



Evaluating the long-term effectiveness of *Active a2b* 2014 in encouraging walking and cycling to work

Prepared for Greater Wellington Regional Council

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Executive Summary

Active a2b is a health and wellbeing programme of Greater Wellington Regional Council and three partners: the Cancer Society, Compass Health and Regional Public Health. The aim of the initiative is to reduce congestion in urban areas by increasing active travel modes for trips to and from work in the Wellington Region.

In January 2014, a total of 1,132 people registered with the Active a2b programme. This report describes an evaluation study carried out among registrants to examine the long-term effect of the Active 2b programme in encouraging the uptake of active travel. Active travel patterns of participants were monitored before the start of the programme, after the programme had finished, and 3 months after discontinuation of the programme. The results were compared to active travel patterns in a group of participants who had not signed up to Active a2b.

The findings of this evaluation study indicate that the Active a2b initiative has been successful in encouraging active travel, resulting in statistically significant increases in both walking and cycling. However, while the number of active travel trips among Active a2b participants increased during the programme, this increase was not maintained during the 3-month follow-up.

The study also found that walking and cycling are related to different factors to some extent. For both walking and cycling, perceptions around perceived ability and safety were important determinants. Cycling was related to health and wellbeing aspects, while these same factors were not related to walking. Social norms were related to walking, but they were unrelated to cycling. Based on these findings, it may be important to target different factors depending on whether the aim is to encourage walking or to encourage cycling.

The study further provided some indication that the Active a2b programme had different effects for participants in different stages of change. The increase in the number of active travel trips was most notable among participants in the contemplation and preparation stages. This suggests that the Active a2b programme did not only have an effect on those who are already engaged in active travel (action and maintenance stages) but that it also helped encourage those who had not yet started engaging in active travel modes on a regular basis.

1. Introduction

Active a2b is a health and wellbeing programme of Greater Wellington Regional Council, and three partners: the Cancer Society, Compass Health and Regional Public Health. The main aim of the initiative is to reduce congestion in urban areas by increasing active travel modes for trips to and from work in the Wellington Region. The programme has been running for five consecutive years.

Previous evaluations of the Active a2b programme indicate that it has been successful in encouraging the uptake of active travel. However, not much is known about the long-term effectiveness of Active a2b. It is important to examine long-term effects of behaviour change interventions to get insight into whether behaviour changes are maintained. This evaluation study monitored active travel before, during and three months after the Active a2b programme to examine whether any changes in active travel were maintained over a longer period of time.

If the aim is to encourage walking, running, or cycling to and from work, it is important to understand the barriers and enablers of active travel. Insight into these barriers and enablers can help the development of future initiatives. Interventions are more effective to the extent that they target important barriers and enablers. In this study, we used the stages of change model as a framework to help provide insight into the barriers and enablers of active travel.

The stages of change model is a model for understanding and explaining behaviour change. It proposes a sequence of stages along a continuum from precontemplation (not intending to start active travel modes), to contemplation (considering to start active travel modes), to preparation (walk, run, or cycle occasionally), to action (regularly engaged in active travel, but started recently), to maintenance (regularly engaged in active travel and has been doing so for a period of time).

The model also defines a number of barriers and enablers that are used to distinguish people in different stages. First, perceived advantages and disadvantages refer to the perceived positive aspects of active travel (e.g. health benefits) and perceived negative aspects of active travel (e.g. rain, wind, lack of safety). Second, self-efficacy refers to people's perceived ability to engage in active travel (e.g. despite the weather or lack of time). Research on encouraging people to engage in more regular exercise for example has shown that these barriers and enablers can help distinguish people in different stages. In addition, because Active a2b programme is targeted specifically to workplaces, we also examined the potential role of social norms. Social

norms refer to our beliefs about what other people are doing. We examined whether active travel was related to the extent to which work colleagues or people they know were also walking, running, or cycling to work. Insight into barriers and enablers of people in different stages of change is important because it may be used to specifically target interventions to individuals in different stages of change.

This evaluation study applied the stages of change model to examine the extent to which commuters can be encouraged to start walking, running, or cycling to work. First, it examined the long-term effectiveness of the Active a2b programme in encouraging walking, running, or cycling, compared to a comparison group. Long-term effects were examined by assessing active travel patterns three months after the active a2b programme had finished. Second, it examined the barriers and enablers of walking and cycling, to establish whether walking and cycling are related to different barriers and enablers. Third, this study examined whether the Active a2b programme had a different effect for participants in different stages of change and whether participants in different stages of change experienced different barriers and enablers. This information may help target the Active a2b programme to participants in different stages.

