tr>
<tr>
<td>Waterbottle</td>
<td>All households requesting information</td>
<td>To encourage environmentally friendly modes</td>
<td>During home deliveries</td>
<td>Queensland Transport</td>
</tr>
<tr>
<td>TravelSmart Hat</td>
<td>All households requesting walking information</td>
<td>To encourage walking</td>
<td>During home deliveries</td>
<td>Queensland Transport</td>
</tr>
<tr>
<td>Flashing Bike Light</td>
<td>All households requesting cycling information</td>
<td>To encourage cycling</td>
<td>During home deliveries</td>
<td>Queensland Transport</td>
</tr>
<tr>
<td>Sunscreen, Notepad, Bookmark, and Key chain</td>
<td>All households requesting information</td>
<td>To encourage and reward environmentally modes</td>
<td>During home deliveries</td>
<td>Queensland Transport</td>
</tr>
</tbody>
</table>
4.4 **Personalised information packs**

Personalised information packs were assembled and distributed by Socialdata to participating households on the basis of their responses to the Service Sheets. All materials were packaged in a TravelSmart® / Townsville calico shopping bag.

This home delivery process, conducted by trained Socialdata Australia staff by bike, reinforced the 'personalised' nature of the TravelSmart® program in Townsville and allowed householders to ask any questions about the project or the materials they had ordered.

4.5 **Overview of Materials**

A total of 317 personalised packages containing a total of 6511 items were requested and delivered (one pack per household) during the marketing campaign. A breakdown of the amount of materials/ information requested is given in Table 4.6.1. On average, each household requested 17 items.

Each pack contained only the information materials and/or incentives requested by the participating household. All packages were individually delivered by bike. A full list of all materials distributed is on the following page.
### Table 4.5.1  TravelSmart® Information and Incentives

<table>
<thead>
<tr>
<th>ITEMS</th>
<th>AMOUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calico Bag</td>
<td>386</td>
</tr>
<tr>
<td>Key chain</td>
<td>386</td>
</tr>
<tr>
<td>Water bottle</td>
<td>386</td>
</tr>
<tr>
<td>Post it notes</td>
<td>386</td>
</tr>
<tr>
<td>Lights</td>
<td>311*</td>
</tr>
<tr>
<td>Sunscreen Tubes</td>
<td>360*</td>
</tr>
<tr>
<td>Book-mark</td>
<td>379</td>
</tr>
<tr>
<td>Backpack</td>
<td>357</td>
</tr>
<tr>
<td>TravelSmart Hat</td>
<td>336</td>
</tr>
<tr>
<td>Access Map</td>
<td>389</td>
</tr>
<tr>
<td>Presentation Folder</td>
<td>261</td>
</tr>
<tr>
<td>TravelSmart Get smart about how you get about brochure</td>
<td>379</td>
</tr>
<tr>
<td><strong>Public Transport</strong></td>
<td></td>
</tr>
<tr>
<td>Hail and Ride Brochure</td>
<td>138</td>
</tr>
<tr>
<td>Sunbus Magnet</td>
<td>165</td>
</tr>
<tr>
<td>Townsville Sunbus Timetable</td>
<td>218</td>
</tr>
<tr>
<td>Sunbus Test Ticket</td>
<td>28</td>
</tr>
<tr>
<td>Further Service Home Visit</td>
<td>17</td>
</tr>
<tr>
<td><strong>Cycling</strong></td>
<td></td>
</tr>
<tr>
<td>Cycle Shop Discount Cards</td>
<td>616</td>
</tr>
<tr>
<td>Cycling Get smart about how you get about</td>
<td>107</td>
</tr>
<tr>
<td>TTSBUG Cycling Facts Sheet</td>
<td>70</td>
</tr>
<tr>
<td>Cycling A Guide for parents and Carers</td>
<td>70</td>
</tr>
<tr>
<td>Townsville and Thuringowa BIKEWAYS MAP</td>
<td>179</td>
</tr>
<tr>
<td>Further Service Home Visit</td>
<td>11</td>
</tr>
<tr>
<td>Further Service Cycle Information Sheet</td>
<td>19</td>
</tr>
<tr>
<td><strong>Walking</strong></td>
<td></td>
</tr>
<tr>
<td>‘Just Walk it’ brochure</td>
<td>155</td>
</tr>
<tr>
<td>Road Runners Calendar of events</td>
<td>50</td>
</tr>
<tr>
<td>Further Service Information Sheet</td>
<td>106</td>
</tr>
<tr>
<td>National Physical Activity Guidelines for Australians</td>
<td>131</td>
</tr>
<tr>
<td>‘Getting Started' Tips to being active safely and regularly</td>
<td>115</td>
</tr>
<tr>
<td><strong>TOTAL ITEMS GIVEN OUT</strong></td>
<td><strong>6511</strong></td>
</tr>
<tr>
<td><strong>AVERAGE ITEMS PER PARTICIPANT</strong></td>
<td><strong>17</strong></td>
</tr>
</tbody>
</table>
4.6 Further Services

