Behaviour Change Sustainability from Individualised Marketing

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Abstract

The need to change the mode share for travel in the Perth Metropolitan Region is clearly enunciated as a set of targets in the region's Metropolitan Transport Strategy. The traditional mobility management approach to achieve mode change has been through the provision of transport services and infrastructure, including pricing, and the longer term land use policies. The application of a behavioural approach, especially in a city with very high car use like Perth, has not, until recently, been in the transport planner's tool box. There is also criticism that if behaviour change is achieved, people quickly revert to their previous behaviour

This paper outlines the sustained behaviour change achieved from a behavioural approach, applied with a random sample of persons in the City of South Perth The technique employed has been developed by Werner Brög over many years and its application in South Perth was a further step in the refinement process by combining cycling with public transport and introducing walking.

The evaluation survey undertaken after the marketing intervention showed a 10% reduction in car as driver trips and an increase in walking, cycling and public transport trips The intervention also achieved a 14% reduction in vehicle (car) kilometres travelled A 12 month evaluation survey showed that these changes were sustained with a further increase in walking trips and corresponding decline in car as driver trips; a 17% reduction in vehicle kilometres travelled.

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Introduction

The need to change the mode share for travel in the Perth Metropolitan Region is clearly enunciated as a set of targets in the region's Metropolitan Transport Strategy. The traditional mobility management approach to achieve mode change has been through the provision of transport services and infrastructure, including pricing, and the longer term land use policies The application of a behavioural approach, especially in a city with very high car use like Perth, has not, until recently, been in the transport planner's tool box There is also criticism that if behaviour change is achieved, people quickly revert to their previous behaviour

This paper outlines the sustained behaviour change achieved from a behavioural approach, applied with a random sample of persons in the City of South Perth The technique employed has been developed by Werner Brög over many years and its application in South Perth was a further step in the refinement process by combining cycling with public transport and introducing walking This is the first known project in the world to use Individualised Marketing (IndiMark) to reduce car use by promoting different environment-friendly modes in one time: public transport, walking and cycling.

Greater detail about how the approach was applied is contained in the paper titled "Changing Travel Behaviour through Individualised Marketing: Application and Lessons from South Perth" presented at the 22nd ATRF Conference (James, 1998). This paper is a further progression down the implementation learning path (James and John, 1997).

Transport Policy Setting

The Metropolitan Transport Strategy (MTS) provides the overall policy setting for the need to achieve a better balance in the use of the motor car The reasons for this better balance are common for most developed cities throughout the world. The MTS provides a vision for a liveable city, of which transport is a contributor, and is supported by a set of principles and targets (Department of Transport *et al*, 1995).

The principles are:
- Safety,
- Efficiency,
- Effectiveness,
- Environmental Responsibility,
- Social Responsibility, and
- Robustness (able to respond to and take advantage of unpredictable changes).

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The relevant MTS targets to access the success of behavioural actions are:

1. The car occupancy target is to increase car occupancy from 1.21 in 1991 to 1.25 by the year 2029 (the trend is to an occupancy rate of 1.13 by 2029).

2. The trip length target for personal trips is to reduce the average trip length from 8.4 km in 1991 to 7.2 km in 2029 (the trend is to 10.7 km in 2029).

3. The mode share targets are shown in Figure 1, which clearly illustrates the aim of redistributing car driver only trips across the preferred modes
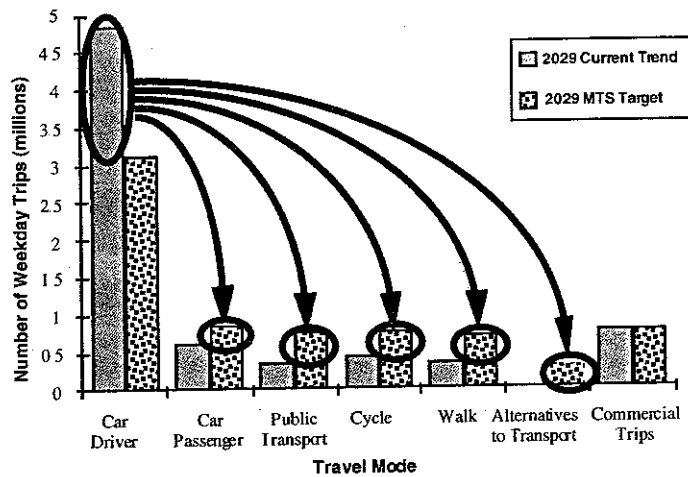

