Evaluation of Norman Creek Pedestrian and Cycle Bridge

Prepared for Queensland Department of Transport and Main Roads

CDM RESEARCH

Contents

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Executive Summary

The Department of Transport and Main Roads (TMR) commissioned CDM Research to undertake an evaluation of the Norman Creek Pedestrian and Cycle Bridge, which opened in early 2016. The project cost around $7.5 m and was match-funded by TMR and Brisbane City Council.

Two fieldwork activities were undertaken to obtain input data for the evaluation:

- video-based manual counts classified by mode, direction of travel and time of day over a sequential 7-day period (Thursday 14 April to Wednesday 20 April 2016), and
- intercept surveys with bridge users undertaken over three weekdays between 7 pm and 10 am and two weekend days from 2 pm to 5 pm.

In addition, counts were obtained on Wynnum Road before and after completion of the bridge to provide an indication of any route diversion that may have occurred among bicycle riders. The data was input into a cost-benefit analysis to estimate the monetary project benefits. The key results of this evaluation are as follows:

- Average daily traffic on the bridge of around 90 bicycle riders and 290 pedestrians.
- There is contradictory evidence on rider diversion. The counts comparison found no change in rider demand on Wynnum Road on weekdays but a 17% reduction on weekends. The intercept surveys suggested that more than 90% of bicycle riders had diverted from other routes (of which Wynnum Road is the most likely alternative). Given the interday variability in rider counts we suggest the intercept survey results provide a more credible picture of likely route diversion.
- The average cycling trip across the bridge for recreation was reported as being about 17 kilometres, compared to 10 kilometres for transport trips. The average recreation walking trip was 4 kilometres compared to 3 kilometres for transport trips (usually walking to education).
- The main transport cycling trips were from Norman Creek to the CBD (40% of weekday AM period transport cycling trips), followed by Morningside to the CBD (12%) and Balmoral to the CBD (8%). Unsurprisingly, almost all walking trips started and/or finished in either Norman Park or East Brisbane.
- As noted above, most cycling demand on the bridge was pre-existing riders who diverted from other routes. Similarly, 90% of walking transport trips and 67% of recreation walking trips were pre-existing. A negligible proportion of bicycle riders would have used car or public transport in the absence of the bridge, although 24% of recreational walkers indicated they would not have made their trip in the absence of the bridge and around 10% of pedestrians indicated they would otherwise have used a car for their trip.
- There is some indication the bridge may have beneficial public health outcomes; half of recreational bicycle riders and pedestrians indicated the bridge had increased their riding over the past month (by up to an hour a week). The bridge

had not affected the amount of walking or riding undertaken by those travelling for transport purposes, and may have reduced walking (due to the shorter distance of the bridge).

- Around half of bridge users travelling for transport purposes had a car available with which they could have made their trip. Most bicycle riders (83%) could have used public transport compared to 32% of pedestrians. In most instances respondents indicated that using a car or public transport would have *increased* their travel time.
- The cost-benefit analysis suggests the project represents poor value for money; the BCR for the central discount rate of 7% was around 0.3. This outcome primarily the high capital cost combined with low demand and that much of this demand consists of pre-existing cycling and walking trips.
- In considering the cost-benefit analysis it is recognised that there are a large number of benefits which cannot be readily monetised. Furthermore, qualitative commentary from path users was overwhelmingly positive. Given these ancillary benefits it could be argued the path still represents a worthwhile investment.

1 Introduction

1.1 Background

CDM Research was commissioned by the Queensland Department of Transport and Main Roads (TMR) to undertake an evaluation of the Norman Creek Pedestrian and Cycle Bridge. The bridge is a 4 m wide bridge over Norman Creek connecting Hilton Street in East Brisbane with Norman Avenue in Norman Creek (Figure 1.1). The total project length, including access paths on either side of the bridge, is around 670 m of which around 100 m is the bridge over the creek. The project cost $7.54 m and was jointly funded by TMR and Brisbane City Council. The bridge opened to pedestrians and bicycle riders in around February 2016 and provides a quiet street alternative to Wynnum Road for bicycle riders travelling from the CBD to the Wynnum/Manly area.

■ **Figure 1.1: Norman Creek Bridge (aerial image: Nearmap, 1 Jul 2016)**

1.2 Methodology

This evaluation adopted a cost-benefit analysis (CBA) methodology as developed previously for TMR (CDM Research 2016). The CBA tool is implemented online[1]. The methodology requires a number of inputs, of which the most important are:

- average daily pedestrian and cyclist counts,
- average distances walked/ridden, and

[1] https://cdmresearch.shinyapps.io/ActiveTravelBenefits/

- diversion rates and induced travel proportions.

The latter refer to the proportion of demand that:

- was already walking/riding before the project, and have changed their route to use the project,
- have diverted from other transport modes (e.g. private car, public transport), and
- all-new trips that would not have otherwise occurred in the absence of the project.

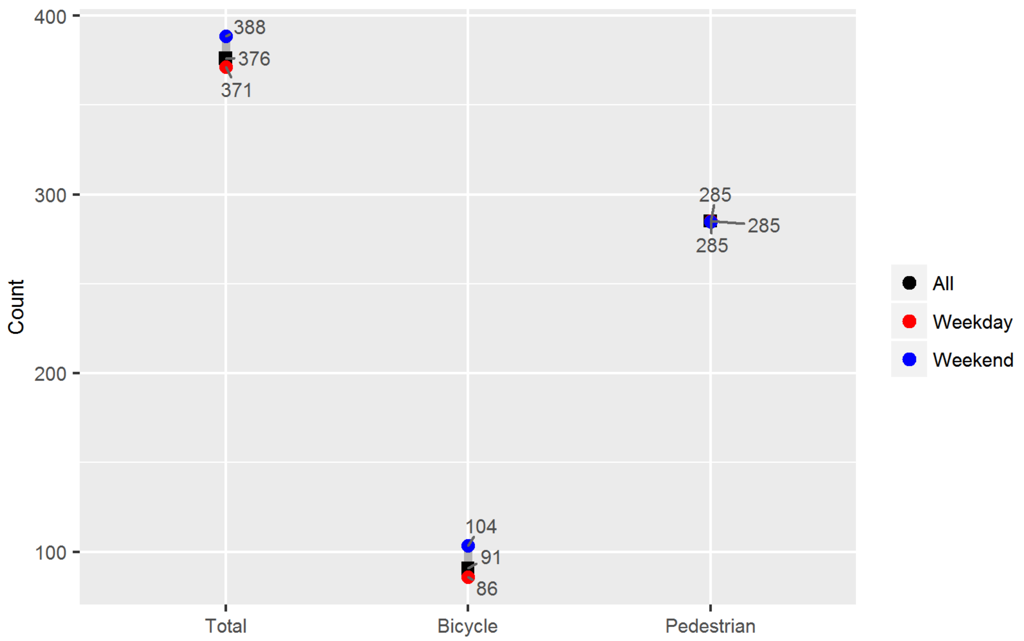
In order to obtain these input parameters two fieldwork activities were undertaken:

1. video-based manual counts classified by mode, direction of travel and time of day from 6 am to 7 pm between Thursday 14 April 2016 and Wednesday 20 April 2016, and
2. intercept surveys with bridge users undertaken between 7 am and 10 am on Wednesday 18 May to Friday 20 2016, and from 2 pm to 5 pm on Saturday 21 May and Sunday 22 May 2016.

In addition, counts were obtained on Wynnum Road at Norman Creek before and after the completion of the active transport bridge in order to further assess what level of substitution between the facilities may have occurred. This report first presents the summary data obtained from the fieldwork activities before then providing the output of the cost-benefit analysis.

2 Counts

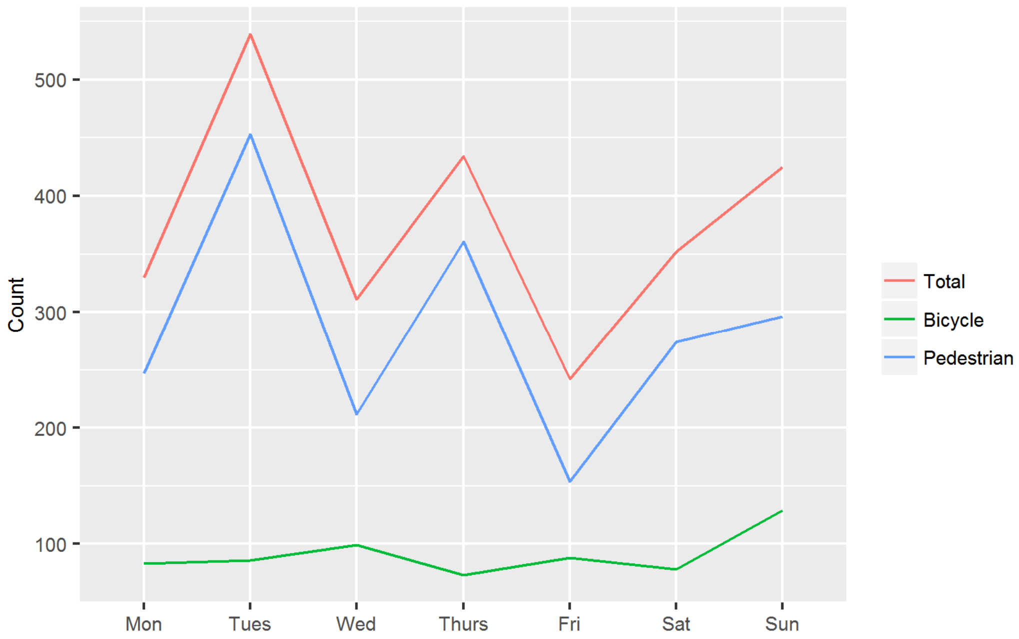
The average daily count at the bridge over the seven-day count period was 376 users per day[2], of which three quarters were pedestrians (Figure 2.1). Average cyclist demand was marginally higher on weekdays than weekends, and average pedestrian demand was identical on weekdays and weekends.



