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A Dialogue on Individualised Marketing:

Addressing misperceptions

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ABSTRACT

Individualised Marketing is a relatively new and successful methodology attracting significant attention from transport professionals and those with policy goals related to achieving reductions in car traffic or increases in the use of public transport, walking and cycling.

This paper provides a summary of published results to date from implementation of Individualised Marketing (IndiMark®) interventions around the world. A discussion is provided to explain the methodology and the evaluation process.

This paper then presents evidence and logic that refutes allegations raised by Professor Peter Stopher of the University of Sydney at a public forum in England in June 2003 and repeated in his ATRF 2003 paper. Similar responses were previously provided to Stopher after the June 2003 Forum, but the arguments presented in his ATRF paper are essentially unchanged.

The paper concludes that the reduction in car as driver trips for all IndiMark® programs is within a range of 6% to 14% across target populations (broadly 5.5-13% allowing for non-contactable and non-responding households), demonstrating that IndiMark® is robust and broadly applicable for urban areas.

The paper has been written jointly by people who have been involved in implementing, project managing, auditing and researching IndiMark® projects.

INTRODUCTION

IndiMark® in its current form was first developed and implemented in South Perth in 1997. Following from this and subsequent successes, it has been implemented in many places around the world as shown in Table 1. A number of additional applications are currently underway, demonstrating continuing growth in interest and funding available for the field of travel behaviour change.

Table 1: Extent of reductions in car driver trips achieved by IndiMark®.

IndiMark® Project	Location	Scale	Relative reduction in car driver trips
South Perth	Australia	Large-scale	14% (Transport WA, 2002)
Goteburg	Sweden	Large-scale	13%
Viernheim	Germany	Large-scale	12%
Brisbane	Australia	Pilot	10% (Marinelli and Roth, 2002)
South Perth	Australia	Pilot	10% (James, 1998)
Gloucester	UK	Pilot	9% (Sustrans, 2002b)
Viernheim	Germany	Pilot	8%
Portland	USA	Pilot	8%
Cambridge	Australia	Large-scale	7%
Frome	UK	Pilot	6% (Sustrans, 2002a)

The results in Table 1 show an average reduction in car as driver trips of about 10% across the target population of all IndiMark® programs, with a range of 6% to 14% for specific interventions. This equates broadly to a 5.5% to 13% reduction across the entire population, allowing for non-contactable and non-responding households. More details can be obtained from review articles such as Dft (2002), Perkins (2002a and 2002b) and Roth (2003).

The evaluation of IndiMark® has been developed and applied separately from the actual IndiMark® intervention. The two independent evaluation tools used for the large scale applications in Perth are:

1. Before and after mail out mail back travel surveys supported by control group surveys of another population.

2. Analysis of public transport electronic ticketing information on services operating in the area subject to the intervention.

The emphasis on the travel surveys is to generate the highest response rates to isolate external effects and to be as representative of the target population as possible. The travel surveys undertaken for the first large scale application in South Perth were also subject to independent audits.

