



To: Place Directorate

From: Adrian Davis

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Subject: Essential Evidence on a page: The rise and rise of e-bikes

Top line: E-bike use has grown dramatically over the past decade and there is little evidence to suggest this growth will slow in the coming decade, as market penetration is low across much of Europe.

Electric bicycles (e-bikes)¹ represent one of the fastest growing segments of the transport market. Over 31 million e-bikes were sold globally in 2012. Since then 36 million e-bikes are manufactured each year in China.² China leads the world in e-bike sales, followed by the Netherlands and Germany. By 2012 in the Netherlands, sales of e-bikes equalled or exceeded those of conventional bikes in value; in Germany, one in ten bikes sold was an e-bike; and there were estimated to be over a million e-bikes in use across Europe in 2012. Sales globally are forecast to reach 47.6 million by 2018.³ E-bike sales in Europe from 2016 have been experiencing a stronger growth trend than regular bike sales, and in 2016 accounted for up to one in six of all bike sales.

A recent review has reported that E-bikes increase bicycle usage. An attraction for potential users is that E-bikes can maintain speed with less effort.⁴ E-bikes have the potential to displace conventional motorised (internal combustion) modes, but there are open questions about their role in displacing traditional bicycles. Researchers have found replacing car trips was cited by almost 65% of respondents as one of their primary reasons for beginning to use an e-bike³. E-bikes have been shown to provide health benefits and an order of magnitude less carbon dioxide than a car travelling the same distance. The research to date on the impact of e-bikes on cycling and car use suggests that e-bikes facilitate more frequent cycling, and trips of greater distance. In North America and Australia and some Chinese studies, e-bikes appear to be used as a replacement for some car trips, although little data exist to understand the precise magnitude of this effect.

Despite the growth in e-bike research over recent years, several important gaps in knowledge are apparent. Government agencies have generally not yet integrated e-bikes as a travel mode option as part of travel surveys, hospital admissions, and police crash databases. As e-bike use continues to grow, it will become more important to offer 'e-bike' as an option on standardised forms related to transport, providing much needed data on the level of e-bike use at the population level. This will help address the low sample size associated with many of the current e-bike studies. Including e-bike questions on population surveys will also serve to enhance understanding of any demographic difference between e-bike owners and the general population. Moreover, in order to better understand the impact of e-bikes, comprehensive studies are needed to quantify the influence of e-bikes on travel behaviour.

¹ i.e. the bicycle has functional pedals, but is assisted by an electric motor

² OECD/International Energy Agency, 2015 *Energy Technology Perspectives 2015. Insights emerging from the 2015 Global EV Outlook (IEA)*. EVI Meeting, Goyang, Korea.

³ MacArther, J., Dill, J., Person, M. 2014. Electric Bikes in North America: Results from an online survey. *Transportation Research Record: Journal of the Transportation Research Board*, 2468, 123–130.

⁴ Fishman, E., Cherry, C. 2016 E-bikes in the Mainstream: Reviewing a decade of research, *Transport Reviews*, 36(1): 72-91.