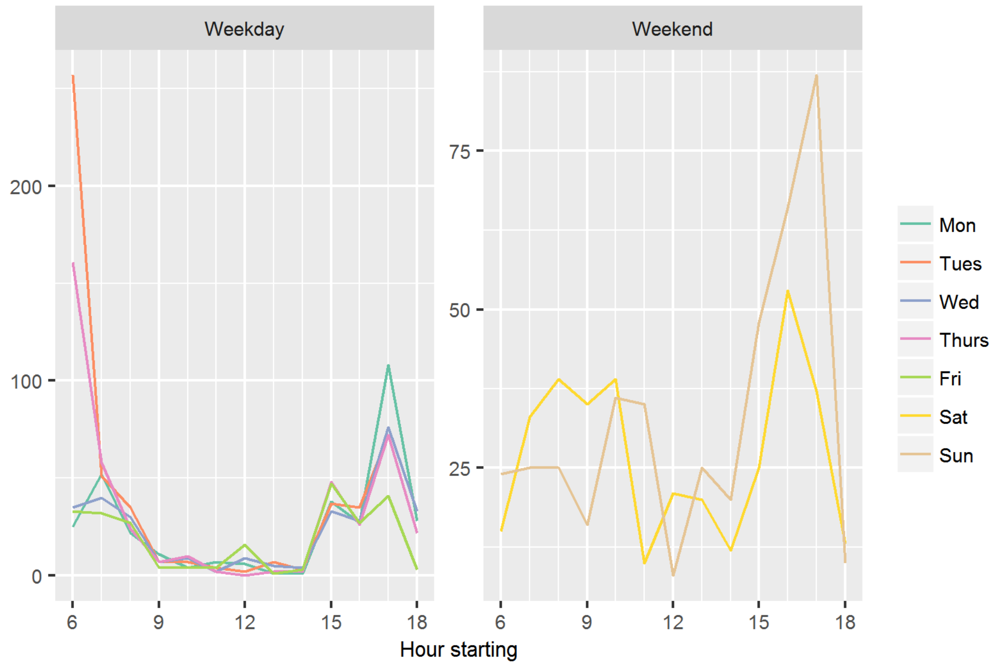
■ **Figure 2.1: Average count by mode and day of week**

The counts by day of week fluctuated markedly, as shown in Figure 2.2. The pedestrian count varied from a low of 154 on the Friday to a high of 453 on the Tuesday. The bicycle rider count was lowest on the Thursday (73 riders) and highest on the Sunday (129 riders). The time of day profile suggests demand is strongest early on weekday mornings and in the afternoons (Figure 2.3). There was very high pedestrian demand on the Tuesday and Thursday morning attributable to sporting groups using the bridge for training runs. This is reflected in the pedestrian demand in Figure 2.4, as well as the generally modest hourly cyclist demand.

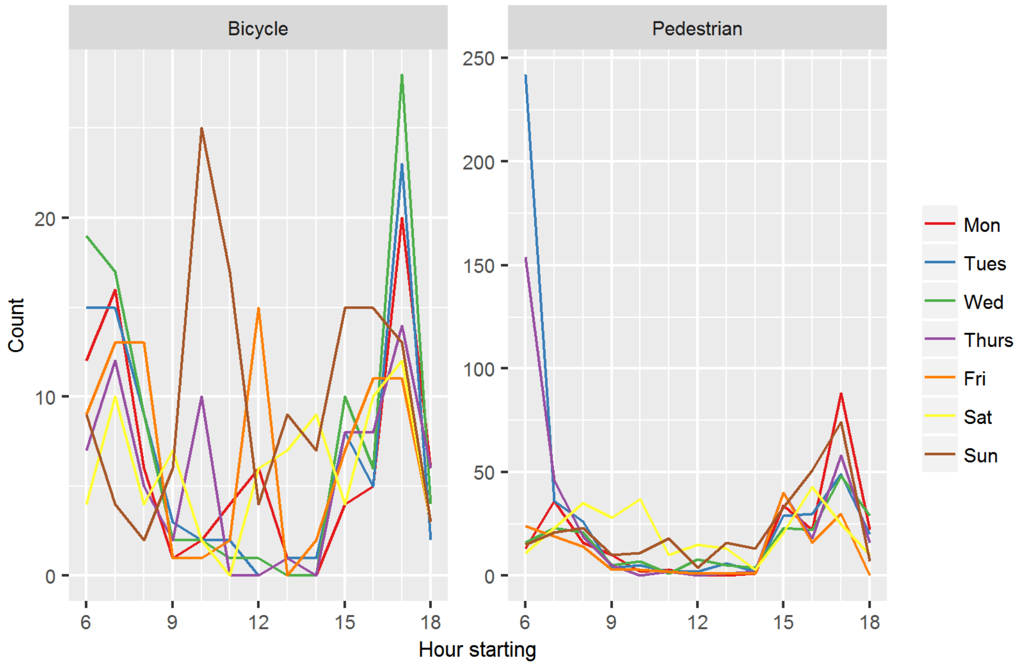
[2] Note the counts were from 6 am to 7 pm, or 13 hours such that they do not correspond to a 24-hour day. Full 24-hour counts may be of the order of 10% higher.



■ **Figure 2.2: Day of week by mode**



■ **Figure 2.3: Time of day by day of week (hourly bins) for all modes**

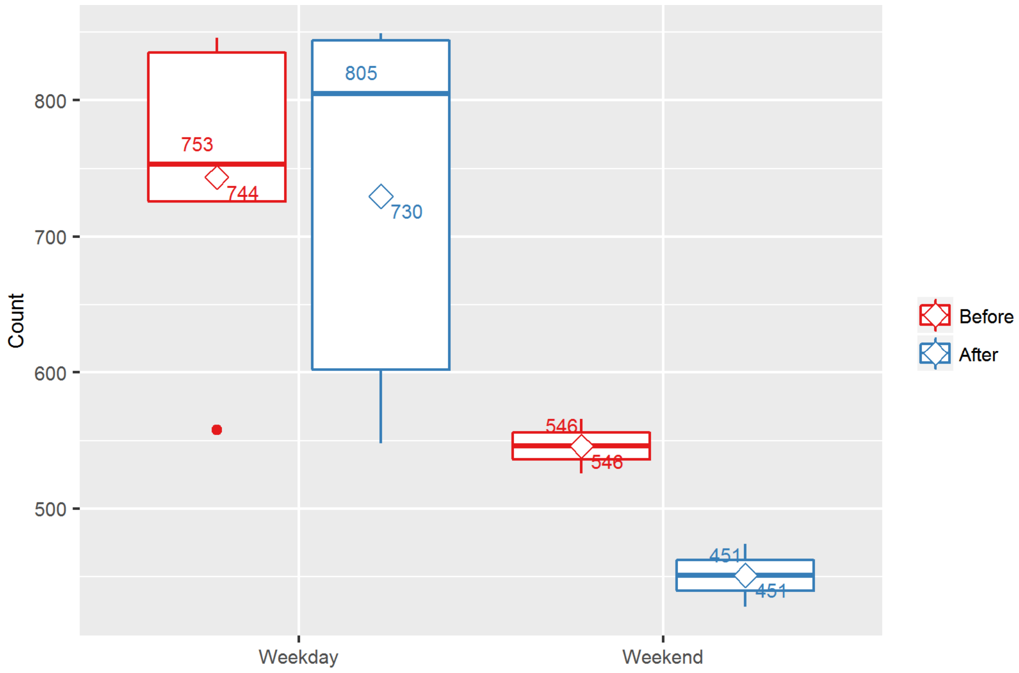


■ **Figure 2.4: Time of day by day of week and mode (hourly bins)**

2.1 Diversion from Wynnum Road

One of the main motivations for the bridge is that it provides a missing link in a connected local road alternative to Wynnum Road for bicycle riders travelling to or from the eastern suburbs and the Brisbane CBD. In principle, if the project has achieved this goal there should be a measurable decline in bicycle traffic on Wynnum Road. Bicycle counts were obtained on Wynnum Road crossing Norman Creek between Wednesday 7 October and Tuesday 13 October 2015, or around four months before the Norman Creek pedestrian and cyclist bridge was completed.

Based on the counts alone there is evidence to suggest the new bridge has indeed diverted riders away from Wynnum Road. As shown in Figure 2.5, the average weekday count reduced from 744 in the period prior to completion of the bridge to 730 afterwards. However, this marginal decrease is not statistically significant ($t(7.77)=0.17$, $p=0.87$) and the median suggests, counterintuitively, that the rider count increased after completion of the bridge. Somewhat more convincingly, the weekend average count decreased from 546 to 451, although again this count was not statistically significant ($t(1.96)=3.12$, $p=0.09$). However, the lack of statistical significance is more an artefact of the small sample sizes of weekends (two days in each case); subjectively the 17% reduction appears to be significant. Taken at face value this suggests around 95 riders on a typical weekend day have shifted from Wynnum Road to the Norman Creek bridge, accounting for around a third of all weekend demand on the bridge (Figure 2.1). Further, it seems plausible that weekend riders will be more attracted to a longer, but more pleasant, alternative route than weekday commuter riders. Hence, it seems plausible that any effect will be more pronounced on weekends.

