**Supplementary material 1: Data extraction for all 122 included single studies**

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| **No** | **Author (Year)** | **Country of origin/author affiliation** | **Gender** | **Study design** | **Main topic of study** | **Type of Bike** | **Data type** | **Age range** |
| 1 |  Abe et al. (2018) | Japan | Both | Obs | Cycling as PA or for transport | CB | Qt | All older adults |
| 2 | Allan et al. (2013) | United States | Both  | Obs | Traffic safety | CB | Qt | All older adults |
| 3 | Aslan et al. (2020) | United States | Both  | Obs | Health benefits | CB | Qt | All older adults |
| 4 | Babatsikou et al. (2012) | Greece | Both  | Obs | Cycling as PA or for transport | CB | Qt | All older adults |
| 5 | Batcir and Melzer (2018) | Israel | Both  | Obs | Health benefits,traffic safety | CB | Qt | All older adults |
| 6 | Bertera (2003) | United States | Both  | Obs | Health benefits | CB | Qt | All older adults |
| 7 | Bijnen et al. (1996) | Netherlands | Men only | Obs | Cycling as PA or for transport, health benefits | CB | Qt | All older adults |
| 8 | Boele-Vos et al. (2017) | Netherlands | Both  | Obs | Traffic safety | CBandP | Qt | All older adults |
| 9 | Boufous et al. (2021) | Australia | Both  | Obs | Facilitators and barriers | CB | Qt | All older adults |
| 10 | Buehler and Pucher (2017) | United States | Both  | Obs | Traffic safety | CB | Qt | All older adults |
| 11 | Bungum and Bungum (2003) | United States | Both  | Obs | Traffic safety | CB | Qt | All older adults |
| 12 | Caruso et al.(2015) | Italy | Women only | Obs | Traffic safety | CB | Qt | Only younger older adults (60-79 years) |
| 13 |  Chad et al. (2005) | Canada | Both  | Obs | Cycling as PA or for transport | CB | Qt | All older adults |
| 14 | Champahom et al. (2020) | Thailand | Both  | Obs | Cycling as PA or for transport | CB | Qt | All older adults |
| 15 | Chang et al. (2020) | Taiwan | Both  | Obs | Traffic safety | CB | Qt | All older adults |
| 16 | Chen et al. (2015) | Taiwan | Both  | Obs | Cycling as PA or for transport | CB | Qt | All older adults |
| 17 | Chen et al. (2013) | United States | Both  | Obs | Traffic safety | CB | Qt | All older adults |
| 18 | Choi et al. (2021) | South Korea | Both  | Obs | Traffic safety | CB | Qt | All older adults |
| 19 | Chong et al. (2010) | Australia | Both  | Obs | Traffic safety | CB | Qt | All older adults |
| 20 | Cousins (2000) | Canada | Women only | Obs | Facilitators and barriers | CB | Ql | All older adults |
| 21 | Das et al. (2019) | United States | Both  | Obs | Traffic safety | CB | Qt | All older adults |
| 22 | DiMaggio et al. (2020) | United States | Both  | Obs | Traffic safety | E | Qt | All older adults |
| 23 | Dubbeldam, Baten, Buurke, et al. (2017) | Netherlands | Both  | Int | Traffic safety,application of technology | CB | Qt | All older adults |
| 24 | Dubbeldam, Baten, Straathof, et al. (2017) | Netherlands | Both  | Obs | Traffic safety | CB | Qt | All older adults |
| 25 | Duda (2008) | Poland | Both  | Obs | Cycling as PA or for transport | CB | Qt | Only younger older adults (60-79 years) |
| 26 | Dupont et al. (1996) | Denmark | Both  | Obs | Traffic safety | CB | Qt | All older adults |
| 27 | Edwards and Mason (2014) | United States | Both  | Obs | Traffic safety,Health benefits | CB | Qt | All older adults |
| 28 | Ekman et al. (1997) | Sweden | Both  | Obs | Traffic safety | CB | Qt | All older adults |
| 29 | Ekman et al. (2001) | Sweden | Both  | Obs | Traffic safety | CB | Qt | All older adults |
| 30 | Eluru et al. (2008) | United States | Both  | Obs | Traffic safety | CB | Qt | All older adults |