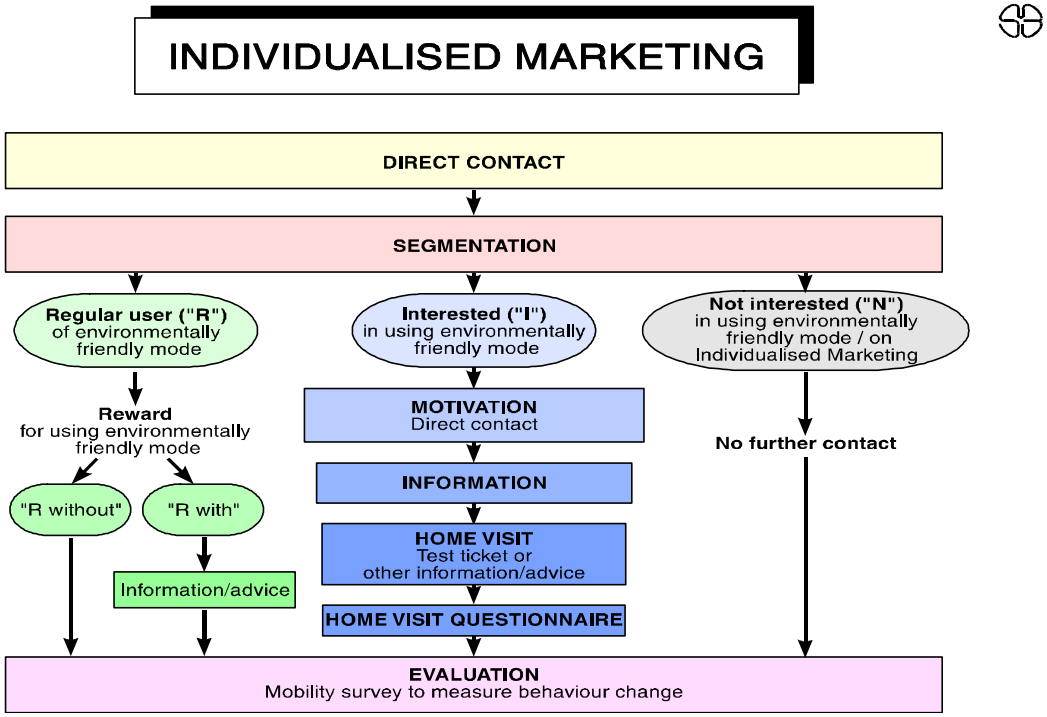
IndiMark® differs markedly from Travel Blending® in that the evaluation tool is embedded within the Travel Blending® intervention. It appears to the authors that Stopher in his early papers and at times assumes the IndiMark® evaluation surveys are embedded within the IndiMark® intervention.

The process utilised by IndiMark® has been carefully developed independent of the travel survey tool to maximise its applicability across entire target populations and simultaneously offer a customised service that is specific to each individual within each household. Figure 1 contains a broad outline of the main steps. The starting point is the attempt to gain direct contact with every member of the target population. Significant effort is made to reach all members as the initial target population serves as the indicator against which the level of behaviour change is reported. A totally separate control group is used to assess the relative impact of those not exposed to IndiMark®. Evaluation surveys sample and report changes relevant to the entire target population, including those who refused to participate in the actual IndiMark® application. The 10% average reduction in car trips reported in Table 1 is thus applicable to all car travel for the target population or community.

This is another key difference between IndiMark® and Travel Blending®. IndiMark® considers all those contactable as exposed to the intervention so that reporting of behaviour change represents whole communities. Travel Blending®, on the other hand, recruits participants from the community and reports results for only those who undertake the full process. To represent community-wide changes, the Travel Blending® results require factoring down by the proportion of participants compared with target population.

The IndiMark® application segments households into several broad categories in order to determine the type of treatment they receive. The process establishes a dialogue with participants, resulting in each household receiving a customised treatment that is determined by their specific needs. The range of assistance varies in level of intensity and type: from “no further contact”; to mailing a generic brochure that is requested; to providing personalised documents or verbal support; to passing on comments; to providing a token reward; and, for a small proportion, to arranging personal home visits or test tickets for the public transport network. More details of this process can be found in a range of the articles in the reference list.

Figure 1 Individualised Marketing Process



The IndiMark® process has been documented, made accessible and open to scrutiny, including an intensive independent audit of data collection and analysis procedures for the South Perth large scale project in 2001 by Konstadinos Goulias (Immediate Past Chair of the US Transportation Research Board Committee on Travel Behaviour and Values). This audit concludes that the collection and analysis of data for the evaluation of IndiMark® 'follows high standards of practice'. It endorsed the findings and strongly recommends expansion of IndiMark® to other communities (Goulias, 2001).

CRITICISMS OF INDIMARK®

Stopher has been critical of the South Perth IndiMark® for a number of years. His criticism has changed over time as his knowledge of the IndiMark® evaluation tools has grown from challenges by the authors of this paper. The evidence for this is presented below. The starting point of the criticism appeared to be based on the false assumption that the evaluation travel surveys were embedded within the IndiMark® intervention.

Stopher's current criticism rests on the lack of representativeness of the travel survey sample of the target population with regard to household size and trip rates. Other issues presented are not used to derive the purported reduced extent of behaviour change.