Figure 1: **Metropolitan Transport Strategy Mode Share Targets**

The primary target for the behavioural approach is the mode share target. The challenge confronting the transport planners is to stop the trend and then change its direction.

Defining Mode Choice

The mode choice reflects the usage of means of transport as a "main mode" on a trip. Main mode is determined in the following hierarchy; public transport – car as driver – car as passenger – bicycle – walk. Modes are the environment-friendly modes (EFM) walking, bicycling and public transport as well as motorised private modes (MPM), divided into motorbikes, car as driver and car as passenger.

Existing Behaviour Trends

An analysis of the existing travel behaviour in South Perth in 1986 (Perth travel survey) and 1997 shows:

- a number of changing trends in travel behaviour that shows the need for change;
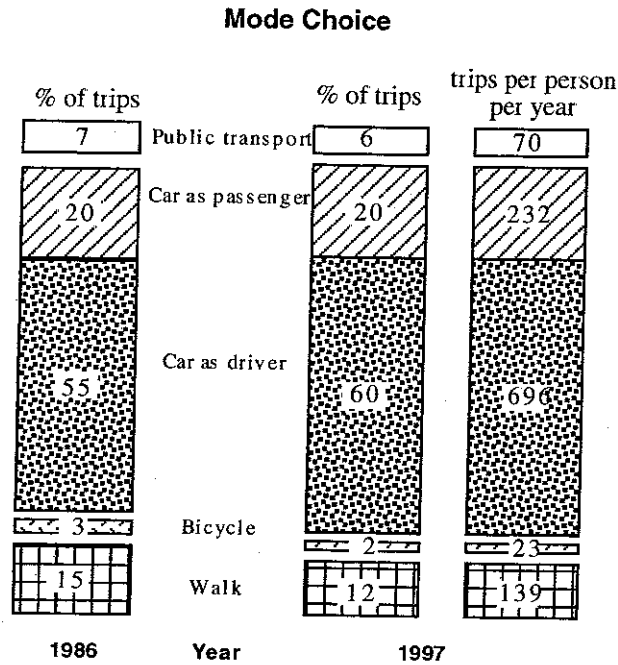- yet it also shows how little some of the fundamentals have changed.

Mode Choice

Figure 2:   Previous Change in Mode Choice in South Perth (trips per person per year)

In 1986 the South Perth residents covered 15% of all trips by walking, 3% of all trips by bicycle and 7% with public transport. Therefore 25% of all trips were done with environment-friendly modes. So three quarters of all trips are with motorised private modes – 55% with the car as driver and 20% as passenger.

In eleven years from 1986 to 1997 the share of environment-friendly modes decreased by 5%-points altogether – walking decreased from 15% to 12% of all trips, cycling decreased from 3% to 2% and public transport from 7% to 6%. These "losses" can be found in the car as driver share that has increased by 5%-points (from 55% to 60%). Car as passenger remained constant (20%). Therefore 80% of all trips in 1997 were covered by motorised private modes.

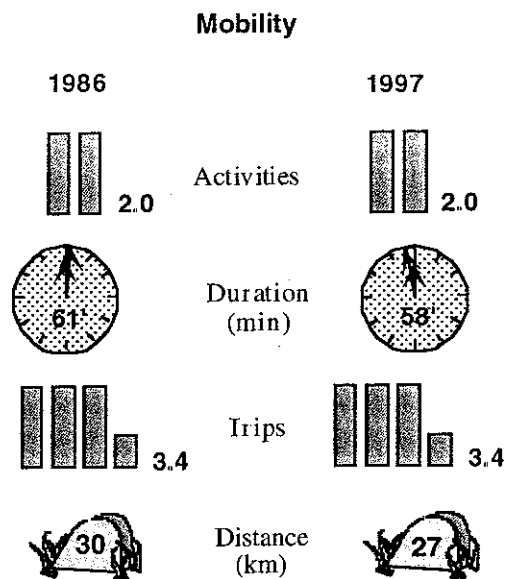The change in mode share has occurred within other mobility indicators that have remained nearly constant.

