

# Travel behaviour change impacts of a major ride to work day event

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## Abstract

While there is increasing interest in the field of travel behaviour change, relatively little attention has been given to the behaviour change potential of major events. ‘Ride to Work Day’ is an annual event which attracts thousands of participants and actively promotes riding to and from work throughout Victoria in Australia. The methodology used to assess the impact of the event on travel behaviour has evolved from a monthly panel survey of event participants to a single follow-up survey five months after the event which focuses on travel behaviour and measurement of the stage of engagement in the behaviour change process. About one in five of those participating in the event are riding to work for the first time. More than one in four (27%) of those who rode to work for the first time as part of the event were still riding to work five months after the event. Over 80% of first-timers indicated that the event had a positive impact on their readiness to ride to work with 57% indicating that it influenced their decision to ride. The event was found to have a greater impact on influencing behaviour change for female than male riders.

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## 1. Introduction

Travel behaviour change programs are an emerging category of Mobility Management initiative which are “designed to enable individuals to become more aware of their travel options and where possible exercise choices which reduce use of the private motor vehicle” (Rose and Ampt, 2003). More than simply trying to raise awareness, these programs seek to deliver sustainable change in individual’s travel behaviour.

Consistent with mobility management initiatives underway in a number of Australian states, the Victorian Department of Infrastructure (DOI) has initiated a TravelSMART Program (DOI, 2004) which aims to:

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“To reduce the negative impacts of car travel through a reduction in vehicle trips and kilometres travelled, achieved through voluntary changes by individuals, households and organisations towards more sustainable travel choices”.

Importantly, the Victorian TravelSMART Program does not rely on or require the provision of additional transport or other infrastructure, or improvements in the level of service of public transport services. Rather, the Program facilitates change within the existing urban transport and land-use systems. There are three components to the TravelSmart program:

- TravelSmart Education: Planning school travel to help families get to school in a healthy and sustainable way as well as developing programs for sustainable travel to tertiary institutions.
- TravelSmart Communities: Assisting individual households choose the best travel options for them.
- TravelSmart Workplaces: Helping Victorian employers reduce the impact of their work-related travel.

The project described here fits within the TravelSmart Workplaces component and is specifically designed to encourage more people to ride a bicycle to work. The aim is to maximise the travel behaviour change impacts of a Ride to Work day event and embed those behaviours into habits. Ride to Work Day (RTWD) is an annual event run by Bicycle Victoria (Australia’s largest cycling membership organisation), which actively promotes riding to and from work, informs participants about the existing cycling infrastructure that is available to them and informs workplaces about making their workplace more ‘cycling friendly’. While the event is generally promoted by Bicycle Victoria, a key component of recruitment for the event takes place within workplaces. Bicycle Victoria recruits volunteer workplace coordinators who receive assistance to encourage other individuals within their workplace to participate in the event. Those workplace organisers receive:

- An information sheet setting out a schedule of actions, in the form of a step by step guide, to assist them in promoting the event within their workplace.
- Scripted emails for distribution over the lead up to the event.
- Posters and postcards to publicise the event.
- A comprehensive information booklet titled “Everything you wanted to know about riding to work – but were afraid to ask” designed to assist them in responding to questions or concerns, and
- A map of Melbourne bicycle facilities.

Individual intending to participate in the event are encouraged to register with Bicycle Victoria. Registration is required for eligibility for both individual and workplace prizes as well as to provide an indication of the level of support which the event attracts.

The highlight of the event is the RTWD free breakfast held in the Melbourne CBD which attracts over 2500 riders each year and receives radio, print and television coverage. The RTWD event is held early in October when weather conditions usually provide over 12 h of sunlight per day (sunrise about 6 AM, sunset about 6:30 PM), little rain and temperatures ranging from a low in the mid teens to a high in the low to mid twenties. The October timing of the event coincides with the start of the summer riding season and is regarded as an ideal time to promote cycling to work.

This paper focuses on an evaluation which has been undertaken to provide insight into the behaviour change impacts of the RTWD event. The paper begins by examining the nature of event-based behaviour change and introduces the model which is used to characterise the behaviour change produced by the RTWD event. Evaluation results reported in the literature are considered not only to provide relevant benchmarks for this study and also to highlight the need for a robust evaluation methodology. The evolution of the evaluation methodology employed in this study is then described. Results from a follow-up survey of participants in the 2004 RTWD event are then used to provide insight into the magnitude of the travel behaviour change, the value placed on different features of the event and the remaining impediments to increasing the frequency of riding to work. The final section of the paper presents the conclusions and highlights directions for future research.

## 2. Ride to work day as an event-based travel behaviour change opportunity

In the transport context there are a variety of events such as commuter challenges, smog alerts, rideshare weeks, bike2work days and CarFree days, which have the potential to produce travel behaviour change (Rose, 2003). It is appropriate to draw a distinction between date-fixed and date-flexible events. Ride to work events are a classic example of an event where the date of the event is fixed, usually well in advance. Smog Alert days typify date-flexible events where strategies and initiatives may be pre-planned but the ‘event’ will only be called if air quality levels fall below a pre-determined threshold (Tools for Change, 2003).

Event-based behaviour change represents a relatively new frontier in travel behaviour change research. Fortunately insight can be drawn from other sectors that have considerable experience in event-based behaviour change. The health promotion sector, responsible for behaviour change initiatives such as Quit Week, World No Tobacco Day, AIDS Day and Heart Health Day, is increasingly being used as a reference point for behaviour change initiatives in the transport sector (Ferguson et al., 1999). The transtheoretical model of the stages in behaviour change, developed by Prochaska and DiClemente (1983) in the context of smoking campaigns, is now seeing application in travel behaviour change programs. That model (see Fig. 1) emphasises the successive stages in behaviour change from not yet thinking about changing (pre-contemplation), to contemplating change, preparing to make a change, taking action to change and finally maintaining that change.