The aim of this evaluation was to answer the following key questions:

- 1) Have Active a2b participants increased active travel modes, compared to a comparison group of non-registrants? Were any changes in active travel sustained over a longer period of time?
- 2) Did the Active a2b programme have a different effect for people in different stages of change?
- 3) What are the barriers and enablers of active travel? Do people in different stages of change experience different barriers to active travel?

2. Methodology

2.1 Study design

An online survey was used to evaluate the Active a2b programme. The study was approved by the Human Ethics Committee of Victoria University of Wellington. To examine the effectiveness of the Active a2b programme, a quasi-experimental design was used. In a quasi-experimental design, participants are part of one of two groups: one group receives an intervention, the other group does not receive an intervention. The inclusion of a comparison group allows us to examine what might have happened to active travel patterns over time if the intervention had not taken place.

Participants in the Active a2b programme were part of the intervention group. To examine the long-term effectiveness of the programme, active travel of Active a2b participants was monitored via a survey before the start of the programme (n January 2014), at the end of the programme (April 2014), and 3 months after discontinuation of the programme (July 2014). Participants in the comparison (no intervention) group were recruited via a Greater Wellington Regional Council panel survey. Active travel patterns of participants in the comparison group was monitored before the start of the programme, in January 2014, and 3 months after discontinuation of the programme, in July 2014.

Table 1. Overview of the study design and measures at each time point.

	<i>Active a2b group</i>	<i>Comparison group</i>
January 2014	<ul style="list-style-type: none"> - Active travel patterns - Stages of change - Barriers/enablers - Socio-demographics 	<ul style="list-style-type: none"> - Active travel patterns - Stages of change - Barriers/enablers - Socio-demographics
April 2014	<ul style="list-style-type: none"> - Active travel patterns - Stages of change 	
July 2014	<ul style="list-style-type: none"> - Active travel patterns - Stages of change 	<ul style="list-style-type: none"> - Active travel patterns

2.2 Sample of participants

A total of 1,132 people registered with the Active a2b programme. As part of the registration procedure, participants filled out the survey. The questions about barriers and enablers were presented as optional questions at the end of the survey. Registrants who filled out the survey could enter a prize draw.

Survey information was collected of Active a2b participants in January, April, and July. For the purpose of this evaluation, only those participants were selected that took part in all three surveys. Based on a unique identifier, responses from January, April and July were matched. Incomplete surveys were removed from the database. Some registrants had filled out the survey more than once; these duplicates were removed, leaving 183 survey participants in the Active a2b group. For participants in the comparison group, a survey was sent out in January and then again in July. Only those participants were selected that took part in the January and July surveys, leaving 255 participants in the comparison group. Based on a unique identifier, responses from January and July were matched. The responses from the Active a2b and the comparison group were combined into one data file.

Table 1 gives an overview of the socio-demographic details of all survey participants. As can be seen from Table 1, the majority of participants in the Active a2b group were female (67.8%). In terms of age, participants between 25 and 54 years of age constituted the vast majority (81.1%), while younger and older age groups were represented to a lesser extent, with 18.6%. A majority (83.4%) of participants identified with being NZ European/Pakeha. Of the participants in the comparison group, 50.6% were female, and 55.3% of participants were between 25 and 54 years of age.

Based on the socio-demographic data gathered, a comparison can be made between participants in the Active a2b group and the comparison group. While the two samples are broadly comparable in terms of ethnicity, it appears that females were overrepresented in the Active a2b group, and participants between 25 and 54 years of age were also overrepresented in the Active a2b group.

Evaluation of Active a2b

Table 2. Overview of socio-demographic variables for Active a2b participants (N = 183) and the comparison group (N = 255).