Mobility

Figure 3: **Mobility in South Perth in 1986 and 1997** (per person/day).

The number of activities (2.0 per person / day) and trips per person per day (3.4) remained the same, the travel time decreased by three minutes to slightly less than one hour and the distance covered decreased by three kilometres to 27 kilometres per person per day.

The changes in travel behaviour over this time coincides with the community health observation that "over the last few decades the amount of physical activity in our day-to-day lives has decreased significantly" (Department of Health and Family Services (1998), p 5).

An innovative Marketing Strategy was conducted to change these trends and to be able to fulfil the targets of the Metropolitan Transport Strategy: Individualised Marketing. This technique has already been successfully proven in many German and other European applications for the promotion of public transport use.

The theoretical construct of Individualised Marketing (IndiMark) is that we all perceive the world around us in a subjective fashion. In this subjective world, people follow their (individual) behavioural decisions. In order to influence those behavioural decisions (with respect to modal choice) there are thus both "measures in the system" (hard policies) and "measures in the mind" (soft policies).

Transport planning is often dominated by hard policies, whereas the impact of "soft policies" is underestimated. But research shows that "soft policies" can activate large potentials by correcting the (incomplete and too negative) subjective perception.

Measures to activate this potential certainly have to be very professionally adapted to the specific needs of public transport as well as to its potential customers, where priority has to be given to better information. If the concept of customer orientation is taken at all seriously, information has to be "delivered" to the customer instead of expecting them to "collect" it from the provider.

One may suggest that all necessary information about environment-friendly modes is available somewhere or even already in everybody's possession. But all empirical surveys show a great lack of information that cannot be solved by improved system designs alone. There is still a requirement for the (potential) customer to inquire for information (e.g. customer/mobility centres). Other approaches bring greater success; such as the individual motivation through direct contact (so called "Individualised Marketing").

The ability of "soft policy" (Individualised Marketing) to achieve such positive results by activating "sleeping" potentials was demonstrated in the IndiMark-project in South Perth. After the IndiMark campaign car use (as driver) went down by 10%. At the same time walking increased by 16%, cycling by 91% and public transport by 21%.

To prove whether these results are sustainable or not an evaluation was also carried out one year later.

Data Base

A before (September 1997) and after (November 1997) travel survey was undertaken to test the effectiveness of the marketing intervention. A twelve month evaluation survey was conducted in September 1998 to ascertain if the behaviour change achieved by the marketing intervention was sustained.

The two after surveys contained two separate groups, the target group (which received IndiMark) and the control group (without IndiMark). This was undertaken to identify any changes that may have occurred due to effects outside of the marketing intervention. The sample size for both surveys was 496 persons (half of the participants in the trial) for the target group (with IndiMark) and 447 persons for the control group. In both surveys, those who showed interest in changing their travel behaviour as well as those who showed no interest (the "N" Group) were included in the target group. The high response rate in both surveys reduced the bias that may have been caused by only the interested participants completing the travel surveys.

The only maintenance marketing function performed was the circulation of a newsletter to participants outlining the results of the marketing intervention.

Results

The presentation of the results of the twelve month evaluation of the IndiMark-campaign in South Perth is divided into the different indicators mode choice, mobility, activities, spatial distribution, car use and travel time.

