

# Gender-Equitable Human Factors in Transport Research

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## SUMMARY

The transport domain suffers from a historic ‘default male’ bias which has disadvantaged women in facilitating their travel needs, limited their choice in transport modes and increased their risk of serious injury. ‘Close the Data Gap’ (CtDG) is a working group of Human Factors and Transport researchers striving for gender-equity within the transport domain. This paper provides a summary of the issues in the domain and how the group is challenging them.

## KEYWORDS

Gender-Equitable Human Factors; Gender-Equity, Data Gap, Transport systems

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## Introduction

Mobility is a human right, and transport networks are central to the economic and social functioning of our societies. Technology and infrastructure have enabled mass connectivity across land, sea and air, but developments have prioritised access to work, central urban areas and commerce hubs. There is growing awareness that the design of our current transport networks falls short in providing equal access to mobility for all users. People of different genders experience travel differently and key gender factors have been identified across key modes of transport that restrict both the level of choice and safety of travel options (Madeira-Revell, 2021; Parnell et al., under review).

## Gender inequity in transport

Criado-Perez (2019) provided compelling evidence of how the ‘default male’ perspective results in gender biased issues across our transport networks. Exclusion of unpaid care work (of young, sick and vulnerable) as a trip purpose in travel surveys has historically ignored trips made predominantly by women (Sanchez de Madariage et al., 2013). Research highlighting the gendered division of work within the household sees women responsible for more domestic tasks than men, which means that they are more likely to trip-chain, make less work-related trips and have shorter commutes (Ng & Acker, 2018). The hub and spoke transport networks are not designed with these types of journeys in minds and therefore often fail to serve the needs of women. Women are more likely to walk to meet their travel requirements and work in jobs closer to home than their male counterparts (Ng & Acker, 2018). Numerous examples of transport design exist where female bodies are considered smaller versions of men’s bodies leading to significant safety inequities. Women are currently still more at risk of serious injury when travelling in a private car due to ill-fitting seatbelts and head restraints (Linder & Svedberg, 2019).

## Close the gender data gap (CtDG) group

Since July 2020, a voluntary group of Human Factors and Transport researchers, linked with the Transportation Research Group at the University of Southampton, have been working to close the gender data gap in transport research (see <https://closethedatagap.soton.ac.uk>), through research

best practice, education, raising awareness, and guidance. CtDG aims to *understand* how current transport modes limit mobility for different genders, *propose change* to ensure the future of transport is gender inclusive, and *act* by closing the gender data gap in their own work outputs. The group is passionate that Human Factors (HF) has a vital role to play in changing society so that 51% of the population are rightly and properly represented in policy, products, protection, and the provision of basic human needs (Madeira-Revell et al., 2021). The group are also interested in intersectionality issues, including how socio-economic status and culture influence transport use in combination with gender. Although the group is UK based, we are exploring problems that arise across different countries and non-western cultures.

## Application

Within the transport domain CtDG have identified seven key gender factors relevant to all transport modes from both a user and employment perspective comprising: family roles, labour market, safety, ergonomic standards, mobility needs, user behaviour and, urban structures.

Training documents and lecture content to inform the next generation of transport researchers and practitioners have been developed and delivered to ensure that, in the future, accounting for gender is the norm, not the exception. Strategies to raise awareness include social media campaigns, presentations to key transportation groups, and petitioning decision makers to focus on equitable research outputs both within academia and industry. CtDG is also applying a gendered lens to existing members' outputs as case studies to identify barriers and opportunities for best practice. For example, the development of a Mobility as a Service (MaaS) mobile phone application in the Solent Future Transport Zone project will follow an inclusive iterative design process. This aims to support women in accessing transport that suits their travel needs. A Heuristics tool has already been developed to identify design elements that help different genders access the services provided (Richardson et al, 2022). This can be applied to future interface design and evaluation.

By establishing guidelines for gender-equitable research, transportation that suits the needs of all genders can become a reality. The utilisation of a systems perspective can highlight how social constructs interact with the need for equitable technologies and transport access. Appropriate data collection could inform ergonomic standards that can accurately account for female body types. The significance of this work is not limited to the transport industry, Human Factors already has the toolset and knowledge to enable inclusive design and user centred approaches that span multiple industries. 'Gender-Equitable Human Factors' (GE-HF) can, and should, be strived for across all domains.

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