A package of ‘further services’ was developed and offered on the TravelSmart® Service Sheet as a means of providing further support and encouragement to households with a particular interest in making greater use of public transport, walking and/or cycling. These were targeted primarily at ‘beginners’, that is, those with little or no experience of using these modes.

4.6.1 Public transport

The concept of public transport ‘further services’ has been implemented successfully by Socialdata in many other IndiMark® projects across the world. The aim is to offer face-to-face advice (preferably from a local bus driver) and a ‘test ticket’ for local bus services to specially selected households to convince them to make greater use of public transport.

Only households with little or no experience of using public transport (but with a keen interest in trying it) are generally selected to receive further services. Those who tick the appropriate box are contacted by telephone and offered a home visit.

In co-operation with Sunbus and Queensland Transport, a number of ‘test tickets’ (one month travel cards) were obtained for the Townsville pilot project, and an agreement was reached with Sunbus (primary public transport providers in Townsville) to provide travel advisers to conduct the required home visits.

For the Townsville pilot project all households were able to request a public transport further service from their Service Sheet, but only carefully selected households were eligible for a ‘test ticket’.

The aim of the home visit is to offer advice and answer questions from the resident on their local services including advice on routes, where to access timetables, which tickets are the best value etc. To households who would benefit from system experience, a test ticket was offered, which was valid for 30 days on all local services to enable the recipient to try out the bus with the minimum effort, when and where it suits them best.
Scheduling of the public transport home visits began on Thursday 10\textsuperscript{th} July, and the last home visit took place on Wednesday 30\textsuperscript{th} July. 17 Home visits were scheduled and took place during this period.

4.6.2 Cycling

Participating households had the chance to receive a further service for cycling. This involved a cycling home visit from a Socialdata Australia trained ‘Bike Doctor’, who advised the household on bike maintenance and informed them on cycle groups in the area.

Phoning to schedule a cycling home visit began on Monday 14\textsuperscript{th} July, and the cycling home visits were completed on Monday 4\textsuperscript{th} August. In total, 19 households scheduled a cycling home visit appointment and/or received a cycling ‘information sheet’ during this time.

4.6.3 Walking

Households could also request further services for Walking. These households were contacted by phone and could choose from a variety of additional brochures on Walking activities and groups in the Townsville area. The information was then posted to the household.

There were 118 households who requested the Walking Further Service on their Service Sheets were contacted, and 106 of these households received a selection of the walking information as a result of the Walking Further Service phone call. Households were contacted between Thursday July 17\textsuperscript{th} and Monday July 4\textsuperscript{th}, with the information requested, mailed the day following the phone calls.
5 EVALUATION

5.1 Survey Responses and Analysis - Introduction

The technique used for the ‘before’ and ‘after’ travel surveys was the New KONTIV®-design, a 7-day week, self-administered mail-back survey for households and individuals, with follow-up by mail and telephone. The travel surveys cover all days of the week and people of all ages, and households are nominated one day of the week as their travel day. The surveys are carried out through a number of mail-telephone phases to obtain a high response rate, so that the survey is representative of the population.