		<i>Active a2b group</i> (N = 183)	<i>Comparison group</i> (N = 255)
<i>Socio-demographics</i>			
Gender	Female	67.8%	50.6%
	Male	32.2%	49.4%
Age	18 – 24 years	5.0%	2.7%
	25 – 34 years	31.1%	11.0%
	35 – 44 years	25.6%	20.4%
	45 – 54 years	24.4%	23.9%
	55 – 64 years	12.8%	31.4%
	65 or over	1.1%	10.6%
Ethnicity	NZ European	83.4%	78.1%
	Maori	5.3%	5.9%
	Pacific Islander	1.3%	1.7%
	Asian	7.9%	2.1%
	Other	2.0%	12.2%

2.2 The survey

The survey used by Greater Wellington Regional Council to evaluate the initiative in previous years was expanded to include and barriers and enablers of active travel. The survey consisted of a number of sections, including: current travel mode to and from work, stages of change, socio-demographic variables and barriers and enablers of active travel. In the following, the variables used in the analyses are discussed. The survey questions regarding active travel, stages of changes and barriers/enablers of active travel were identical in the Active a2b survey and the comparison group survey.

Active travel to and from work. For each day of the week (Monday – Sunday), participants were asked to indicate the main travel mode (i.e. the mode that was used for the largest distance) and secondary travel mode (if applicable) they used to travel to work. If travel modes were different for the trip home, participants were then asked to indicate the main and secondary travel mode for the trip from work. From this, the total number of walking and cycling trips was calculated (main and secondary mode combined).

Stages of change. Based on previous research on the stages of change model, two stages of change questions were developed, one for walking and one for cycling. These questions were used to divide participants into five distinct groups, i.e. pre-contemplation, contemplation, preparedness, action and maintenance. Participants were asked to the following question: “Which of these options best describes you? Please choose one. By regular, we mean that you cycle to work three or more times a week.” Participants who choose “I currently do not walk or run to/from work and I do not intend to start walking or running in the next 3 months” were categorized as pre-contemplators. Participants who chose: “I currently do not walk or run to/from work but I am thinking about starting walking or running in the next 3 months” were classified as contemplators. Participants who chose “I currently walk or run to/from work, but not regularly” were classified as being in the preparation stage. Participants who chose: “I regularly walk or run to/from work, but I have been doing this for less than 3 months” were classified as being in the action stage. Lastly, participants who chose: “I regularly walk or run to/from work, and I have been doing this for more than 3 months” were classified as being in the maintenance stage. A second question was used to assess stages of change for cycling, using the same response options (with walking/running replaced by cycling).

In total, 47.6% of all participants were in the pre-contemplation phase, 9% in the contemplation phase, 7.2% in the preparation phase, 10.2% in the action phase, and 26.1% in the maintenance phase. For an overview of the stages of change (in January) for the active a2b and comparison group participants separately, see Table 3.

Table 3. Overview of stages of change for the Active a2b and the comparison group (in January).

	<i>Active a2b group</i> (N = 183)	<i>Comparison group</i> (N = 255)
Stages of change: walking	Precontemplation	62.2%
	Contemplation	3.9%
	Preparation	8.3%
	Action	1.6%
	Maintenance	24%
Stages of change: cycling	Precontemplation	79.8%
	Contemplation	5.4%
	Preparation	3.3%
	Action	1.2%
	Maintenance	10.3%

Barriers and enablers of active travel. Previous research on encouraging engagement in physical activity has identified a number of important barriers and enablers to engage in active travel: perceived advantages and disadvantages of active travel, and perceived self-efficacy (i.e., ability) to engage in active travel. In addition, social norms about active travel were included. These variables were assessed by means of questions used in previous studies, adapted to walking, running and cycling. For all questions, participants were asked to indicate their level of agreement on a scale from 1 (strongly disagree) to 5 (strongly agree).

Perceived advantages (pros) of active travel were measured with three questions. Participants rated the following statements that included benefits of active travel: “Walking, running or cycling to work helps me, or would help me improve my health and wellbeing”, “I feel good (or would feel good) about myself if I walked, ran, or cycled to work”, and “Walking, running or cycling to work would help me stay in shape”.

Perceived disadvantages (cons) of active travel were measured with the following items: “I think walking, running, or cycling to work would not be too exhausting for me”, “I would enjoy walking, running or cycling to work”, “I would feel safe walking or running to work”, and “I would feel safe cycling to work”.

Participants levels of **self-efficacy** was assessed by asking participants to rate the extent to which they felt confident in their ability to walk, run or cycle to work even when “I feel tired”, “do not have the time” and “when the weather is bad”.