This model of the stages in behaviour change has proved to be very effective in examining the promotion of cycling as a commuting mode through a RTWD event and has seen application in the analysis of propensity to commute by bike in the absence of a major event (Gatersleben, 2003). Involvement in the event can be maximised through pre-event and event related initiatives while the habitualisation of the behaviour change is likely to rely on post-event initiatives. Rose et al. (2004) summarise the range of initiatives which commonly form part of travel events. One particularly valuable feature of the model shown in Fig. 1 is that it highlights that the process does not stop at ‘Action’. Maintenance is important if the behaviour change is to be sustained. RTWD events have a potential role to play in that context through maintaining people’s motivation to ride just as they have the potential to stimulate people to ride to work for the first time.

Within the health promotion context, the behaviour change process is imbedded within a Health Promotion Framework (cited in Department of Human Services (2000)) which emphasises a range of initiatives covering medical, behavioural and socio-environmental approaches. Within that framework, health promotion events are no longer viewed as one-off initiatives that will alone produce behavioural change. Rather there is recognition of the need for multiple strategies and initiatives applied across the whole health promotion framework. The experience in the health promotion sector would suggest that RTWD will have most effect when imbedded within a broader program. This is clearly the message from the ‘Promoting Active Transport’ report of the National Public Health Partnership (2001) which states that:

“Comprehensive, long-term strategies are essential when attempting to change transport modes across all settings, and to achieve behavioural change there is a need to focus on policy and environmental changes in addition to individual change strategies”.

In this context, a broader strategy aimed at encouraging cycling, such as the ‘Cycle Instead’ campaign run in West Australia (Greig, 2001), could serve as a useful framework within which a RTWD event would have most impact. To date, ‘Cycle Instead’ programs have only been trailed in Victoria so the RTWD event considered here does not have the benefit of that broader supporting promotional framework.

While there have been major RTWD events in many cities round the world, it appears that the vast majority of the resources goes into running the event rather than conducting or reporting on the results of any evaluations of these initiatives. Of the evaluations that have been done, there tends to be an emphasis on process evaluation, or at best measurement of participation levels, rather than outcome evaluation (Rose,

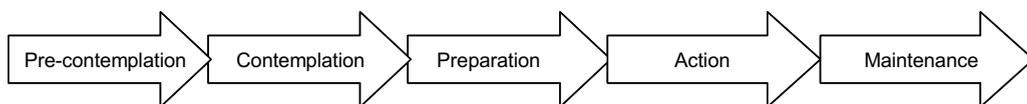


Fig. 1. Prochaska and DiClemente's (1983) Model of the stages in behaviour change.

2003). There are however, some results reported in the literature which provide insight into the travel behaviour change impacts of these events.

Perhaps not surprisingly, there is strong evidence that RTWD events attract individuals who are already riding regularly to work. In the case of the Queensland (Australia) event, nearly three quarters of respondents reported already riding to work daily or very regularly (2–4 times per week) (Mellifont, 2001, 2002). In a Washington DC study, nearly 50% of respondents indicated cycling at least three days per week (LDA Consulting, 2002). For these regular riders the event may play a role in maintaining their travel behaviour. There is however, also evidence that these events stimulate travel behaviour change. Mellifont (2001, 2002) reports results from an evaluation of two RTWD events in Queensland, Australia and in both years about 8% of respondents indicated that they had ridden to work for the first time as part of the event. In contrast, 16% of respondents to a survey of participants in the Metropolitan Washington Council of Government's 2001 RTWD Day indicated that they did not commute by bike before they participated in the event (LDA Consulting, 2002). Of those who rode to work for the first time in the Washington event, 38% reported riding to work after the event. This suggests that the event was successful in stimulating travel behaviour change with some people starting to use a new mode. Importantly, about 14% of respondents who were riding before, indicated that they were riding more often after the event. In this case the event was successful in increasing the rate of participation of those who were already riding to work. The event was also successful in stimulating greater use of the bike for non-work trips with a small percentage of respondents (2%) indicating that they started to ride their bikes for non-work trips after participating in the RTWD while about a third said they used their bikes more often for non-work trips after RTWD than before the event. These latter results are important and indicate that the travel behaviour change impacts extend beyond the context of the RTWD event itself to other travel decisions.

The studies mentioned above provide some benchmark results and also highlight the need for a robust and cost-effective evaluation methodology. In this study considerable effort was directed to the development of the evaluation methodology and that process is described in the following section.

### 3. Developing and evolving the evaluation methodology

The overall objective of the evaluation was to provide insight into the impacts of the event on participants' travel behaviour. It was recognised that the impacts may vary over time and potentially decline in the weeks or months after the event. Considerable effort was directed at developing and refining a cost effective evaluation methodology to provide insight into the travel behaviour impacts of the event. Table 1 summarises the key features of the evaluation survey as it evolved while the description below outlines the rationale for the refinements.

As noted earlier, the desire was to study participants in the event. Fortunately, participants are invited to register and this provided a sampling frame of individuals who expressed a desire to participate in the event.

When the evaluation survey was first set up (to evaluate the 2002 event), three short closed questions were designed to capture information on travel behaviour. This design was expected to minimise respondent burden and maximise response rates. Those issues were considered important since the desire was to track the participants' travel behaviour over time using a panel survey. Information was only sought on the mode used on a single travel day. The travel day was selected to be the same day of week and in the same week of the month as the RTWD event to minimise the impact of variations in activities by day of week. All registered participants were mailed a copy of the questionnaire which included a section where they could nominate to participate in the subsequent survey waves and their preferred form of contact (mail, email or telephone). Subsequent email surveys revealed that due to security reasons a number of the respondents' computer systems would not accept web-based forms which were the basis for the on-line survey. After that problem was detected, the questions were also included in the body of the email so that respondents could complete the survey by sending a reply to the email with their answers inserted into the text.