5.2 Definitions

The following explanations refer to the terminology used throughout the report.

MODE "Main mode is used to measure changes for each trip, and this is represented as a percentage. There can be more than one mode used for each trip, so a main mode (of the trip) is determined by the following ranking: public transport; motorised private modes (car, motorbike); non-motorised modes (bicycle, walk).

ACTIVITY The main business carried out in one spatial setting out-of-home, such as travelling to work, shopping.

TRIP Travel from one destination to another to carry out an activity.

TRIP DISTANCE Door-to-door distance (as reported by the respondent).

TRIP DURATION Calculated (door-to-door) duration between the start of a trip and the arrival at the destination (as reported by the respondent).

CAR USAGE The percentage of (private) cars used per day, compared to all (privately) owned cars.
5.3 **Weighting**

To produce this analysis, weighting procedures were used for:

- Sample days (‘before’ and ‘after’), to represent each day of the week with the same share of persons in the dataset.

- In the IndiMark® groups (‘before’ and ‘after’) to represent the proportion of the groups (“I”, “R”, “N”) as in the IndiMark® action.

- Gender and age (‘before’ and ‘after’), to correct the distribution of age and gender in the ‘before’ and ‘after’ dataset with the same secondary data (ABS).

- Trip purpose (‘after’ only) to keep the same distribution of trip purposes in the ‘after’ data the same as in the ‘before’ data

- For the control group, it was agreed that weighting was not necessary, as there was little difference in mobility behaviour between the target and control group.

The statistical significance of the changes in mode share is shown on pages 9 -11 of the Appendices.

5.4 **Survey Response**

The 'before' survey was conducted in May 2003 with a random sample of households in the Mundingburra and Hermit Park areas for the target area and the rest of Townsville (excluding Thuringowa) for the control group.

Socialdata Australia recommended a panel survey with sample sizes in the ‘before’ survey of 580 households (net) in the target area and 511 households (net) for the control group.

The initial cleaned gross sample was 1231 households. A total of 904 households responded, representing a response rate of 73 %.

The ‘after’ survey was conducted from September 2003 to October 2003, conducted with respondents from the ‘before’ survey. The adjusted gross for the 'after' survey was 1,026 households, of which 831 households responded, achieving a high response rate of 81 %.
5.5 **Characteristics of sample and travel patterns**

The sample for the ‘before’ survey target area was drawn randomly from within the population of the project area, and the control group was drawn randomly from the rest of Townsville. So the results of these surveys give a representative picture of the everyday travel patterns of residents (excluding commercial and freight traffic and trips longer than 100 km).

The following results show the changes in travel behaviour that were achieved, and these are expressed across the whole target population, including those that were not interested in participating in the IndiMark® marketing intervention.
5.6 Results

Mode choice is the key indicator of interest to the TravelSmart program. In the Townsville ‘before’ survey, non-motorised forms of transport made up 13% of all trips and public transport made up 2% of trips. The mode of transport mostly used was the car, which accounted for 55% of ‘car as driver’ and 28% of ‘car as passenger’ trips.

Following the Individualised Marketing intervention with the Townsville target group, the ‘after’ survey results show that ‘car as driver’ decreased by 3 percentage points, (58% to 55%) and walking increased by 2 percentage points.
The effects of Individualised Marketing can clearly be seen by the relative changes before and after IndiMark®.

A very positive 26% relative increase in walking and an 15% overall relative increase in cycling was achieved. Cycling in Hermit increased by a very high 30% after IndiMark® had been implemented. There was a relative reduction in private motorised modes of 16% or by approximately 55 trips per person per year.
The 8% relative reduction in car as driver trips is associated with a 9% relative reduction in car km per vehicle. The greater (proportionate) reduction in car km is due to a combination of mode shift and destination shift of car driver trips, a higher proportion of trips taking place to local destinations.

From a greenhouse, pollution and traffic perspective it is interesting to compare these results with other projects to date in Australia (specifically Western Australia). To do this, the absolute car km driven by each community can be compared, and combined with the relative reductions reported above.