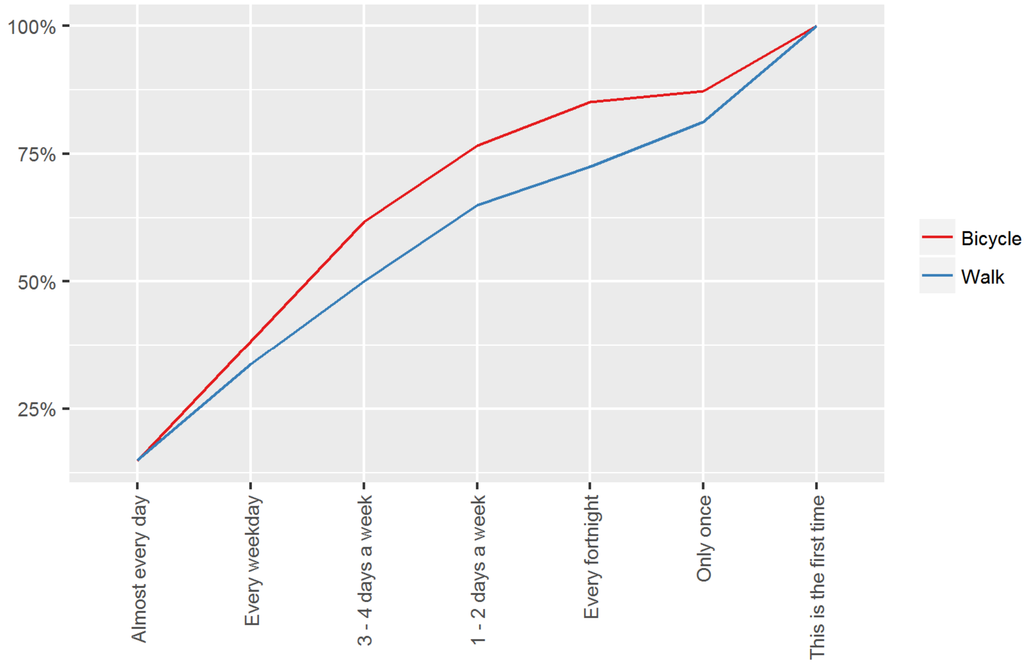


■ **Figure 2.5: Wynnum Road (Norman Creek) bicycle rider counts before and after completion of the Norman Creek pedestrian and cyclist path (7-day counts, 6 am – 7 pm, averages are diamonds)**

3 Intercept surveys

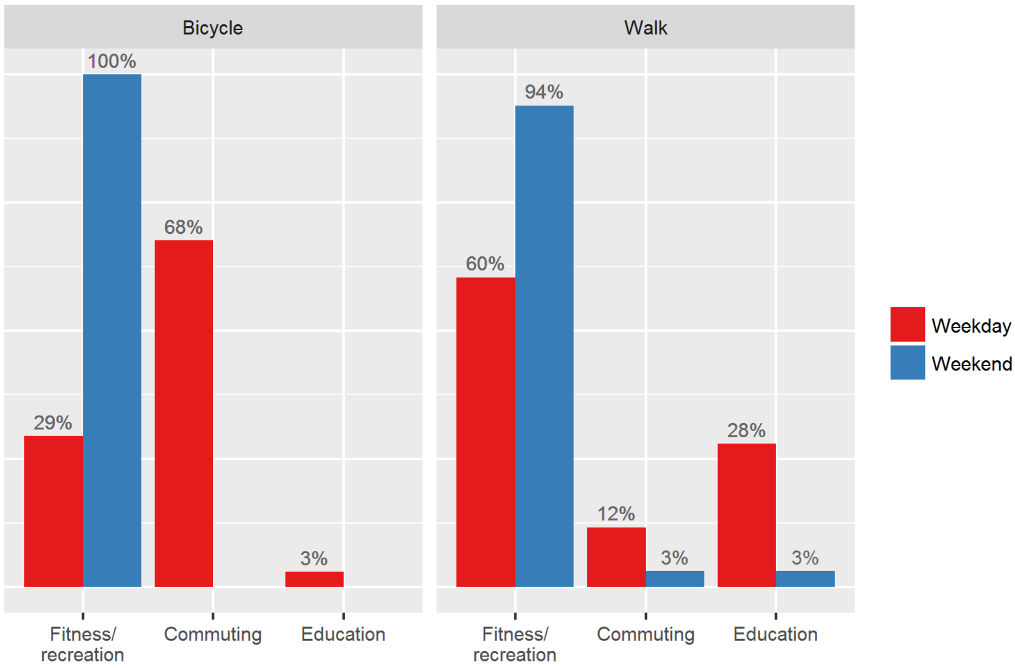
Intercept surveys were conducted with bridge users between Wednesday 18 May and Sunday 22 May 2016. A total of 127 complete interviews were obtained, of which 80 were pedestrians and the remaining 47 were bicycle riders.

Familiarity with the bridge is high; 77% of bicycle riders and 65% of pedestrians indicated that they use the bridge at least once a week (Figure 3.1). Bicycle riders appear to use the bridge marginally more frequently than pedestrians. All pedestrians subject to the interview were aware the bridge was new, and only one bicycle rider was unaware of this.



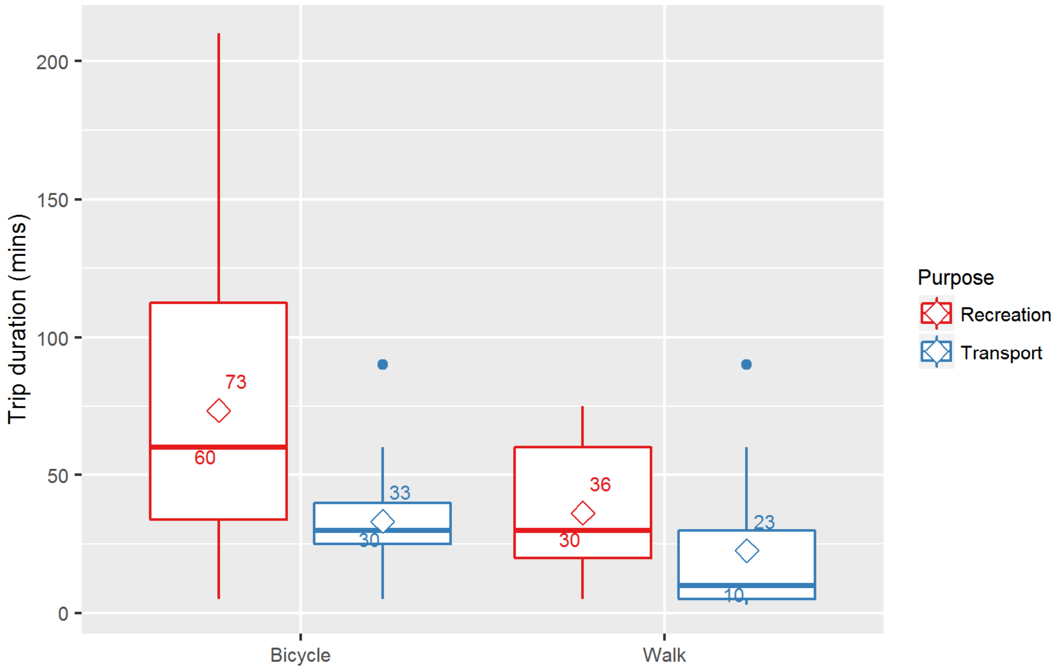
■ **Figure 3.1: Frequency of use by mode**

All bicycle riders on weekends were travelling for fitness or recreation, compared with 29% of weekdays (Figure 3.2). By contrast, 60% of pedestrians on weekdays were travelling for recreation increasing to 94% of weekends.

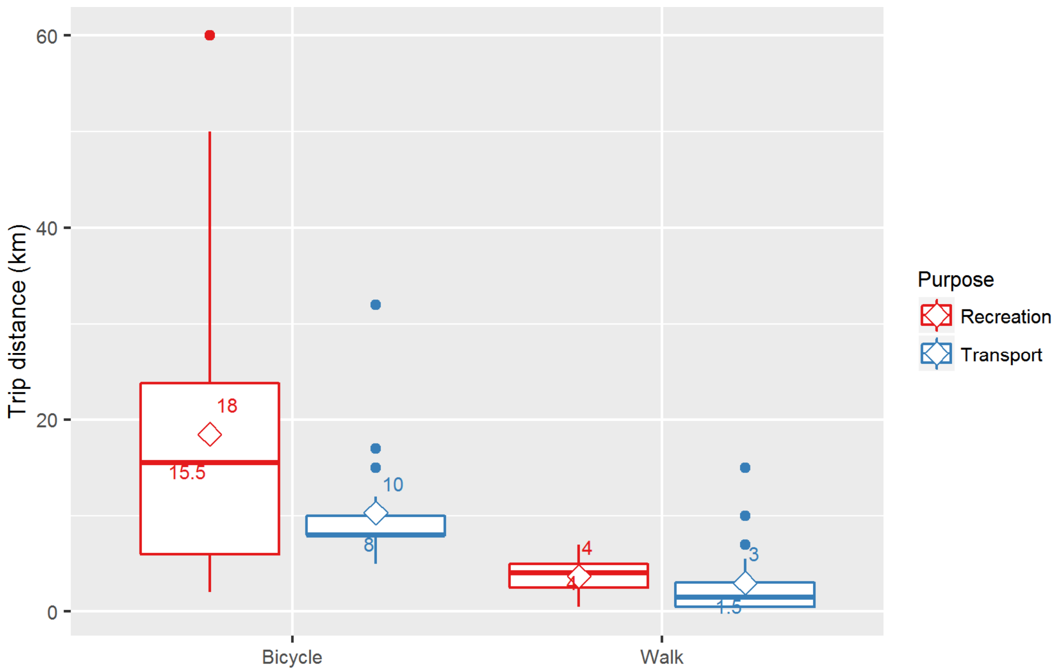


■ **Figure 3.2: Trip purpose by mode and day of week**

The average bicycle trip for recreation had a duration of 73 minutes (Figure 3.3) over a distance of 18 kilometres (Figure 3.4). Transport cycling trips were shorter, with an average duration of 33 minutes over 10 kilometres. Walking trips for recreation lasted on average 36 minutes over 4 kilometres, and 23 minutes and 3 kilometres respectively for transport walking trips.