The first post-event survey was conducted in December 2002 (two months after the event) with the subsequent waves in February, March, April and July. January was excluded because it is the peak summer holiday period in Australia. While the response rate started at 40%, by March it had dropped to 15% and the number of first time rider respondents (i.e. individuals who had not cycled to work prior to the event) in March was

Table 1  
Evolution of the survey methodology

	2002 Event	2003 and 2004 Events
Survey type	Panel survey	Single cross sectional survey
Duration of travel survey	Single travel day, selected as same day of week and week of month as RTWD event	Survey of one work week, same week of month as RTWD event
Timing of the survey	5 waves: December, February, March, April and July	1 wave: March
Survey content:		
–Mode used for the greatest distance in the journey to work	✓	✓
–Frequency of riding to work prior to the RTWD event (December survey only)	✓	
–Factors which influenced mode choice (from a list)	✓	
–Commute distance and how long it takes to ride to work	✓	✓
– Engagement with behaviour change process pre and post the event		✓
– Perceived impact of the event on travel behaviour		✓
– Perceived value of event features		✓
– Factors which prevent or discourage riding to work more often		✓
– Personal details (home and workplace address/postcode, year of birth, gender)	✓	✓

very low (31 in all). To compound the poor response rate, considerable effort was involved in running each survey wave including the staff time to distribute the survey as well as the mailing and data entry costs for the paper questionnaire. The research team concluded that the paper based questionnaire was not cost effective for this study and so emphasis was placed on refining the email survey.

There was a concern that by monitoring travel behaviour on only a single day, adverse weather on that day could impact the results. Work by Richardson (2003), on the impact of variability in travel behaviour over time on travel survey design, influenced a move to a five day travel survey (i.e. covering a whole work week). The survey was distributed at the end of the week and asked respondents to recall their travel to work over the preceding week. This was done so that the survey would not influence travel behaviour. It was also felt that the initial short survey did not provide sufficient insight into the impact of the event or the importance of the various features of the RTWD event. These dimensions were picked up in the 2003 and 2004 event evaluations. To reduce respondent burden and administration costs it was also decided to conduct the survey at a single point in time in March, five months after the event. The weather then is still conducive to riding and measurement at that time provides insight into the medium-term impact of the event.

Key features of the 2005 post-event survey responses are shown in Fig. 2. In 2004, a total of 5577 individuals registered for the 2004 RTWD event. Slightly over one in three (38%) of the registrants did not supply an email address. Of the email addresses which were supplied, approximately one in six were invalid either because of typographical errors, changes in respondents email addresses or Spam filters. On the basis of the emails that could get through, a response rate of 66% was achieved. The vast majority of those respondents used the web-based forms which meant that their data was automatically coded as they completed the survey. Close to 2000 responses in all were received, representing a 35% response rate of all registered participants. Importantly however, just under one in five (17%) of the respondents had not ridden to work prior to the event (referred to here as First Timers) which compares well to the 22% of registrants who indicated they rode to work for the first time as part of the 2004 RTWD event.

Overall the on-line survey approach has yielded respectable response rates and is very cost effective due to the automated coding. As a result, the analysis of the results which follows is able to draw on a much larger sample of data than was available in any of the evaluations described earlier in the literature review.

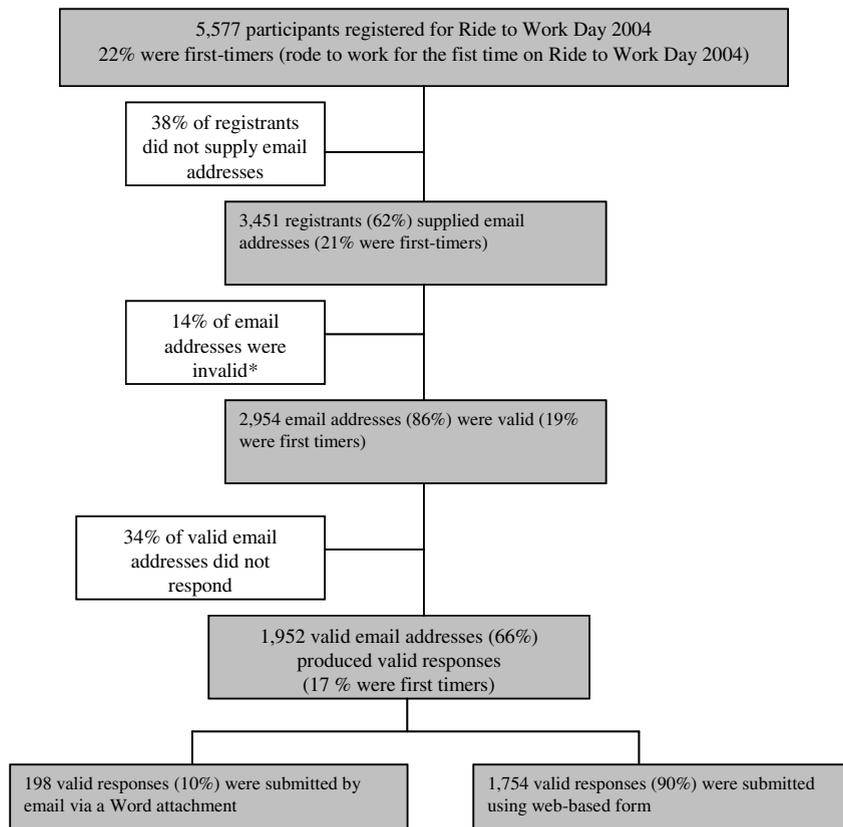


Fig. 2. Breakdown of registrants and respondents \* Reasons for invalid email addresses include typographical errors, changes in respondents' email addresses and spam filters.

#### 4. Travel behaviour change impacts of the 2004 RTWD event

The 2004 RTWD event was conducted on the 6th of October 2004. The follow up survey of individuals who registered for the event was distributed by email on Friday 11 March 2005 (five months after the event). This section summarises the results from the survey. First the travel behaviour change impacts are examined, then attention is turned to the impact of the event in progressing participants along the behaviour change continuum as per the Prochaka and DiClemente (1983) model. Consideration is also given to the self-reported impact of the event on travel behaviour, the value participants saw in the main features of the event and the remaining barriers which inhibit riding to work more often.