For example, prior to TravelSmart® the average person in Townsville drove for 17.7 kms per day, in Alamein (VIC) for 23.5 km per day\(^1\), in the Town of Cambridge, (WA) 16.3 km per day\(^2\) and in the City of South Perth, (WA) 17.6 km per day\(^3\). The relative reductions in

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1. Mobility Behaviour Alamein 2003
kilometres by car for each of these projects are 9% (Townsville), 9% (Alamein), 9% (Cambridge) and 17% (South Perth). The reductions in car driver km per person per day can be calculated as 0.4 kms in Townsville, 2.0 kms in Alamein, 1.5 kms in Cambridge and 3.0 kms in South Perth.

In the above graph, IndiMark® Evaluation, the mode share is also expressed in the percentage of ‘car as driver’ trips per person per year. Mundingburra and Hermit Park residents had a relative reduction of 8% ‘car as driver’ trips. Comparisons can be made with other projects from Australia and overseas.

With IndiMark®, there was a relative increase in environment friendly modes of 21%.

It is worth noting that a significant reduction in ‘car as driver’ trips needed a change, on average about one trip per week. Therefore, a very small change in household behaviour is significant in aggregate results!
The changes that occurred in the way Townsville residents travel have had little impact on their mobility. On an average day before Individualised Marketing, a resident of Mundingburra or Hermit Park spends 42 minutes travelling 17 kilometres, making 3.2 trips to attend 1.9 activities.

With Individualised Marketing, the number of activities and trips per person per day, the distance travelled, and the time spent travelling remained the same.

As a general rule, activities can be grouped into 3 main areas: – those that are pre-determined, such as going to work or school; those that are more discretionary such as shopping, personal business or escorting another person to an activity; and thirdly, leisure trips.

<table>
<thead>
<tr>
<th></th>
<th>Without IndiMark®</th>
<th>Per person/day</th>
<th>With IndiMark®</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activities</td>
<td>1.9</td>
<td></td>
<td>1.9</td>
</tr>
<tr>
<td>Travel Time (min)</td>
<td>42</td>
<td></td>
<td>42</td>
</tr>
<tr>
<td>Trips</td>
<td>3.2</td>
<td></td>
<td>3.2</td>
</tr>
<tr>
<td>Distance (km)</td>
<td>17</td>
<td></td>
<td>17</td>
</tr>
</tbody>
</table>
Education and work related activities remained almost unchanged (30 % to 28 %), with trips for work and education each decreasing by 1 percentage point. These account for just under one third of all activities.

The more discretionary activities for shopping, attending personal business and escorting another person increased by 2 %, with the amount of personal business and escort trips each rising by 1 %.

Leisure activities increased slightly from 33 % to 35 %.
Indicators can also describe the day-to-day use of private cars in the project area.

In the ‘before’ survey, approximately three quarters of all private cars of Mundingburra and Hermit Park residents were used for at least one trip per day. An average of 3.0 trips were undertaken for each car with an average duration time of 36 minutes. The distance covered for everyday trips (excluding commercial and long-distance trips) was 18 km and each car was occupied by an average of 1.5 people.

Following the implementation of Individualised Marketing, car usage remained the same, however, the amount of trips made per person per day decreased, as did the distance travelled.

These indicators proved to be very constant against seasonal influences.
Differences as to the activities are shown in trips made by ‘car as driver’, motorised private mode.

‘Before’ IndiMark® is the baseline, set to 100 trips per person per year for ‘car as driver’ trips.

Following IndiMark®, changes in mode use occurred, which led to a decrease in ‘car as driver’ trips (down to 92 %). For ‘car as driver’ trips, there was an overall decrease in all activity-related trips, except leisure trips, with IndiMark®. Driving to work decreased 2 percentage points, driving to shopping activities decreased 2 percentage points, and other activities by 4 percentage points, while leisure trips remained the same.
The differences shown in the activities of the groups ‘before’ and ‘after’ Individualised Marketing, are also reflected in the different time periods. These show that changes in behaviour occur most often in off-peak times.