Mode Choice

The mode share, expressed as trips per person per year (see Figure 4) shows the extent of the behaviour change achieved by the marketing intervention.
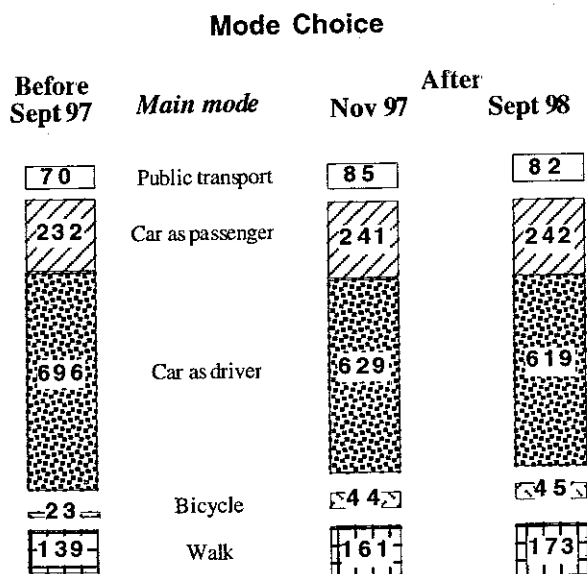
Mode Choice

Before Sept 97	*Main mode*	After Nov 97	Sept 98
70	Public transport	85	82
232	Car as passenger	241	242
696	Car as driver	629	619
23	Bicycle	44	45
139	Walk	161	173

Figure 4: **Mode Choice Changes** (trips per person per year).

The second evaluation shows that the behaviour change achieved by the intervention was sustained for twelve months. In fact there was a further increase in walking from 139 trips in Sept. 97 to 161 trips in Nov. 97 and 173 trips in Sept. 98. Cycling gained one more trip per person per year that equals an increase of 96% compared to the initial situation one year before. Public transport experienced a reduction of three trips per person per year in the twelve month evaluation although it is still 17% higher than the original 70 trip level one year before. In contrast a further reduction in car as driver trips (down from 60% of all trips in

Sept 97 to 53% in Sept. 98 or minus 77 car trips per person per year within one year) could be measured.

The sustained behaviour change through Individualised Marketing with even further effects one year later is important for justifying funding for large-scale marketing interventions, especially in terms of "non-built" (eg demand management) solutions for strategic asset management

Mobility

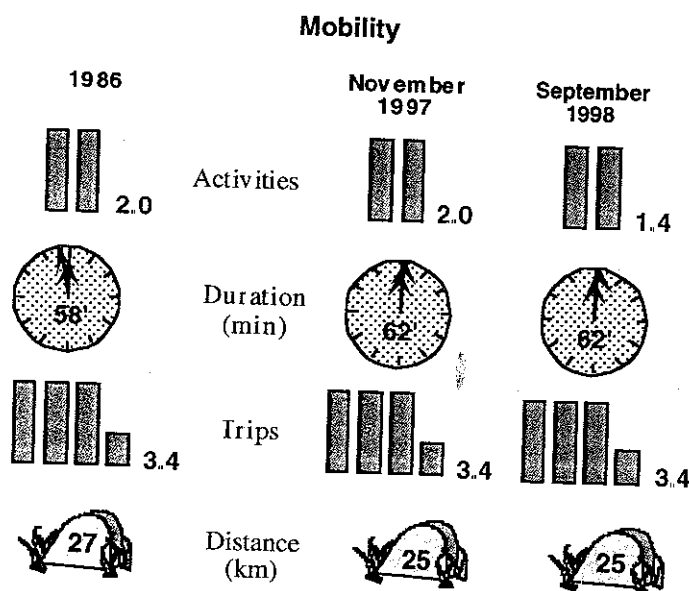These changes in mode choice had hardly any effects on the daily mobility:

Mobility

	1986	November 1997	September 1998
Activities	2.0	2.0	1.4
Duration (min)	58	62	62
Trips	3.4	3.4	3.4
Distance (km)	27	25	25

