121-2025

Where do the costs and benefits of infrastructure projects fall?

Considering the short and long-term effects of infrastructure projects

Infrastructure is consistently a hot topic

It's clear that we need more and better infrastructure to service our economy now and in the future. However, long delays in construction stages and the associated disruptions can have significant impacts on businesses and local communities, which are often left out of cost-benefit analyses on infrastructure projects.

The trade-offs between short-term costs and long-term benefits are the core of any investment case. It is imperative that decision makers effectively manage and mitigate the disruption impacts on businesses and communities while ensuring that future needs are met.

In this paper, we begin by investigating the ways in which short-term costs and impacts are included in infrastructure investment decisions. We then review the literature on the short-term impacts of infrastructure construction, drawing attention to the size, scale and duration of the impacts.

Lastly, we comment on how short-term disruption impacts on businesses can be better incorporated into infrastructure investment decisions. We also recommend a range of policy options that policy and decision makers can use to mitigate or minimise these impacts.

Investment cases for infrastructure projects focus on long-term economic benefits…

Cost-benefit analyses on public infrastructure projects usually focus on the net present value of impacts over a 30–40-year period. (Auckland Transport 2015; NZ Transport Agency Waka Kotahi 2024). Economic benefits identified in transport infrastructure projects are focused on measures like travel time savings, traffic decongestion, reliability improvements, health benefits, and reductions in greenhouse gas emissions. These are the direct benefits of better infrastructure to existing and new road users across various transport modes.

When wider economic impacts are considered, these are usually made up of flow-on future impacts such as enhanced business productivity due to greater density (agglomeration) and general uplifts in consumer demand for businesses within the site areas. For example, the 2015 Auckland City Rail Link Business Case (Auckland Transport 2015) presented transport-related benefits of NZ$10.3 billion and wider economic benefits in terms of increased agglomeration of NZ$3.2 billion[1] over a 40-year operational phase, assuming the city rail link is open in 2023.

The business case claimed that the city rail link would encourage intensification of businesses and people around Auckland's city centre, the City Centre Fringe and adjacent areas around

[1] Both refer to undiscounted figures.

the rail line. This would, in turn, uplift productivity across Auckland's inner city.

…but short-term impacts on local community tend to be absent

The city rail link experience is an example that demonstrates the ongoing costs to the public sector and society more broadly if the short-term disruption impacts are not accounted for upfront. Although the city rail link 2015 Business Case (Auckland Transport 2015) acknowledged the potential disruptions of the construction works to the local community, the project did not allocate any budget to account for having to compensate for the potential losses to local businesses due to the disruptions.

Official advice to the Minister of Transport (Ministry of Transport 2021) on compensation for business disruptions, resulting from the city rail link construction, calls out the need for short-term impacts to be included in business cases. This gap is also highlighted by the City Rail Link Interim Review (New Zealand Infrastructure Commission/Te Waihanga 2023), which found a general lack of consideration of the significant negative short-run disruption impacts on businesses and the resulting compensation costs from the disruptions.

"*It may be that the approach used for CRL (as the project is already underway), is different to the approach to be used for future projects where disruption management and financial support is considered and factored in during the business case and funding for any new project. Looking forward, minimisation of disruption could also be incentivised at the beginning of future projects through enhanced contractual arrangements.*" (Ministry of Transport 2021)

Inadequate accounting for the short-term impacts leads to several consequences

In 2019, a business hardship programme was set up following a petition of businesses affected by the first stage of the city rail link construction works had caught public awareness (Clent 2019). This programme paid out compensation ranging from NZ$5,500 to the cap of NZ$100,000 to only 25 of the businesses affected by the first stage of the construction works (Orsman 2021). A subsequent NZ$12 million Targeted Hardship Fund was also established in 2021 to support those businesses struggling to survive due to disruptions and construction delays.[2]

More recently, Auckland Council and the City Rail Link Alliance have set up a Small Business Support Programme, recognising the need to support businesses to grow resilience in the Auckland CBD's changing environment. The programme provides affected businesses in the Auckland CBD midtown tailored business support services and microgrants.[3]

The Sydney CBD Light Rail project is another example of the ongoing costs to the public when the short-term disruption impacts were not adequately accounted for and communicated to the local community. After construction commenced in 2015, most businesses along the route had to close down due to the construction works, and some properties were devalued (Committee for Auckland 2021).

Although an amount of AU$68 million (1 percent of the project's total budget) was set aside to mitigate the disruption impacts on the local community (Randwick City Council 2014), this was much less than the financial losses experienced by the local as the project completion had been delayed significantly.[4] In recent years, the affected business and property owners have brought up the Sydney

[2] The Building Cities Better webinar in 2021 suggests that 200 businesses had already been affected since the construction of city rail link started.

[3] https://progressakl.co.nz/midtown/supporting-businesses/

[4] Lawyers involved in the legal claims of the Sydney Light Rail Class Action suggests some amount of AU$400 million to properly compensate for businesses' financial losses.