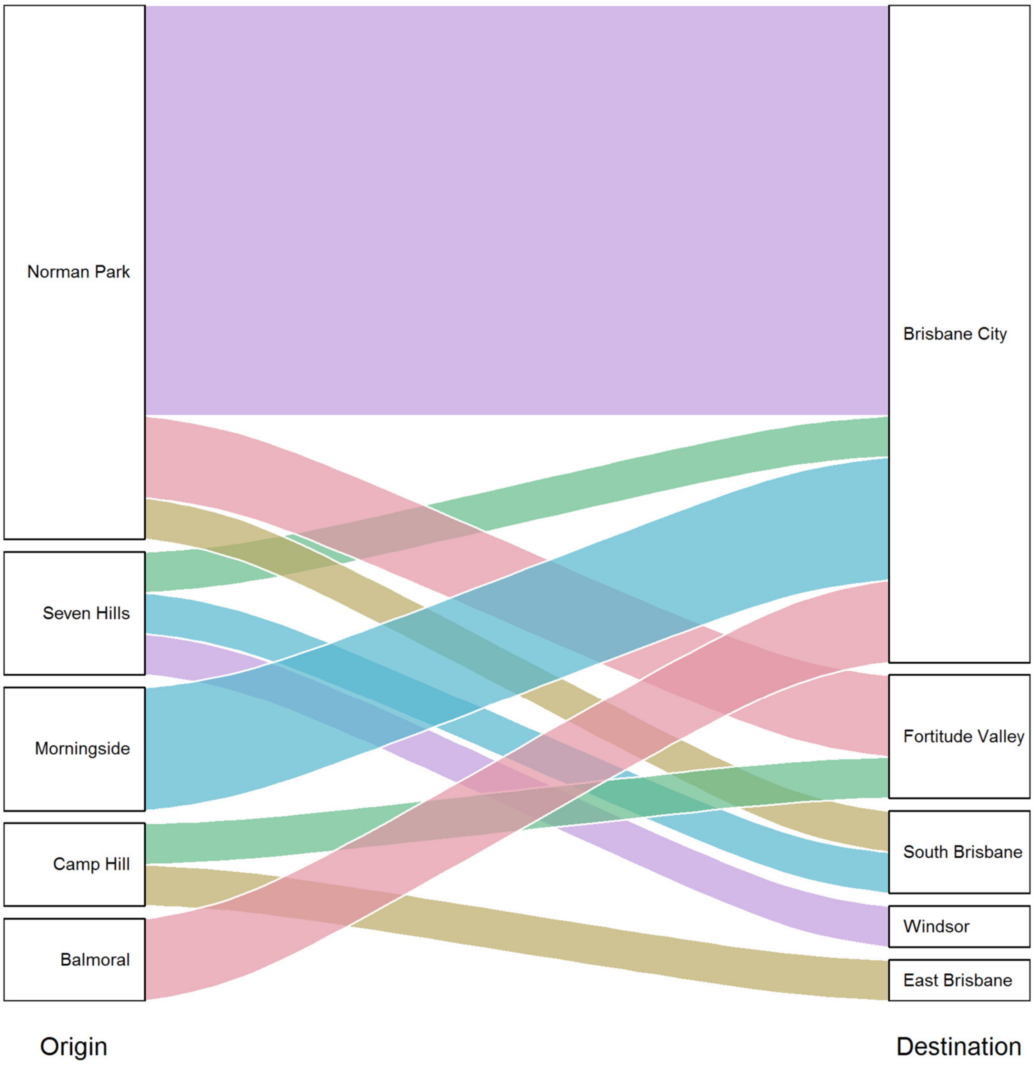
■ **Figure 3.3: Trip duration by mode and purpose**



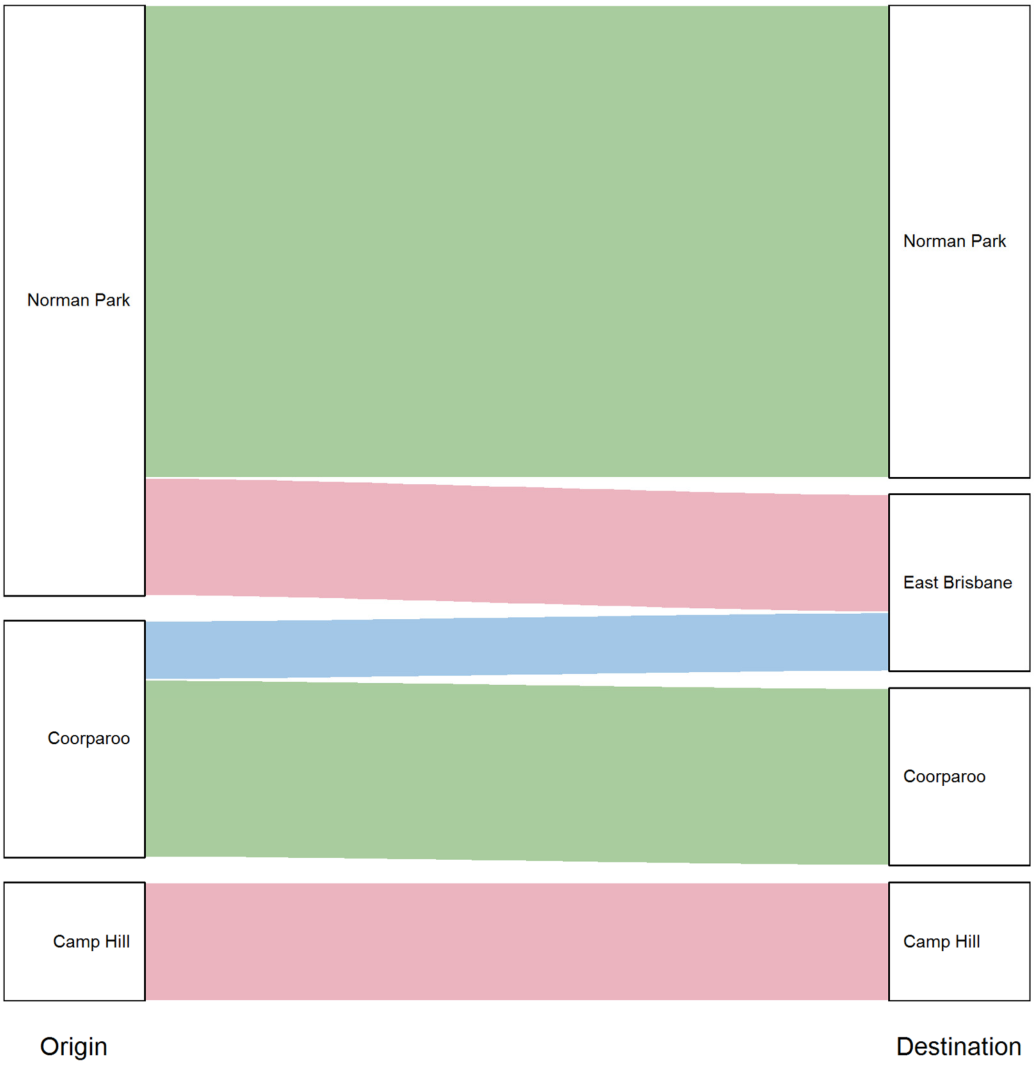
■ **Figure 3.4: Trip distance by mode and purpose**

The trip origin and destination suburbs by mode of travel and purpose are illustrated in Figure 3.5 and subsequent figures. The predominant trip flows are as follows:

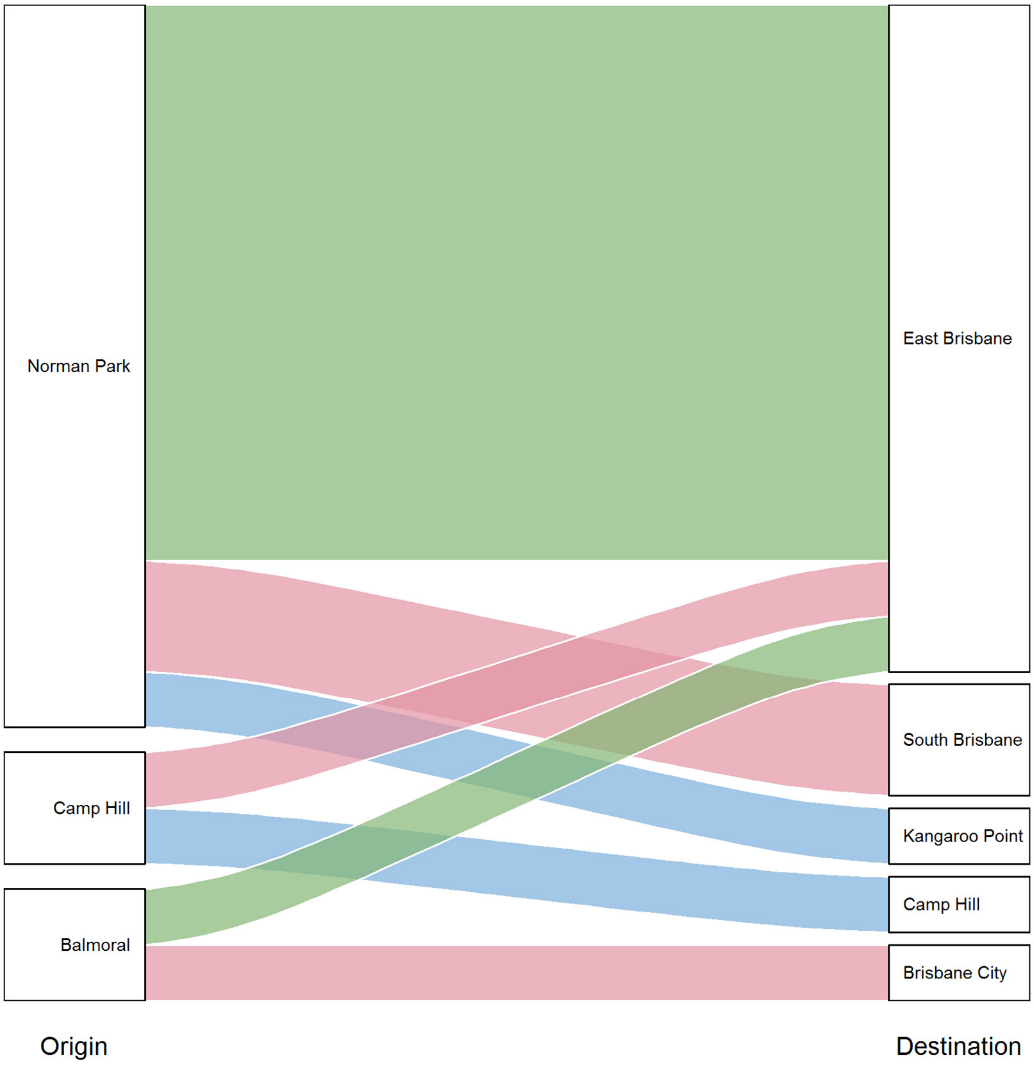
- 40% of all cycling transport trips were from Norman Park to Brisbane City, followed by Morningside to Brisbane City (12%) and Balmoral to Brisbane City (8%) (Figure 3.5).
- Unsurprisingly, most recreation cycling trips started and finished in the same location; 36% started and finished in Norman Park and 14% started and finished in Coorparoo (Figure 3.6).
- 48% of walking transport trips were from Norman Creek to East Brisbane with a further 10% to South Brisbane (Figure 3.7).
- Most recreation walking trips started and finished in Norman Park (36%) or East Brisbane (34%) (Figure 3.8).



