Land transport: Driving success

A brief look at the quality of our rail and road infrastructure.

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- The World Economic Forum's most recent Global Competitiveness Index shows that firms in New Zealand think that our road and rail networks are not up to scratch.
- Significant levels of investment have recently expanded the capacity and condition of these networks.
- But this has not been enough to address past underinvestment and as a consequence network performance has deteriorated during the current economic cycle.
- Even if economic growth softens, changing demographics, structural changes to the economy, advances in technology and broader environmental considerations will ensure that our appetite for travel keeps growing.
- Greater investment is needed if we are to stop playing catch-up and deliver a transport system capable of addressing future demand.

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Context

The World Economic Forum's (WEF) recently published global competitiveness index (GCI) report for 2017-18 ranks New Zealand the 13th most competitive out of 137 countries.

The country scores highly across a number of dimensions of competitiveness. It receives top marks for the sophistication of its financial markets, it is rated highly on the efficiency of its labour markets, and beats most other countries on health and primary education indicators.

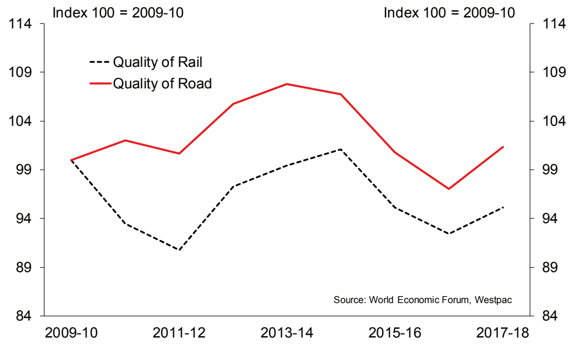
However, the GCI also shows that firms in New Zealand are dissatisfied with the state of our land transport system. Indeed, the quality of our road and rail networks was identified as one of a number of weak spots in our overall competitiveness.

Transport perceptions – GCI rankings

The GCI ranks the quality of our road network 40th – ahead of Ireland and China and a little behind Estonia and Swaziland. It ranks the quality of our rail network even lower at 46th, putting New Zealand behind Poland and Hungary, although just ahead of South Africa and Swaziland who come in at 46th and 47th, respectively. New Zealand's natural peer group, i.e. countries which it typically compares to in other surveys, all sit higher in the index.

This not a one-off – for a number of years an inadequate supply of infrastructure has been seen by firms as being the biggest hurdle for doing business in New Zealand. Figure 1 shows GCI scores (which underpin the rankings) for road and rail infrastructure indexed back to 2009-10. It suggests that although there have been some fluctuations, firms operating in New Zealand rate the quality of our roads in 2017-18 as being about the same as they did in 2009-10. In other words, no change in quality over the past 8 years. The picture is worse for the rail – business opinion has deteriorated over the years and despite a slight pick-up in 2017-18, remains below that of 2009-10.

Figure 1: World Economic Forum – GCI scores



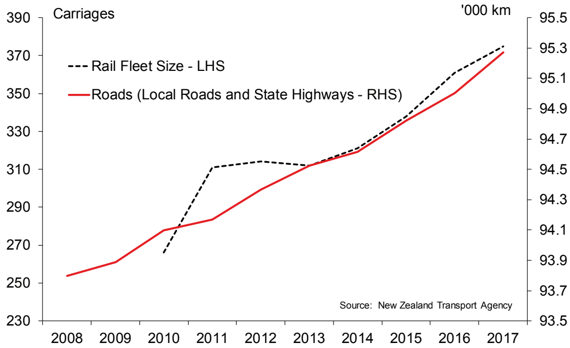
The importance of a high quality land transport network cannot overstated. Road and rail networks provide accessibility to different parts of the country as well as to the rest of the world. They link people to jobs and products to markets. Moreover, they underpin supply chains and logistics; and support domestic and international trade. When working well, they make can make a significant contribution to New Zealand's economy. When they are not, they can constrain economic growth and prosperity.