Figure 5: Mobility Indicators

The various mobility indicators measured at the three points in time showed that they essentially remained constant (see Figure 5). Variations occur in travel time and overall travel distance. The increase in travel time is due to greater use of alternative modes (see also Figure 5). The reduction of travel distance is coupled with the greater use of the alternative modes and a greater propensity to access local activities, such as shops.
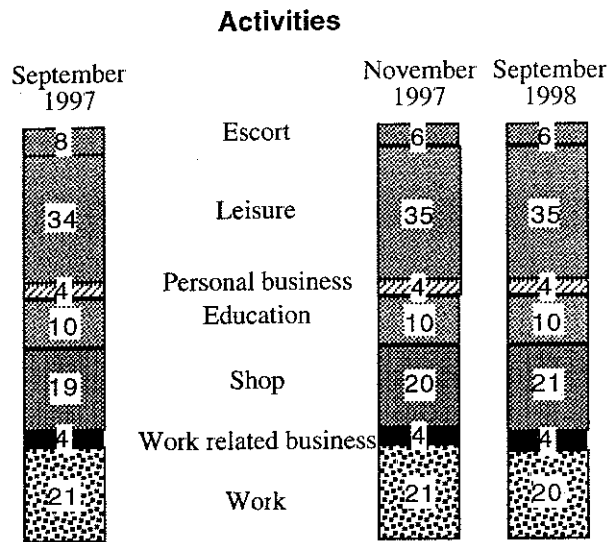
Activities

Activities

September 1997 | November 1997 | September 1998

Escort: 8 / 6 / 6
Leisure: 34 / 35 / 35
Personal business: 4 / 4 / 4
Education: 10 / 10 / 10
Shop: 19 / 20 / 21
Work related business: 4 / 4 / 4
Work: 21 / 21 / 20

Figure 6:   **Activities** (%).

The aim of the marketing intervention is to achieve changes in travel modes but not through restraining mobility. The surveys showed that Individualised Marketing made minimal change to the activities people travelled to. The one activity of interest has been the decline in escort, which is likely to be school trips. Leisure has – with around one third of all trips – still the greatest share of all activities, followed by shopping and work with about one fifth each.
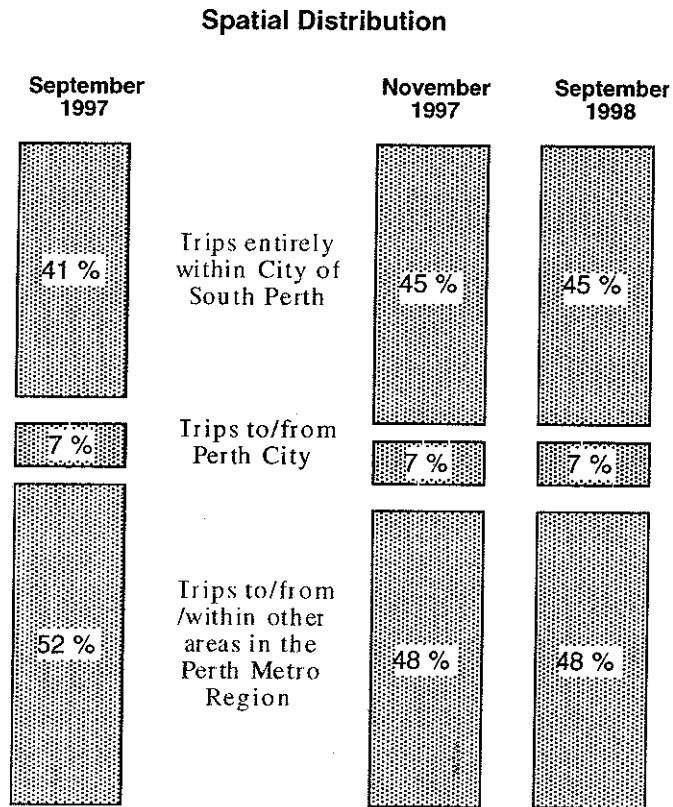
Spatial Distribution

Spatial Distribution

September 1997		November 1997	September 1998

Trips entirely within City of South Perth

41 %   45 %   45 %

Trips to/from Perth City

7 %   7 %   7 %

Trips to/from /within other areas in the Perth Metro Region

52 %   48 %   48 %

Figure 7: **Spatial Distribution of Trips** (% of trips)

In September 1997 41% of all trips were starting and ending in South Perth, 7% of the trips were to or from Perth City and more than half of all trips (52%) were to/from/within (other) parts of the metropolitan area. Almost no trips were made to destinations outside of the metropolitan area.

