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Travelsmart suburbs Brisbane – a successful pilot of a voluntary travel behaviour change technique

Paolo Marinelli and Michael T Roth
Queensland Transport

Abstract

TravelSmart is the brand for a voluntary travel behaviour change program aimed at encouraging people to reduce private vehicle travel in favour of more sustainable modes such as walking, cycling, public transport and ride sharing as well as shorter trips.

The TravelSmart Suburbs Brisbane Pilot used the Individualised Marketing (IndiMark®) technique developed by Werner Brög, in a group of inner northern suburbs of Brisbane. The results from the Pilot clearly demonstrate that the IndiMark® technique can deliver significant mode shift in a Brisbane urban context with large increases in use of environment friendly modes (EFM) leading to a reduction in private vehicle use of 10%. The results replicate those obtained in the 1997 South Perth Pilot and the subsequent large scale application in Perth.

There is a wide range of credible and proven evidence for the sustainability of the results. The enormous social and economic benefits support its wide scale application in the Queensland urban context. IndiMark® could be a major tool in holding current private vehicle growth in check for several years to eliminate or delay the need to spend several billion dollars on road expansion and technology solutions. This will facilitate improved levels of service for the travelling public on all transport modes and progress the sustainability of our transport systems.

Keywords: TravelSmart Suburbs Brisbane, Voluntary Travel Behaviour Change, Travel Demand Management

Contact author

Paolo Marinelli[1]
Strategy And Environment Section, Strategy Branch, Land Transport And Safety Division, Queensland Transport, Po Box 673, Fortitude Valley, Queensland, 4006, Australia.
Paolo.A.Marinelli@Transport.Qld.Gov.Au
Michael.T. Roth@Transport.Qld.Gov.Au

[1] Paolo Marinelli is Principal Advisor (Transport and Environment) and manages the TravelSmart Queensland program in Queensland Transport.

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Introduction

Over the last few years there has been recognition amongst transport planners, decision-makers and the general public that increasing the supply of private road space may not be the long-term answer to 'solve the urban congestion and pollution problem.'

Both the *Integrated Regional Transport Plan for South East Queensland (1997)* and *Transport 2007 (2001)* recognised that reduction in single occupant vehicle kilometres travelled (VKT) is a major policy response path available to reduce the impacts of this growth both on congestion and the environment.

Attention is now turning to managing demand for road space through a range of Travel Demand Management (TDM) approaches. TDM is generally classified into three broad categories:

- voluntary travel behaviour change
- better use of existing capacity (e.g. Intelligent Transport Systems; access controls on road use or parking)
- economic instruments (e.g. road use and parking charges; fuel levies; subsidies for public transport).

This paper details the results of piloting one voluntary travel behaviour change approach to households in a group of inner northern suburbs of Brisbane, Queensland, Australia. The TravelSmart Suburbs Brisbane Pilot used the Individualised Marketing (IndiMark®) technique developed by Werner Brög, Director of Socialdata, a transport solutions company. The IndiMark® technique encourages people to voluntarily switch from private car use to more sustainable modes of walking, cycling, public transport and ride sharing.

Brisbane is the second city in Australia to implement IndiMark®. The experience and results of a pilot and large-scale application in Perth are reported in Brög et al (1999) and James (2002). The Brisbane Pilot has successfully replicated the success of the program and demonstrated that this success is transferable to other urban areas within Australia.

Changing travel behaviour

What is travel behaviour?

Travel can be expressed as the process undertaken to access activities or places away from a location (normally the home).

Commuting to work, business travel, shopping and taking children to school accounts for roughly two thirds of private motorised travel. The other third is leisure travel that may or may not involve the journey itself as a recreation activity. "Mobility", or distance travelled, is thus a primary role for only a small proportion of trips whereas "access" is the primary role of the majority of travel.

When “access” is considered as the fundamental role of transport, performance measures of distance travelled are most appropriately used as measures of the efficiency of travel, i.e. long average trip distances represent an inefficient process.

