

Chapter 7- Transport -Late -Evidence:

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Please find below the list of peer-reviewed evidence that we request to file that supports our requested amendments to Appendix 7.2 in our Statement.

List of evidence:

- Andersen, Lars Bo, et al. (2011), 'Cycling to school and cardiovascular risk factors: a longitudinal study', *Journal of physical activity and health*, 8 (8), 1025-33.
- Bonham, Jennifer and Koth, Barbara (2010), 'Universities and the cycling culture', *Transportation research part D: transport and environment*, 15 (2), 94-102.
- Buehler, Ralph (2012), 'Determinants of bicycle commuting in the Washington, DC region: The role of bicycle parking, cyclist showers, and free car parking at work', *Transportation research part D: transport and environment*, 17 (7), 525-31.
- Chatterjee, Kiron, Sherwin, Henrietta, and Jain, Juliet (2013), 'Triggers for changes in cycling: the role of life events and modifications to the external environment', *Journal of Transport Geography*, 30, 183-93.
- Cooper, Ashley R, et al. (2008), 'Longitudinal associations of cycling to school with adolescent fitness', *Preventive medicine*, 47 (3), 324-28.
- CyclingCenterOfExcellence (2006), 'The Mayor's School Cycle Parking Program in London', *Children, Youth and Environments*, 16 (1), 191-98.
- Daley, Michelle, Rissel, Chris, and Lloyd, Beverley (2007), 'All Dressed Up and Nowhere to Go?: A Qualitative Research Study of the Barriers and Enablers to Cycling in Inner Sydney'.
- Gonzalo-Orden, Hernán, et al. (2014), 'Bikeways and Cycling Urban Mobility', *Procedia-Social and Behavioral Sciences*, 160, 567-76.
- McClintock, Hugh and Shacklock, Vincent (1996), 'Alternative transport plans: encouraging the role of employers in changing staff commuter travel modes', *Town Planning Review*, 67 (4), 485.
- Nkurunziza, Alphonse, et al. (2012), 'Examining the potential for modal change: Motivators and barriers for bicycle commuting in Dar-es-Salaam', *Transport policy*, 24, 249-59.
- Santos, Georgina, Behrendt, Hannah, and Teytelboym, Alexander (2010), 'Part II: Policy instruments for sustainable road transport', *Research in Transportation Economics*, 28 (1), 46-91.
- Tin, Sandar Tin, et al. (2009), 'Cyclists' attitudes toward policies encouraging bicycle travel: findings from the Taupo Bicycle Study in New Zealand', *Health Promotion International*, dap041.

Showers & Lockers

“However, in regard to facilities staff commuters focused on shower and change areas rather than bike storage. Cyclists reported learning about scattered, often secret, shower facilities by word-of-mouth and these facilities often lacked clothes hooks, benches and towel racks. The need for lockers was universally expressed given the necessity to store helmets, biking equipment, toiletries, and changes of clothing. Participants from Technology Park described a completely different on-site experience. Most private sector businesses have shower and locker facilities initially developed for use by fitness enthusiasts who run and jog at lunchtime. Though a smaller community in number, cyclists benefit from this infrastructure and the health/fitness culture.” (pg. 100 (Bonham and Koth 2010)).

“Echoing commuter cyclists, non-commuters saw the lack of on-site facilities as a major deterrent to cycling. Students expressed a preference for modern, secure, high-visibility bike racks in areas with high foot traffic as a deterrent to theft. In describing their anticipated use of these facilities, every focus group participant envisioned convenient one-stop parking, shower/change and lockers located very close to the classroom or office destination, preferably in the same building.” (pg. 101, (Bonham and Koth 2010)).

“Facilities at workplaces also had an influence on cycle commuting, with good facilities (showers, lockers, etc.) enabling cycling, and lack of facilities preventing cycling in some cases.” (pg. 192, (Chatterjee et al. 2013)).

“Physical barriers including weather, absence of safe parking at home and at work, lack of bicycle paths and water showers at work places as well as personal barriers like social status, social (in)security and not feeling comfortable on a bicycle have the most negative influence on bicycle commuting.” (pg. 249, (Nkurunziza et al. 2012))

“Results of rare events logistic regressions indicate that bicycle parking and cyclist showers are related to higher levels of bicycle commuting—even when controlling for other explanatory variables. The odds for cycling to work are greater for employees with access to both cyclist showers and bike parking at work compared to those with just bike parking, but no showers at work.” (pg. 525, (Buehler 2012))

“Compared to individuals without any bicycle facilities at work, commuters with cyclist showers, clothes lockers, and bike parking at work are associated with a 4.86 greater likelihood to commute by bicycle. Individuals with bike parking, but no showers and lockers at the workplace, are associated with 1.78 times greater odds to cycle to work than those without trip-end facilities.” (pg. 529, (Buehler 2012)).