Before IndiMark®, the majority of ‘car as driver’ trips were undertaken between the hours of 5am and 7pm.

There were decreases for each of the time periods for an average day. The largest increase (3 %) in ‘car as driver’ trips was experienced during evening main peak time from 3pm – 7pm. Decreases of 2 % respectively were achieved in the periods from 5am – 9am and 9am – 3pm.
The corresponding time period changes are also shown for ‘environmentally friendly mode’ trips.

Before IndiMark®, environmentally friendly trips were undertaken between the hours of 5am and 7pm.

Environmentally friendly modes increased for all time periods of the (average) day, with large increases of 10% and 8% occurring between 9am – 3pm and 3pm – 7pm respectively. An overall increase of 21% was achieved in environmentally friendly modes.
The sociodemography for ‘car as driver’ trips shows that the number of trips decreased in all age groups, except for under 20 years of age; but especially in the trips made by females aged 20 – 59. Their car as driver trips have decreased from 39 % trips per person per year in ‘before’ Individualised Marketing, to 35 % following the marketing intervention, a reduction of 4 percentage points.

Reductions of 2 % of ‘car as driver’ trips were achieved for both males aged between 20 and 59 years of age and for persons over 60 years of age.
The sociodemography for ‘environmentally friendly modes shows that the number of trips increased in all age groups; but especially in the trips made by persons under 20 years of age (9 % increase in EFM’s). Their car as driver trips have increased from 30 % trips per person per year in ‘before’ Individualised Marketing, to 39 % following the marketing intervention.

**SOCIODEMOGRAPHY**

- Mundingburra, Hermit Park -

**Environmentally-friendly modes**

<table>
<thead>
<tr>
<th>Without IndiMark® (100)</th>
<th>With IndiMark® (121)</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>39</td>
</tr>
<tr>
<td>23</td>
<td>25</td>
</tr>
<tr>
<td>25</td>
<td>32</td>
</tr>
<tr>
<td>22</td>
<td>25</td>
</tr>
</tbody>
</table>

under 20 years
20 - 59 years female
20 - 59 years male
60+ years

Males aged between 20 and 59 experienced increases in environmentally friendly modes of 3%, and persons over 60 years of age, while females achieved a 2% increase aged 20 – 59.
**Concept of evaluation**

The aim of the TravelSmart® pilot project in Townsville (in the areas of Mundingburra and Hermit Park) was to reduce car as driver trips without constraining people’s mobility. To prove the effects of the IndiMark® intervention behavioural travel surveys were conducted to measure the achieved change in travel behaviour.

The survey concept was planned as ‘before’ and ‘after’ surveys approaching the target group of IndiMark® and a control group outside the target area. The surveys in the target group were based on matched samples (panel); this gives the statistical advantage to eliminate the between-sample variance.

The control group surveys were cross-sectional surveys based on independent randomly-drawn samples in the rest of Townsville.

**Table 1: Survey Data**

<table>
<thead>
<tr>
<th></th>
<th>Survey date</th>
<th>Response rate</th>
<th>Net sample</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Households</td>
</tr>
<tr>
<td><strong>Target Group</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before survey (matched sample)</td>
<td>May / June 2003</td>
<td>75 %</td>
<td>580 (511)</td>
</tr>
<tr>
<td>After survey</td>
<td>Aug. / Sep. 2003</td>
<td>90 %</td>
<td>511</td>
</tr>
<tr>
<td><strong>Control Group</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before survey</td>
<td>May / June 2003</td>
<td>71 %</td>
<td>324</td>
</tr>
<tr>
<td>After survey</td>
<td>Aug. / Sep. 2003</td>
<td>70 %</td>
<td>320</td>
</tr>
</tbody>
</table>
A weighting scheme was applied to account for the correct basis for comparison for the total population targeted by the IndiMark® intervention.

For the target group there was a weighting of the after data (which was not needed for the before data). The distribution of the IndiMark® groups (‘I’, ‘R’ and ‘N’) in the survey sample was corrected accordingly to the one in the IndiMark® campaign to balance differences in the response behaviour of the single groups.

