



Cross rail project in London - pic from International Business Times

project evaluation — public transport and a fair go

Promoting public transport is a common goal of many government agencies. Public transport not only provides improved accessibility but also creates a wide range of benefits to society. However, where resources and budgets are constrained, government agencies need to justify and prioritise all investments to ensure resources are allocated efficiently.

Arriving at the best overall outcome depends on using tools and approaches that can reconcile the fundamental differences between types of investment. Even though public transport and roads are both part of the transport system, public transport investment is different from road investment in a number of respects. Generally, road infrastructure is intended to address accessibility and connectivity issues, whereas major public transport investment has a strong emphasis on the “city-shaping” and societal outcomes.

We need to be able to compare these differing project types with an even hand. However, our current approach introduces a structural limitation that makes it harder for us to justify public transport investment on a like for like basis. Further, we believe that the evaluation tools we use tend to reinforce a bias against Public Transport.

The economic benefits generated by a transport project can be broadly categorised into three categories: conventional transport benefits, land use benefits and wider economic benefits. These are summarised on the next page.

CATEGORY	DESCRIPTION	BENEFITS
Conventional transport benefits	These companies are likely to appear as MaaS matures. They would provide mainly transport-related services or destination/event services such as:	<ul style="list-style-type: none"> ■ Travel time savings ■ Vehicle operating cost savings ■ Improved reliability ■ Improved amenity ■ Decongestion ■ External cost savings ■ Crash cost savings
Land use benefits	These companies are likely to appear as MaaS matures. They would provide mainly transport-related services or destination/event services such as:	<ul style="list-style-type: none"> ■ Urban consolidation resource savings ■ Urban consolidation transport benefits ■ Gains from housing or business location
Wider economic benefits	These companies are likely to appear as MaaS matures. They would provide mainly transport-related services or destination/event services such as:	<ul style="list-style-type: none"> ■ Agglomeration benefits ■ Increased labour supply ■ Imperfect competition

Conventional Transport Benefits – Key Issues

Conventionally, transport benefits are made up of changes in consumer surplus, producer surplus and externalities (Infrastructure Australia, 2017). A standardised approach, methodology and guidelines are generally used to assess these benefits. The assessment results are generally presented as a cost benefit analysis (CBA).

The conventional approach has some limitations in public transport appraisals, which can be summarised as follows:

Aggregation effects

Conventional assessment methodologies do not distinguish between an accumulation of very small savings by many people and larger savings by a smaller number of people. This means that a road project that generates a one-minute saving for a 1000 people is assessed as generating the same travel time benefit as a rail project that generates a 10-minute saving for 100 people. However, research indicates that very small savings are not necessarily either recognised or valued very highly by travellers and so this approach distorts a comparison between the two.

As a result, small incremental effects in high volume road environments can 'score' highly even when these effects are not substantive enough to effect meaningful behaviour change.

'Travel Cost' and mode shift

For new public transport projects, while the main objective is to encourage people to switch from private vehicles to public transport, the reality is that mode shift can only be expected when there is a significant reduction in "travel cost" perceived by users. Travel cost typically includes "door-to-door" travel time as well as monetary costs such as public transport fare and tolls. In the context of most Australian cities, public transport does not really offer much competitiveness in terms of "travel cost".

The Rule of Half

Even for travellers who do switch from car to public transport, the economic benefits associated with change in travel cost would need to be cut by half, (i.e. the "rule of half"). The rule of half is a well-established practice for estimating benefits enjoyed by mode switchers, but one that represents what could be a crude approximation with a substantial impact on the assessment of benefits flowing from such a switch. Given such a mode shift is in many cases one of the stated objectives of major public transport investment, this can have a significant effect on the assessed economic performance of that project.

Reliability Benefits

Reliability benefits are typically under-stated in assessment of public transport projects for travellers diverting from car to public transport. The estimation of reliability benefits requires detailed analysis of journey time variability. For rail projects, it is possible it is relatively easy to capture the reliability benefits to continuing rail users. However, for travellers who switch from car or bus, it is challenging to estimate their average lateness in the absence of relevant data.

Broader public transport benefits

Public transport projects sometimes are not only designed to improve transport accessibility but also to unlock land use development and improve business productivity. These impacts can be captured in a cost benefit analysis framework, but they have not been formally accepted as core economic outcomes by most national and state evaluation guidelines.