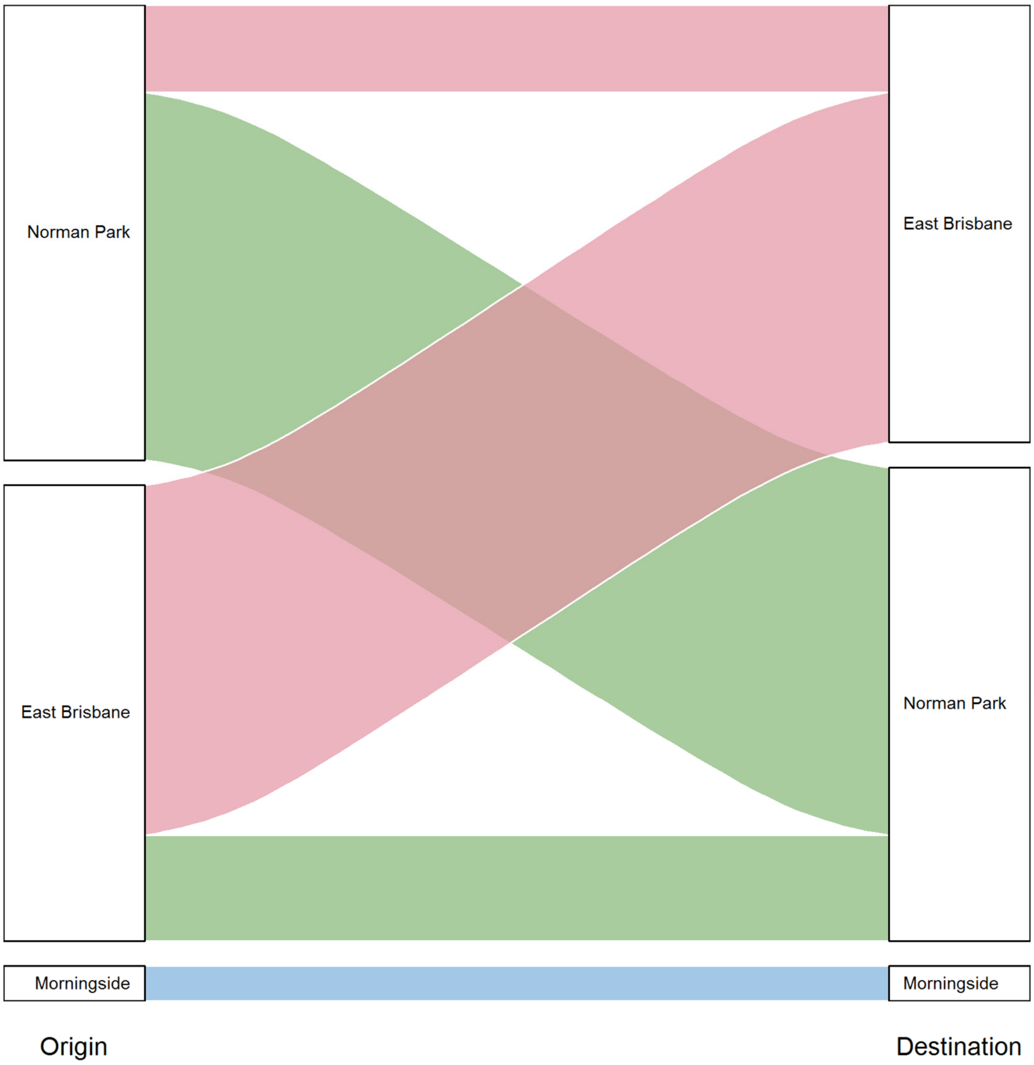
■ **Figure 3.5: Origins and destinations of cycling trips for transport (n=25)**



■ **Figure 3.6: Origins and destinations of cycling trips for recreation (n=22)**



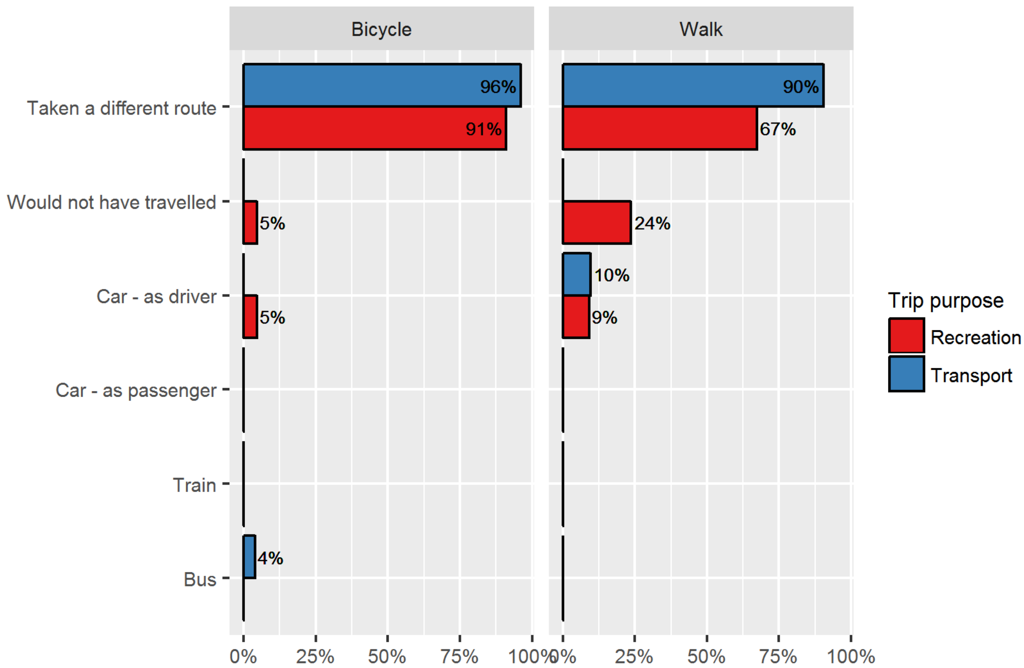
■ **Figure 3.7: Origins and destinations of walking trips for transport (n=21)**



■ **Figure 3.8: Origins and destinations of walking trips for recreation (n=59)**

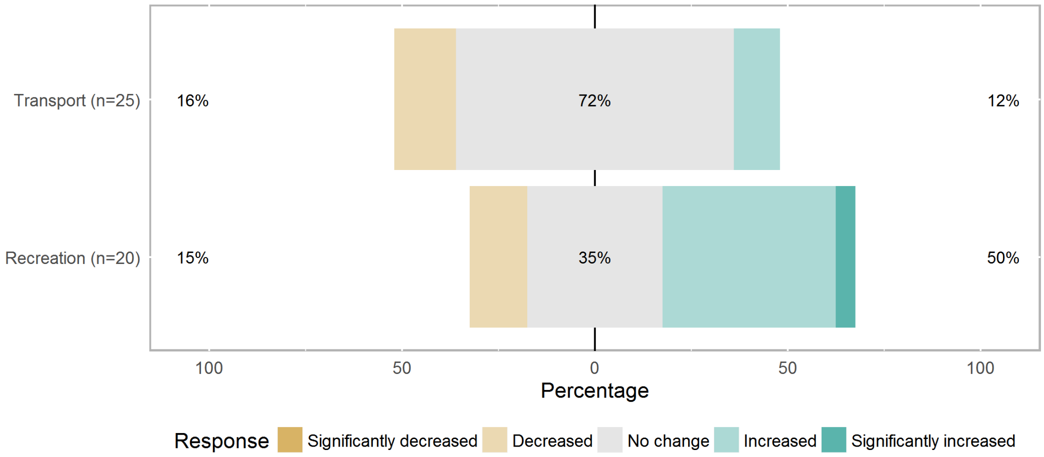
Respondents were asked what they would have done for their trip if the bridge were not present. In most cases the respondent indicated they would have taken an alternative route (Figure 3.9). The most likely alternate route for bicycle riders is Wynnum Road. As noted in Section 2.1 there is some evidence from the counts to suggest diversion on weekends. The intercept survey supports this evidence, but goes further in suggesting that almost all transport riding trips (which occur predominantly on weekdays) are diverted from other routes. We suggest this evidence of diversion is highly likely to be predominantly from Wynnum Road, and the lack of support provided by the counts is attributable to the large interday variability in the weekday count. As such, we view the intercept survey results as a more credible indication of the diversion.

A small minority of bridge users would otherwise have driven a motor vehicle, and relatively few recreation bicycle riders (5%) and pedestrians (24%) would not have had their trip in the absence of the bridge. Nonetheless, if these generated trips were to facilitate a meaningful increase in physical activity by these individuals we may expect favourable public health benefits.