Light Rail Class Action against Transport for New South Wales for the losses and nuisances caused by the project's construction works and delays.

The City of Montreal launched programmes to support businesses that have been impacted by construction works of city infrastructure projects, retroactive from 2016 to 2021. This included a CA$25 million programme to compensate for the losses to businesses due to city construction projects (Olson 2018; MacLellan 2018). Businesses that experienced at least 15 percent of their profits compared to prior earnings could receive a compensation of up to a maximum of CA$30,000 per year.[5] A CA$16.8 million programme was also set up to help business development organisations support local businesses during construction periods (Jadah 2018).

Lack of evidence base for short-term disruption impacts in New Zealand

There is anecdotal evidence in the media about how businesses and property owners have been impacted by infrastructure construction works. These include losses of amenity, revenue, rental income and even negative impact on the mental health of some business owners (Powell 2024; Long 2024; Orsman 2021; Huston 2023; Daly 2024; NZ Herald 2021). However, little work has been done in New Zealand to measure the size of the impacts.

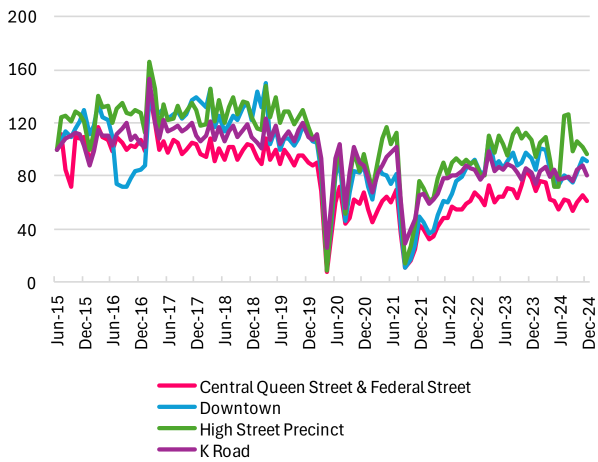
One way of identifying the impacts is by comparing pedestrian traffic counts and business activities before and during construction. Here, we show how this approach may be applied using Heart of the City's pedestrian count series,[6] which covers the period before the city rail link construction works and during the construction.

Our analysis of the pedestrian count data suggests that foot traffic went down drastically during the COVID-19 pandemic across the Auckland CBD and is still on its way to recovering to the pre-pandemic levels in February 2020. Recovery has been much slower around Central Queen Street and Federal Street, which are the part of the CBD closest to where construction works of the city rail link underground tunnel and Te Waihorotiu Station.

Pedestrian counts across Auckland's CBD experienced sharp drops due to COVID-19 restrictions in early 2020. However, looking at the pre-pandemic period trend, pedestrian traffic in the Central Queen Street and Federal Street area has been tracking lower since as early as 2017.

Figure 1 Monthly pedestrian traffic by part of the Auckland CBD

Index (%), base: June 2015



Source: NZIER estimates based on Heart of the City's pedestrian count data

In line with this observation, a 2020 Auckland city centre business census study by Auckland

[5] The compensation received per year was calculated based on the loss in gross profits during the construction period relative to prior gross profits, minus the first 15 percent in losses. This compensation programme was only eligible for businesses that provide direct services or sales to the public.

[6] More information on Heart of the City's pedestrian count data is available at: https://www.hotcity.co.nz/city-centre/results-and-statistics/pedestrian-counts

Council (Huang 2020)[7] found that there were around 90 fewer businesses between 2017–2020 in the Central Queen Street Valley and near the SkyCity areas, which was a 6 percent decrease in the business counts in these two areas combined. Note that these two areas are in close proximity to the city rail link construction works. Increased work-from-home arrangements and the economic downturn post-COVID could be two other contributing factors to the decline in pedestrian traffic in the areas near the city rail link construction. These factors are intertwined with construction disruptions.

Nonetheless, the differences in pedestrian traffic in pre-COVID years and the slower recovery in pedestrian traffic post-COVID in areas near the city rail construction still suggest that the nuisances of those construction works have had some negative impacts on activity in nearby areas in the Auckland CBD over the years.

International evidence suggests growing scrutiny of disruption impacts

Globally, there has been a growing spotlight on the need to identify, quantify and monetise the potential short-run negative impacts that construction disruptions may have on local communities and businesses. In this section, we discuss findings from Canada and the United States.

Canada

A survey of small to medium businesses in Canada found that around 70 percent of businesses were affected by construction activity over the five-year period from 2018 onwards (Canadian Federation of Independent Business 2024).

Businesses reported operational impacts like traffic, dust, debris or noise (58 percent), delivery and logistics disruptions (49 percent) and parking and accessibility problems (49 percent). Financial impacts reported by businesses include decreases in sales (22 percent), additional expenses (15 percent), business owners needing to use savings (14 percent), taking on additional business debt (12 percent), and either losing or having contracts delayed (8 percent).