The focus of discussion tends to be on the extent of reduction in car driver trips, the prime objective of the IndiMark® intervention.

BEHAVIOUR CHANGE FOR THE TARGET POPULATION

Stopher appears to have initiated criticisms of IndiMark® when the Public Transport industry in New South Wales was considering a proposal for a large IndiMark® application as a means to address falling revenues without the necessity for additional on-going subsidies. A draft paper, written by Peter Stopher, was circulated amongst the industry, questioning the merits of IndiMark®. This earlier draft paper made the assertion that the claimed behaviour change only occurred for a subset of participants that received the highest level of support. The IndiMark® proponents presumably had, deliberately or unwittingly, misled the rest of the transport fraternity with grossly exaggerated claims. The circulation of this paper based on incorrect assumptions has, based on information received by the authors, severely hindered the prospect of IndiMark® being applied in NSW. The draft paper eventually reached one of the author's who was targeted by it. This began an extended process of exchanging information before the material was eventually discarded from Stopher's planned publication. The authors are extremely disappointed at not being given the opportunity to provide a response prior to circulation of the draft paper in NSW.

The same matter does unfortunately arise again in Stopher's discussion on the Brisbane pilot where it is used to cast doubt on the level of reduction and its generalisability.

The assumption made by Stopher that led to the allegations is contrary to the previous discussion on IndiMark® target populations and to a number of explicit references in articles that Stopher had reviewed. For example, Marinelli and Roth

(2002) state, in respect of the Brisbane pilot, that "*all Partnership and Control households in the initial phase (including Group "N") are included in the evaluation survey to measure changes in travel behaviour…*". Similar statements occur in other references.

As an example, the extent of behaviour change for the South Perth large scale IndiMark® is shown in Table 2. For each of the three segmented groups in IndiMark®, car as driver trip reduction is:

- 25% for the Interested "I" group;
- 12% for the Regular user "R" group; and
- 0% for the Not interested "N" group.

These changes can be weighted by the size of each group to approximate the average 14% reduction for the target population. The actual 14% figure is derived using the household sizes and trip rates.

Table 2: Extent of behaviour change by segmentation in South Perth large scale IndiMark®.

Total		Main Mode	Group I (46%)		Group R (17%)		Group N (37%)	
Before	After		Before	After	Before	After	Before	After
12%	16%	Walking	13%	21%	13%	16%	11%	11%
2%	3%	Bicycle	2%	3%	3%	4%	2%	2%
0	0%	Motorbike	0	0	1%	0	0	0
60%	**52%**	**Car as driver**	**61%**	**46%**	**57%**	**50%**	**59%**	**59%**
20%	22%	Car as passenger	19%	21%	19%	22%	23%	23%
6%	7%	Public transport	5%	9%	7%	8%	5%	5%
100%	100%	Total	100%	100%	100%	100%	100%	100%
3.4	3.4	Trips per person per day	3.4	3.4	3.3	3.3	3.6	3.6

HOUSEHOLD SIZE

The household sizes from the original data sets used to derive the behaviour changes are reasonably consistent between samples and with census data, as shown in Table 3.

A review of the household sizes between before and after samples used to measure the effects of the South Perth large-scale IndiMark®, as shown in Table 4, is reasonably consistent between the before and after samples.

Table 3: Average household sizes.

Survey purpose	Title in Stopher paper	Average household size
Before 1997	Community 97	2.25 persons
1st after pilot	Target 97	2.30 persons
2nd after pilot	Evaluation 98	2.28 persons
1st after large-scale	As per the paper	2.06 persons
1996 census	Pop'n 33,159	2.1 persons
2001 census	Pop'n 36,108	2.2 persons

Table 4: Proportion of sample population by household sizes in the surveys used to measure the effect of the South Perth large-scale intervention.

Household size	Percentage of people	
	Before sample	After sample
Persons in 1 person households	14%	15%
Persons in 2 persons households	34%	33%
Persons in 3 persons households	18%	19%
Persons in 4 and more persons households	34%	33%
	100%	100%

Stopher's allegation that these surveys exclude larger households is not supported by ABS data or other travel surveys conducted in Perth.