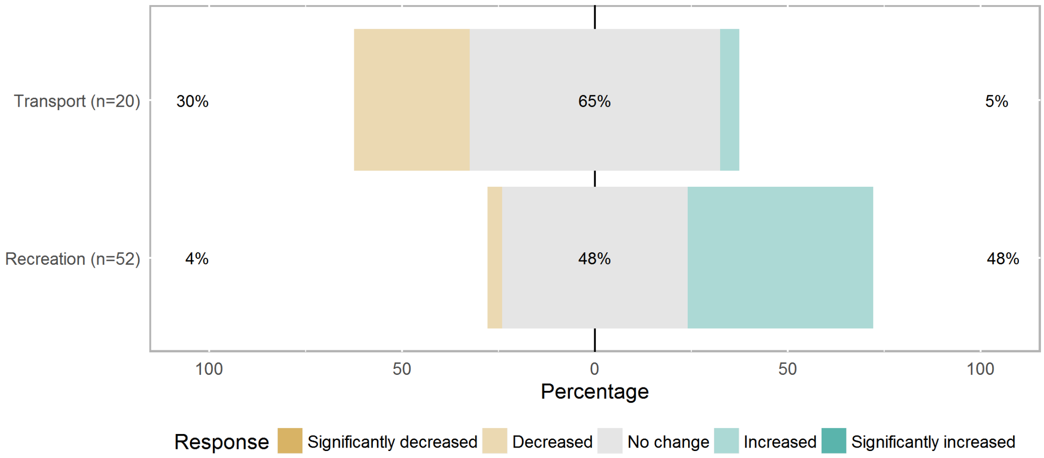


■ **Figure 3.9: What would you have done if this bridge was not here?**

There is some evidence to suggest that those travelling for recreation have indeed increased their overall time spent riding or walking as a result of the construction of the bridge. As illustrated in Figure 3.10 half of recreational riders indicated they had increased their riding over the past month as a result of the presence of the bridge. In the case of transport riders the result is mixed; around the same proportion indicate they had increased their riding as decreased. It is conceivable that for some riders the bridge provides a shorter route to their destination than previously, thereby reducing their riding time. This effect, if true, is supported by the substantial reduction in walking time for transport shown in Figure 3.11. Conversely, 48% of pedestrians travelling for recreation indicated they were walking up to an hour per week more than prior to the construction of the bridge.

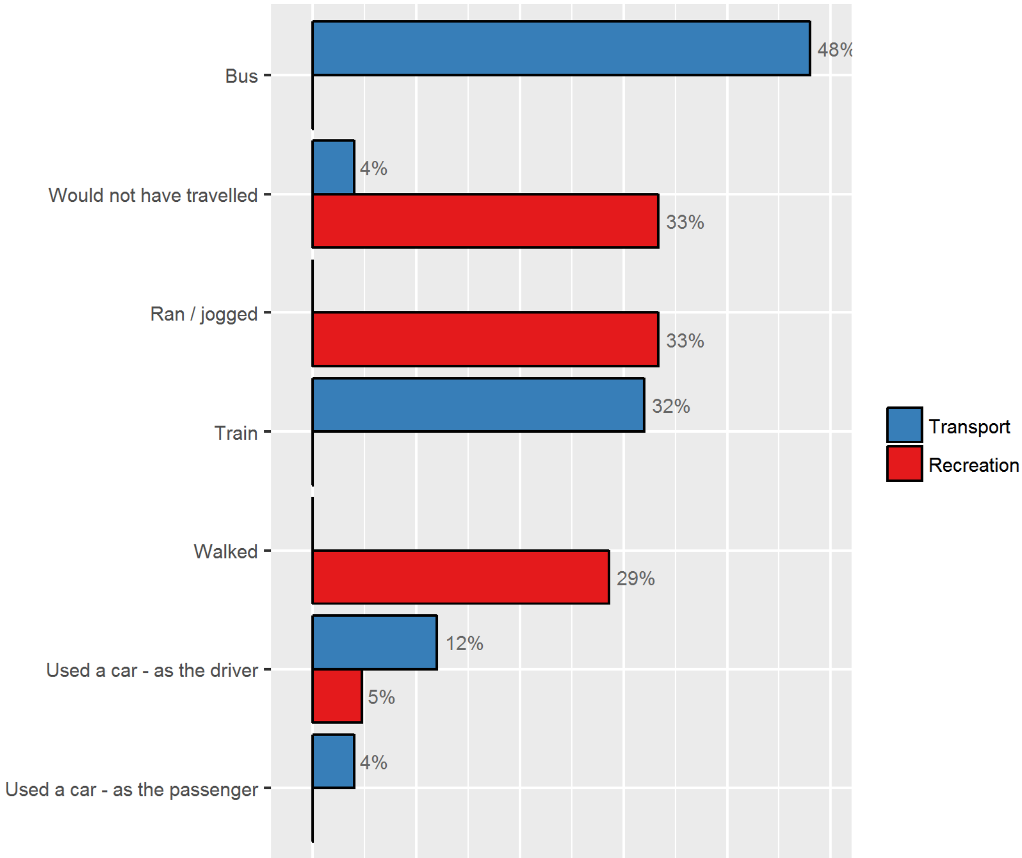


■ **Figure 3.10: Has the bridge changed the amount of time you've spent <u>riding</u> over the past month?**



■ **Figure 3.11: Has the bridge changed the amount of time you've spent <u>walking</u> over the past month?**

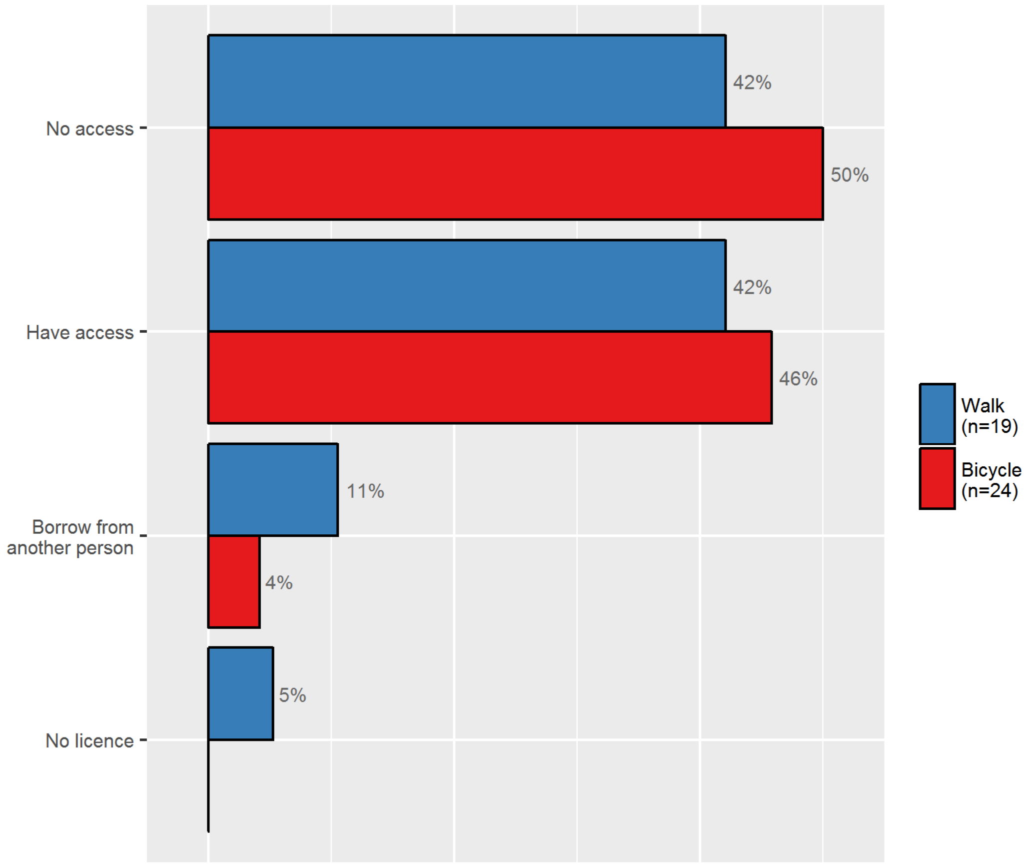
Bicycle riders were also asked what they would have done if they could not have used their bicycle for their trip. Just under half of transport cyclists indicated they would have used a bus with a further 32% using train (Figure 3.12). Only a minority (16%) would have driven or not travelled at all (4%). Among recreation cyclists a third would not have travelled at all, a further third would have run and most of the remainder would have walked.



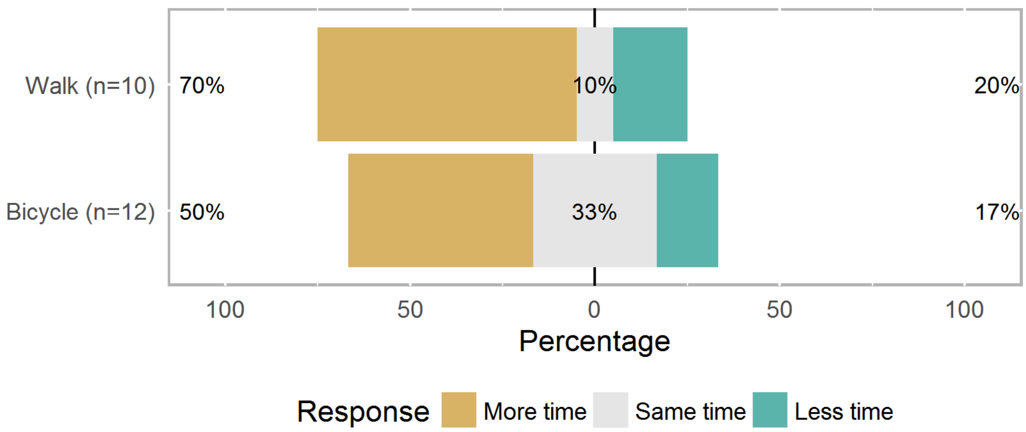
- **Figure 3.12: What would you have done if your bicycle was not available for this trip?**

Respondents who were travelling for transport purposes (e.g. commuting, education, shopping) were asked whether they could have used a motor vehicle for their trip. Both bicycle riders and pedestrians were fairly even split between those who did not have access to a motor vehicle and those who did (Figure 3.13). Notably, even pedestrians who could have used a car indicated in most cases that doing so would have made their trip longer (Figure 3.14). This result is notable insofar as it suggests these active transport trips are providing travel time savings to these users. In conventional transport cost-benefit analysis travel time savings represent the most significant benefit stream; although only a minority of bridge users indicate they would have used a car prior to the bridge being built (Figure 3.9) there are likely to be travel time benefits in them doing so.