Because the Active a2b programme specifically targets workplaces, perceived **social norms** were also assessed. These were measured by means of asking participant to indicate their level of agreement with two statements: “Many of my colleagues walk, run, or cycle to work” and “Many people I know walk, run, or cycle to work”.

3. Results

In this section, we will discuss the main findings. In the first part, we will examine the effectiveness of the Active a2b programme in encouraging walking, running and cycling to work, compared to changes in active travel in the comparison group. Then, we will take a closer look at participants' stages of change for walking and for cycling and examine which barriers and enablers are important.

3.1 Did Active a2b results in long-term change in active travel to work?

3.1.1. Changes in walking/running to and from work

The number of trips to and from work that involved walking or running increased during the Active a2b programme. From January to April, the number of walking/running trips by Active a2b participants significantly increased from 3.8 per week to 4.2 trips per week¹. In July, the number of walking/running trips was 4.0 per week. In the comparison group, the number of walking trips decreased slightly, from 2.7 trips per week in January to 2.6 trips per week in July (see Figure 1a).

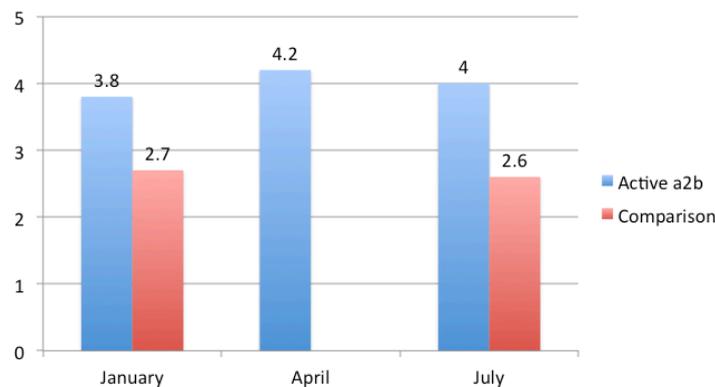


Figure 1a. The number of walking trips for Active a2b participants and the comparison group

To examine whether the changes achieved in the Active a2b group were significantly different from those in the comparison group, an additional analysis was conducted. The number of walking trips in January was included as well, to correct for any differences in walking that already existed between the two groups prior to the intervention. In this analysis, the treatment effect did not reach statistical

¹ This increase is statistically significant: ($t(182) = -2.76, p < .01$).

significance.² This means that while participants in the Active a2b group increased the number of walking trips in July, compared to January, this change was not large enough to be significantly different from changes observed in the comparison group.

3.1.2. Changes in cycling to and from work

During the Active a2b programme, the number of cycling trips went up from 1.7 trips per week in January to 2.1 trips per week in April – this is a statistically significant increase.³ In July, however, cycling rates dropped to 1.4 trips per week. Cycling rates in the control group remained relatively low and unchanged, with .92 trips in January and .77 in July. These results indicate that in the Active a2b group, the number of cycling trips significantly increased during the intervention period, and that it reverted back to baseline levels when measured at the 3-month follow-up. Cycling rates in the comparison group remained relatively constant during the same time period (see Figure 1b).

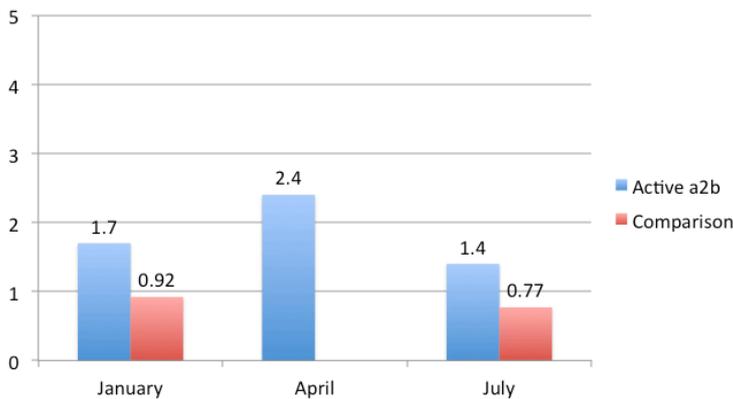


Figure 1b. The number of walking trips for Active a2b participants and the comparison group

Overall, based on the results, Active a2b had a significant effect in encouraging walking and cycling trips during the intervention period. Increases were observed in the number of active travel trips. However, the use of active travel modes returned to near-baseline levels during the three month follow up in July.