So what does the evidence say about the quality of our road and rail networks? Specifically, how extensive are they and what condition are they in?

Transport realities – extensiveness

New Zealand's road network is 95,000 kilometres in length, of which 11,000 kilometres is state highways and remainder, local roads. As can be seen in Figure 2, the length of the road network has grown by about 1,500 kilometres over the past 10 years, increasing by an average 0.2% per year.

Figure 2: Road and rail capacity



About 82% of this road network (87% of local roads and 45% of state highways) is now open to high productivity motor vehicles (HPMVs). These vehicles, which have a carrying capacity of more than 44 tonnes (up to a maximum of 62 tonnes), help freight operators move more freight with fewer truck trips at lower cost. Not surprisingly, the use of HPMV's has grown steadily and now accounts for well over 30% of heavy commercial travel.

Rail is slightly different. The network is made up of 4,100 kilometres of track and this has been relatively stable for some time. What has changed, however, is the electrification of Auckland rail system and related upgrades to existing infrastructure. As a result of this about 589 kilometres of rail infrastructure across New Zealand is now electrified. Figure 2 also shows that the number of train carriages has grown steadily in recent years, increasing by an average of 5% per annum over the last decade on the back of improvements to the network in Auckland and the replacement of ageing rolling stock in Wellington.

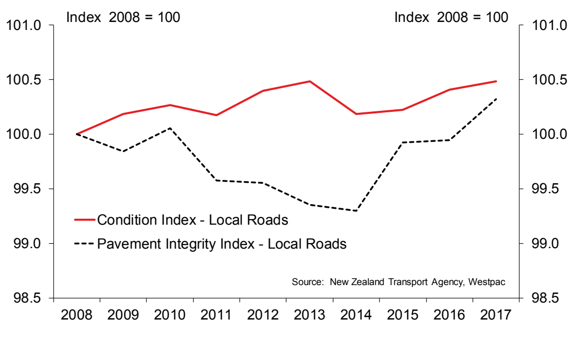
Another way of looking at extensiveness is to observe how different transport networks work together within a system. While some progress has been made on integrating rail and road based public transport, particularly in Auckland, there has been limited progress on freight – almost 85% of which is moved around by road. There is good reason for this. Road is not only cheaper than rail, it also provides a convenient door-to-door service. This is even more so given the introduction of HPMVs. By contrast, rail typically involves road-bridging freight to a public freight yard or container–transfer facility, or investing in and servicing customer rail sidings. Either of these takes time, money and logistic effort. This counts against rail, not just in a competitive sense but also in terms of its ability to complement road. That's not to say that possibilities do not exist - the New Zealand Transport Agency and Kiwirail together with sector partners are actively looking at ways to improve road and rail integration, but more needs to be done. The key is to improve the competitiveness of rail freight and until that happens the possibility of a fully integrated transport system seems quite far off.

Transport realities – condition

The standard approach to assessing the condition of a transport network is look at its physical characteristics to determine whether it is able to deliver the levels of service for which it was designed. Using this approach, we would argue that things have improved in recent years.

Rail data is pretty hard to come by, so we have focused on road infrastructure, particularly the 84 000 kilometres of local roads (which takes just over 50% of all road based travel). As can be seen from Figure 3, indicators of pavement integrity and condition for New Zealand's local roads have shown an improving trend since 2014 (reversing declines from previous years). Published data from the New Zealand Transport Agency also indicates that the surface condition of the state highway network has been maintained at optimal levels for a number of years. This is despite large increases in demand for travel and reflects the impact of best in class asset management practices, evidenced by ongoing maintenance, renewal and operations activity.