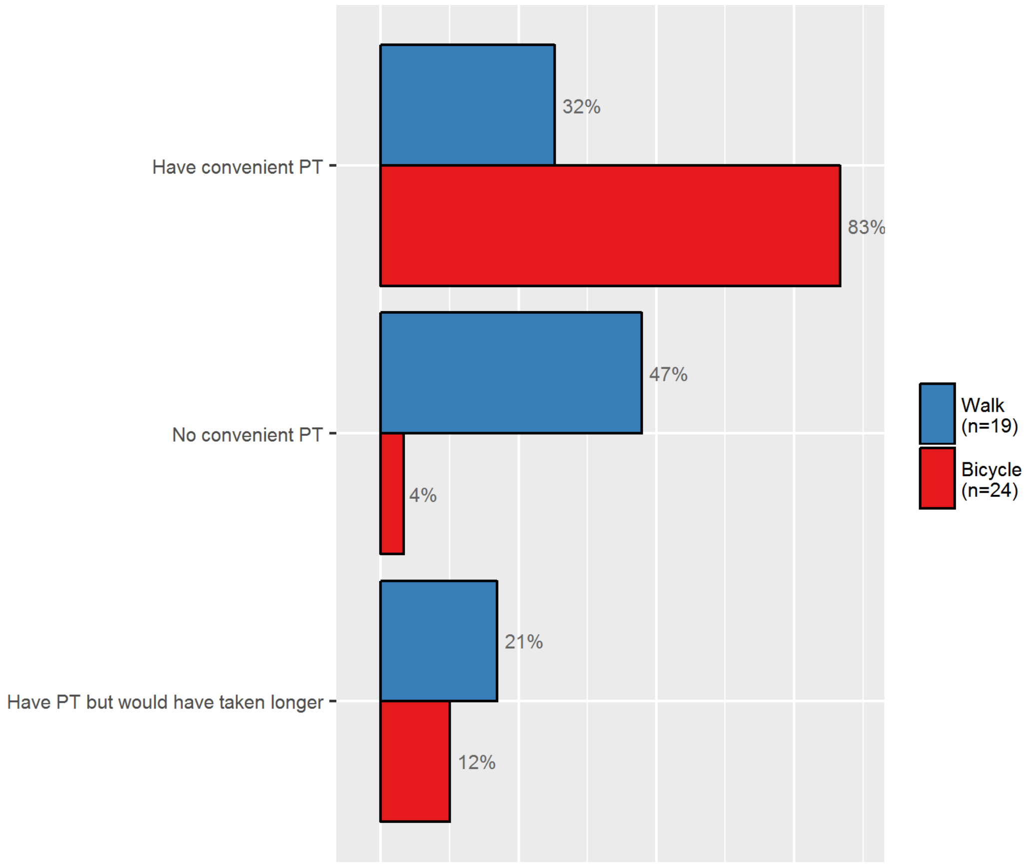
Respondents were also asked about the available of a public transport alternative for their trip; 32% of pedestrians and 83% of bicycle riders indicated they had a viable public transport option (Figure 3.15). It seems likely that many bicycle riders destined for the Brisbane CBD would have had a public transport alternative, whereas many pedestrians making shorter, more local trips would not have had such an alternative. Unlike the car alternative, most pedestrians and bicycle riders indicated the public transport alternative (if available) would have taken longer than their chosen active transport mode.



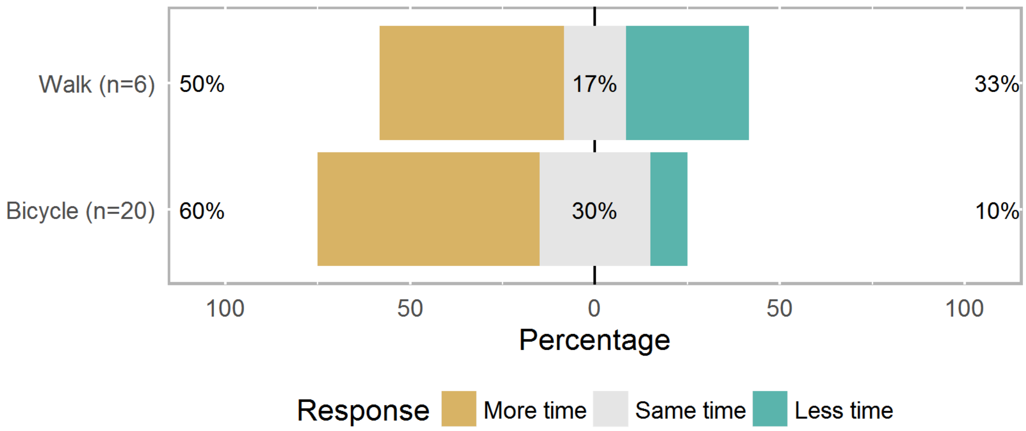
■ **Figure 3.13: Car availability by mode for transport trip purposes**



■ **Figure 3.14: Change in travel time for those who could have used a car (transport trip purpose only)**



■ **Figure 3.15: Public transport availability by mode for transport trip purposes**



■ **Figure 3.16: Change in travel time for those who could have used public transport (transport trip purpose only)**

4 Cost-benefit analysis

The cost-benefit analysis framework as described in CDM Research (2016) was used to estimate the monetary benefits against the costs of the project. The key elements of this framework are:

- broad consistency with the current national guidelines (Transport and Infrastructure Council 2016),
- 30-year economic life with no residual value at the end of the appraisal period,
- estimates mortality and morbidity health benefits using a willingness to pay methodology for valuing statistical life,
- no safety in numbers effect,
- 60% of bicycle travel in the area occurs on-road without provision, 10% on-road with bicycle lanes, 25% on off-road shared paths and 5% on footpaths,
- relative risks for bicycle lanes of 0.5, off-road shared paths of 0.3 and footpaths of 1.8 (all relative to on-road with no provision),
- cumulative annual demand growth of 3%,
- rule-of-half applies to the willingness-to-pay component of health costs, vehicle operating and parking costs, PT fares for all users and travel time savings for new users only,
- Monte Carlo simulation to represent parameter uncertainty,
- capital and operating cost estimates to +/-10% at 95% confidence level, and
- demand estimates to +/-20% at 95% confidence level.

The input assumptions to the cost-benefit analysis are summarised in Table 4.1, and are based wherever possible on the survey data.

Table 4.1: Economic assumptions

Parameter	Assumption	Source
General assumptions		
Economic life	30 years	
Discount rate	3%, 7%, 10%	
Health benefit ramp-up period	5 years (linear)	Genter et al. (2009)
Effective average motorist speed	30 km/h	Estimate
Effective average cyclist speed	20 km/h	Estimate
Effective average walking speed	6 km/h	Estimate
Effective average PT speed	15 km/h	Estimate
Bicycle riders		
Opening year demand (AADT)	91	Video counts
Average trip distance	14.1 km	Intercept surveys
Diversion: car	2%	Intercept surveys
Diversion: PT	2%	Intercept surveys
Diversion: walk	0%	Intercept surveys
Diversion: reassign	94%	Intercept surveys
Diversion: induced	2%	Intercept surveys
Transport purpose split	48%	Intercept survey
Change in trip distances	+1 km	Estimated from Wynnum Rd vs Lang / Richmond / Waminda / Railway / Norman / Heath Sts
Pedestrians		
Opening year demand (AADT)	285	Video counts
Average trip distance	3.5 km	Intercept surveys
Diversion: car	9%	Intercept surveys
Diversion: PT	0%	Intercept surveys
Diversion: reassign	74%	Intercept surveys
Diversion: induced	17%	Intercept surveys
Transport purpose split	31%	Intercept survey
Change in trip distances	-0.3 km	Estimated from Nroman / Wynnum vs bridge and Heath St

Parameter	Assumption	Source
Facility		
Length	0.7 km	New path and bridge
Type	Off-road path	
Diverted motor vehicle travel time by period	Busy: 50% Medium: 30% Light: 20%	Guesstimate
Investment		
Capital cost	2014: $3.77 m 2015: $3.77 m Total: $7.54m	Total cost as per TMR/BCC funding agreement
Operating cost	$10,000 p.a.	Guesstimate

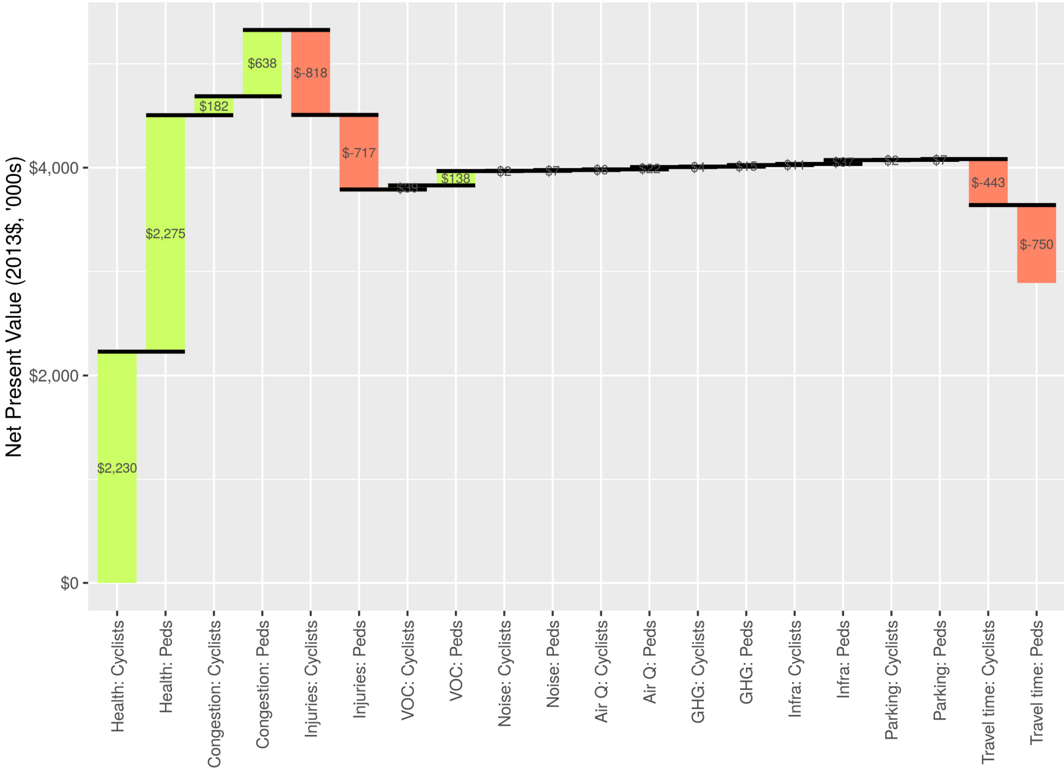
The results of the cost-benefit analysis are summarised in Table 4.2. For the central discount rate of 7% the BCR is 0.3, indicating poor value for money.