² An ANCOVA was conducted, with walking trips in January as a covariate. The treatment effect was not statistically significant: $F(1, 435) = 3.617, p = .06$. When differences between two groups are statistically significant, the p-value is below .05. This means that there is a 95% chance that the finding is probably true and a 5% chance that the results were obtained by chance. In this case, the value is .06, which means that there is a 94% chance that the findings are probably true and a 6% chance that the findings were obtained by chance.

³ This increase is statistically significant: $t(182) = -2.66, p < .01$.

3.2 Did the Active a2b programme have a different effect for different stages of change?

Participants were categorised in different stages of change based on whether they were currently walking or cycling and whether they had the intention to do so in the next 3 months. In the Active a2b group, stages of change were measured in January, April and July. We examined whether the Active a2b programme had a different effect for participants in different stages of change.

First, the number of walking trips and the number of cycling trips were compared for participants in the different stages in January, April and July. As can be seen in Figure 3, increases in walking trips between January and April occurred among participants in the contemplation (0.9), preparation (1.4 trips) and action stages (1.6 trips). Participants in the maintenance group reduced the number of walking trips. The number of walking trips in July was slightly lower than in April for most groups. However, the average number of walking trips in the contemplation, preparation and action group were all higher in July compared to January - pointing to a long-term effect for participants in those stages of change groups.

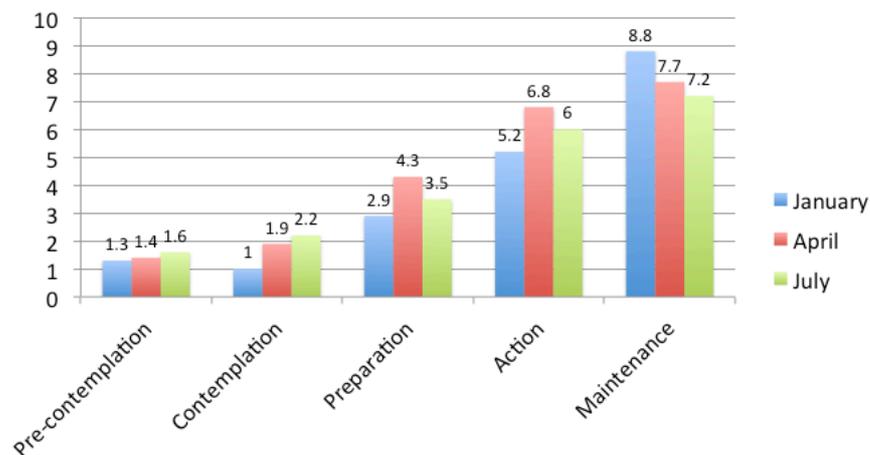


Figure 2. Walking rates for the different stages of change in January, April and July.

For cycling, increases in cycling trips occurred among participants in the contemplation stage, with 0.7 trips, and in the preparation stage, with an average of 2.2 trips. Cycling decreased in July across all stages of change, most notably in the action stage. Cycling rates were still slightly higher in July compared to January in those groups with increased cycling rates, i.e. the contemplation and preparation stages.

Evaluation of Active a2b

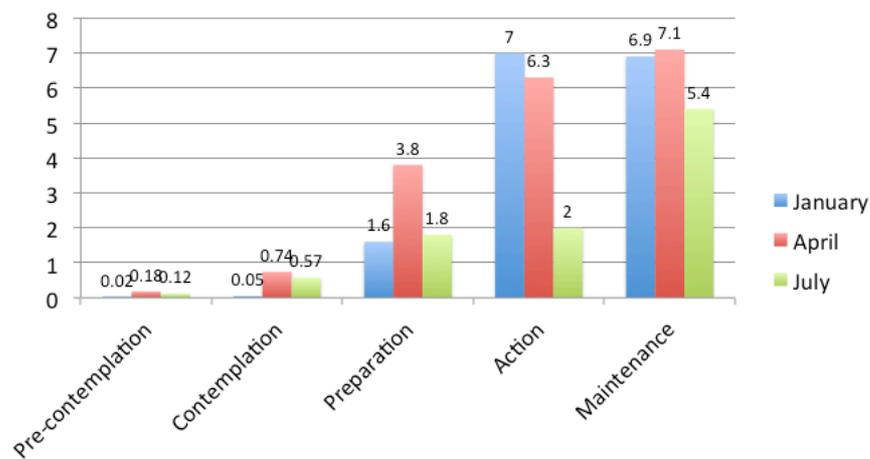


Figure 3. Cycling rates for the different stages of change in January, April and July.