##### 4.1. Travel behaviour in the survey week

The questionnaire asked respondents to indicate how they had travelled to work each day of the survey week. To simplify the questionnaire, it sought information on linked trips. That is, if an individual used more than one mode of transport, they were asked to indicate the mode used for the longest part of the journey, where 'longest' was explicitly defined as the mode that covered the greatest distance rather than took the most time.

Fig. 3 summarises results for two key market segments: 'First Timers', that is those who had not ridden to work prior to the event, and 'Prior Riders', that is those who had ridden to work prior to the event. Of particular interest is the proportion of each market segment who are riding to work after the event. Here riding is defined as riding at least once in the survey week (i.e. once in five days). Just over one quarter (27%) of the first timers were still riding to work five months after the RTWD event. This result highlights the travel behaviour

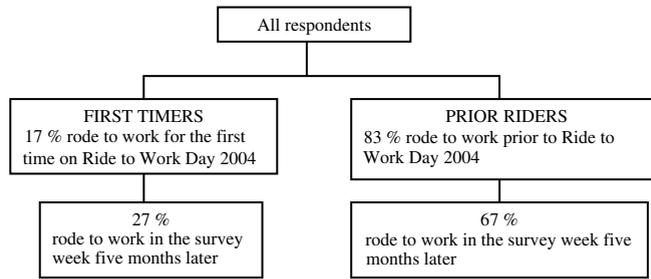


Fig. 3. Riding proportion by market segment.

change potential of the event. This figure is consistent with the 23% of first timers who were still riding five months after the 2003 RTWD event (Bicycle Victoria, 2004) and the 38% figure reported for Washington (LDA Consulting, 2002). Fig. 2 also highlights that about two thirds of those who rode to work prior to the event also rode at least once during the survey week five months after the event.

Differences across gender are also of interest. Fig. 4 shows the breakdown of respondents by gender. Males (59% of respondents) are more highly represented than females (41%) in the respondents. A higher proportion of males had ridden to work prior to the event (88% versus 71% for females) and a higher proportion of them were still riding after the event (71% versus 60%). However, a higher proportion of first time females were still riding five months after the event. Just under one third (30%) of female first-timers were still riding in the survey week while only 22% of male first-timers were still riding.

A two-way contingency table analysis was conducted to evaluate whether there was a difference in the gender distribution of riders depending on their event status (First Timer versus Prior Rider). The two variables were gender of the rider and event status (First Timer versus Prior Rider). Gender of riders and event status were found to be significantly related (Pearson  $\chi^2(2, N = 1125) = 26.86, p = .000$ ). Thus there is a higher proportion of female first timers still riding (five months) after the event compared to males.

The results from the 2004 event also reflect a higher proportion of females continuing to ride than for the previous year’s event. The March 2004 surveys of registrants from the 2003 RTWD event showed that only 17% of female first timers continued to ride compared to 31% of first time males (Bicycle Victoria, 2004). Overall the event appears to be effective in engaging women riders with that engagement stronger in 2004 than in 2003. These gender differences are important since travel surveys in Australia highlight that women’s participation in cycling is half that of men (Garrard, 2003). Encouragement of greater involvement in cycling by women has the potential to produce both mobility and health benefits (Garrard, 2003).

Respondents were asked to indicate the length of a one way commute to work in terms of time (min) and distance (km). For respondents who reported riding to work, the average commute took 33 min (SD = 19.2) and the average commute distance was 12 km (SD = 8.0). This translates into an average speed of about 22 kph. However as evidenced by the values of the standard deviation, there was a great deal of variation in the results. Respondents were often more comfortable about indicating a time than the distance. At the very least, except

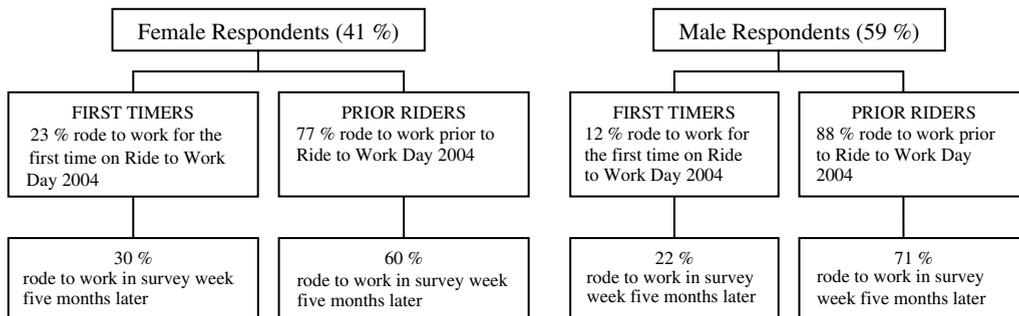


Fig. 4. Riding proportion by gender.

for keen cyclists with an odometer fitted to their bicycle, a higher level of estimation error could be expected in the reported riding distances. For these reasons the commuting time is used in the subsequent analyses. The impact of commute time on riding frequency was examined using a multivariate statistical model.

Of particular interest is the ability to predict whether a particular individual is likely to ride to work during the survey week. Binary logistic regression was used for the analysis with the dependent variable ‘Ride’ taking values of ‘1’ for those individuals who reported riding in the survey week five months after the event and ‘0’ for all others. A stepwise forward logistic regression model with the following predictor variables was considered:

$$\ln\left(\frac{\text{RIDE}}{1 - \text{RIDE}}\right) = \alpha + \beta_1 \text{Gender} + \beta_2 \text{FTer} + \beta_3 \text{Age} + \beta_4 \text{Time} \quad (1)$$

where ‘Gender’ takes a value of 1 for Male and 0 for female, ‘FTer’ is 1 for First Timers and 0 for Prior Riders, ‘Age’ is the respondents’ age in years and ‘Time’ is the one way commuting time by bicycle in minutes. The final model contains main effects only without any interaction effects. Stepwise regression results revealed that all variables except Age were significant at the five per cent level (Table 2). Age was however retain in the model since Hosmer and Lemeshow (1989) recommend the inclusion of those predictor variables into the model that have a significance  $p$ -value of up to 0.2 in order to avoid miss-classification.