Research shows that the average number of activities undertaken outside of home is just under 2 per day, requiring just over 3 trips and a travel time of approximately 60 minutes per day. These figures remain relatively constant across cultures and across history, regardless of travel modes used. Specific individuals or sectors may travel more or less but the average always emerges near these constants.

The major impact of the increasing dominance of the private motor vehicle mode has been to increase travel speed and therefore extend the length of trips. In the period after World War II when environment friendly modes (EFM) such as walk, cycle and public transport were still dominant, average travel distance per day was less than 10km. With the increase of private motorised travel to almost 80% mode share currently, the average travel distance per day has almost trebled to around 25km (not including holiday travel).

As we average 1 hour of “active mobility” per day, our period of “passive mobility” is 23 times as long. During this period, people are exposed to the increasingly disturbing consequences of traffic, the majority of which are attributed to motorised private travel. We are thus experiencing a classic “tragedy of the commons”. Most people want motorised traffic to reduce yet are not prepared to take action themselves as it would reduce their real or perceived access to activities.

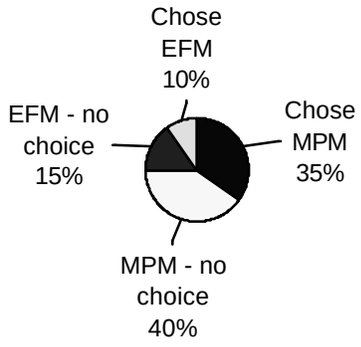
Community values research also demonstrates that the majority of people want decision makers to improve EFM, and the decision makers themselves want to improve EFM. Yet the decision makers, when asked what the public want, generally perceive that further road infrastructure is required (The Warren Centre, 2001).

This difference between perception or subjective reality and the notion of objective reality leads us to a discussion of how travel behaviour can be changed. As discussed earlier, the mobility constants of just over 3 trips and 60 minutes travel per day are unlikely to change. Average distance per trip must therefore be decreased. Changes in settlement structures and land use could reduce distances. This is however a long term strategy without incentive and thus unlikely to succeed while car mode share remains at close to 80%. This is demonstrated by the failure of Brisbane City Council (BCC) to gain support for a modest increase in residential density from low to low-medium in a defined 400 metre radius of post-war homes around the new Holland Park Busway Station. The main lever we have to begin reducing travel distance is to increase the use of slower EFMs.

How do we change mode share?

The Department of Transport in Western Australia (James, 2000) undertook a detailed analysis of people's travel choices and their options for each of their trips. The pie chart below shows the 4 categories they found by determining the mode – motorised private mode (MPM) or EFM - and whether there was an alternative option available - choice or no choice.

Figure 1 Potential for change between modes



The chart shows that in Perth, about 40% of trips have no realistic alternative other than a car and 15% are constrained to walking, cycling or public transport. This leaves 10% of trips for which an EFM is chosen despite the availability of a car, and 35% of trips for which a car is chosen despite a realistic EFM alternative existing.

"Hard" solutions which seek to modify objective reality (such as new infrastructure or modified systems) have the potential to reduce the 40% of trips for which there exists no option but cars. "Soft" solutions which seek to change perceptions or subjective reality (such as education and behaviour change programs) have the potential to reduce the 35% of trips for which a realistic alternative exists but is not currently being chosen.

"Soft" solutions therefore have the potential to convert about the same number of trips to EFM as do hard solutions. The provision of infrastructure and systems to provide alternatives for most trips would clearly require vast investments, especially in public transport.

The major potential for cost effective mode choice changes in the short term is therefore the application of behaviour change strategies that have demonstrated success in changing perceptions and motivating actual changes in mode choice.

What is IndiMark®?

Whereas mass marketing is aimed at all households in the hope that those interested will catch the message, the IndiMark® process quickly and accurately identifies those households that indicate a potential or interest in using EFMs and focuses limited marketing resources on them. IndiMark® also rewards regular users of the alternative modes as studies show that many have both further opportunities to use alternative modes and a potential, if not supported, to revert to increasing MPM use.