■ **Table 4.2: Economic assessment**

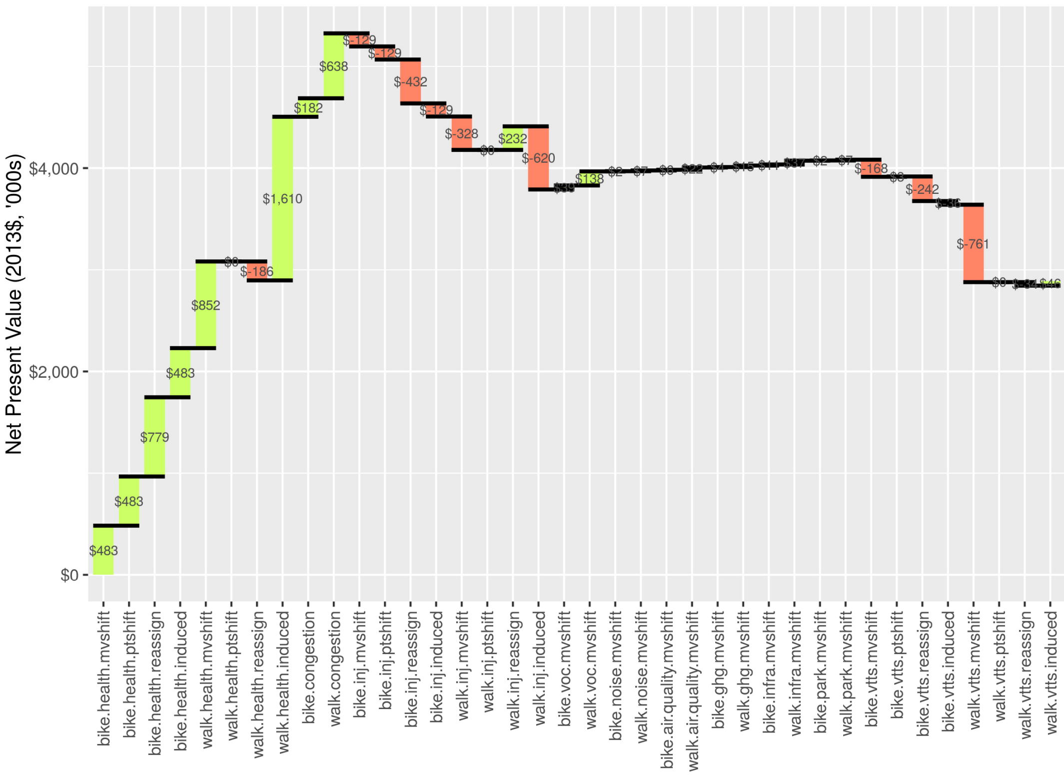
	Discount rate		
Parameter	**4%**	**7%**	**10%**
Benefit-Cost Ratio (BCR)	0.5	0.3	0.2
Likelihood BCR < 1.0	100%	100%	100%
Net Present Value (NPV)	-$4.15 m	-$5.57 m	-$6.35 m
Present Value of Benefits (PVB)	$3.68 m	$2.26 m	$1.48 m
Present Value of Costs (PVC)	$7.84 m	$7.84 m	$7.84 m

All values are 2013 prices and values.

The breakdown of the NPV for the central discount rate is shown in Figure 4.1. The majority of the benefits accrue from cyclist and pedestrian health benefits. There is marginal congestion relief, primarily as a result of motorists shifting to walking for local trips (Figure 4.2). There are also net travel time disbenefits, primarily a result of walking trips shifted from motor vehicles. This is contrary to the intercept survey finding in Figure 3.14, where respondents suggest shifting from walking to driving would take them longer. The model assumes walking speed of 6 km/h andd to 30 km/h for driving. Even if these travel time disbenefits are set aside the BCR for the 7% discount rate case improves only marginally to 0.4.



■ **Figure 4.1: Summary breakdown of net present value**



■ **Figure 4.2: Detailed breakdown of net present value**

5 Discussion

The Norman Creek pedestrian and cycle bridge provides a comfortable and safe alternative for pedestrians and bicycle riders to cross Norman Creek. The main pre-existing alternative of Wynnum Bridge is likely to be unattractive to both road users. Moreover, the bridge provides for a connected local road route for bicycle riders to avoid Wynnum Road. Furthermore, the bridge provides a direct connection between local schools, sporting grounds and residential areas. However, the project cost $7.5 m and currently provides for around 90 bicycle trips and 300 walking trips per day. The issue is whether the benefits to these users exceed the costs. This is the purpose of the cost-benefit analysis, which attempts to assign monetary values to the benefits and costs of the project over its economic lifetime.

The reported BCR of around 0.3 suggests the project represents poor value for money. This result is primarily attributable to three factors:

- the comparatively high capital cost,
- comparatively low pedestrian and rider demand, and
- that much of the demand appears to be pre-existing riders and pedestrians who have changed their route.

The latter factor is particularly significant given that most of the project benefits accrue from the health benefits attributed to active travel among those who divert from car or public transport or which are all-new (induced) trips. No physical activity benefits are assigned to bicycle riders or pedestrians who would have ridden or walked prior to construction of the bridge. While there will be safety benefits to this group, at least among those who divert from using Wynnum Road, the assumed relative risks for the different infrastructure is insufficient to provide meaningful monetary benefit. Nonetheless, it is noted that if the bridge were to save a single bicycle rider or pedestrian life the “saving” of around $4 m would go a long way towards meeting the project cost of $7.5 m[3].

It is possible that demand will increase more rapidly than the 3% cumulative growth rate assumed herein, particularly in the near-term as awareness of the presence of the bridge increases. In addition, it is noted that at the time of the fieldwork there was a paucity of wayfinding signage in the vicinity of the bridge. Should the alternative riding route to Wynnum Road be more widely promoted it is plausible that cycling demand will increase more rapidly than forecast, which would have a commensurate effect on the cost-benefit analysis.

Finally, it is recognised that the intercept survey found several positive project outcomes, including:

- almost universal support for the project among path users,

[3] However, it should be recognised that any (hypothetical) life saved would to need occur early in the project life for the benefit to be of material economic benefit given the effect of discounting.

- some indication of additional walking trips that would otherwise have been made by car, and of induced walking trips,
- self-reported increases in recreation cycling and walking (up to an hour a week) by path users, and
- travel time savings for those who would otherwise have used car or public transport.

Furthermore, it is noted that the path provides a convenient connection between East Brisbane and Norman Park which did not previously exist. There are non-monetary benefits associated with removing the geographic barrier of the creek and improving local connectivity which cannot be monetised but which are clearly valued by the community.

References

CDM Research. 2016. 'Measuring the Benefits of Active Travel'. Prepared for Queensland Department of Transport and Main Roads.

Genter, J. A., S. Donovan, B. Petrenas, and H. Badland. 2009. 'Valuing the Health Benefits of Active Transport Modes'. Research Report 359. Wellington, N.Z.: NZ Transport Agency.

Transport and Infrastructure Council. 2016. 'Australian Transport Assessment and Planning Guidelines: M4 Active Travel'. http://atap.gov.au/mode-specific-guidance/active-travel/files/m4_active_travel.pdf.

Appendix A: Intercept survey script

We're completing a quick survey on the path. Could you help us?

1. INTERVIEWER enter mode of travel
   a. Bicycle rider
   b. Pedestrian
2. In what suburb did you start your trip, and where will you finish your trip?
   a. Start: ___________
   b. Finish: __________
3. How long will the trip take?
   a. Hours: _____
   b. Minutes ____
4. How far is the trip?
   ____ km
5. What is the purpose of your trip?
   a. Commuting to or from work
   b. Fitness, recreation or sport
   c. Shopping
   d. School, university or other education activity
   e. Other: _________
6. How often have you walked/ridden here in the past month?
   a. Almost every day
   b. Every weekday
   c. 3 – 4 days a week
   d. 1 – 2 days a week
   e. Every fortnight
   f. Only once
   g. This is the first time
7. This bridge has only recently been built. Are you aware that it's new?
   a. Yes
   b. No
8. How would you have made this trip if this bridge wasn't here?
   a. Taken a different route (incl. used the road)
   b. Would not have travelled

c. Car – as driver
d. Car – as passenger
e. Motorcycle
f. Train
g. Bus
h. Ferry
i. Taxi
j. Don't know
k. Other: _________

9. What change, if any, would you say the construction of the bridge has had on the amount of time you've spent walking/riding over the past month?
    a. Significantly decreased (by at least an hour a week)
    b. Decreased (by less than an hour a week)
    c. No change
    d. Increased (by less than an hour a week)
    e. Significantly increased (by at least an hour a week)
10. IF BICYCLE RIDER: What would you have done if you couldn't ride your bike for this trip?
    a. Would not have travelled
    b. Used a car – as the driver
    c. Used a car – as the passenger
    d. Motorcycle
    e. Train
    f. Bus
    g. Ferry
    h. Taxi
    i. Walked
    j. Ran / jogged
    k. Don't know
    l. Other: ___________
11. IF TRANSPORT PURPOSE: Which of the following best describe how easily you could have used a car for this trip?
    a. I had a car available and could easily have got access to it
    b. I could have got a car from another person where I started my trip (e.g. another household member)
    c. I did not have ready access to a car to make this trip
    d. I do not have a drivers licence
    e. Other: _________

12. IF COULD HAVE USED CAR: Would it have taken more or less time to reach your destination by car?
    a. More time
    b. Same time
    c. Less time
13. IF TRANSPORT PURPOSE: Which of the following best describes how easily you could have made this trip by public transport?
    a. I had a convenient public transport alternative
    b. I had a public transport alternative but it would have taken longer
    c. I did not have a viable public transport alternative
    d. Other: _________

14. IF COULD HAVE USED PUBLIC TRANSPORT: Would it have taken more or less time to reach your destination by public transport?
    a. More time
    b. Same time
    c. Less time
15. INTERVIEWER enter any other comments: _______________