| 31 | Engbers et al. (2018) | Netherlands | Both  | Obs | Traffic safety | CB | Qt | All older adults |
| 32 | Fishman et al. (2015) | Netherlands | Both  | Obs | Cycling as PA or for transport | CB | Qt | All older adults |
| 33 | Frith and Loprinzi (2018) | United States | Both  | Obs | Health benefits | CB | Qt | All older adults |
| 34 | Garcia et al. (2013) | Brazil | Both  | Obs | Traffic safety | CB | Qt | All older adults |
| 35 | Grimes et al. (2020) | United States | Both  | Obs | Facilitators and barriers | CB | Qt | All older adults |
| 36 | Handa and Mitobe (2020) | Japan | Both  | Int | Traffic safety | CB | Qt | Only younger older adults (60-79 years)  |
| 37 | Harvey et al. (2018) | Australia | Both  | Obs | Health benefits,traffic safety | CB | Qt | All older adults |
| 38 | Hertach et al. (2018) | Switzerland | Both  | Obs | Traffic safety |  | Qt | All older adults |
| 39 | Hinrichs et al. (2010) | Germany | Both  | Obs | Cycling as PA or for transport | CB | Qt | All older adults |
| 40 | Hosseinpour et al. (2021) | United States | Both  | Obs | Traffic safety | CB | Qt | All older adults |
| 41 | Hu and Baker (2010) | China | Both  | Obs | Traffic safety | CB | Qt | All older adults |
| 42 | Jochems et al. (2021) | Netherlands | Both  | Obs | Traffic safety | CB | Qt | All older adults |
| 43 | Johansson et al. (2019) | Denmark | Both  | Obs | Cycling as PA or for transport | CB | Qt | All older adults |
| 44 | Jung et al. (2018) | Japan | Both  | Obs | Cycling as PA or for transport | CB | Qt | Only younger older adults (60-79 years) |
| 45 | Kaimila et al. (2013) | Japan  | Both  | Obs | Traffic safety | CB | Qt | Only younger older adults (60-79 years) |
| 46 | Kammerlander et al. (2012) | Austria | Both  | Obs | Traffic safety | CB | Qt | All older adults |
| 47 | Kaplan et al. (2014) | Denmark | Both  | Obs | Traffic safety | CB | Qt | All older adults |
| 48 | Kay et al. (2019) | United States | Both  | Obs | Traffic safety | CB | Qt | All older adults |
| 49 | Kemperman and Timmermans (2009) | Netherlands | Both  | Obs | Environmental factors | CB | Qt | All older adults |
| 50 | Kim et al. (2015) | South Korea | Women only | Obs | Health benefits  | CB | Qt | All older adults |
| 51 | Kim et al. (2019) | South Korea | Both  | Obs | Traffic safety | CB | Qt | All older adults |
| 52 | Kim et al. (2017) | South Korea | Both  | Obs | Traffic safety | CB | Qt | All older adults |
| 53 | Kingma (1994) | Netherlands | Both  | Obs | Traffic safety | CB | Qt | All older adults |
| 54 | Koolhaas et al. (2016) | Netherlands | Both  | Obs | Health benefits | CB | Qt | All older adults |
| 55 | Kramer et al. (2013) | Netherlands | Both  | Obs | Cycling as PA or for transport | CB | Qt | All older adults |
| 56 | Kremers et al. (2012) | Netherlands | Both  | Obs | Traffic safety,health benefits | CB | Qt | Only younger older adults (60-79 years) |
| 57 | Lustenberger et al. (2010) | United States | Both  | Obs | Traffic safety | CB | Qt | All older adults |
| 58 | Lutz and Kreidel (1988) | Germany | Both  | Obs | Traffic safety | CB | Qt | All older adults |
| 59 | McNiel and Westphal (2020) | United States | Both  | Obs | Cycling as PA or for transport | CB | Ql | All older adults |
| 60 | Mertens et al. (2019) | Belgium | Both  | Obs | Cycling as PA or for transport | CB | Qt | All older adults |
| 61 | Meusel and Rieder (1999) | United States | Both  | Obs | Traffic safety | CB | Qt | All older adults |
| 62 | Missoni and Kern (2003) | Croatia | Both  | Obs | Traffic safety | CB | Qt | All older adults |
| 63 | Mittleman et al. (1989) | Canada | Both  | Obs | Health benefits | CB | Qt | Only younger older adults (60-79 years) |