The financial impacts can be significant; small businesses reported losing an average of 22 percent of their sales and incurring additional costs of around CA$10,000 on average for repairs and cleaning services.

United States

Cost impacts on businesses from disruptions due to infrastructure construction works are also evident in the United States. Radin and Ray (2011) reviewed several quantitative studies undertaken during the 1990s and 2000s on the sales revenue impacts of highway construction on local small businesses. The impacts from those studies ranged up to almost a 40 percent decrease in sales.

The negative impacts of transport project construction on local businesses can go beyond just the short-term loss of revenue.

Ray (2017) found that the risk of business failure appeared to be 46 percent higher for businesses located within 400 metres of station construction for the Los Angeles Metro Rail than those who were not. Only 38 percent of businesses within 400 metres of station construction remained in business.

There is also growing research on how new transport investments can lead to commercial gentrification in the surrounding areas. Shuetz's (2015) study highlights the vulnerability of retail to commercial gentrification. The loss in retail employment density after the station opening suggests that the risk of business failure can persist even if they manage to survive the construction phase. Tornabene and Nilsson (2021) and Wexler and Fan (2022) also showed evidence

[7] This study was limited to the inclusion of businesses or premises Including vacant) with publicly accessible information visible from the street and on signage in building foyers.

of the vulnerability of local small businesses to business displacement even beyond the construction phase of transport projects.

The importance of quantifying short-term impacts in cost-benefit analysis

Cost-benefit analysis hinges on the concept of allocating resources in the most economically efficient way. In economics, this is typically referred to as 'Pareto efficiency', where no one can be made better off without making others worse off as a result. In reality, this cannot always be the case, and governments implement policies to redistribute the economic welfare more to achieve greater equality or equity.

The Kaldor-Hicks compensation principle expands on this concept by proposing that policies would be implemented if the benefits gained are large enough to potentially fully compensate those who lose out (Boardman et al. 2018).

While this does not actually require compensation to occur, it underscores the need to adequately consider the total costs and benefits and the groups that will gain or lose out from a policy decision. For businesses able to endure short-term costs, the potential future gains may be enough to compensate them for their impacts.

However, many small businesses may not be able to withstand reductions in profits long enough to benefit from future gains. Policies, therefore, need to consider ways to reduce the short-term impacts so that all businesses can benefit from future benefits, or the benefits need to outweigh the costs, including the potential compensation.

The review of the Auckland City Rail Link (New Zealand Infrastructure Commission/Te Waihanga 2023) calls out the lack of consideration of the significant impacts that early works had on local businesses, and that compensation was not explored. A major finding of the review is that: *"full consideration of the impacts of a project on business and community should occur prior to implementation and be considered at the time of funding deliberations. The forms of compensation for differing stakeholders who may be negatively impacted should be considered and funded within project approvals. The governance of any form of compensation should also be considered and endorsed."*

An advantage of quantifying short-term negative impacts and identifying who is impacted is that the policy can be further developed and refined to reduce costs where possible. It may not be appropriate to have compensation as the first tool to mitigate negative impact.

How can short-term impacts be better integrated into decision-making?

PolicyLink (2013) discuss the Seattle Light Rail project as an example of how business impacts from transport project construction can be successfully mitigated. The construction of the Seattle Light Rail began in 2006 and was completed in 2009. By the end of the construction period, 85 percent of all businesses along the light rail line were still operating.

In anticipating the short-term and long-term impacts on businesses along the new light rail line, the regional transport authority leading the light rail project had set aside US$50 million in 2002 – four years in advance of project construction, for a range of financial assistance and business support programmes.

Business outreach programmes also began ahead of project construction, which helped the transport authority build a trusting relationship with the local community and better understand the assistance and support local businesses need to get through project construction.

The transport authority also partnered with community-based organisations that were experienced with business development and support to provide the technical assistance needed for the survival and strengthening of the businesses to get through project construction.

Key areas for assessing and minimising negative short-term impacts

Reviews of the disruption impacts that construction projects have on businesses and local communities cover several core recommendations (New Zealand Infrastructure Commission/Te Waihanga 2023; Canadian Federation of Independent Business 2024; Minnesota Department of Transportation 2009). These are broadly categorised as:

- **Outreach programmes** – businesses and communities should be involved early and regularly throughout the project. From early design and optioneering to consistent check-ins and communication along the build phase.
- **Clear lines of responsibility** – enabling contact between stakeholders, decision makers and community representatives provides an avenue to discuss impacts and identify how they could be mitigated.
- **Considering financial support** – forms of financial support should be clearly identified, planned for and communicated to stakeholders as early as possible. This ensures businesses are aware of the eligibility criteria for compensation. This also ensures that funding is available and, if insufficient, other mitigation measures can be investigated.

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