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Perth's Alternative Transport Users: What They Say About Motivations For Changing Transit Mode.

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Abstract

Diffusion theory suggests that new ideas and behaviours are developed by social innovators before they become widely accepted in 'mainstream' culture. At the present time over 85 percent of commuters in Perth (Western Australia) are drivers of single occupancy vehicles (SOVs). According to diffusion theory, the remaining 15 percent of commuters who have adopted alternative modes of transit can be considered to be social innovators. This research sought to identify the motivations which encouraged non-SOV transport users to switch transport modes. The objective of the present research was to identify motivations which could be used in campaigns aimed at reducing the numbers of SOVs on Perth's roads. Participants were 40 adult non-SOV transport users who agreed to participate in semi-structured telephone interviews. Results suggest a 'big five' of motivations for switching transport modes which include the perceptions of economic benefit, personal well-being, environmental concern, convenience issues and time savings.

Perth's alternative transport users: What they say about motivations for changing transit mode.

It has been widely reported that environment problems in general will be the issue of most community concern within ten years, outranking in importance concern about unemployment, education and crime (Government of New South Wales, 1994). Community concerns about the specific environmental problems of air quality and traffic congestion in Australian cities have become an issue of increasing public debate.

It is well known that road transport generates the largest component of harmful atmospheric emissions in Western cities (Flechtner and Mayer, 1993; Rajendra, 1995) and commuting trips form a large percentage of all road based journeys. The link between declining urban air quality and increasing use of private vehicles for personal transport is now well established (Prendergast, 1990). Conversely however, it is generally recognised that increasing the use of alternative transport arrangements such as walking, cycling, car pooling, public transport or telecommuting can add to a significant improvement in urban air quality (Rajendra, 1995). Reducing the numbers of private cars on the road can have major impacts on improving air quality and reducing traffic congestion.

At the present time however, single occupancy vehicles (SOVs) dominate the private transport arrangements of most commuters. Kidder (1976) suggested that despite the headaches of traffic jams, parking constraints, air pollution and high operating costs people seem to prefer to drive to work alone. In a similar vein, Kearney and De Young (1995) suggested that "Our society relies on subsidised solo driving. For most employees, driving to work alone is simply too convenient, comfortable, and cost effective to consider alternative transportation modes. For others there are no alternatives (p. 652)". Studies indicate that commuters have indeed continued to vote with their ignition keys. Kearney and De Young (1995) noted that growth in travel demand is doubling every twenty years, outpacing population growth. Today, around 85% of all commuter trips are made by SOV drivers and these trips are constantly increasing at the expense of other forms of transport. In Perth, Western Australia, almost 55% of commuters into the central business district arrive and leave in single occupancy vehicles (Cosgrove, 1996). A US Department of Transport study (Anonymous author, 1990) identified that growth projections for SOV use strongly suggested an ever widening gap between the demand for travel and the physical capacity to meet demand. Prendergast (1990) noted that a problem of this growth in that even though US tail pipe emissions have been reduced by 96% since 1972, vehicles still pollute due to the shear numbers involved and the increasing numbers of kilometres driven. Whilst technical developments have reduced vehicle emissions, it is now clear that technological advances alone will not solve air pollution problems. Prendergast's (1990) study supported the notion that solutions to worsening air quality must be found through altering human behaviour. A major response to the perception of the need to change human behaviour has been the development of travel demand management (TDM) actions. Koppelman, Bhat and Schoffer (1993) suggested that travel demand management seeks to ameliorate transport problems by encouraging individuals to change their commuting patterns. Travel demand management actions involve the twin strategies of traffic reduction or travel demand shifting. Reduction strategies aim to get people to switch from a reliance on SOVs for their personal transport. Demand shifting involves temporal dispersion of peak period trips by strategies such as workplace flexi-time. The GVRD Communications (1995) report in Vancouver noted that travel demand management reduces traffic volumes and congestion by shifting the mode of transport, eliminating trips and lowering peak demand. The US Department of Transport (Anonymous author, 1990) noted that TDM depends on realistic alternative modes of travel and financial disincentives such as loss of free parking to reduce traffic volumes.