He also states that larger households would "intuitively" be less likely to modify travel behaviour. As large households have more people and trips, there are more interactions and opportunities to modify travel. They may actually be more likely to modify travel behaviour. Stopher's 'intuition' is not based on data and not reliable.

COMPARATIVE TRIP RATES AND NON-MOBILES

There are many reasons why trip rates vary in different travel surveys, such as: whether all ages or 9 years and above are included in the sample; inclusion or exclusion of weekends and commercial trips; exclusion of trips over 100 km; response rates; weather; and systematic errors. The trip rates reported in the IndiMark® evaluation surveys are consistent with those from other Perth travel surveys, taking into account the above issues. Higher response rates, as achieved in the IndiMark® travel surveys, usually include a greater proportion of non-mobiles. Non-mobiles are least likely to respond without encouragement as many do not realise that their lack of travel is important information. Therefore, great caution is required in comparing different surveys.

INDIMARK® RESULTS

South Perth Pilot

Stopher's criticisms of the South Perth pilot stem from the alleged reduced mobility of the IndiMark® participants compared to the general population. As other Perth travel surveys show similar trip rates across the population, and given the cautions expressed above when comparing different surveys, this allegation is rejected.

Stopher reports that 206 households exposed to IndiMark® and 207 households not exposed were involved in the survey. He then asserts that more households must have received IndiMark® later or a disconnect between samples has occurred, on the basis that the original 138 "I" households plus 34 "R" households sums to less than 206. He again fails to acknowledge the consistent message that the 188 households in the "N" group are also considered as participants, or are "exposed" to IndiMark®, in his language. The 206 exposed households are taken from the I, R and N groups that sum to 360.

South Perth Large Scale

Use Of Control Groups

Stopher criticises the use of Victoria Park as a control group for South Perth on the basis that it has some socio-demographic differences. He implies that a valid control group should be identical to the intervention group, which is only possible if both are a random sample of the same population – and even then would be subject to sampling variation.

An equally important criterion for a control group is that it is subject to the same influences as the intervention group, hence the importance of similar location (both Victoria Park and South Perth are inner city and across the river from the CBD of Perth) and both being serviced substantially by the same bus operator. Anyone familiar with Perth will recognise the importance of these latter criteria.

In practice, the control group showed a small drift away from environment friendly modes, but the published results for the South Perth large scale IndiMark® have not been adjusted for this – precisely in order to be 'cautious' about the results.

Household size

Stopher has incorrectly used the 1.96 persons/household for the I group rather than the 2.06 persons/household for the exposed sample in the after survey of October 2000. As 2.06 is within 1.9% of the ABS 1996 average and 6.4% of the ABS 2001 average, there does not appear to be any rationale to proportionally reduce the results. Table 4 above also supports this conclusion. This is reinforced by the lack of any evidence to suggest a reduced impact amongst larger households.

Trip rates

Stopher's claim of alleged reduced mobility of the IndiMark® participants is rejected for the same reasons as for the pilot intervention. Other Perth travel surveys show similar trip rates across the population and caution is essential when comparing different surveys because of the many factors that influence reported trip rates, as discussed previously.

Errors in household numbers reported

The authors acknowledge some errors and resulting confusion in reported total household numbers for South Perth. Several figures, ranging from 15,267 to 18,626 have been published in various papers relating to the South Perth large scale IndiMark®. ABS census data for the number of occupied households within the City of South Perth for 1996 and 2001 is 15,879 and 16,153 respectively.

The target population of the large-scale IndiMark® intervention was 15,300 households (rounded from 15,267) located within the City of South Perth. The extent of behaviour change measured by the travel surveys presented in the project documents is representative of any change occurring in this target population.

Using the figure of 18,626 total households and 13,382 households that were contacted and had agreed to participate (reported in Goulias, 2001), Stopher concludes that about 28% ((18,626 – 13,382)/18,626 = 28.1%) of the households in South Perth were not included. From the ABS census of 2001 and the target households included in the evaluation, this figure reduces to 5% ((16,153 – 15,267)/16,153 = 5.48%). Using Stopher's logic, the local impact throughout South Perth of the IndiMark® application is more accurately stated as about 13%. This is a 5% proportional decrease in the 14% car as driver trip reduction achieved for the target population.