“Current riders also identified that a lack of end of trip facilities (showers, lockers, irons, secure bicycle storage/racks) in workplaces, at train stations and public facilities was a barrier to using bicycles for transport.” (pg. 74, (Daley et al. 2007)).

“The existence of changing rooms, lockers, showers/bathrooms are another auxiliary facility that helps the day by day use.” (pg 571, (Gonzalo-Orden et al. 2014)).

“Non-cyclists ranked reasons for not cycling as follows:

4. Arriving in a perspiring condition (53 per cent). Compared with the cycling group where 30 per cent of respondents regarded shower/changing facilities to be important, non-cyclists evidently tend to give more weight to the question of personal hygiene and comfort.” (pg. 499, (McClintock and Shacklock 1996)).

“4.1.2. Cycling Policies which appear to encourage cycling for shorter trips for recreational and transport purposes, include:

- Showers in offices. Cycling as part of a vigorous exercise routine can induce tiredness and sweating. Some employers provide showers and locker facilities for employees who prefer to cycle in the appropriate gear and change into a suit once they get to work.” (pg. 60,(Santos et al. 2010)).

“The study population comprised 2469 cyclists, aged 16 years or over, who had enrolled in the 2006 Watty Lake Taupo Cycle Challenge. The majority (88%) reported the provision of bicycle lanes as an important factor that would encourage them to cycle more often, followed by bicycle paths (76%), better bicycle security (64%), reduced motor vehicle speed (55%) and bike friendly public transport (38%). Of those who reported travelling to work at least once a week (N=2223), varying proportions reported shower facilities at work (61%), fewer difficult intersections (43%), rising fuel costs (41%), fewer car parks (27%), bike designed to commute (26%) and rising cost of car parking (25%) as important factors that would encourage them to cycle to work more often.” (pg. 54, (Tin et al. 2009)).

Covered cycle parking at schools

“Research carried out with teachers and students aged 9-14 at schools where cycle parking had been installed demonstrated that, within just three to eight weeks of installation, the new parking facilities had encouraged students to both cycle to school more often and to cycle more in general (Transport for London 2004b). Of particular note:

- 61 percent of school cyclists reported that the new cycle racks had encouraged them to cycle to school more often.
- 22 percent of school cyclists said that they had travelled to school by car before the installation.
- 19 percent more school cyclists are now cycling every day.
- 56 percent of school cyclists reported that they used their bikes more often to cycle “to other places.”
- 47 percent of leisure cyclists reported that they are now likely to cycle to school in the future as a result of the new cycle parking facilities.

The majority of students and teachers were delighted with the new facilities, particularly because they were “safe” and “dry.” Of those students and teachers less happy with the facilities, the fact that people did not always get a parking space was the most common response.” (pg. 194 (CyclingCenterOfExcellence 2006)).

Cycling commuting and children's health:

“Background: Cycling to school may potentially increase physical activity level in sedentary children. Transport to school occur twice a day and could improve cardiovascular health in children. Commuter cycling is associated with lower mortality and cardiovascular disease rate in adults, but limited evidence exists in children.

Methods: Participants were 334 children (age 9.7 ± 0.5 years) who were followed up 6 years later. Mode of travel to school was investigated by questionnaire. Cardiovascular (CVD) risk factors were compared by mode of travel to school both at baseline and at follow up and for subjects who changed mode of transportation. No difference was found between walkers and passive travellers, and these groups were merged in the analysis.

Results: A consistent pattern of better CVD risk factor profile in commuter cyclists compared with children using other means of transport was found. Participants, who did not cycle to school at baseline, and who had changed to cycling at follow up, were fitter, had better cholesterol/HDL ratio, better glucose metabolism, and a lower composite CVD risk factor score than those who did not cycle at either time point.

Conclusion: Cycling to school may contribute to a better cardiovascular risk factor profile in young people.” (pg 1025, (Andersen et al. 2011))

“Objective. To investigate whether change in transport to school from non-cycling to cycling was associated with change in cardio-respiratory fitness (CRF) over a six-year follow-up.

Methods. Participants were 384 children (9.7 (0.5) years) who participated in the Danish arm of the European Youth Heart Study in 1997 and who were followed up 6 years later. CRF was assessed by a maximal cycle ergometer test and travel to school was investigated by questionnaire at both time points. Linear regression models were used to investigate associations between CRF and change in mode of travel to school between baseline and follow-up.

Results. Higher CRF was significantly associated with cycling to school in children and adolescents of both sexes. Longitudinal regression models showed that a change in travel mode from non-cycling to cycling was a significant predictor of CRF at follow-up ($P < 0.001$) after adjustment for potential confounders. Participants who did not cycle to school at baseline, but who had changed to cycling at follow-up, were significantly fitter (0.33 W kg^{-1}) than those who did not cycle to school at either time point ($P = 0.001$), a difference of 9%.

Conclusion. Cycling to school may contribute to higher cardiovascular fitness in young people.” (pg. 324, (Cooper et al. 2008)).