The main hope of the future for decreasing air pollution and congestion problems lies in reversing the upward trend in SOV use and increasing the participation of commuters in

alternatives to the car. Efforts to encourage commuters to switch from SOVs to other transport modes must begin from an understanding of the motivations used by commuters in choosing between different transport possibilities. Any attempts to change behaviour through TDM must link transport measures to commuters transport decision making strategies. An innovative approach to the consideration of motivations for transport choice can be focused using aspects of diffusion theory - how innovative behaviours spread through society (Portnoy, Anderson and Erikson, 1989; Howze and Redman, 1992). Diffusion theory identifies factors which impede or accelerate adoption of new practices or result in rejection of innovation. Howze and Redman (1992) stated "The theory of diffusion of social innovations defines the conditions by which new ideas and practices become adopted in a culture or subculture" (p.370). Diffusion research is crucial because changing environmentally destructive behaviour into environmentally protective behaviour involves the adoption of innovative behaviours.

Cosgrove (1996) used qualitative discussion panels to investigate willingness to change travel modes from single private vehicle use to others such as car pooling, trains, bike riding or busing. Cosgrove's results suggested a latent demand on the part of Perth commuters for travel alternatives to the SOVs. A GVRD Communication report (1995) noted that convenience is the "carrot" and cost is the "stick" to change commuters transport behaviour. Lack of convenience can be a "stick" and cheaper costs can also be a "carrot". The report suggested that motivations may be based around convenience of travel, time constraints, economic incentives, environmental concern and improved personal health. Other studies (Oppenheimer, 1979; Machin and Stone, 1995; Cosgrove, 1996; Farmer-Bowers, 1996) have noted similar stated preferences for motivations for changing to alternative transport modes. The present study attempted to assess the stated preferences which lead commuters to switch transport modes in Perth. Although only exploratory, the research hypothesis is in line with earlier studies which suggested a 'big five' of motivations including economic self interest, time issues, convenience issues, health issues and environmental issues.

Method

Participants

Participants consisted of 42 adult transport users who voluntarily called a telephone interviewer in response to articles placed in the media (see Appendix A). Twenty three (57.5%) of the participants were male. Two callers (one male, one female) were not used for analysis purposes due to the nature of their responses - they wished to complain about various unrelated issues). Forty participants provided suitable information for analysis.

Materials

Materials for the research project included a semi-structured interview schedule (see Appendix B) and a telephone . Standard office equipment such as a computer with word processing packages was needed for data analysis.

Procedure

The researchers forwarded a press release to news editors in major newspaper and radio media asking for people who had switched from SOV use to other transport methods to contact a telephone interview line. The press release resulted in coverage in Western Australia's largest circulation daily newspaper and a number of regional community newspapers. The media coverage also included radio interviews on the Australian Broadcasting Corporation (ABC) "Peter Holland Show" and Information Radio talkback programme. Further coverage was gained when the monthly magazine "Cyclewest" covered the press release. The press release, newspaper stories and radio interviews emphasised that people who had switched from SOV

use should contact the research team in order that factors which influenced their decisions could be studied.

In response to the media coverage a number of people telephoned the interview line. All participants were informed about the research project and why they had been asked to call. People were assured that their identity would not be revealed and that individual information provided would be reported in terms of averages and themes. Importantly, the same researcher conducted all the telephone interviews in order to overcome any possible problems of differences in interpretation of participant responses.

The interview consisted of asking a number of open ended questions such as "What is your main form of alternative transport"? Further probes were used to explore additional information and themes. The interviews lasted approximately 20 minutes with some ranging from five minutes to a little over one hour. The telephone calls occurred on Tuesdays and Wednesday between 8 am and 4 pm. All calls were taken during August and September 1996. The interviewer wrote a record of information presented and used a 'reflective listening' approach to make sure that what had been said was interpreted correctly. The questions were structured to find out respondent attitudinal information on the benefits, costs and reasons for switching from SOV use to other transport methods. Secondary information about air pollution and congestion in general were also sought. The survey was exploratory and quite informal and explicit demographic information was considered irrelevant but gender was one factor which was noted - simply because it was information which was presented when speaking on the telephone.