The achievement of mode shift to the more environment-friendly modes led to a reduction in trips lengths and people accessing local activities more than activities outside the City of South Perth. The changes achieved by November 1997 remained the same in September 1998. Therefore Individualised Marketing helps to meet the second MTS target of reducing trip lengths.

Car Use

The Individualised Marketing intervention achieved reductions in private car use. Company cars (ten per cent of the vehicle fleet) are excluded as the use of these cars does not change.
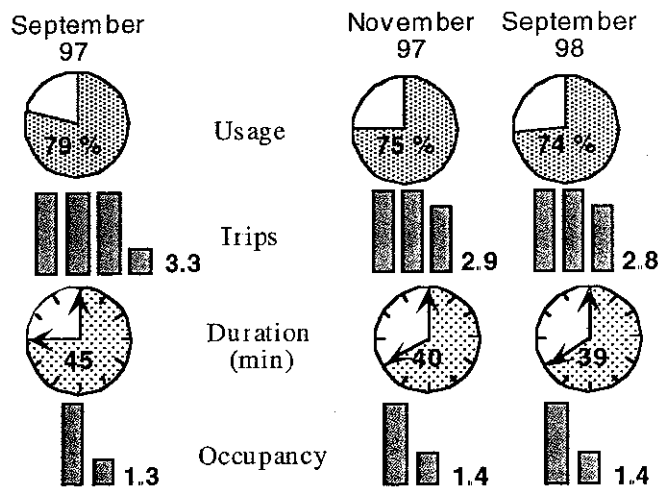
Private Car Use (car per day)

Figure 8:   Changes in Private Car Use

On an average day 79% of all (private) cars were used for at least one trip per day. The use of private cars decreased from 79% to 75% after IndiMark, the number of trips made by each car reduced (2.9 against 3.3) and the average travel time decreased by five minutes per car per day. One year later there was a further in car use.

There was also an increase in car occupancy in line with the MTS. The car occupancy rose from 1.3 to 1.4 people per car through IndiMark and remained the same after one year.
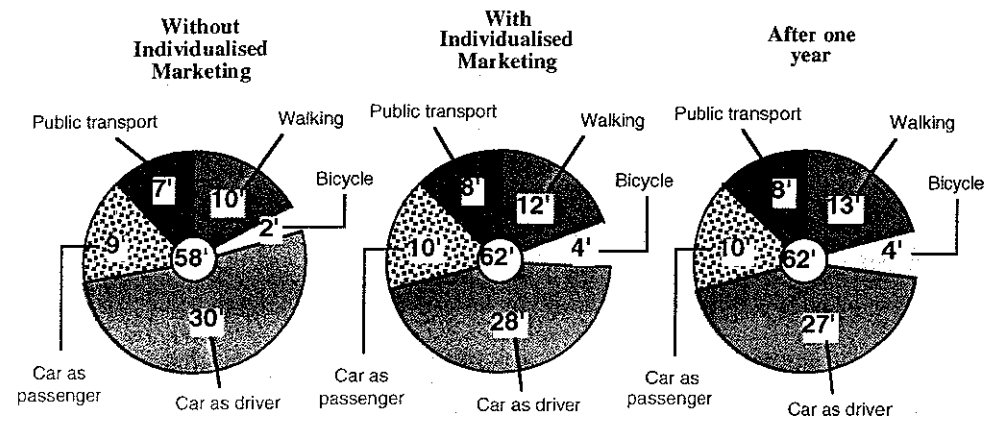
Travel Time

Figure 9: **Time Spent Travelling by Mode Used** (Minutes per person per day; base: unlinked trips)

After Individualised Marketing the time spent travelling for the alternative modes increased in line with the mode changes. The extra time spent walking and cycling (four minutes in total) is a direct measure of increases in physical activity. The twelve month survey showed a further minute was added to walking from car as driver trips which is in direct alignment with public health policies identifying reduced community physical activity due to increased car use.