The global test of the null hypotheses ( $\beta = 0$ ) testing the model with a constant only against the model with the three predictors shown above is significant ( $\chi^2 = 254.5$  with  $df = 4$  and  $p = 0.000$ ). This omnibus test of model coefficients is computing the chi-square test statistic as the difference between the log likelihood ratio of the full model and the constant-only model  $\chi^2 = 2[-LL(\text{all}) - (-LL(0))]$ . The model including the predictors performs significantly better than the constant only model and the null hypothesis must be rejected.

The exponent of a parameter Exp(B), also called odds ratio in some statistical software packages because of its exponential relationship to the odds ratio of the successful outcome, is an indicator of strength. Thus, the results of Table 2 indicate that the odds ratio of gender has a strong positive effect while being a first time rider at the time of the RTWD event has a strong negative effect. A male is 1.6 times more likely to be riding five months after the event than a female. In contrast, a first timer has only a 20% chance of riding compared to a Prior Rider.

Afifi and Clark (1996) recommend that the odds for continuous variables be interpreted in terms of the incremental odds ratio corresponding to a change of  $k$  units in the predictor variable. Here a reasonable increment is 10 min for travel time and 10 years for age, yielding 10 increment odds ratios for Time of 0.84 [ $\exp(10 \times -0.017)$ ] and for Age of 0.9 [ $\exp(10 \times -0.1)$ ]. Thus the odds of riding are estimated to be about 85% of what it would be if a person were ten years younger. Likewise, the odds of riding are estimated to be about 90% of what it would be if a person’s commute to work were 10 min longer.

The logistic regression model provides an estimate of the probability that an individual will ride to work five months after the event:

$$\text{Pr}(\text{Ride}) = \frac{1}{1 + e^{-(1.47 + -0.465\text{Gender} - 0.017\text{Time} - 1.627\text{FTer} - 0.01\text{Age})}} \quad (2)$$

This model could potentially be used to identify individuals for follow-up maintenance initiatives on the basis of the probability that they will ride to work. When used to predict the probability that an individual would ride, and using a probability of 0.5 as the cut value, the model correctly predicted 69.4% of cases.

While the above results relate to the proportion of respondents who rode at least once, it is appropriate to note that there is a wide variation in the riding frequency. Perhaps not surprisingly, first timers rode much less

Table 2  
Logistic regression model parameter estimates

	B	SE	Wald	df	Significance	Exp (B)
Gender	.465	.108	18.600	1	.000	1.592
Time	-.017	.002	57.849	1	.000	.983
FTer	-1.627	.154	110.975	1	.000	.197
Age	-.010	.005	3.403	1	.065	.990
Constant	1.470	.229	41.061	1	.000	4.349

than prior riders. The average frequency of riding to work in the survey week was 0.6 days for first-timers versus 2.2 days for prior riders. However, for those who reported riding in the survey week, the average frequency was 2.3 days for first-timers and 3.3 days for prior riders. Fig. 5 shows the frequency of riding for those who rode. While the first timers tend to ride once or twice a week, the prior riders show a greater propensity to ride more days per week.

The survey results also provide insight into the extent of modal blending of those who ride less than five days per week. Rose and Ampt (2001) coined the term ‘Travel Blending’ to refer to choosing a mix of modes over time to reduce the use of the private car. The survey responses provide insight into the extent to which commuter cyclists blend their travel choices with different modes. Table 3 shows the mode choice proportions for the non-cycling days depending on the number of days per week that the person cycled. For people who ride only once per week, there is a two thirds chance (65%) that they will use private transport on the other days. In contrast, for those who are riding almost every day of the week there is less than a 50% chance (44%) that they will use public transport on other days. This would suggest that programs which encourage individuals to ride to work even infrequently (once per week) are likely to have a positive effect on reducing private VKT and associated emissions.

4.2. Engagement with the behaviour change process

It is of interest to know if the event advanced people in the stages of behaviour change, even if they are not riding to work at the time of the survey. This component of the study drew on the stages in the behaviour change continuum as per Prochaska and DiClemente’s (1983) model. Each behaviour change stage was reflected in a statement presented to respondents (Table 4). In separate questions, the respondents were asked to indicate which statement applied to them at the time of the survey (March 2005) and retrospectively for March 2004 (that is prior to the RTWD event which occurred in October 2004).

Comparing the responses for March 2004 and March 2005 provided an indication of whether the respondent had progressed in terms of the stages of behaviour change. It is of interest to know whether there has, or

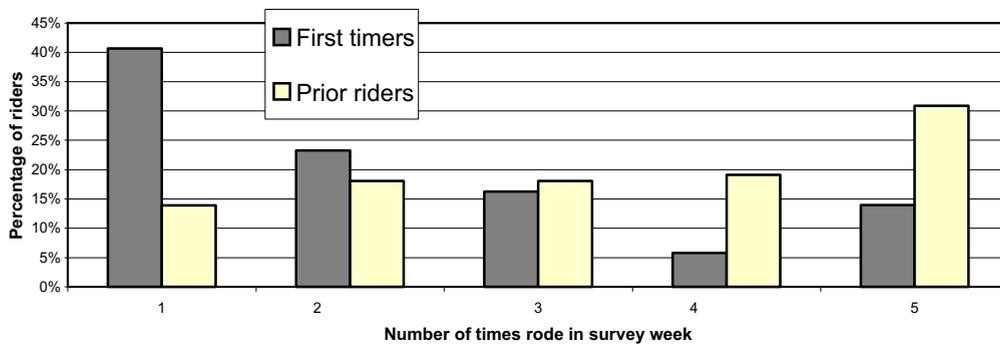


Fig. 5. Frequency of riding in the survey week for those who rode.