The key success factor of IndiMark® is its underpinning philosophy that having an individualised direct contact approach to the customer and establishing a dialogue is of vital importance. The process establishes a dialogue using a detailed step-by-step procedure.

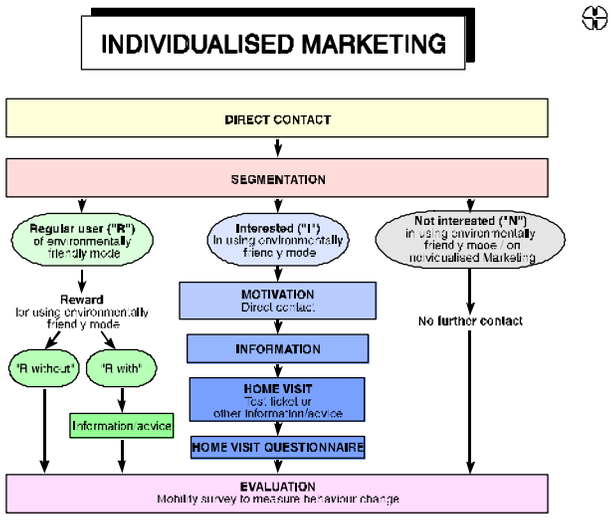
Through these stages there is a communication process based on personal contact, and therefore providing information and further support on an individual basis. This personal contact can motivate people more effectively to think about their daily travel, provide them with information if requested and support their need to try out the alternatives if required. The choice is always left to the individual. (Brög and Erl, 2000).

The Phases of the IndiMark® process are:

- Contact/Segmentation
- Motivation
- Information
- Convincing / System experience
- Evaluation.

More detail on the phases can be found in Section 4.4. Figure 2 following (from Brog, 2001) provides a graphic representation.

Figure 2 Individualised marketing process



Applying Indimark® in Brisbane

Purpose of the Pilot

The Pilot was developed and implemented by Queensland Transport to:

- verify the results obtained from the Australian application of the IndiMark® technique in Perth
- determine its applicability to Queensland urban conditions in encouraging EFM
- increase the knowledge base of QT officers and selected key stakeholders regarding the operation of voluntary travel behaviour change programs.

Selecting typical suburbs for the pilot

A location was chosen for the project to fulfil the following criteria:

- the area had a reasonable provision of EFM facilities and services so that alternative options were possible for a proportion of car trips
- the area was representative of the wider Brisbane urban area in terms of demographics, trip patterns, etc.
- the area was likely to have a reasonable amount of stakeholder support and awareness so that the outcomes would be better understood and incorporated in other transport processes.

The final choice was the Grange district of inner northern Brisbane. After a site visit and consultation with BCC and Socialdata Australia, the boundaries were chosen to match the boundaries of a recently completed Local Area Plan (LAP), which in turn also matched the boundaries of the Ward of Grange.

Description of Brisbane - Grange District

The Pilot area consisted of a group of inner northern Brisbane suburbs – Alderley, Gordon Park, Grange, Newmarket, Wilston, Windsor, and part of Lutwyche. The suburbs lie between 3 and 6 kms from the GPO and contain an estimated resident population of about 26,000 - or about 10,000 households (Qld Department of Local Government and Planning, 2001).

The suburbs are bounded by the Kedron Brook to the north and the Breakfast/Enoggera Creeks to the south. The eastern boundary is formed by the Bowen Bridge and Lutwyche Roads (generally six lane carriageways) while the western boundary is formed mainly by the Kelvin Grove/Enoggera Roads (generally six lane carriageways). Topography is very typical for inner Brisbane suburbs with creek floodplains, generally undulating hills with some peaks to over 60 meters Australian Height Datum. There are many steep gradients.

The suburbs are relatively well serviced compared to most Brisbane suburbs having four rail stops on one line of the Citytrain network and 17 bus services spread over three main routes. Community facilities such as cycle and pedestrian connections are typical for Brisbane and given the creek systems there is an abundance of parks and sports fields.