The 13% figure, however, does not relate directly to the level of local car traffic for two reasons. Some of the reduction in car traffic occurs in surrounding areas where longer trips have changed mode or reduced in length, favouring more local destinations. Also, some local car traffic is generated by residents from outside the area who are driving through or accessing facilities within the target area. The extent of these impacts will vary significantly depending on the local context. It is most appropriate therefore to report the 14% reduction in car trips for the target population. Acknowledgement that approximately 5% of the population cannot be reached becomes important when large areas are being implemented and when modeling of broad impacts is undertaken.

The point also remains that for the households that were not contactable, there is no evidence to support an assumption that they would have a significantly different propensity for behaviour change than the target population. The 14% reduction is the valid figure when assessing performance against a target population and when considering costing and per person impacts.

The following points are very marginal in the calculations Stopher uses to adjust the figures.

IndiMark® Feedback Questionnaire

Stopher confuses a feedback questionnaire with the after travel survey, creating doubt about the numbers reported and response rates. The feedback questionnaire was just that, it was separate from any after travel survey. A lower response rate for a feedback questionnaire is logical as it is of lesser importance than a travel survey and much less effort is made to encourage responses.

Time between Before Survey and IndiMark®

Stopher questioned the extent of time lapse between the 1997 before survey and the IndiMark® intervention. This is a valid concern as it could overstate IndiMark® impacts if events or trends led to travel changes toward walking, cycling and public transport. The trend data prior to 1997 was, however, showing mode shift away from

these modes and to the car. Continuation of this trend would result in the evaluation understating the effect of IndiMark®. The Victoria Park control group, as discussed above, was established to provide trend data for the period around the IndiMark® intervention.

Public transport ticket data

The estimated 17% increase in public transport use, derived from the before and after travel surveys, is supported by independent Wayfarer bus ticket data showing an increase of approximately 21% from February 2000 for bus boardings in South Perth. The installation and commencement of the IndiMark® intervention began at the end of January 2000. Stopher's assertion that it began in March 2000 is incorrect. This is a powerful independent corroboration of the accuracy of the IndiMark® performance indicators.

Speed of travel

Total distance travelled per person decreased from 27km to 26km as a result of the IndiMark® intervention. Travel time remained constant at 58 minutes before and after the intervention (Socialdata, 2002). Average speed of travel therefore reduced by about 1 km/h. This result is consistent with a mode shift away from cars as walking, cycling and public transport are generally slower modes. Stopher's allegation of an increase in travel speed is incorrect.

Brisbane Pilot

Stopher again makes the error that the evaluation did not include the entire target population. Marinelli and Roth (2002) state clearly that all participants are involved.

Stopher makes a calculation error in his claim that there were 2.55 trips per person per day, when he presumably was dividing the 1,076 by 365 which equals 2.95. The authors divided the number of trips by 341 to represent average weekday travel and derive the stated figure of 3.2 trips per person per day.

The results for the Brisbane pilot do include a small decline in mobility or the number of trips made. This decline was consistent across both the target population and the control group so it is assumed to be a seasonal or local impact of other factors. The consistency in overall mobility changes across both groups and the size of the mode share change indicate a robust 9.6% car as driver trip reduction for the target population.

ANALYSIS OF TRAVEL BLENDING®

Stopher purports to critically appraise "travel behaviour modification" but focuses attention solely on IndiMark® rather than also appraising Travel Blending®. Interestingly, his section on Travel Blending® claims that it is being promoted more cautiously and not much has been published on its success, so there is no need or ability for critical appraisal. Travel Blending® has been extensively documented, with detailed data on outcomes, including Tisato and Robinson (1999), DfT (2002) and Perkins (2002), none of which Stopher references although they are readily available. Some key tables are missing from the published version of Perkins (2002) but would have been made available by the author on request, as they have been to at least one author of this paper.

The alleged cautious approach to promotion being adopted by the proponents of Travel Blending® is reaping rewards from funding bodies. The authors remain disappointed that Stopher has not shown the same endeavour to critically appraise Travel Blending® and are eager to see his response on why this is the case.

