

Modelling Subjective Barriers to PT Adoption

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Introduction

Public transport (PT) adoption is central to reducing greenhouse gas emissions and achieving sustainable urban development. While previous research has identified a wide range of barriers to PT use, little is known about which barriers are most central, or how they interact to influence decision-making. This study adopts a novel network analysis approach to model subjective barriers to PT adoption, providing a holistic view of their interconnections.

Methodology

Participants (N = 101) completed an online survey including four hypothetical journey scenarios and a card-sorting task to indicate factors shaping their decisions to use or avoid PT. The resulting data were analysed as a network to examine barrier centrality, clustering, and relative influence.

Figure 1 to the right: drag-and-drop task

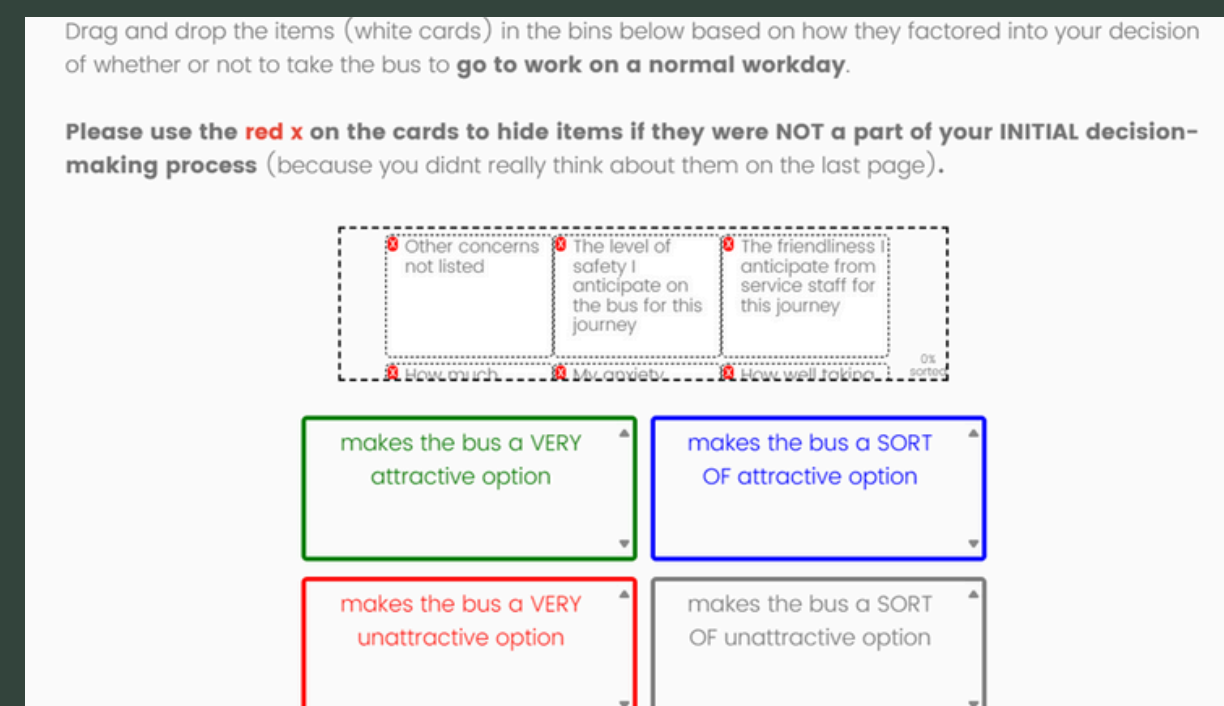
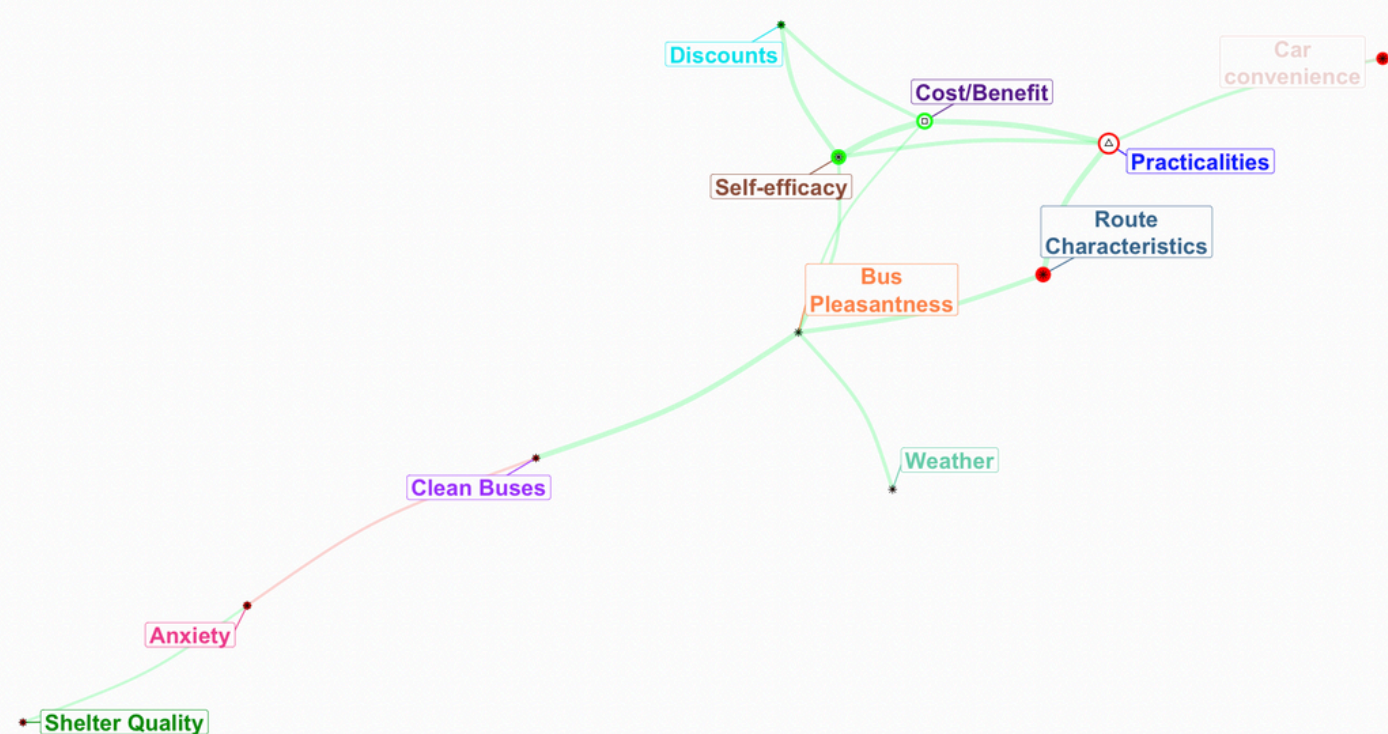


Figure 2: Simplified Network



This is the simplified network, showing the decision factors clustered into five groups - self-efficacy (brown), bus pleasantness (orange), route characteristics (blue), practicalities (dark blue), and cost/benefit (purple). Each differed in their level of importance for decision-making.

Results

Results indicated that although several barriers (e.g., bus reliability, carbon footprint, ease of payment) frequently influenced decision-making, trip duration was the only factor that significantly affected mode choice. Trip duration was a factor in the "Practicalities" cluster. Network analysis further identified five central nodes - trip duration, ease of planning, route familiarity, walk from end, and bus stop wait - and clustered barriers into five groups: practicalities, cost/benefit, self-efficacy, bus pleasantness, and route characteristics.

Implications

Reducing trip duration emerged as the most influential barrier to public transport adoption, suggesting that policies targeting journey efficiency will yield the greatest impact. Interventions such as improved service coordination, fewer transfers, and more direct routes can shorten both actual and perceived travel times. Central nodes like ease of planning and route familiarity highlight the value of clear journey information and intuitive trip-planning tools. These findings demonstrate how network analysis can guide targeted, evidence-based strategies to increase public transport use and support sustainable urban development.

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Connect

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