The IndiMark® Application

The methodology employed was the standard IndiMark® technique used by Socialdata Australia in the South Perth Pilot during 1997. This has been documented in previous years of the Australian Transport Research Forum.

Figure 3 following (from Qld Transport, 2002) provides a graphic representation using the actual process applied in the Brisbane Pilot.

Household Selection and the Before Travel Survey – May to August 2001

This phase creates the application and control zones and then randomly selects households for those two zones to create the Partnership Group (i.e. target group that will eventually receive IndiMark®) and the Control Group (no application of IndiMark®).

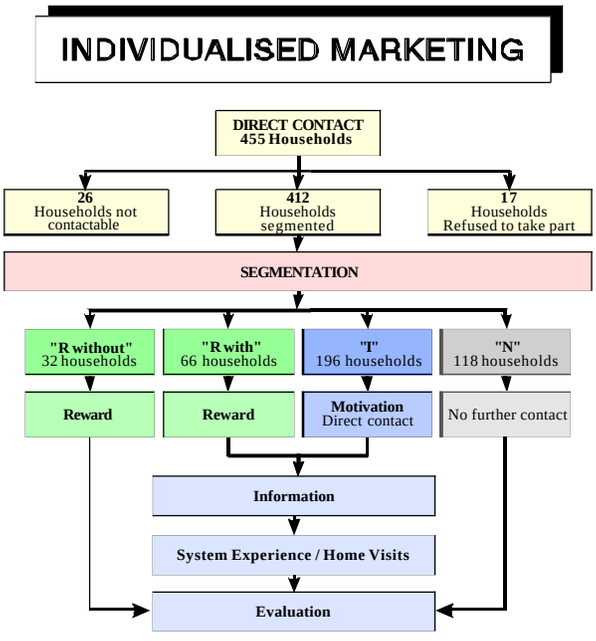
The Pilot area was separated into two physical zones. The first contains the Partnership Households to which the IndiMark® technique would be applied. The other zone contained Control Households. Zones were drawn to ensure similar levels of topography, public transport service, access to the CBD and community facilities.

All these Partnership and Control Households (total of 1080) were sent a Before Travel Survey of which 78% of Households (843) responded. The very high response rates achieved through use of the New KONTIV travel survey process is fundamental to ensure that no selection bias influences the results. The Partnership group was randomly selected from the respondents, of which 96% were successfully contacted. (A full-scale application would involve contacting every household).

In July/August, 455 Partnership Households were asked (via another letter from the Minister and follow up contact from Socialdata) if they would like to participate in the TravelSmart initiative.

After removing non-contactable households (moved or on holidays) 429 households were left of which 412 were successfully contacted and engaged in dialogue. These 412 households were asked about their travel needs and asked if they would like to find out more information on how they can meet some of their travel needs via EFM.

Figure 3 Individualised marketing process used in the Brisbane pilot



Segmentation Phase - August 2001

The aim in this phase is to quickly and accurately target the specific information on EFM to those households that want it.

The 412 households in the Partnership Group are segmented into three main groups:

- Group “I” – Interested / Interesting Households (These households are selected to receive the most attention and be provided with further services. They are the “receptive” households, more likely to change and continue to use EFM with personal contact, motivation, information and system experience).
- Group “R” - Households regularly using an EFM (Households that have at least one member using EFM regularly benefit from encouragement and support and are rewarded with a small present (local history or regional walking trails book). Group “R” includes those who are regular users of EFM who do not require further information “R without”, and “R with”, as many regular users also need up-dated or more information on other environment friendly options.
- Group “N” – Not interested / Not interesting Households. (Group “N” are those who do not wish to participate, have no interest, intention or possibility of using EFM. This group receives no further contact).

Table 1 following (from Qld Transport, 2002) details the composition of Partnership Group into its three main sub-groups following segmentation.