Second, we examined whether participants moved between the stages of change during the course of the study period. Between April and July, the precontemplation, contemplation, action and maintenance groups increased slightly. The proportion of participants in the preparation stage decreased. The percentage of participants in the maintenance group grew slightly during the Active a2b programme and at the three month follow-up.

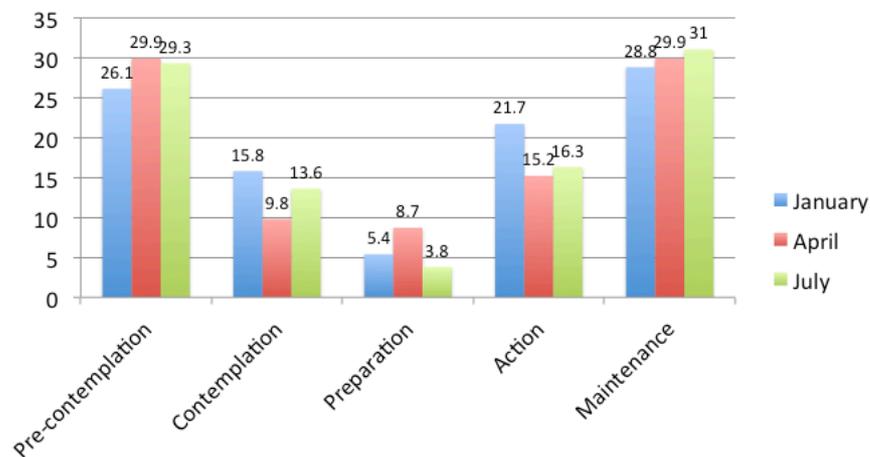


Figure 4. Percentage of participants in the walking stages of change over time.

For cycling, the pattern is slightly different. The percentage of participants increased in the preparation, action and maintenance stages. In all three groups, the percentage of cyclists increased during the Active a2b programme, and then decreased again in July. Not surprisingly, the percentage of precontemplators is notably higher for cycling than for walking, and increased during the course of the study.

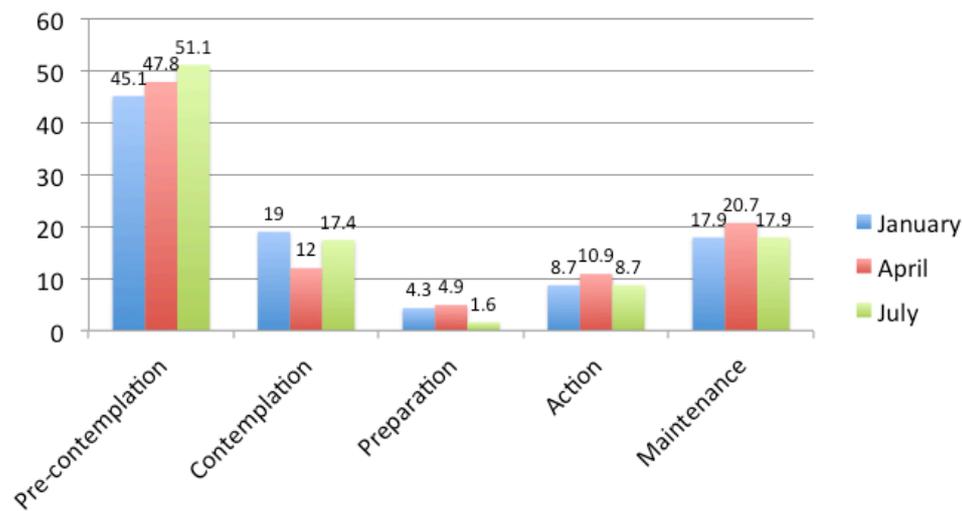


Figure 5. Percentage of participants in the cycling stages of change over time.