Table 2: Weighting Effect – Target Group

<table>
<thead>
<tr>
<th></th>
<th>After unweighted</th>
<th>After weighted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walking</td>
<td>10 %</td>
<td>9 %</td>
</tr>
<tr>
<td>Bicycle</td>
<td>4 %</td>
<td>5 %</td>
</tr>
<tr>
<td>Motorbike</td>
<td>1 %</td>
<td>1 %</td>
</tr>
<tr>
<td>Car as driver</td>
<td>55 %</td>
<td>55 %</td>
</tr>
<tr>
<td>Car as passenger</td>
<td>28 %</td>
<td>28 %</td>
</tr>
<tr>
<td>Public transport</td>
<td>2 %</td>
<td>2 %</td>
</tr>
<tr>
<td>TOTAL</td>
<td>100 %</td>
<td>100 %</td>
</tr>
</tbody>
</table>

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Trips per person and day</td>
<td>3.3</td>
</tr>
</tbody>
</table>

The comparison shows that the mode choice for the weighted and unweighted data in the ‘before’ survey is nearly the same with only a change of one percentage point between the car driver share. This is evidence for the stability of the sample.
The changes in mode choice are the central indicators for the success of an IndiMark® campaign. To separate the effect of IndiMark® from other influences, a survey design with a control group was applied. Both the target group and the control group were surveyed before and after the campaign.

Before the IndiMark® campaign, 7% of all trips in the target group were made (exclusively) on foot, 4% by bicycle, 1% with a motorbike, 59% with car-as-driver and 27% with a car-as-passenger. Public transport accounted for the remaining 2%. After the campaign, the target group share of walking trips increased to 9%, the share of cycling to 5%, the share of car as passenger to 28%, the share of car as driver decreased to 55%, whereas motorbike and public transport remained the same.

Table 3: Mode Choice – Target Group

<table>
<thead>
<tr>
<th>Mode Choice</th>
<th>Before %</th>
<th>After %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walking</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td>Bicycle</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Motorbike</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Car as driver</td>
<td>59</td>
<td>55</td>
</tr>
<tr>
<td>Car as passenger</td>
<td>27</td>
<td>28</td>
</tr>
<tr>
<td>Public transport</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Trips per person and day</td>
<td>3.3</td>
<td>3.2</td>
</tr>
</tbody>
</table>
But these changes are not necessarily the effects of the IndiMark® campaign. To determine other influencing factors (seasonal and external influences), the concept of a control group, which was not exposed to the IndiMark® campaign, was used.

The observed changes in the control group, a slight decrease in the car driver-share and an increase of the car passenger-share from 27 to 28 %, would also have been expected in the target group.

These changes have to be taken into account when the reference for the situation ‘with IndiMark®’ is established. A ‘transfer factor’, based on the relative change observed on the control group, is derived from the relativity between the ‘before’ and ‘after’ of the control group.

**Table 4: Mode Choice – Control Group**

<table>
<thead>
<tr>
<th></th>
<th>Before %</th>
<th>After %</th>
<th>Transfer factor (Relative change)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walking</td>
<td>7</td>
<td>7</td>
<td>1.01</td>
</tr>
<tr>
<td>Bicycle</td>
<td>3</td>
<td>3</td>
<td>0.97</td>
</tr>
<tr>
<td>Motorbike</td>
<td>1</td>
<td>1</td>
<td>0.92</td>
</tr>
<tr>
<td>Car as driver</td>
<td>60</td>
<td>60</td>
<td>0.98</td>
</tr>
<tr>
<td>Car as passenger</td>
<td>27</td>
<td>28</td>
<td>1.05</td>
</tr>
<tr>
<td>Public transport</td>
<td>2</td>
<td>1</td>
<td>0.94</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>100</strong></td>
<td><strong>100</strong></td>
<td></td>
</tr>
</tbody>
</table>

With this transfer factor, the ‘before’ of the target group is adapted. So the reference point is not the ‘before’ situation of the target group, but the ‘before’ corrected by the control group effects (‘would be’).
### Table 5: Mode Choice – Target Group