Table 1 Partnership group segmented into main sub-groups

Type	No of households	% of households
Group I	196	47%
Group R	98	24%
Group N	118	29%
Total	***412***	***100%***

Motivation Phase – September 2001

The motivation phase involves detailed discussions with groups "I" and "R with" to identify problems they have and support their needs. A "service-sheet" that allows householders to select the exact information on the EFM they require is sent to them, followed by a telephone discussion.

Information Phase – September 2001

The information phase involves filling their exact information requests from a range of standard and specially prepared information sources. 89% of Group “I” and 86% of Group “R with” requested information with a total of 1633 information requests or an average of 8.1 per household.

The majority of the information existed prior to the commencement of the Pilot and generally comprised:

- bus and train timetables, routes and fare information
- cycling materials (e.g. Brisbane Bicycle Maps)
- health materials (e.g. Just Walk It Heart Foundation information kit)
- local community information (e.g. how to catch the Stafford City Customer Express community bus).

Two thirds of the entire Partnership group requested additional information on EFM. Almost half of both the Group “I” and Group “R with” households requested the Brisbane Public Transport Directory (which had been distributed to every residence in Brisbane the previous year) and standard bus and train timetables. This indicates that although basic public transport information may exist it is not necessarily accessible to people when and how they need it.

A range of new information products for all modes was also created for the Pilot. The chief criterion for inclusion in the Pilot was that the product would probably be one created for any large-scale application or for general public release. This was to ensure that Pilot results would not be distorted by the availability of ‘special information’.

Key materials produced included:

- stop specific bus timetable for three major bus stops in the Grange District
- cycling brochures outlining the basics of cycling in urban areas

- a TravelSmart Map of the Grange District showing pedestrian, cycle and public transport connections and services as well as community facilities
- personalised and journey specific timetables produced by Socialdata staff using the TransInfo (public transport timetabling) web site
- TravelSmart branded message reinforcing materials (e.g. water bottles for walkers and cyclists; car key rings for car poolers / ride sharers; reflector ankle straps for cyclists; hat for walkers).

Only material that was specifically ordered by a household was provided and all materials were personally delivered. It is important to note that there were no general information marketing or media campaigns on public transport, walking, fitness or health etc being run at the same time in the Pilot area. This was to ensure that any mode changes that did occur could be attributed to IndiMark®.

Convincing Phase – September/October 2001

In this phase, specially selected households of Group "I" received an incentive to stimulate more frequent use of alternative modes. This is done by conducting home visits to provide very detailed information on a mode or modes to those that indicated the need for this level of support. Additionally 15 of the Group "I" households (8%) received a one month System Experience Ticket for bus or rail. These households were selected after careful analysis of their travel patterns and a determination that they were not existing public transport users so that no cannibalisation of ticket revenue would occur.

Evaluation Phase – November 2001 to April 2002

During November all Partnership and Control households contacted in the initial phase (including Group "N") are included in the evaluation survey to measure changes in travel behaviour. They were sent an 'After Travel Survey' so as to be able to compare the mode shifts resulting from the application of IndiMark®. A total of 700 households were contacted of which 589 (84%) successfully completed the survey.

The results were analysed by Socialdata and reviewed by the TravelSmart Suburbs Brisbane Pilot Working Group comprising QT and BCC officers.

The mode shift occurs

Existing travel patterns in Grange District

The 'Before Travel Survey' revealed similar travel patterns to those of South Perth where the previous IndiMark® projects had been implemented.

Table 2 Pre IndiMark® mobility indicators for Brisbane - Grange Distict

Mobility Indicators (average/person/day)	Amount
Number of activities	1.9
Travel time (minutes)	58
Number of trips	3.2
Total distance (km)	22

The mode choice results were roughly as expected for inner suburbs of Brisbane.

Table 3 Pre IndiMark® mode choice indicators for Brisbane - Grange District

Mode Choice	Amount
Walking	10%
Bicycle	1%
Motorbike	<0.5%
Car as Driver	55%
Car as Passenger	25%
Bus / Train	9%
Total	***100%***

The trip distances conformed to usual expectations and the 10:30:50 Rule where 10% of car trips are under 1km, 30% are under 3km and 50% are under 5km.