3.3 Which barriers and enablers are related to walking and cycling?

To examine the barriers and enablers of walking and cycling, average scores on the relevant survey questions were calculated. A higher score means that participants expressed a stronger agreement with that particular statement. Scores could range from 1 (strongly disagree) to 5 (strongly agree). The results are summarised in Figure. 6.

As can be seen from Figure 6, participants generally agreed that walking and cycling has health and wellbeing benefits and that it would be something they enjoyed or would enjoy doing. While participants generally felt safe walking, not surprisingly, they would not feel safe cycling. Time and weather were important barriers, in that people felt less able to walk or cycle when they didn't have the time or when there were adverse weather conditions.

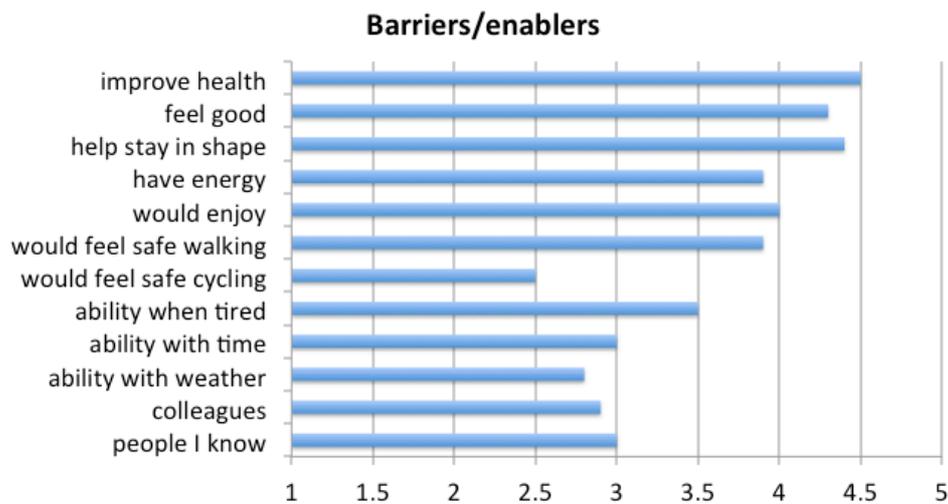


Figure 6. Summary of barriers and enablers of walking and cycling.

To examine which of the barriers and enablers are related to active travel, correlation analyses were conducted. Relationships were examined between the barriers and enablers of active travel on the one hand and the number of walking/running trips and total number of cycling trips with the total sample of participants (Active a2b and comparison group combined). These results are summarised in Table 3. A higher correlation represents a stronger association between two variables.

The results indicate that - to some extent at least - walking and cycling are related to different factors. For cycling, factors related to staying in shape and feeling good are important. The more participants thought that cycling would help them stay in shape for example, the more likely they were to cycle to work. These same factors appeared to be unrelated to walking. Another important difference was the role of social norms. The more participants thought that other people were also walking to work, the more likely they were to walk to work. In contrast, social norms were not related to cycling to work. For both walking and cycling, perceptions around perceived ability were important. The more participants felt confident that they would be able to walk or run to work (despite feeling tired, or despite adverse weather conditions), the more often they would walk, run or cycle to work. Perceptions of safety were related to both walking and cycling.

Table 4. Relationships between barriers/enablers and walking and cycling. Correlations in bold are statistically significant.

	Walking	Cycling
Improve health and wellbeing	.09	.17
Feel good about myself	.09	.21
Help me stay in shape	.06	.14
Have the energy	.20	.29
I would enjoy	.19	.28
I would feel safe walking	.21	n/a
I would feel safe cycling	n/a	.36
Ability when tired	.23	.28
Ability with time	.22	.38
Ability with weather	.27	.22
Many colleagues walk/cycle to work	.23	.04
Many people I know walk/cycle to work	.25	.04

Finally, we examined whether participants in the different stages of change had different perceptions of the barriers and enablers of walking. Participants in all stages attach importance of health and well-being benefits of walking and cycling. However, participants in the precontemplation stage had lower scores on average on the perceived barriers (having energy and feeling safe) compared to participants in the other groups. Another notable difference is in the levels of perceived ability to walk and cycle (despite the weather or feeling tired) between the five groups. Levels of perceived ability being the highest in the maintaining stage and lowest in the pre-contemplation stage. Lastly, it also appears that perceptions of social norms change with different stages: perceptions of how many people are walking to work are lowest in the pre-contemplation phase compared with the other phases. Figures 7 and 8 represent the importance of barriers and enablers for participants in the pre-contemplation and action stages, to illustrate some of these differences.

