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Cost Benefit Analysis of walking and cycle track networks

Adrian Davis 29/07/09

Top line: investment in walking and cycle track networks in three Norwegian cities seems to be highly beneficial to society since net benefit/cost ratios in these cities were approximately 4:1, 14:1 and 3:1, respectively (ie highly positive).[1]

Since the start of the 21st century there has been an increasing number of studies addressing cost-benefit analysis (CBA) of walking and cycling. These indicate that including health impacts arising from existing and new users could make a major difference to CBA results.[2] One study undertaken in three Norwegian towns (Hokksund, Hamar, Trondheim) of their walking and cycling track networks directly addressed this short-coming.[3] The CBA included conservative estimates of some benefit components:

- *Traffic accidents* - assumed that the number of traffic accidents resulting in injury would remain unchanged because of the new walking and cycling tracks.
- *Travel time* – assumed that travel times for pedestrians and cyclists remain unchanged
- *Insecurity* - felt by pedestrians and cyclists moving along a road was included at a cost of NOK 2 per kilometre. Assuming an average speed of 10–20 km/h the cost of insecurity was about NOK 20–40 per hour for cyclists.
- *School bus transport* - assumed that 50% of children previously using a bus would not need this if walking and cycle track networks were constructed.
- *Less severe diseases and ailments and less short-term absence* – assumed that short-term absence from work would be reduced by 1 percentage point (from 5% to 4%) and that 50% of new pedestrians and cyclists would see improvements in their health.
- *Severe diseases and ailments and long-term absence/disability* - moderate amounts of daily physical activity reduce risk of premature mortality in general. Risk reductions were related to just four types of severe diseases or ailments - cancer, high blood pressure, type-2 diabetes and musculoskeletal ailments. Estimated costs due to welfare loss for people suffering from these diseases or ailments were included. The welfare loss is estimated to be 60% of the total costs - the same magnitude as for welfare loss for people injured in traffic accidents used in Norwegian CBAs of other road investments.
- *External costs of road transport* - included the external costs were CO2-emissions, local emissions to air, noise, congestion and infrastructure costs.
- *Parking costs* – commute trips by car replaced by walking or cycling were assumed to reduce parking costs for businesses in Trondheim, Hamar and Hokksund by NOK 1165, NOK 560 and NOK 325[4] per month, respectively.

Compared to the relatively low net benefit/cost ratios for other transport investments, investments in walking and cycle tracks provides a chance to make investments yielding considerably higher profitability to society than seen from most other programmes in the transport sector. This conclusion is supported in more recent studies.

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[1] A benefit to cost ratio greater than 1 represents "value for money" to the public sector.

[2] Elvik, R. 2000 Which are the relevant costs and benefits of road safety measures designed for pedestrians and cyclists? *Accident Analysis and Prevention*, 32: 37-45.

[3] Sælensminde, K. 2004 Cost-benefit analyses of walking and cycling track networks taking into account insecurity, health effects and external costs of motorised traffic, *Transportation Research Part A*, 38: 593-606.

[4] £1 = 10 Norwegian Kroner (NOK)