Extent of Information

After the IndiMark-campaign an in-depth survey was conducted with both the target group which received IndiMark and the control group without IndiMark. The survey is based on trips and was conducted to obtain information about the reasons for using or not using a certain mode (Bróg and Schädler, 1999). Within this survey the extent of information about existing public alternatives was determined.

The knowledge about alternative modes is the basis for behaviour change – without information changes are impossible. The level of information about public transport was measured to assess the extent to which Individualised Marketing improves information.

Individualised Marketing led to a remarkable improvement in the extent of information. The change in potential user knowledge achieved by Individualised Marketing for public transport as an alternative to motorised private transport is shown below:
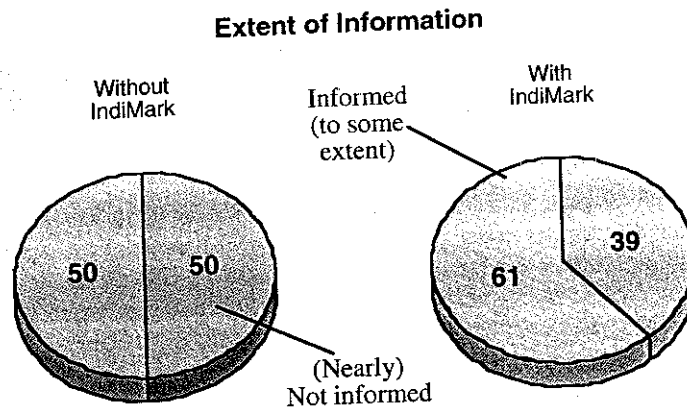
Extent of Information

Figure 10: **The Extent of Information** (Motorised Private Transport – no constraints, Public Transport available).

In the group without IndiMark people were 50% less informed about an existing public transport alternative to motorised private modes (with public transport available and no constraints).

With IndiMark the analysis shows a better informed target group. The IndiMark respondents were informed about the public transport alternatives in 61% of all trips. The knowledge about alternative modes is the basis for behaviour change.

Transport Planning Implications of this Programme

The sustainability of this travel demand management intervention, especially as it involves voluntary behaviour change, means that its effective application on a large scale will provide profound changes away from the current trends to the new direction espoused in the Metropolitan Transport Strategy.

The major impact is likely to be in the area of transport infrastructure planning. The inclusion of quantifiable behaviour change program that is cost effective in the transport infrastructure decision making process could lead to a change in direction of the types of projects funded and a change in the share of funding between road construction and the alternative modes.

A key issue in this implication is the actual measurement of the change in travel behaviour and car use. These measures provide the base from which it is possible to establish cost benefit analysis (refer to Ker and James, 1999). This in turn provides a measure by which to compare behaviour change programs with traditional infrastructure projects. It does however require a change in thinking as a physical asset is not created, although financial revenue streams are enhanced through behaviour change (i.e. increase public transport fare revenue).

It is in this context that funding of A$1.3 million was obtained to implement this programme for the whole of the City of South Perth. A difference from the pilot project will be the installation of 180 bus stop timetable stands at stops throughout the municipality

Conclusion

The application of Individualised Marketing in the City of South Perth has achieved sustained mode shift to the alternative modes in line with the MTS targets. After the IndiMark-campaign, car as driver trips went down by 10%. At the same time walking increased by 16%, cycling by 91% and public transport by 21%. The walking figure increased further after one year while cycling and remained the same– therefore a sustainable behaviour change through IndiMark.

The twelve month survey also showed a further decline in car vehicle kilometres travelled from 14% to 17%, a change in line with the second MTS target. Through IndiMark car occupancy was raised from 1.3 to 1.4 and remained the same after one year.

The change to walking and cycling increased physical exercise by four minutes per day after IndiMark, and a further minute for walking twelve months later. The changes were achieved by people making voluntary choices without any changes to people's mobility in accessing urban activities. These results show that this form of voluntary behaviour change is worthy of becoming a main stream transport planning activity.

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