Figure 3: Condition of local roads in New Zealand



However, if we define condition in terms of whether road or rail is meeting the demands placed upon it then a very different picture emerges. Figure 4 compares the capacity of the road network with demand for travel (expressed as vehicle kilometres travelled) indexed back to 2008. It clearly shows that while the supply of transport capacity has edged higher in recent years, it hasn't kept pace with growth in travel demand which has been underpinned by a relatively strong domestic economic performance (in turn supported by above trend population gains).

This is despite the fact that the country spends over $5bn a year on land transport and has done so for over decade. The biggest chunk of this spending goes on road and rail.

However, much of this spending has been focused on addressing an infrastructural deficit caused by chronic underinvestment in the 1980s and 1990s. In doing so, it has increased the capacity of the network and helped to maintain it in tip top condition. But this hasn't been enough to ensure that the network is always able to handle some of the large increases in traffic that have accompanied the current economic cycle – at least not without some deterioration in network performance.

Figure 4: Supply of network capacity vs demand for travel

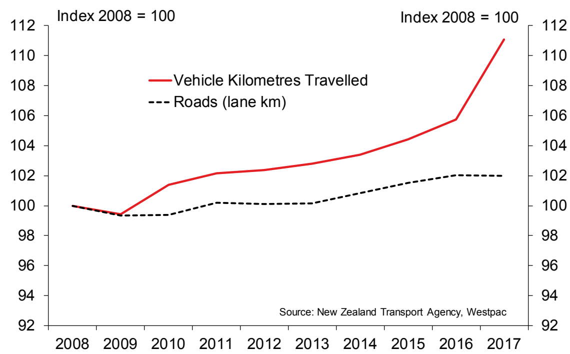
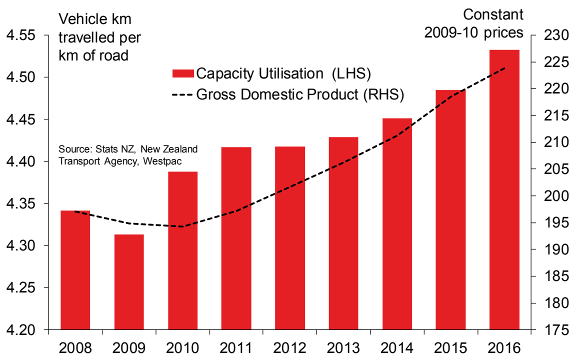


Figure 5 shows that as travel demand has increased, capacity utilisation (expressed as vehicle kilometres travelled per kilometre of road length) has risen (much in line with the economy as a whole). Other indicators of capacity utilisation, such as the Austroad's measure of network productivity, reflect a similar pattern.

Figure 5: Capacity utilisation vs economic activity



A consequence of this increase in capacity utilisation has been a deterioration in customer levels of service, evidenced by a reduction in the ability to predict travel times between origins and destinations. According to the New Zealand Transport Agency, the percentage of journeys deemed to be predictable fell from 80% in 2014 to 70% in 2015/16 across our three major urban centres.

For businesses, this lack of predictability is very real – it implies higher transport costs, a possible loss of competitiveness and the potential for reduced profitability. It is also likely to have been the key reason why firms in New Zealand continue to view road and rail transport in such a poor light.

Final Stop

There has actually been some big increases in investment over the past 10 years, which have demonstrably increased the extensiveness and improved the condition of our land transport networks.

Despite this investment, the evidence presented here shows that the network is not keeping pace with the growing demands being placed upon it, perhaps due to a legacy of under investment in the latter part of the 20th century. This presumably explains why firms gave a downbeat assessment in the GCI.

Greater investment is needed if we are to stop playing catch-up and deliver a transport system capable of addressing future demand. Even if economic growth starts to slow, our appetite for travel is likely to increase further, underpinned by demographic and structural economic changes, rapid advances in technology and deepening environmental considerations.

The challenge then is to anticipate what demand for travel will look like in the future and invest accordingly. Only then will we get to a point where transport infrastructure is viewed more as an enabler rather than a problematic factor for doing business in New Zealand.

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