INDUCED TRAVEL

Speculation on the possible effects of induced demand is a very complex issue that neither the authors, nor many other researchers, purport to understand completely. The existence of induced demand requires suppressed demand. Congestion is not severe in the project areas of South Perth and the inner-north of Brisbane so the level of suppressed demand would be minor.

The evaluation of IndiMark® includes the entire target population, as discussed previously. This includes the 30 to 40% who are segmented into the “Not Interested” group. As these people live in the target area and receive no further contact after the initial questions for segmenting, one would expect that induced demand would be most prevalent for them. To date, the evaluations have shown little or no increase in car driver mode for this group, suggesting negligible levels of induced demand. The “N” group for the South Perth large scale IndiMark®, as shown in Table 2, had a 59% car as driver mode share before and after the IndiMark® application, compared with the before total for the target population of 60% car as driver.

The inclusion of all the target population in the evaluation ensures that local induced demand that results from the improved level of service on the local road network is captured within the evaluation.

Any significant change to level of service for a mode, in the absence of other changes, would be expected to impact the level of demand for that mode. The potential does therefore exist for a portion of the benefit of IndiMark® to be eroded through time, just as the congestion relief of a road expansion is gradually eroded through induced demand. IndiMark® is not a final solution, it is a step in a process of behaviour change, contingent on long term policy and program objectives and actions. Depending on the objectives, the reduction in car trips resulting from IndiMark® could be used to:

- cater for more population growth;
- delay or prevent the need for new infrastructure;
- support the provision of new walking, cycling or public transport services or facilities;
- reduce public transport operating subsidies;
- improve road freight travel times;
- reduce public perceptions of congestion; and
- improve social and environmental outcomes of transport.

LOCATION CHOICE FOR INTERVENTIONS

The South Perth and Brisbane IndiMark® interventions were both in inner suburbs of large urban areas, although very different topographically. The City of South Perth also has a diversity of socio-economic groups plus an area of cul-de-sac subdivision with no public transport services. The locations have demographics more typical of inner urban areas than middle and outer suburban areas. As such, some caution is necessary when generalizing from only these results to a broader context.

The results in Table 1 show that IndiMark® has now been successfully implemented in a broader range of urban areas, including the suburb of Cambridge in a much less 'promising' area of Perth. The growing number of successful IndiMark® interventions in a broad range of urban and cultural contexts, provides confidence that IndiMark® can be successfully generalized to all urban dwellers.

Analysis has been conducted of the potential for change in various parts of Perth (James, 1999). This research shows that significant potential exists in many areas, including suburban areas with relatively poor public transport. Travel choices are dependent on socio-demographics and trip purposes as well as the nature of the transport system. Inner-city areas in Australia generally have fewer cars per person and a higher proportion of older people who travel less on average, both indicators suggesting less scope for change. Areas with limited public transport networks often begin with a very low base for public transport and contain significant opportunities for walking, cycling and car pooling.

Stopher's conclusions are intuitively based and not supported by evidence.

EFFECTS OF SAMPLING ERROR

Stopher's estimation of sampling error is grossly overestimated as he fails to acknowledge that their have been two 'after' surveys for the South Perth large scale IndiMark®. The after surveys produced very similar results. The statistical probability of two independent samples producing the same erroneous results are very much lower than that of one sample producing a particular set of erroneous results.

A more recent 'technical appendix' (Socialdata, 2002) has addressed the issue of statistical significance and concluded that the null hypothesis, of no change in mode share, can be rejected with a probability of more than 97.5% for all modes (walking, cycling, car as driver, car as passenger, public transport).

SUSTAINABILITY OF BEHAVIOUR CHANGE

Figure 2 shows the results of the evaluations conducted two and one half years after the South Perth IndiMark® pilot (Socialdata, 2000). No additional IndiMark® or reinforcement of the behaviour change was undertaken in the intervening period. Figures 3, 4 and 5 show the sustainability of public transport patronage increases for European cities up to four years after intervention of the predecessor to IndiMark® that focussed on public transport (Socialdata/UITP, 1998). Monitoring of the sustainability of the impact to date suggests that little or no maintenance is required for five years and potentially much longer.