<table>
<thead>
<tr>
<th>Target Group</th>
<th>Before %</th>
<th>Transfer factor</th>
<th>With Control Group Effect ('would be') %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walking</td>
<td>7</td>
<td>1.01</td>
<td>7</td>
</tr>
<tr>
<td>Bicycle</td>
<td>4</td>
<td>0.97</td>
<td>4</td>
</tr>
<tr>
<td>Motorbike</td>
<td>1</td>
<td>0.92</td>
<td>1</td>
</tr>
<tr>
<td>Car as driver</td>
<td>59</td>
<td>0.98</td>
<td>58</td>
</tr>
<tr>
<td>Car as passenger</td>
<td>27</td>
<td>1.05</td>
<td>28</td>
</tr>
<tr>
<td>Public transport</td>
<td>2</td>
<td>0.94</td>
<td>2</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>100</strong></td>
<td></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Correspondingly the situation can be shown for the expected situation without IndiMark® ('would be') and the factual situation after the IndiMark® campaign (table 6).
The mode choice can also be shown in trips per person per year. An average person (of the target group) undertakes 1114 trips per year (on 341 days at place of residence). 77 out of these trips are (exclusively) made on foot, 48 with a bicycle, etc.

Table 6: **Mode Choice**

<table>
<thead>
<tr>
<th>TARGET GROUP</th>
<th>Without IndiMark&lt;sup&gt;®&lt;/sup&gt;</th>
<th>With IndiMark&lt;sup&gt;®&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walking</td>
<td>77</td>
<td>97</td>
</tr>
<tr>
<td>Bicycle</td>
<td>48</td>
<td>55</td>
</tr>
<tr>
<td>Motorbike</td>
<td>13</td>
<td>12</td>
</tr>
<tr>
<td>Car as driver</td>
<td>648</td>
<td>598</td>
</tr>
<tr>
<td>Car as passenger</td>
<td>312</td>
<td>308</td>
</tr>
<tr>
<td>Public transport</td>
<td>16</td>
<td>18</td>
</tr>
<tr>
<td>TOTAL</td>
<td>1114</td>
<td>1088</td>
</tr>
</tbody>
</table>
This leads to a change in trips per person and year (table 7).

Table 7: **Mode Choice - Change**

<table>
<thead>
<tr>
<th>Trips per person and year</th>
<th>Relative change %</th>
</tr>
</thead>
<tbody>
<tr>
<td>+20</td>
<td>Walking</td>
</tr>
<tr>
<td>+7</td>
<td>Bicycle</td>
</tr>
<tr>
<td>-1</td>
<td>Motorbike</td>
</tr>
<tr>
<td>-50</td>
<td>Car Driver</td>
</tr>
<tr>
<td>-4</td>
<td>Car Passenger</td>
</tr>
<tr>
<td>+2</td>
<td>Public Transport</td>
</tr>
</tbody>
</table>

The walking trips per person per year increased by 20 (+26 %). This was the greatest (relative) change observed. Bicycle trips increased by +7 trips, (+15 %).

The IndiMark® intervention led to a decrease in car-use of 50 car driver trips per person per year (-8 %) and 4 car passenger trips (-1 %).

Public transport increased relatively by 13 %.
The following table shows the final results of the changes achieved by the IndiMark®.

Table 8: **Mode Choice**

<table>
<thead>
<tr>
<th>TARGET GROUP</th>
<th>Without IndiMark®</th>
<th>With IndiMark®</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Walking</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td>Bicycle</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Motorbike</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Car as driver</td>
<td>58</td>
<td>55</td>
</tr>
<tr>
<td>Car as passenger</td>
<td>28</td>
<td>28</td>
</tr>
<tr>
<td>Public transport</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>100</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>
Statistical Significance of the Changes in Mode Choice: Car as driver

Regarding the statistical significance of the changes in mode choice, expert opinions differ whether this test should be based on persons or trips. For that reason, the following test was implemented for both persons and trips. The statistical significance of change in mode choice is located between the results of these two tests. The basis for the test is persons, in a matched sample (panel) ‘before’ and ‘after’. However, the test is calculated for independent samples to use the most strict test conditions. For a panel, the variance between the two surveys is much lower.

