

Summary

BYTRANS: Effects and consequences of capacity reduction in the Bryn tunnel. End-report

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The Bryn tunnel is located on the outer ring-road called Ring 3 in Oslo, and it carries annual average daily traffic (AADT) of about 70 000 vehicles. The capacity in the tunnel was reduced from four to two lanes in the period of February 2016 to April 2017. Road users adapted to the capacity reduction in ways resulting in a significant decrease in traffic volumes through the tunnel, by 26–34 percent in rush hours and 20–23 percent per day. The average traffic speed was, nevertheless, significantly reduced during the capacity reduction. In the normal situation, average measured speeds were close to or above the speed limit, 70 km/h. During the capacity reduction, speed limits were reduced to 50 km/h, and the average measured speeds to 30–40 km/h. The southbound traffic in afternoon rush hour was different, and here average measured speeds were reduced from about 30 km/h to about 20 km/h. Average traffic speeds were also reduced in the hours adjacent to rush hour.

Traffic volumes increased on two alternative routes on the main road system, which indicates that some road users chose to use these as alternative routes. We found only smaller changes in traffic volumes on more local roads. Apart from this, it seems that the effects of the Bryn tunnel capacity reduction were mainly limited to the road network in close proximity to the tunnel. Overall, it appears that the number of vehicles in the road system was somewhat reduced in the period with capacity reduction. Traffic increased when the tunnel regained normal capacity, but to a lower level than in the before-situation. The information from public authorities about the capacity reduction seems to have reached the road users. In surveys, some of the employees in companies located in the Bryn area answered that they had adapted to the capacity reduction by choosing other routes when travelling to and from work, changing their mode of transport, travelling earlier or later or using their home offices more frequently. Freight and distribution traffic adapted by avoiding the tunnel in rush hour to a limited degree, and the effect was lower compared with that observed in passenger transport. Those who made changes to adapt to the situation chose other routes, reorganised routes or started their route earlier. Taxi drivers saw no need to make changes.

Concerning consequences, a minority of commuters reported changes of routines and responsibilities in the household, and some experienced reduced satisfaction with their commutes. Some truckdrivers reported more stress and frustration, longer work hours and less predictable and comfortable workdays. We have not been able to detect significant negative consequences.

Hence, it can be concluded that halving the capacity on one of Norway's heaviest trafficked roads mainly resulted in negative effects in the form of increased delays and variability in the Bryn tunnel and adjacent roads, but severe consequences were not experienced. The capacity reduction went relatively well, and better than expected, as it caused neither crisis nor chaos. This is in line with findings from previous research on similar cases, in Norway and elsewhere.

The study and the results can open up new ways of thinking and for new opportunities in developing the more efficient and sustainable cities and urban transport systems of the future, by:

- Expanding understandings of what interventions are possible and relevant in developing more efficient and sustainable cities and urban transport systems
- Providing input to ongoing discussions concerning assumptions and methods used in analyses of interventions in transport systems, that could have a major impact on the development of future urban transport systems
- Illustrating that replacement capacity does not necessarily have to be built if, for various reasons, road capacity are reallocated for other uses
- Contributing to reduced investments in road capacity expansions in urban regions aiming at zero-growth or reduction in road traffic
- Documenting the need to consider measures that can reduce delays, stress and other disadvantages for truckdrivers working in freight transport and goods delivery
- Providing transport authorities with a better knowledge base for reducing disadvantages associated with future tunnel rehabilitation projects in urban areas