Table 3  
Mode Choice blending proportions

Number of days riding	Percentage of other travel days by mode		
	Private motor vehicle (%)	Public transport (%)	Walk (%)
1	65	30	5
2	60	32	8
3	49	40	11
4	44	48	8

Note: ‘Private motor vehicle’ includes car either drive alone or with a passenger, taxi or motorbike, ‘Public Transport’ includes bus, train or tram.

Table 4  
Behaviour change stage statements

Statement shown to respondents	Corresponding behaviour change stage
I am not even considering riding to work	Pre-contemplation
I am thinking about riding to work but I am not ready to give it a go	Contemplation
I am doing things to get myself ready for riding to work	Preparation
I have tried riding to work once or twice	Action
I am riding to work infrequently (less than once a week)	Maintenance A
I am riding to word fairly regularly (at least once a week)	Maintenance B

has not, been any progression in behaviour (e.g. from ‘Contemplation’ in March 2004 to ‘Action’ in March 2005). It is also appropriate to separately consider those who have not progressed but have continued riding (e.g. in ‘Maintenance B’ in both March 2004 and March 2005) as opposed to those for whom there is no progression but they are not riding (e.g. in ‘Contemplation’ in both March 2004 and March 2005). Fig. 6 shows the basis on which respondents were classified into three groups (Progression, No Progression – Not Riding, and No Progression – Riding Maintained) based on the statements they selected as applying to them in March 2004 and March 2005.

Using those classifications of behaviour change it is possible to identify the extent of change for different market segments (see Fig. 7). Just over 85% of respondents had either progressed over the year or had maintained their riding to work habit. Slightly more than a quarter of all respondents (28%) had progressed in their engagement with riding to work however 72% of first-timers indicated that they had progressed. The ‘no progression- riding maintained’ category represents those who rode before the event, and that explains the higher percentage of males reflecting the data presented in the previous section. Interestingly a higher proportion of females than males progressed.

4.3. Self-reported impact of the event

Respondents were asked to indicate the impact of the 2004 RTWD event on their riding by selecting one of four statements (I was aware of the event, It got me thinking about riding to work, It influenced my decision to ride, or None of the above). In retrospect it was realised that there was no statement corresponding to the event reinforcing or maintaining their behaviour as an impact. Consequently the results, which are summarised in Fig. 8, show a high proportion of ‘No impact’ which may have been the only statement which some

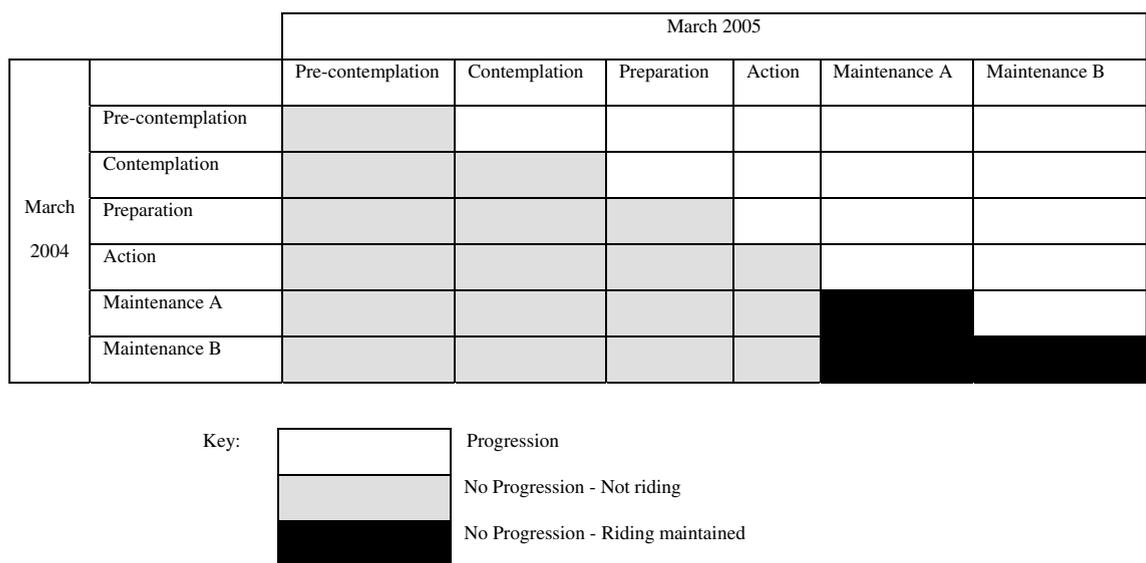


Fig. 6. Classification of behaviour change over time.