Table 4 Pre IndiMark® trip distances for Brisbane - Grange District

Distance	All trips*	Car trips*
Up to 1km	16%	10%
Up to 3km	42%	36%
Up to 5km	62%	56%
Up to 10km	85%	81%
Total	***100%***	***100%***

* trip distance percentages are cumulative

The indicators confirm that Brisbane is no different to Perth in terms of travel behaviour and overall mobility and it conforms to 2 key geo-cultural ‘constants’ of travel (i.e. 1 hour per person per day & 10:30:50 Rule).

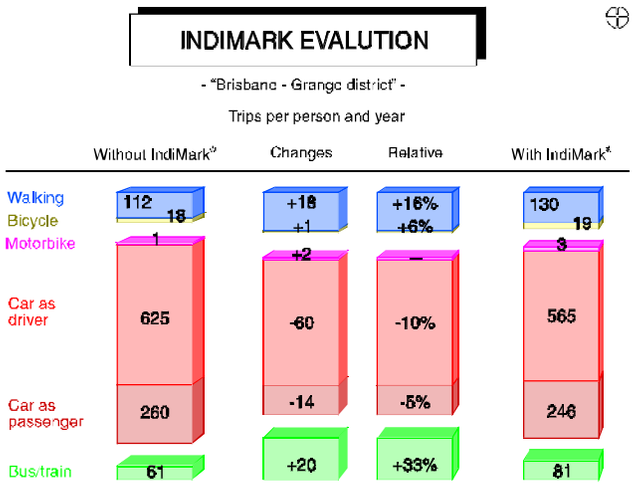
Success of IndiMark®

The ‘After Travel Survey’ also revealed a similar travel pattern change to those of previous projects in South Perth. EFM (Walk, Cycle and Public Transport)

share increased while MPM decreased. The main difference between the previous IndiMark® applications and the Brisbane Pilot is that the reduction in VKT for the Grange District was experienced as reduced overall mobility with EFM holding in the Partnership Group but dropping in the Control Group.

Figure 4 following (from Queensland Transport, 2002) shows the key mode shifts by trips per person per year and by percentages.

Figure 4 Post IndiMark® mode shift for Brisbane - Grange District



The 10% reduction in car trips is very significant and impacts greatly on congestion, pollution, etc when implemented on a large scale. This 10% reduction in car trips converts to 56 additional EFM trips/person/year or less than 1 additional return trip (2 trip legs) each week for each person. This demonstrates conceptually how simple it is for the 10% reduction to be achieved when a large portion of the population is engaged and empowered to use EFM already available to them.

Policy implications

Economics

A thorough discussion of the Benefit Cost Ratio (BCR) is beyond the scope of this paper. The analysis was based on "Evaluating Behaviour Change in Transport: Benefit Cost Analysis of Individualised Marketing for the City of South Perth" by Ker and James (1999).

The Benefit estimate was approximately 30 cents saving per VKT reduced, using conservative assumptions. The major benefits are in car operating costs and road congestion, with smaller contributions from environmental externalities

and public transport revenue. The major costs include total IndiMark® project management and implementation cost as well as an on-going contribution to fund additional buses to cater for increased peak patronage.

The outcomes are assumed to be sustained for 5 years on the basis of evaluations of earlier IndiMark® applications. This results in a BCR of over 20:1 for a 10% VKT reduction.

Multi sectoral benefits

The travel demand reduction leads to community benefits in economic, social and environmental dimensions. Concerning economic benefits, a 10% travel demand reduction is a marked performance improvement in itself. Further, due to the non-linear influence of congestion on travel time, a greater than 10% performance improvement in travel time, compared with projected growth, can be expected during peak hours. Optimal implementation would target travel in those corridors where traffic conditions are otherwise expected to deteriorate in the near future. Further economic goals will be progressed by the reduced need for capital and maintenance expenditure on new and widened road corridors as well as the reduced level of private expenditure on fuel.

