To:	Transport & Health Policy Makers, & Practitioners
From:	Prof Adrian Davis, TRI, Edinburgh Napier University
Date:	13th November 2019
Subject:	Essential Evidence 4 Scotland No 18: Does building cycle networks lead to more and safer cycling?

Top line: The primary cause for the large reduction of risk to cycle users in Seville was the implementation of the network of bikeways. The reduction in risk was the primary cause for the increase in the number of bicycle trips.

Growing public awareness about the negative effects of car-based mobility on environment and health has attracted considerable attention to alternatives based on active mobility in urban environments. Such alternatives include utilitarian cycling, that appears as a valid option for short trips below 5–10 km. Bicycles are also a good way to access public transport networks. Building bicycle lanes and bicycle tracks are probably the most common measures used to encourage cycle use. Most planners and bicycle advocates firmly believe that these facilities reduce the risk of cycling. In fact, statistics on a national scale in countries with a well developed cycling infrastructure, like the Netherlands, Denmark or Germany, suggest that bicycle kilometres travelled per inhabitant continued to increase, while the number of cycling fatalities continued to decline.

A study reported on the effect on cycling safety of the building of a network of bi-directional and segregated cycle tracks in the city of Seville (Spain) between 2006 (19km) and 2013 (164km).[1] Seville experienced a big growth of utilitarian cycling, from negligible use to near 6% of all trips, after the implementation of the cycle tracks network, followed by the implementation of a successful system of bicycle sharing. The researchers noted that it was the political decision of implementing the network which triggered the whole process leading to the reported substantial reduction in the risk of cycling after 2007. The risk of cycling is defined as the yearly ratio between the total number of bicycle collisions with motor vehicles and the total number (millions) of bicycle trips.

The researchers concluded that the “effect of the network” must be considered as a relevant effect, besides the obvious effect of the length of the network ‘mesh’. They also investigated the presence of a “safety in numbers” effect. There is evidence showing that the number of bicycle traffic crashes does not grow linearly with the number of cyclists.[2] The researchers analysis provided an independent confirmation of the theory of “safety in numbers”.[3] It also showed that the percentage of killed or seriously injured cyclists over the total number of bicycle traffic crashes, also dropped after the implementation of the cycle tracks network in 2007.

The main conclusion regarding policies aimed to promote cycling safety in the city of Seville was the confirmation of the importance of the decision of creating a complete network of bikeways covering the whole city instead of just continuing making isolated bikeways. Future policies aimed to further increase cycling safety in the city should, however, take into account the need to complement the extension of the network of bikeways with other measures such as traffic calming and/or restrictions to motorised traffic, which are poorly developed in the city.

[1] Marqués R., V. Hernández-Herrador, 2017. On the effect of networks of cycle-tracks on the risk of cycling. The case of Seville. *Accident Analysis and Prevention*,102: 181-190.

[2] Elvik, R. 2009. The non-linearity of risk and the promotion of environmentally sustainable transport. *Accident Analysis and Prevention,* 41(4): 849-855.

[3] Jacobsen, P. 2003. Safety in numbers: more walkers and bicyclists, safer walking and bicycling. *Injury Prevention*, 9(3): 205-209.