Land use outcomes

Transport projects, especially major projects, in many cases have land use outcomes. Land values change with changing proximity to transport infrastructure and the changing transport accessibility that results. Housing, employment patterns and industrial location can be affected by major transport infrastructure. Famously, the construction of the Sydney Harbour Bridge had profound effects on the way inner Sydney developed after its construction; likewise, the construction of Melbourne's underground rail loop changed the accessibility of different parts of its CBD and the development pressures that resulted.

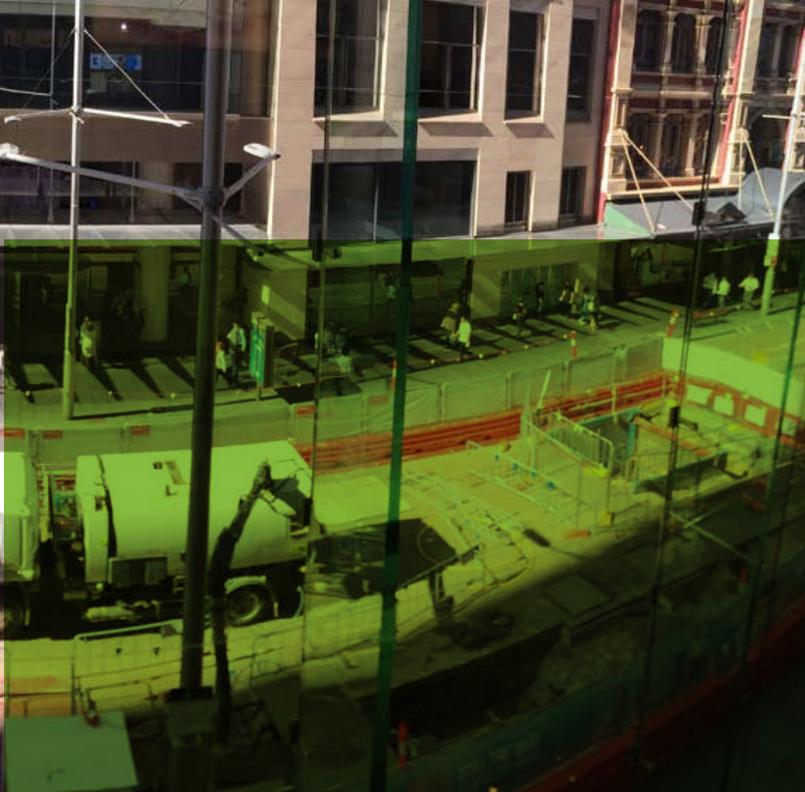
This change in land use may generate additional economic benefits that are not captured in an assessment of conventional transport benefits, although land use benefits generated by transport infrastructure are broadly recognised in Infrastructure Australia (2017).

Sydney infrastructure





George Street



Wider Economic Benefits

The third category of economic benefits is gathered under the heading of wider economic benefits. In perfect market conditions, an assessment of conventional transport benefits would capture all welfare effects of a transport project. However, the market is usually imperfect, and the economy does not function completely efficiently. As a result, benefits may arise from a transport project which are not captured in the conventional transport benefit assessment. These benefits are usually represented by improved business productivity (i.e. agglomeration benefits) from improved accessibility, and benefits arising from relocation of businesses and households. There is no agreed and universally accepted approach to assessing these benefits.

Land use and wider economic benefits can be significant for major public transport projects. For Sydney Metro City & Southwest, they collectively account for 20% of total economic benefits without inclusion of land value uplift. An attempt to capturing a wide range of "city-shaping" benefits has been made in many public transport appraisals. However, currently the national and most state-specific guidelines only accept these benefits as a "sensitivity test" to the conventional benefit.

Conclusions

CBA is a well-established tool for appraising transport infrastructure projects. Conventional transport benefits have been the focus of such economic appraisals. While increased consumer surplus, expressed in terms of travel time savings and vehicle operating cost savings, is an important objective of transport projects, such projects can provide society with a broader range of benefits typically not captured in conventional assessments.

This is particularly the case for major public transport projects. Assessment of the value of major public transport projects has primarily been based on travel time savings, decongestion and environmental benefits. The reality is that these benefits are not assessed as being as significant as travel time savings achieved by road projects, for two major reasons:

- the "rule of half" applied to mode switchers, and
- data limitations preventing capture of some impacts, such as reliability benefits.

Importantly, in many cases public transport projects are developed not only to address transport needs, but also broader strategic outcomes which are harder to quantify such as creating a more liveable, sustainable city.

Increasingly, those appraising transport projects attempt to capture these benefit streams. However, there needs to be a detailed, consistent and authoritative guidance on the methodology to be adopted nationally. This should include detailed step by step instructions to ensure projects can be appraised on the same basis.