

Chapter 8 Evaluation of walking and cycling

8.1 Overview

Introduction

This chapter describes methods for economic efficiency evaluation of walking and cycling projects. The projects may include a new facility, improvements at hazardous locations, promotional activities or a combination of these.

Reference 1 sets out a framework and priorities for development of walking and cycling. Reference 2 provides guidance for cycle network and route planning.

For a cycle network to be effective in encouraging cycling, provision of cycle lanes or paths should be complemented with secure cycle parking, signage, maps, safer cycling education, marketing and integration of the routes with passenger transport.

The simplified procedure SP11 in chapter 13 can be used for evaluating walking and cycling projects.

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8.2 Travel impacts

Demand

Factors influencing demand for walking and cycling include:

- availability of facilities
- type and quality of facility including cycle parking, signage and safety of use
- location and route length
- population served by the facilities
- education and marketing.

Studies have shown that there is a positive correlation between the number of facilities that are provided and the percentage of people that use cycling for commuting purposes. It has also been observed that, in addition to having cycling facilities, they must connect appropriate origins and destinations to encourage cycling as an alternative commuting mode.

Reference 3 describes a stated preference methodology and study to identify preferences for different types of cycling facilities. The study determined the additional time that cyclists would spend travelling on each type of facility (the incremental benefit of that type of facility) compared with a base case of 20 minutes of travel in-traffic with parking.

Evaluators are required to make realistic estimates of the demand for a new or improved facility, particularly the number of new pedestrians or cyclists generated by a project. Reference 2 provides methods for estimating cycle demand.

Walking distances

Statistics on walking are provided in reference 1. The average pedestrian trip length is estimated at one km and projects that involve model shift need to be careful not to claim unrealistic walking distances.

Cycling distances

Statistics on cycling are provided in reference 1. The average cycle trip length is estimated at three km. This applies equally to new and existing users.

8.3 Benefits

Introduction

Walking and cycling provide health, access, mobility and transport choice benefits and contribute to the New Zealand Transport Strategy objectives. Walking to and from public transport stops is an essential component of most public transport journeys, and cycling can extend the catchment area of public transport. Walking and cycling contribute to community liveability, support other government strategies for health and active living, are amongst the most environmentally friendly forms of transport, free up road and parking space, can provide benefits to local economies, and can make streets safer for people.

Cycle and pedestrian facilities are non-market goods, making it difficult to ascribe an economic value to their benefits. Either stated preference or revealed preference methods are, therefore, used to value social and economic benefits.

Of the benefits listed in chapter 3, those most relevant to walking and cycling are:

- congestion reduction
- cycle and walking costs
- accident costs
- health benefits
- user cost savings
- environmental benefits (monetised and non-monetised impacts)
- community liveability
- consumer travel options.

Congestion reduction

The congestion reduction benefits of a walking or cycling project result from the number of private vehicle trips replaced by walking or cycling. This is location and time of day dependent. There is no congestion reduction benefit in places or at times when there is no congestion.

As explained in chapter 3, congestion reduction benefits consist of:

- perceived VOC and travel time savings for people that change modes
 - resource cost corrections for unperceived VOC
 - travel time and VOC savings for other road users.
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8.3 Benefits, continued

Accidents

Some projects effectively eliminate hazards along an established route used by pedestrians or cyclists, eg an intersection improvement. Walking or cycling benefits can be applied to projects that reduce or eliminate a hazard along a route, where the project promoter demonstrates (by surveys/research) that the hazard is a major impediment to these users and provided robust pedestrian or cycle counts have been undertaken.

There is growing international evidence that cycling becomes safer as it becomes more popular.

Health benefits

Regular physical activity is associated with an improvement in a wide range of health conditions, including heart disease, mental health and diabetes. The health benefits of walking and cycling have been researched overseas, and this research indicates significant benefits associated with these activities.

There is a significant range in the level of health benefits that can be ascribed to walking and cycling. The currently accepted level of the health benefits is 40 cents per kilometre for **new pedestrians** and 16 cents per kilometre for **new cyclists**.

Note: The above values are subject to further revision as new information becomes available.

One significant difference between the procedures for walking and cycling is that the health benefits of walking are applied to **new pedestrians only**, while the health benefits of cycling are applied to both **new and existing cyclists**. For cycle projects it is considered appropriate to base the analysis on all current and future cyclists using the facility. For pedestrian facilities the number of users is potentially extremely large and it is considered inappropriate to base the analysis on all pedestrian users. Therefore the benefit is applied to new users only. This is a decision that Land Transport NZ may review in the future.

User cost savings

Like congestion reduction, user cost savings is also based on the amount of modal change. User cost savings are generally zero for other than peak periods and are included in the overall perceived value of modal change described in chapter 3.

Community liveability

Community liveability benefits resulting from new or improved pedestrian or cycle facilities are proportional to the change in average distance to such a facility from residences in the community. These benefits will only be significant if a network of facilities is provided.

8.3 Benefits, continued

Composite benefits for footpaths and other pedestrian structures

A composite benefit of \$0.50 per person per km of new facility may be applied to all new pedestrians using a new facility. This benefit includes elements for the general health benefits of walking, safety and environmental benefits that accrue from attracting new pedestrians (as an alternative to private motor vehicle travel). The benefit is applied **only to new users**, because the benefits primarily accrue as a result of avoiding private motor vehicle travel.

Where a new facility eliminates or improves a site that is an impediment to safe walking, a benefit of \$0.50 may be ascribed to all **new pedestrians** using the facility. The benefit is irrespective of the length of the work. It uses the average pedestrian trip length of one km times the composite benefit given above.

Similarly, pedestrian trips (to work or to educational facilities) generated by a promotional project may be ascribed a benefit of \$0.50 per **new regular pedestrian**.

Note: These benefits are only applied to workdays (250 per year).

Composite benefits for cycle lanes, cycleways or increased road shoulder widths

A composite benefit of \$0.30 per cyclist per km of new facility may be used for **all cyclists** using a new facility. This value includes the general health benefits of cycling, the safety benefits of separating cyclists from motorised traffic and environmental benefits that accrue from less car trips, and is applied equally to new and existing cycle users.

It is assumed that provision of facilities that enhance the cycling environment will encourage existing cyclists to continue using that mode of transport.

Where a new facility eliminates or improves a site that is an impediment to safe cycling, a benefit of \$0.90 may be ascribed to **all cyclists** using the facility. The benefit is irrespective of the length of the work. It uses the average cycle trip length of 3 km times the composite benefit given above.

Similarly, cycle trips (to work or to educational facilities) generated by a promotional project may be ascribed a benefit of \$0.90 per **new regular commuter cyclist**.

Note: These benefits are only applied to workdays (250 per year).

Combined projects

Projects that combine walking and cycling may claim benefits for both modes but safety issues arising from pedestrian/cycle conflicts must be addressed and if there are additional accidents these must be accounted for in the project evaluation.

8.4 Cost benefit evaluation

Simplified procedure

Simplified procedure 11 provides a standard procedure with worksheets for evaluating the economic efficiency of walking and cycling projects with the exception of signalised crossings over roads.

8.5 References

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1. Ministry of Transport, *Getting there – on foot, by cycle. A strategy to advance walking and cycling in New Zealand transport*, February 2005.
 2. Land Transport Safety Authority, *Cycle network and route planning guide*, 2004.
 3. Transportation Research Board, *Guidelines for cost-benefit analysis of investments in bicycle facilities – interim report, Tasks 1-5, NCHRP Project 7-14*, 16 August 2004.
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