| 64 | Næss et al. (2020) | Norway | Both  | Obs | Traffic safety  | CB | Qt | All older adults |
| 65 |  Noordzij et al. (2021) | Netherlands | Both  | Obs | Cycling as PA or for transport | CB | Qt | Only younger older adults (60-79 years) |
| 66 | Pai et al. (2017) | Taiwan | Both  | Obs | Traffic safety | CB | Qt | All older adults |
| 67 | Pai et al. (2018) | Taiwan | Both  | Obs | Traffic safety | CB | Qt | All older adults |
| 68 | Petzoldt et al. (2017) | Germany | Both  | Obs | Traffic safety | EandCB | Qt | All older adults |
| 69 | Prins and Van Lenthe (2015) | Netherlands | Both  | Obs | Environmental factors | CB | Qt | All older adults |
| 70 | Pritchard et al. (2014) | Australia | Both  | Obs | Cycling as PA or for transport | CB | Qt | All older adults |
| 71 | Pucher et al. (2011) | United States | Both  | Obs | Cycling as PA or for transport | CB | Qt | All older adults |
| 72 | Pulakka et al. (2020) | Finland | Both  | Obs | Cycling as PA or for transport | CB | Qt | Only younger older adults (60-79 years) |
| 73 | Reuvers et al. (2020) | Netherlands | Both  | Obs | Traffic safety | CB | Qt | All older adults |
| 74 | Richter et al. (2005) | Germany | Both  | Obs | Traffic safety | CB | Qt | All older adults |
| 75 | Rodgers (1997) | United States | Both  | Obs | Traffic safety | CB | Qt | All older adults |
| 76 | Rolfsman et al. (2012) | Sweden | Both | Obs | Traffic safety | CB | Qt | All older adults |
| 77 | Rosenkvist et al. (2014) | Sweden | Both  | Obs | Environmental factors | CB | Qt andQl | All older adults  |
| 78 | Ryan et al. (2016) | Sweden | Both  | Obs | Cycling as PA or for transport | CB | Qt andQl | All older adults |
| 79 |  Sadeghvaziri and Tawfik (2020) | United States | Both  | Obs | Cycling as PA or for transport | CB | Qt | All older adults |
| 80 |  Sakurai et al. (2019) | Japan | Women only | Obs | Traffic safety | CB | Qt | All older adults |
| 81 | Sakurai et al. (2016) | Japan | Women only | Obs | Cycling as PA or for transport,traffic safety | CB | Qt | All older adults |
| 82 | Scheiman et al. (2010) | Sweden | Both  | Obs | Traffic safety  | CB | Qt | All older adults |
| 83 |  Shaer and Haghshenas (2021) | Iran | Both  | Obs | Cycling as PA or for transport | CB | Qt | All older adults |
| 84 | Sjögren and Björnstig (1991) | Sweden | Both  | Obs | Traffic safety | CB | Qt | All older adults |
| 85 | Son et al. (2018) | South Korea | Both  | Obs | Traffic safety | CB | Qt | All older adults |
| 86 |  Stones and Hartin (2017) | Canada | Both  | Obs | Facilitators and barriers | CB | Qt | All older adults |
| 87 | Takahashi et al. (2012) | United States | Both  | Obs | Environmental factors | CB | Qt | All older adults |
| 88 | Tanabe (2019) | Japan | Both  | Obs | Traffic safety | CB | Qt | All older adults |
| 89 |  Tredray (2019) | Canada | Both  | Int | Promotion of cycling | CBandE | Ql | All older adults |
| 90 | Tsuji et al. (2015) | Japan | Men only | Obs | Traffic safety | CB | Ql | Only younger older adults (60-79 years) |
| 91 | Tsunoda et al. (2015) | Japan | Both  | Obs | Cycling as PA or for transport | CB | Qt | All older adults |
| 92 | Tsunoda et al. (2021) | Japan | Both  | Obs | Cycling as PA or for transport | CB | Qt | All older adults |
| 93 | Tsunoda et al. (2012) | Japan | Both  | Obs | Cycling as PA or for transport,environmental factors | CB | Qt | All older adults |
| 94 |  Twisk et al. (2017) | Netherlands | Both  | Int | Traffic safety  | CBandP | Qt | All older adults |
| 95 | Ulak et al. (2018) | United States | Both  | Obs | Traffic safety | CB | Qt | All older adults |
| 96 |  Useche et al. (2018) | Spain | Both  | Obs | Traffic safety | CB | Qt | Only younger older adults (60-79 years) |