Figure 2 South Perth large scale IndiMark® sustainability

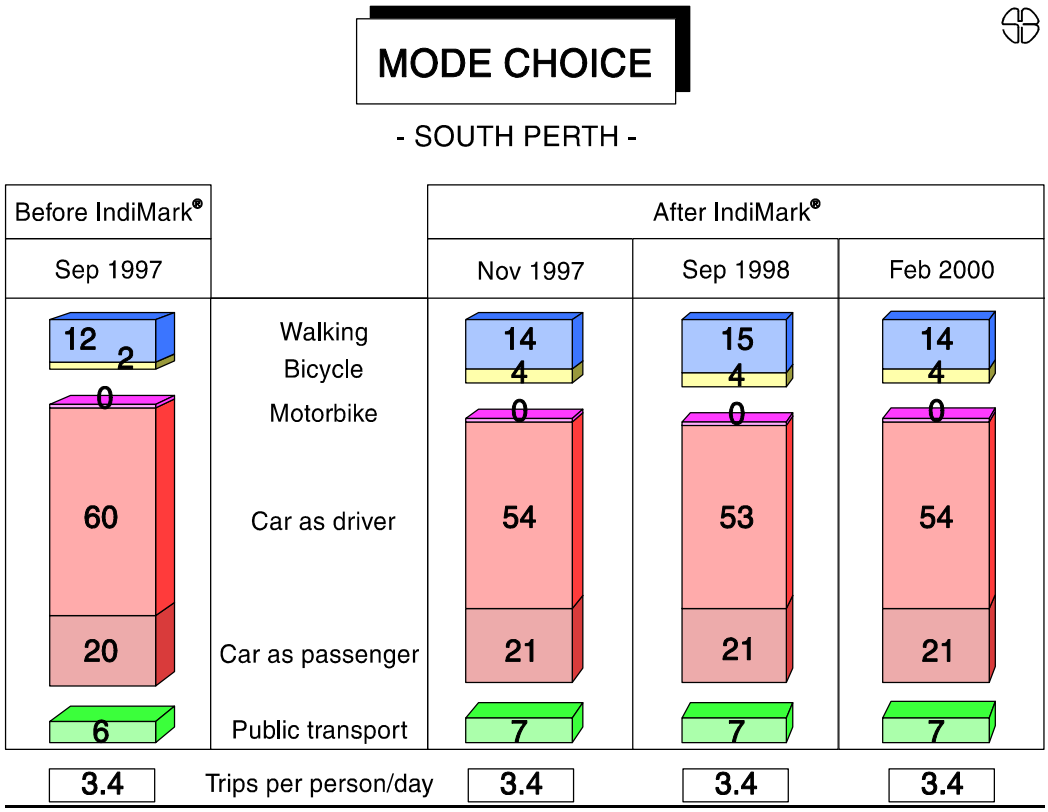


Figure 3 Davlik sustainability

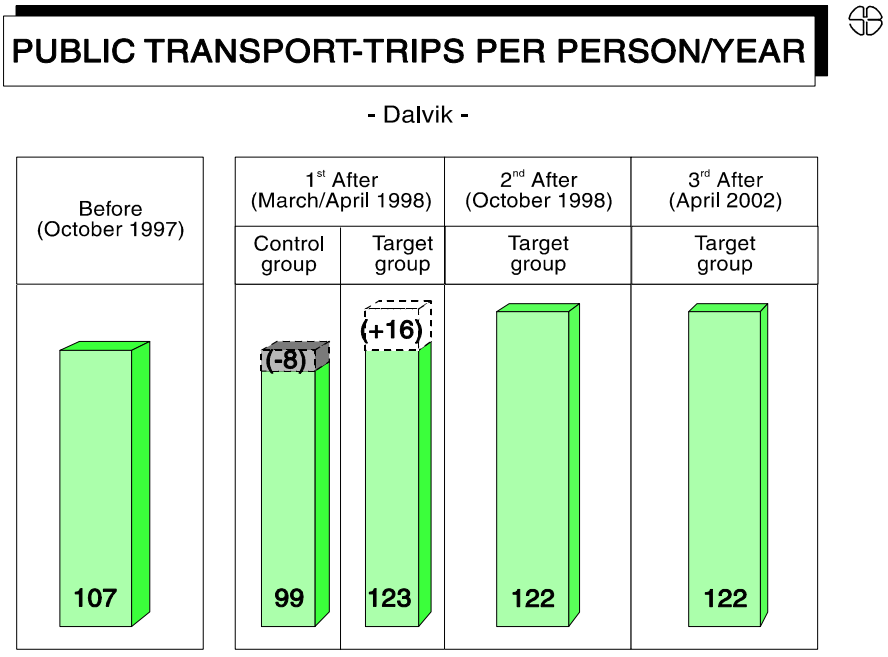


Figure 4 Kassel sustainability

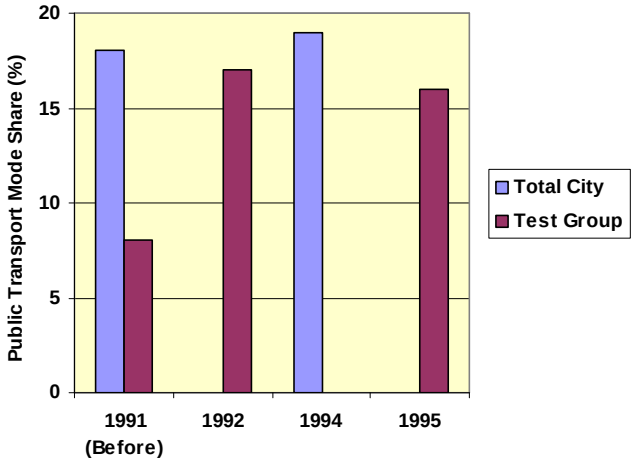
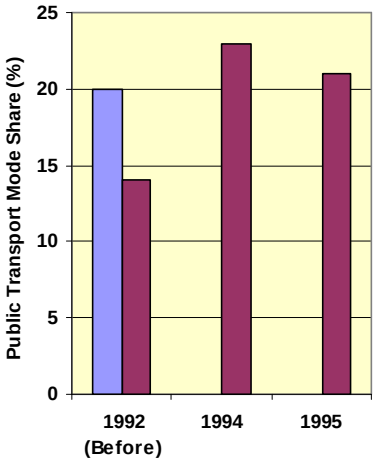


Figure 5 Nurenberg sustainability



Unlike a change in attitude or awareness that often erodes over time, IndiMark® achieves significant levels of behaviour change. The newly-acquired behaviours are consistently reinforced by the personal benefits realised (health, time, stress, money, etc.) and the regular need for mobility. There is no reason to expect the new behaviours to change as long as the quality of the resulting experience does not change.

The behaviour changes may be threatened when households change location or progress to further life stages. The behaviours may, however, also expand to other people as they see the personal benefits demonstrated and may even impact on home location choice. These long term possibilities pose a significant problem for long term evaluation but a fertile source for research into culture change processes.

Benefit cost ratios (BCR) have been calculated using a decay function over 10 years for Perth (Ker and James, 1999) and an assumed sustained five year benefit life for Brisbane (Marinelli and Roth, 2002). The lowest BCR was 13:1 for Perth and 20:1 for Brisbane. Data to date indicates these figures are overly pessimistic.

CONCLUSION

The reduction in car as driver trips for all IndiMark® programs across the target population is within a range of 6% to 14%. This demonstrates that IndiMark® is a robust intervention that is successful and broadly applicable across urban areas.

The authors have responded to the allegations raised by Professor Peter Stopher and presented evidence and logic that refutes all allegations. The authors have grappled with many of the complex issues associated with long term evaluation of behaviour change projects in the transport sector and welcome further discussion in this field.

The recently announced $18.5million TravelSmart® Australia program provides an opportunity to design an evaluation process before the interventions happen. The process should be designed to assess the sustainability of the TravelSmart® interventions and the diffusion effect as people change home location, workplace, etc.

All IndiMark® interventions have resulted in less car driving. It is the desire of the authors to focus on how to increase TravelSmart implementation and effectiveness in order to maximise outcomes. Spending a higher proportion of program budgets to estimate a little more precisely, or continuing debates with those unable to modify their misperceptions when exposed to evidence to the contrary, is perhaps not the best use of resources.

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