Persons
The following test can be performed. The zero-hypothesis and the alternative-hypothesis are:

\[ H_0: P_1 \leq P_2 \]
\[ H_1: P_1 > P_2 \]

\[ P_1 = \text{share of car as driver before IndiMark}^{\text{®}} \]
\[ P_2 = \text{share of car as driver after IndiMark}^{\text{®}} \]

The zero-hypothesis postulates that the car share ‘after’ is not lower than ‘before’. If this zero-hypothesis can be rejected, there is an impact of IndiMark\(^{\text{®}}\) on the reduction of the car share.

The surveys ‘before’ and ‘after’ represent a panel. Nevertheless the calculation is done as t-test for independent samples, and again means that the true value would be even better. The share of car as driver without (59 %) and with IndiMark\(^{\text{®}}\) (55 %) and the number of observed persons are the input (before: \(n_1 = 1,166\); after: \(n_2 = 1,180\)).

For the test value the following formula exists:

\[
T = \frac{P_1 - P_2}{\sqrt{\frac{P_1(1-P_1)}{n_1} + \frac{P_2(1-P_2)}{n_2}}} = \frac{0.04}{\sqrt{0.0004}} = 1.9567
\]
Test-decision:

\[ \varphi(y, y) = \begin{cases} 
1 & \text{if } T < z_a \\
0 & \text{other} 
\end{cases} \]

\[ z_{0.025} = 1.96 \] (critical value for a level of significance of 97.5 %).

It follows that based on this test, the zero-hypothesis (no decrease in the share of car as driver ‘after’) can be rejected with a probability of more than 97 %. The reduction of car usage achieved by the IndiMark® campaign in the target area is statistically highly significant.

**Trips**

For testing on the basis of trips, also representing as discussed a panel of people, the same test can be performed. Again, this test gives a lower significance as the variance is lower than assumed in the test procedure.

The zero-hypothesis and the alternative-hypothesis are:

\[ H_0: P_1 \leq P_2 \]

\[ H_1: P_1 > P_2 \]

\( P_1 \) = share of car as driver before IndiMark®

\( P_2 \) = share of car as driver after IndiMark®

The zero-hypothesis postulates that the car-share ‘after’ is not lower than before. If this zero-hypothesis can be rejected, there is an impact of IndiMark® on the reduction of the car-share.

The calculation is done as a t-test for independent samples. The share of car as driver without (59 %) and with IndiMark® (55 %) and the number of observed trips are the input (before: \( n_1 = 3,762 \); after: \( n_2 = 3,745 \)).
For the test value the following formula exists:

\[
T = \frac{P_1 - P_2}{\sqrt{\frac{P_1(1-P_1)}{n_1} + \frac{P_2(1-P_2)}{n_2}}} = \frac{0.04}{\sqrt{0.0001}} = 3.5002
\]

Test-decision:

\[
\varphi(y, y) = \begin{cases} 
1 & \text{if } T < z_a \\
0 & \text{other}
\end{cases}
\]

\[z_{0.01} = 2.326\] (critical value for a level of significance of 99 %).

It follows that the zero-hypothesis (no decrease of the share of car as driver after) can be rejected with a probability of at least 99 %. The reduction of car usage achieved by the IndiMark® campaign in the target area is statistically highly significant.

So the significance tests performed, produced a significance level of more than 97.5 % based on persons and more than 99 % based on trips and the real value will be in between (definitely higher than 97.5 %).

Table 9: Overview of significance tests for car reduction

<table>
<thead>
<tr>
<th>Level of significance</th>
<th>Persons</th>
<th>Trips</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 97.5 %</td>
<td>&gt; 99 %</td>
<td></td>
</tr>
</tbody>
</table>

Already these values are proving, conclusively, a reduction of car use.

Again, the true results are even better as the test was performed for independent samples, whereas the real basis were matched samples.
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