Social goals will be progressed through approximately pro rata (10%) decreases in crash rates and improvements in health and fitness due to exercise (reduced mortality). The National Public Health Partnership Case Study on Promoting Active Transport (2001) identified transport as a high priority setting to promote physical activity.

They note that there is consistent epidemiological evidence that demonstrates the role that physical activity plays as a major modifiable risk factor in the reduction of mortality and morbidity from many chronic diseases, including cardiovascular disease, several cancers and Type 2 diabetes. Regular walking, cycling or walking to PT fits the recommended goal of 30 minutes per day of moderate-intensity activity that can be accumulated in bouts of approximately 10 minutes. Indirect health benefits may also accrue from reduced environmental pollution.

TravelSmart contributes to these goals as it increases the mode share of walking, cycling and public transport as a replacement for some motor vehicle trips. Further improvements are expected via enhanced social interaction contributing to improved local community viability and improved personal security.

The environmental goals for noise, local and regional air quality and greenhouse gas emissions will also be progressed pro rata (10%) through the reduced travel demand and consequent reduced fuel use and exhaust pollutants.

Sustainability of results

The IndiMark® Third Evaluation Report (Transport WA, 2001) demonstrates that the behaviour change achieved in the South Perth pilot has been sustained for a period of two and a half years. Evidence from projects in Germany supports sustained behaviour change for at least four years. Further historical data is not available as this is a new policy area, however there is no direct evidence to doubt the sustainability of the project results beyond four years.

The process of voluntary travel behaviour change projects is one of empowering and educating people to make deliberate choices regarding travel mode, destination, activities, etc. rather than unconsciously stepping into a car whenever a perceived need arises. Unlike a change in attitude or awareness that often erodes over time or does not convert to actual behaviour change, these projects demonstrate significant levels of behaviour change. The newly-acquired skill is a result of the empowerment process and is consistently reinforced by the personal benefits realised (health, time, stress, money, etc.) and the regular need for mobility.

Through regular use, the new behaviours are sustained over the longer term. It is likely that the behaviours will expand to other people as they see and learn from the behaviours and personal benefits demonstrated. As people change workplace or residential location, the established behaviours will continue to impact on travel choices and may even impact on location choice. In the long term this would provide additional VKT reduction through market incentives for improved urban planning and land use outcomes.

The monitoring of the sustainability of the abatement to date suggests that little or no maintenance is likely to be required in the long term. In the unlikely event of a reduction in sustainability, IndiMark® can respond through both modifications to future projects and implementation of low cost maintenance interventions.

Conclusions

IndiMark® delivers sustainable mode shift

The results from the Pilot clearly demonstrate that the IndiMark® technique can deliver significant shifts to EFM in a Brisbane urban context. The results replicate those obtained in the 1997 South Perth Pilot and the subsequent large scale application in Perth. The results are consistent with the general trends found in 70 successful similar applications in numerous European cities.

The variations in individual mode shift patterns suggest that topographic and existing public transport service levels have an influence on the outcomes. The exceptionally hilly terrain of the area more than likely caused the much lower increase in Bicycle mode (6% compared to 91% for South Perth). Conversely the existence of two main public transport options (train and bus) influenced the higher shift to that mode (33% compared to only 21% for South Perth).

Importantly, the total reduction in car trips is almost the same (both pilots show a 10% MPM trip reduction) thus indicating IndiMark® is a very robust technique that can have wide applicability in a variety of urban conditions in Australia.

The way forward for TravelSmart

The strong positive results in Brisbane, combined with outstanding BCR and evidence of sustainability of outcomes without need for reapplication makes IndiMark® an exceptionally strong candidate for large scale application in Brisbane, many parts of South East Queensland as well some regional cities. IndiMark® could be a low cost and widely applicable tool in holding current private vehicle growth in check for several years and eliminate or delay the need to spend several billion dollars on road expansion and technology solutions. This will facilitate improved levels of service for the travelling public on all transport modes and progress the sustainability of our transport systems.

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