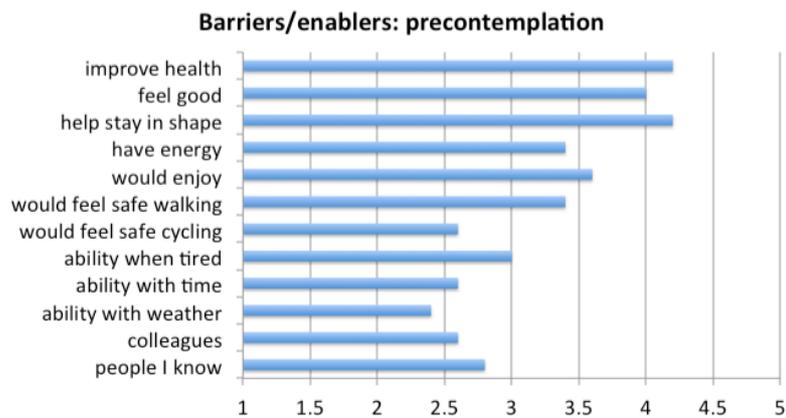


Figure 7. Perceived barriers and enablers for participants in the precontemplation stage.

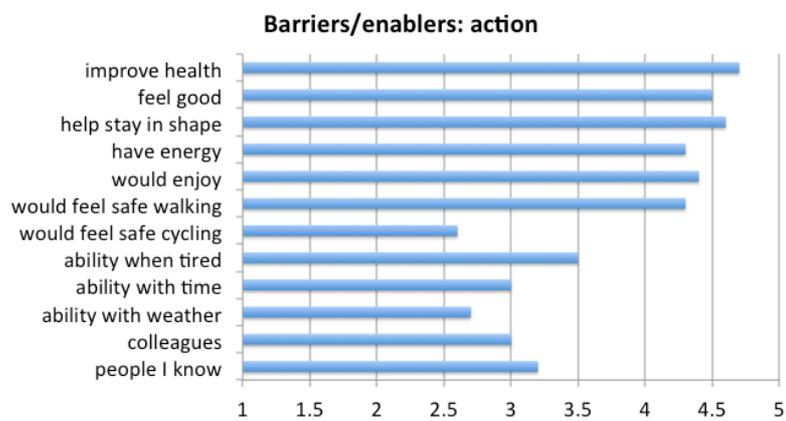


Figure 8. Perceived barriers and enablers for participants in the action stage.

4. Main Conclusions

The findings of this evaluation study indicate that the Active a2b initiative has been successful in encouraging active travel and suggest an increase in active travel. However, long-term effects of the Active a2b programme were not observed.

The number of active travel trips among Active a2b participants increased significantly during the Active a2b programme, from 3.8 to 4.2 walking trips on average. While the number of walking trips in July (4.0) was higher than in January, this change was not statistically significant compared to walking patterns in the comparison group. The number of cycling trips increased significantly from January to April, from 1.7 to 2.2 trips. This increase was not maintained in July.

The study further provided some indication that the Active a2b programme had different effects for participants in different stages of change. For walking, an increase in number of trips was observed among participants in the contemplation, preparation and action stages. This suggests that the Active a2b programme does not only have an effect on those who are already walking (action) but that it also helps encourage those who are thinking about walking or had only been walking occasionally.

The study also found that walking and cycling are related to different factors. For both walking and cycling, perceptions around perceived ability and safety were important. However, cycling was related to health and wellbeing aspects, while these same factors were not related to walking. Another important difference lies in the role of social norms. The more participants thought that other people were walking to work, the more likely they were to walk to work. In contrast, social norms were not related to cycling. Based on these findings, it may be important to target different factors to encourage walking than to encourage cycling. For example, the uptake of walking may be encouraged by emphasising social norms. That is, when walking is perceived to be the norm, people may be more likely to start walking to work.

Overall, the results indicate that Active a2b has been effective in facilitating the uptake of active travel in the Wellington Region, but the long-term effects were not statistically significant. Insights into barriers, enablers and stages of change may help inform future, similar initiatives to encourage active travel.