| 97 |  Valent et al. (2002) | Italy | Both  | Obs | Traffic safety | CB | Qt | All older adults |
| 98 | Van Cauwenberg, Clarys, et al. (2018) | Belgium | Both  | Obs | Environmental factors | CB | Ql | All older adults |
| 99 | Van Cauwenberg, De Bourdeaudhuij, et al. (2019a) | Belgium | Both  | Obs | Traffic safety | E  | Qt | All older adults |
| 100 | Van Cauwenberg et al. (2012) | Belgium | Both  | Obs | Environmental factors | CB | Qt | All older adults |
| 101 | Van Cauwenberg, De Bourdeaudhuij, et al. (2019b) | Belgium | Both  | Obs | Environmental factors | CB | Qt | All older adults |
| 102 | Van Cauwenberg, De Bourdeaudhuij, et al. (2018) | Belgium | Both  | Obs | Cycling as PA or for transport,health benefits | E  | Qt | All older adults |
| 103 | Van Cauwenberg, Schepers, et al. (2019) | Belgium | Both  | Obs | Cycling as PA or for transport, health benefits | EandCB | Qt | All older adults |
| 104 | Vance et al. (2008) | England | Both  | Obs | Cycling as PA or for transport | CB | Qt | All older adults |
| 105 | Van den Berg et al. (2011) | Netherlands | Both  | Obs | Cycling as PA or for transport | CB | Qt | All older adults |
| 106 | Värnild et al. (2020) | Sweden | Both  | Obs | Traffic safety | CB | Qt | All older adults |
| 107 | Velasco et al. (2015) | Spain | Both  | Obs | Traffic safety,Facilitators and barriers | CB | Qt | All older adults |
| 108 | Vlakveld et al. (2015) | Netherlands | Both  | Int | Traffic safety | CBandE | Qt | Only younger older adults (60-79 years)  |
| 109 | Voss et al. (2016) | Canada | Both  | Obs | Cycling as PA or for transport | CB | Qt | All older adults |
| 110 | Walsh et al. (2001) | United States | Women only | Obs | Cycling as PA or for transport | CB | Qt | All older adults |
| 111 | Weijermars et al. (2016) | Netherlands | Both  | Obs | Traffic safety | CB | Qt | All older adults |
| 112 | Weinz and Schönle (2001) | Germany | Both  | Obs | Traffic safety | CB | Qt | All older adults |
| 113 | Weiss et al. (2018) | Germany | Both  | Obs | Traffic safety | CBandE | Qt | All older adults |
| 114 | Westerhuis et al. (2021) | Netherlands | Both  | Int | Application of technology,Traffic safety | CB | QtandQl | All older adults |
| 115 | Westerhuis et al. (2020) | Netherlands | Both  | Int | Environmental factors | EandCB | QtandQl | All older adults |
| 116 | Whitaker (2005) | United States | Men only | Obs | Cycling as PA or for transport,health benefits | CB | QtandQl | Only younger older adults (60-79 years) |
| 117 | Winters, Voss, et al. (2015) | Canada | Both  | Obs | Cycling as PA or for transport, environmental factors | CB | Qt | All older adults |
| 118 | Winters, Sims-Gould, et al. (2015) | Canada | Both  | Obs | Facilitators and barriers,traffic safety | CB | QtandQl | All older adults |
| 119 | Wong (1987) | Singapore | Both  | Obs | Traffic safety | CB | Qt | All older adults |
| 120 | Yamada et al. (2013) | Japan | Both  | Obs | Cycling as PA or for transport | CB | Qt | All older adults |
| 121 | Zander (2013) | Australia | Both  | Obs | Facilitators and barriers  | CB | Ql | All older adults |
| 122 | Zhang (2016) | China | Both  | Obs | Environmental factors | CBandE | Qt | Only younger older adults (60-79 years) |

Note: CB (Conventional Bicycle), E (E-bike), Int (Interventional), Obs (Observational), P (Pedelec), Ql (Qualitative), Qt (Quantitative).

**Supplementary material 2: List of included single studies**

1. Abe T, Seol J, Kim M, Okura T. The Relationship of Car Driving and Bicycle Riding on Physical Activity and Social Participation in Japanese Rural Areas. *Journal of Transport & Health* (2018) 10:315-21.

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