Analysis of information consisted of the researcher identifying themes from the written statements to each item and ranking the themes from most common to least common. Two researchers identified statement themes independently and then compared final rank ordering to overcome subjective bias of interpretation. Reliability of themes was checked using a process of inter-rater reliability checking, in which two researchers had to justify their interpretation and agree on the theme identified.

Results

Respondents represented the full range of alternative transport options available in Perth (see table one). The majority of callers were users of various components of the public transport system. Those using trains and buses accounted for almost 66% of all those surveyed. Cyclists were the next highest responder group accounting for just over 23% of callers.

Table 1. The alternative transport used by participants.

Statement Themes	Number	%	Cum %
Bus	11	27.50	27.50
Cycle	10	25.00	52.50
Combination bus/train	6	15.00	67.50
Train (cycle and train)	6	15.00	82.50
Park 'n' ride	3	7.50	90.00
Car pool	1	2.50	92.50
Walk	1	2.50	95.00
Ferry	1	2.50	97.50
Other (hitchhikers, etc)	1	2.50	100.00
Total	**40**	**100.00**	**100.00**

The respondents made 83 statements on the various motivations they perceived in switching from SOV use (see table two). The largest number of statements (with almost 23%) related to a perception of personal economic benefit from switching transport modes. A number of callers noted that environmental concern was a major motivation with 12% of statements reflecting this theme. The desire for exercise and a quicker journey time were also major motivations with over 8% of statements being related to each of these issues.

Table 2. Major motivations for switching to non-SOV transport.

Motivation	Statement themes	No
Economic	Personal economic benefit	19
Environment	Wanted to do 'something' for environmental	10
Convenience	More convenient or easier than alternatives	7
Convenience	Parking hassles at destination	7
Well-being	Enjoyable experience (relaxing, less stress, etc)	7
Well-being	Fear when driving due to perception of accidents (stress)	6
Well-being	Wanted to get fit or have exercise	6
Well-being	Personal or social conscience issues	5
Time	Quicker - journey time is less (or no time loss)	4
Convenience	Better infrastructure (more trains, better cycle paths, etc.)	3
Well-being	Lifestyle issue - choice to live close to work	3
Environment	Perception of air pollution becoming a problem	2
Economic	Hidden costs caused by accidents	2
Convenience	Journey has multiple function - can do other things	1
Economic	Costs of funding roads for use by private cars	1
	Total number of statements made on this issue	**83**

Over 38% of the 78 statements made about the benefits of using non SOV transport related to the theme that a trip can have multiple purposes over and above merely moving from A to B (see table three). Examples of these purposes include relaxing, reading or catching up on work. For cyclists and walkers the trip is often seen within the context of an active exercise program. Over 13% of statements related to the economic benefits of using alternatives to the car. A further 9% of statements noted that a time saving for each trip was a benefit of using the alternative. The underlying motivations to the theme of benefits of changing were predominantly characterised as issues of personal well-being such as reduced stress, or transport as a pleasurable activity.

Table 3. Benefits of switching to non-SOV transport.

Motivation	Statement themes	No
Well-being	Able to read or listen to music, etc	12
Well-being	Able to relax	11
Economic	Economic saving	10
Convenience	Excellent service	8
Time	Time saving	7
Well-being	Fitness benefit of walking or cycling	7
Well-being	Personal and social benefit of meeting other people	6
Well-being	Less stressful than driving	5
Convenience	Able to do work	3
Well being	Able to dose off	3
Convenience	Easy to use and convenient	2
Well being	Pleasurable experience	2
Well being	Safety issues related to driving	2
	Total number of statements made on this issue	**78**

Respondents made far less statements on the disadvantages of using alternatives to SOVs than they did about the benefits (see table four). Of the 52 statements made over 15% were related to the problems of using public transport during non peak hour times - especially nights and weekends. The need to plan in advance was stated as a cost of non SOV use with 13% of statements related to this theme. Over 36% of statements made referred to the poor service, inconvenience and lack of coordination of public transport in Perth. The demotivations for switching modes were largely seen in terms of inconvenience and disadvantages for personal well-being (eg, personal safety).