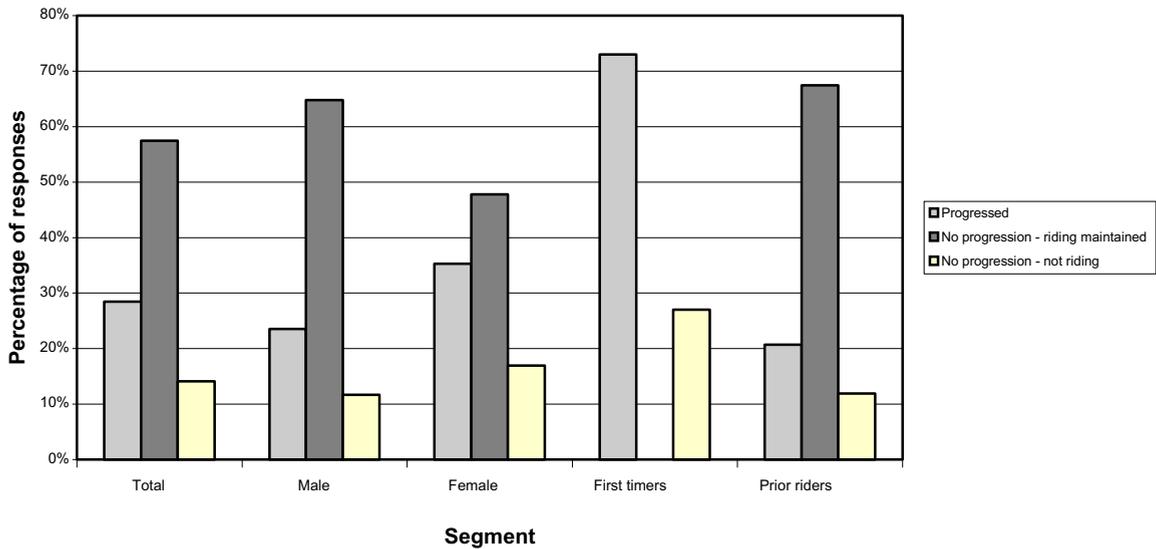


Fig. 7. Extent of behaviour change March 2004–March 2005.

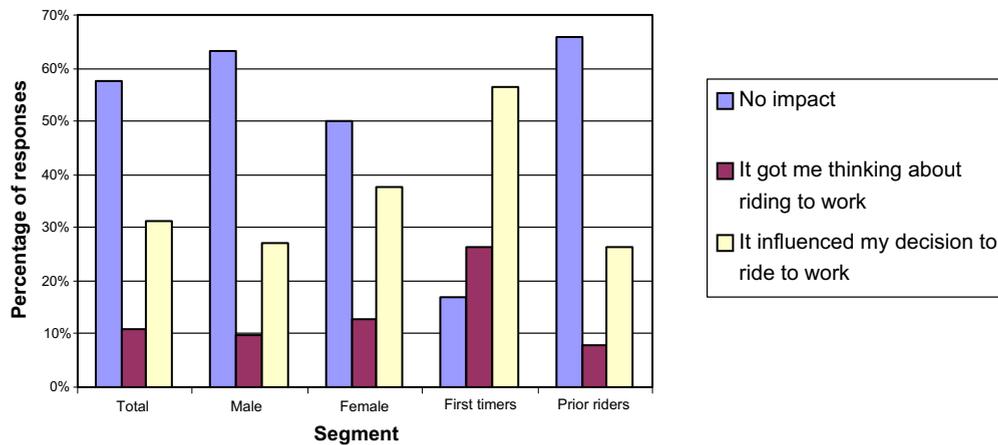


Fig. 8. Self reported impact of the event.

respondents could relate to when the event supported the maintenance of their riding behaviour. The vast majority (83%) of first-timers (i.e. those who had never ridden to work before the event) reported that the event had a positive impact on their readiness to ride to work with 57% indicating that it had influenced their decision to ride to work. Females reported a stronger impact than males (50% of females reported an impact from the event versus 37% of males). Importantly about one in four of the prior riders indicated that the event influenced their decision to ride to work. This highlights the ‘maintenance’ function of events such as this for individuals who are already riding to work.

#### 4.4. Value of event features

Respondents were presented with a list of six event features and asked to indicate which they valued the most. Results are presented in Fig. 9 in terms of percentage of responses since multiple responses were possible from each respondent. Four event features stand out (in order of importance): ‘Being part of a big event that promotes cycling’, ‘Seeing lots of people riding to work’, ‘Free breakfast in city/town centre or workplace’ and the ‘Publicity the event generates about riding to work’. While one of these relates to a personal, tangible

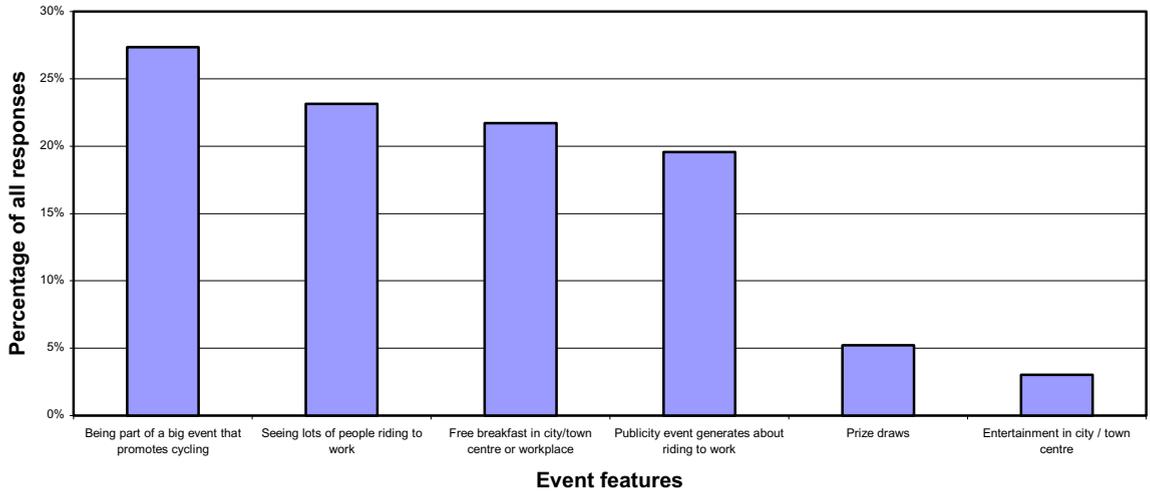


Fig. 9. Reported value of event features.

benefit from involvement in the event (free breakfast) the others are all intangible. ‘Prize draws’ and ‘entertainment’ were the least valued event features. The importance of event elements was similar for first-timers and others and no major differences were highlighted when the results were analysed by gender.

4.5. Barriers to riding more often

Respondents were presented with a list of 12 factors which could discourage or prevent them from riding more often and asked to select up to three which were relevant to them. These potential barriers to riding were identified from earlier focus group research conducted as part of this study (Rose et al., 2004). The results, which are presented in Fig. 10, highlight that daily circumstances, such as weather and out-of-work commitments, were most commonly cited as reasons for not riding to work or not riding to work more often. Concerns about safe conditions on the road also featured in responses to this question. Inadequate locker and shower facilities appeared to be a greater deterrent than inadequate bike parking facilities, perhaps reflecting increased access to the latter in recent years.

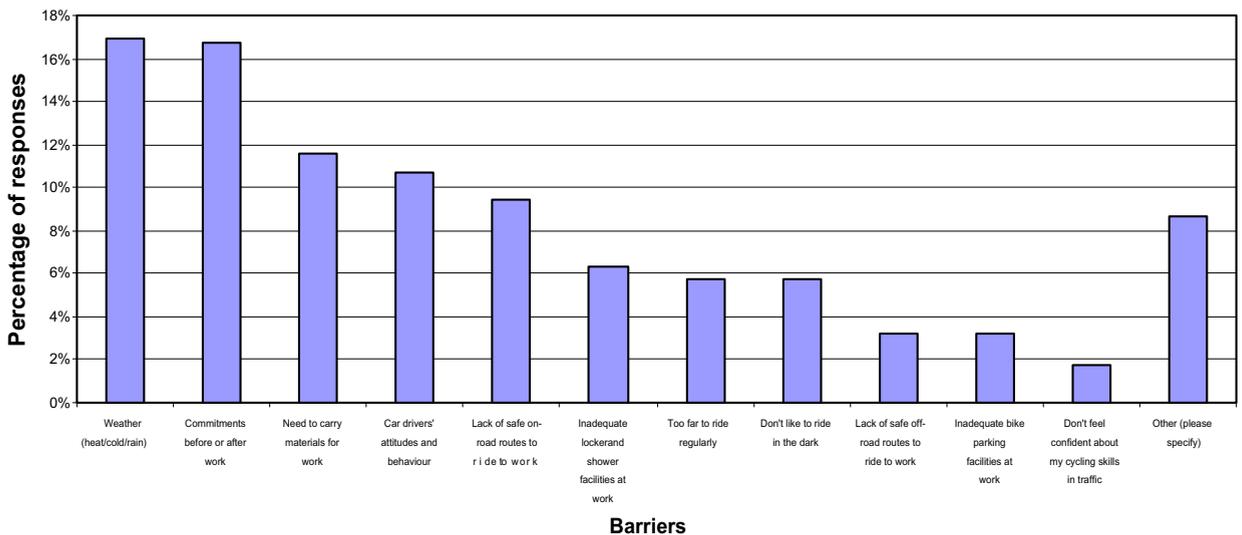


Fig. 10. Perceived barriers to riding to work more often.

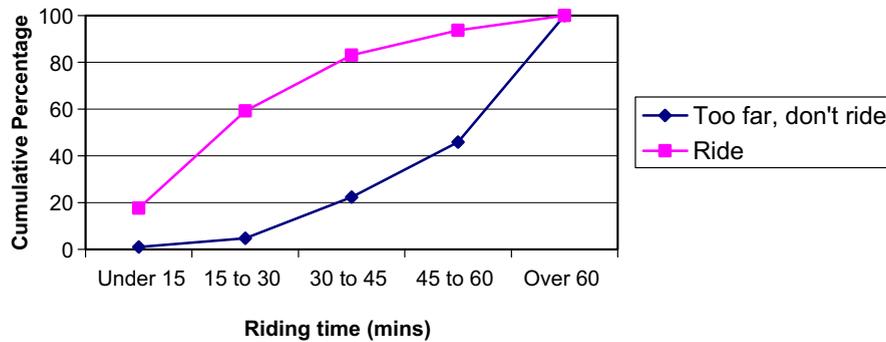


Fig. 11. Cumulative distribution of riding time.

Since there were no major differences between the responses for prior riders and first-timers, or males and females, those results are not presented here. However, one noticeable difference was between the proportion of non-riders and riders and who selected ‘Too far to ride regularly’ as a barrier (27.8 versus 6.2% , respectively). The cumulative distribution of riding time (Fig. 11) highlights that about one quarter of non-riders perceive their riding distance to be too far at up to 45 min whereas 83% of riders are commuting that distance. It may be possible to target those one in four non-riders with commutes of less than 45 min with maintenance initiatives which may build their fitness and reduce their perception of this as a barrier to riding.

## 5. Conclusions

Event-based behaviour change represents a relatively new frontier in travel behaviour change research. This paper has reported an examination of the travel behaviour change impacts reported by participants in the 2004 Ride to Work Day event held in Victoria, Australia. While the event attracts many people who have previously ridden to work, it is also important in stimulating travel behaviour change. Approximately one in four of those riding to work for the first time on Ride to Work Day 2004 were still riding to work five months later. For first time riders, the event is very influential with over 80% of them reporting that the event had a positive impact on their readiness to ride to work and nearly 60% indicating that it had influenced their decision to ride to work. Importantly the event engages women in riding to work with a higher proportion of women first time riders riding to work after the event than their male counterparts. This has important implications for both health and mobility management.

For organisers of events such as this it is important to know that being ‘part of a large event that promotes cycling’ and ‘seeing lots of people riding to work’ along with a free breakfast, were substantial motivators according to respondents. In contrast, ‘prize draws’ and ‘entertainment in the city/town centre’ were relatively unimportant. Daily circumstance such as weather and out-of-work commitments were most commonly cited as reasons for not riding to work or not riding to work more often as were concerns about safe conditions on the road.

There is potential for future research to identify initiatives which would maximise both the engagement in the event and the proportion of participants who continue riding after the event. There is also scope to use prediction models of the form presented in this paper to assess the likelihood that an individual will ride after the event and then target them with appropriate post event maintenance initiatives. In particular, it may be possible to target those non-riders with moderate commutes (up to 45 min) with maintenance initiatives which may build their fitness and reduce their perception of this as a barrier to riding.

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