Table 4. Disadvantages of switching to non-SOV transport.

Motivation	Statement themes	No
Well-being	Problem of travel at night and weekends (including personal safety issue)	8
Convenience	Have to plan ahead	7
Convenience	Poor service	6
Convenience	General inconvenience	5
Convenience	Lack of viable public transport	4
Convenience	Lack of coordination between trains and buses	4
Well-being	Weather issues (hot, cold, wet, windy, etc)	4
Convenience	Loss of spontaneity	3
Convenience	Having to stand up (buses full during peak times)	3
Time	Adds to journey time	3
Well-being	Car security at park 'n' ride	2
Well-being	Other transport users	2
Well-being	Poorly designed cycle paths	1
	Total number of statements made on this issue	**52**

In response to the need to reduce traffic congestion and air pollution problems over 32% of statements suggested the need to develop the existing public transport system (see table five). A further 29% of statements made suggested that increasing the incentives for using alternatives and increasing the disincentives for not using alternatives were strategies worth pursuing.

Table 5. Perception of what can be done to solve.

Statement themes	No
Develop the public transport service, faster, more destinations, etc	10
Increase disincentives - high cost parking, petrol, tax, etc	6
Increase incentives - cheap public transport, car pooling tax incentives	4
Develop an annual car free day (or other campaign)	3
Stop tunnel development and invest in public transport	2
Provide facilities for cyclists	2
Secure parking at park 'n' ride	1
Develop denser inner city planning policy	1
Involve employers in encouraging staff	1
Develop points system for bike riding in corporate cup	1
Provide car parks for use of car poolers	1
Total number of statements made on this issue	**32**

Discussion

In the present study, the issues of economic self interest, time saving, convenience, personal well-being and environmental concern are recurrent themes and can be considered major motivations in commuters decision making strategies. The study supports the earlier work of GVRD Communication (1995) which also suggested a 'big five' of transport motivations.

There are clearly individual differences on the dimensions of motivation for switching from SOV use to other transport modes. So, for instance, it is worth noting that 48% of respondents noted an economic benefit from switching to non SOV use whilst a further 21% stated that social conscience or environmental concern were major motivations for switching modes. There were also a range of perceptions about the personal benefits of using non SOV transport methods. Clearly individual differences play a major role in determining the perception of what constitutes a benefit. Over 38% of the statements generated about benefits related to the idea that the journey becomes more than just a matter of getting from A to B. The time spent travelling is perceived as a productive period in which other activities such as reading, listening to music or just dosing become enjoyable activities. For cyclists and walkers the journey time can have the secondary purpose of providing an exercise or fitness component to the day. In relation to the disadvantages of non SOV transport, callers again noted a range of problem issues or costs. Problems related to the need to plan ahead in general, and on weekends and night time in particular were the most common responses to the issue of transport problems. Statements on these issues accounted for over 28% of the total made for this item. The separate issues of poor service, inconvenience, lack of infrastructure and poor transport coordination may be considered as external to the control of the individual and when combined they account for over 36% of the statements generated.

When asked the 'magic question' - "If you could personally fix transport problems, what would you do?" callers offered a number of strategies which basically break down into two dominant

themes. The first theme is related to infrastructure issues with the major number of statement suggesting the public transport system be further developed. Over 32% of statements indicated support for more trains and buses, more destinations, faster services, etc. Other infrastructure related statements suggested more cycle paths and facilities such as showers for cyclists, denser inner city development, and using the money allocated for road development to fund public transport. The second theme related to incentives and disincentives to encourage individuals to switch transport modes. Almost 30% of statements were related to disincentives (such as imposing restrictions on inner city parking, higher fuel prices, increased car tax, etc) or incentives such as reduced parking fees for car poolers, cheaper or free public transport, development high occupancy vehicle (HOV) lanes, etc. Another theme which emerged were suggestions for possible transport campaigns such as an annual car free week or the use of a points system to encourage cycling (with prizes).

To conclude, it appears that commuters do perceive a 'big five' of motivations for switching from SOVs to other transport modes. The five major motivations include economic self interest, convenience issues, time issues, personal well-being and environmental concern. Any attempts to promote change through diffusion and adoption of innovative behaviours must consider commuters' perceptions of the advantages and disadvantages related to each of the motivations noted. The number of motivations indicate that 'messages' developed to promote alternative transport use must occur at a number of levels. There are clearly multiple solutions to the problems of air pollution and traffic congestion and what will ultimately be acceptable to the commuting public may depend on matching the messages of promotional campaigns to commuters' perceptions of their own motivations.

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Appendix A - Media Release

Wednesday 31 July 1996
For Immediate Release

Car poolers to have their say.

Community researchers from Edith Cowan University and the Department of Environmental Protection are studying changes in Commuters' use of private motor vehicles.

The Department is seeking opinion on alternative modes of transport and is particularly interested in hearing from people who regularly car pool to get too or from work.

Researchers have established a telephone hotline on 222 7130 and commuters who have switched from the car to public transport, walking or cycling are also encouraged to phone.

According to project co-ordinator Graham Marshall, air quality is rapidly becoming a community concern and since nearly 50% of air quality problems in Perth are caused by motor vehicles, reducing our reliance on the car may help solve part of the problem.

He said "At the moment we are undertaking a preliminary survey of people who have already made the decision to use the car less. These people are social innovators and it is important to know what factors influenced their environmentally friendly decisions".

Mr Marshall recommended that interested people take the opportunity of responding to the survey and he said "We would really value these people's opinions and it is a great opportunity for the car poolers, bike riders and public transport users to help develop socially and environmentally friendly transport practices.

Researchers will be taking calls from interested parties on Tuesdays and Wednesdays for the next six weeks. The calls will consist of an informal interview and callers can remain completely anonymous. Mr Marshall stressed that caller's will not be required to answer long winded questionnaires or commit themselves to any further research activities.

Those interested in volunteering information for this project can call Mr Marshall on 222 7130.

ENDS

For further information:

Contact: Graham Marshall
All hours: 419 1882

Appendix B - Informal Interview Schedule

1. Name - .

2. Address .

3. Telephone, fax, e-mail.

Phone
Fax
Other

4. Other demographic information they might disclose

5. Gender

6. Main form of alternative transport? (eg, car pool, walk, cycle, bus, park and ride, etc).

7. What issues helped you decide to switch transport methods?

   Probe for more information, eg, "How much money have you saved each week"?

8. Has changing been easy?

   Probe for issues (eg, waiting, time consuming, planning).

9. What have been some of the benefits?

   Probe about parking, fuel, shared costs, time saved, social interaction with ridesharers. Turn the page for more items.

10. What about costs?

    Probe about time losses, inconvenience, social problems with ridesharers, etc.

    Probe with "What major issues would influence you to stop and return to SOV use?

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11. What are your feelings about people who drive SOVs.

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12. General questions about congestion. Probe about feelings when stuck in traffic, lack of parking spaces, cost of parking, etc.

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13. Question about sense or inevitability of change - eg, "Do you think traffic or air pollution will get worse or better"?

    Probe with "What can be done about it"? - try to get a sense of roles of responsibility, eg, individuals, Government, Transport Department, etc.

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14. For car poolers (and others if relevant).

    Ask about car pooling organisation - was it work based or suburb based? Was it arranged in any 'formal' way by the employer. Were the people involved already known to each other?

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15. Wind down with "Any other information at this time"?

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16. Wind up with thanks and appreciation.

    Use the following to get personal details.

    Probe with "Would they be interested in receiving information as research continues"?

    Probe with "Would they like any further involvement such as completing a survey, etc"?

    If yes: Ask for address-insert on page one.