INVISIBLE JOURNEYS: UNDERSTANDING THE IMPACT OF SAFETY CONCERNS ON WOMEN'S MOBILITY

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1. Introduction

This study examines invisible journeys and investigates how these decisions shape mobility in Birmingham, Sutton Coldfield, and Tipton. Using semi-structured interviews, surveys, and GIS mapping, the research captures lived experiences of walking and public transport, revealing patterns of vulnerability, avoidance, and emotional strain. Interview transcripts highlight anticipatory fear, hyper-vigilant behaviours, and complex risk assessments influencing route choices. Roads were classified as safe, unsafe, or disputed based on participant narratives, reflecting nuanced perceptions rather than crime statistics. By centring women's voices, this study exposes hidden mobility constraints and informs gender-sensitive urban planning.

2. Literature review

2.1 Introduction

Invisible journeys can be defined as trips not taken due to fear, perceived risk, or systemic barriers (Duri,2025). These journeys offer a critical lens to examine gendered mobility in urban environments. These unmade journeys, though often absent from conventional transport datasets, profoundly shape the lived experiences of women within cities (Duri, 2025). This literature review draws on feminist mobility theory and recent policy developments to explore the factors that contribute to transport exclusion in Birmingham.

Gendered mobility refers to the ways in which movement through space is influenced by gendered norms, roles, and risks (Cresswell & Uteng, 2016). These strategies reflect not only personal safety concerns but also broader systemic failures in urban design and transport policy.

Historically, UK transport planning has prioritised efficiency and economic growth over inclusivity and safety. Scholten and Joelsson (2019) argue that mainstream transport models often overlook gendered experiences, resulting in infrastructure that inadequately serves women's needs.

Socio-economic inequality further compounds these issues. Women from lower-income backgrounds face heightened mobility constraints due to limited access to private transport, financial barriers, and increased exposure to unsafe conditions (Equality Trust, 2022). These disparities restrict access to education, employment, and healthcare, undermining women's autonomy and right to the city (Lam, 2021). Birmingham City Council's (BCC) health needs assessment also highlights how intersecting factors such as mental health, violence, and deprivation influence women's ability to move freely and safely (BCC, 2024).

2.2 Safety, Fear, and Transport Infrastructure in Birmingham

Feminist transport literature documents how urban design and transport systems have historically been shaped by male-centric norms, marginalising women's experiences (Lehmann, 2020). This marginalisation manifests in avoidance strategies such as altering routes, avoiding travel at night, or not travelling at all, all of which constitute invisible journeys (Dunkel-Graglia, 2013).

Women consistently report heightened vulnerability on public transport. Ait Bihi Ouali et al. (2020) found that women are significantly more likely than men to feel unsafe on buses and trains, especially during off-peak hours. These perceptions are rooted in lived experiences of harassment and exclusion.

TfWM's Transport Champions initiative embeds safety into transport policy through staff training, improved lighting, surveillance, and a zero-tolerance approach to harassment (TfWM, 2024a). The West Midlands Safer Travel Partnership's 2025–2028 strategy acknowledges that while crime rates on public transport are low, perceptions of safety remain a significant barrier to mobility, particularly for women and girls travelling alone.

2.4 Socio-Economic Demographics and Mobility Constraints

Socio-economic inequality significantly influences women's mobility in Birmingham. The Equality Trust reports that 88% of Birmingham's wards are more deprived than the national average, with 43% of children growing up in poverty (Bailey, 2010). These conditions disproportionately affect women from ethnic minority backgrounds, single-parent households, and low-income communities.

Office for National Statistics (ONS) data shows Birmingham has a lower employment rate and higher unemployment than the regional average (ONS, 2024). Housing disparities further illustrate inequality. In deprived areas like Bordesley and Highgate, home ownership is low, correlating with greater reliance on public transport and heightened safety concerns. Lam (2021) defines transport poverty as the inability to access affordable, safe, and reliable transport. Lam (2021) further argues that this condition disproportionately affects women, especially single mothers and carers.

Giardina (2024) critiques traditional transport planning for failing to account for the complex, multi-stop journeys typical of women's routines. The cost of safer alternatives, such as taxis or ride-hailing services, is often prohibitive for low-income women, reinforcing the invisibility of journeys not taken due to financial and safety constraints (Bergsma, 2025).

2.5 Intersectionality, Marginalised Experiences, and Health Impacts

Intersectional factors such as race, class, and health compound mobility challenges. The Birmingham Women's Health Needs Report (2024) identifies mental health, violence, and reproductive health as key issues affecting women's ability to travel safely.

The Institute for Fiscal Studies (IFS) Deaton Review (2023) reveals that social mobility is significantly lower in the Midlands compared to London, with parental income and geography shaping lifetime earnings. Multiply marginalised groups (women of colour, LGBTQ+ individuals, and disabled women) face compounded risks. Geliş and Meinherz (2025) argue that these women often normalise harassment and develop complex avoidance strategies, adding to their mental load and restricting mobility.

Anecdotal evidence suggests that women from ethnically diverse and economically disadvantaged communities in Birmingham are more likely to experience fear and harassment on public transport (BCC, 2024). These experiences are underreported and underrepresented in policy discussions, leading to a lack of targeted interventions.

2.6. Invisible Journeys and Urban Planning in Birmingham

Invisible journeys could be argued to be of particular relevant in Birmingham's suburban contexts, where women may avoid travel due to safety concerns or unreliable transport. Duri (2025) draws parallels with domestic workers in South Africa, whose long, unsafe commutes are excluded from transport planning.

Birmingham's Local Transport Plan aims to reimagine mobility by prioritising active travel and reducing car dependency. However, critics argue that gender-specific needs remain underrepresented in planning processes (Giardina, 2024). TfWM's Handbook advocates for co-

design and community engagement, encouraging planners to work directly with women and girls to understand their lived experiences (TfWM, 2024b).

2.7 Policy Responses and Community Engagement

TfWM's Safer Travel Partnership, in collaboration with West Midlands Police and British Transport Police, has implemented measures such as 24/7 CCTV monitoring, patrols, and public awareness campaigns like "See Something, Say Something" (TfWM, 2024a). Technological interventions such as safety apps (Safe and the City, Walk Me Home) offer GPS tracking and emergency alerts. However, it could be argue that these tools often place the burden of safety on women rather than addressing systemic issues.

The Women's Budget Group recommends gender safety audits, participatory planning, and investment in inclusive infrastructure (Lam, 2021). Scholten and Joelsson (2019) advocate for integrating gender into every stage of transport planning (from data collection to infrastructure design) to ensure inclusive mobility.

Community-led initiatives supported by the Equality Trust show promise in amplifying lived experiences and advocating for systemic change (Equality Trust, 2022). These grassroots efforts are essential for addressing invisible journeys and ensuring that transport systems reflect the needs of all users.

3. Methodology

This research adopted a mixed-methods approach through integrating qualitative interviews, quantitative survey data, and spatial analysis using Geographic Information Systems (GIS) to explore how safety concerns shape mobility, and to visualise the absence of movement as a critical dimension of gendered travel behaviour.

3.1 Research Design

The study is structured around three core objectives:

1. To conduct interviews with women from diverse backgrounds to understand safety-related travel decisions, with a focus on journeys not taken and those which may be taken but are altered.
2. To understand how travel patterns correlate to participant's socio-demographic.
3. To use GIS to visually present alternative mobility patterns in the absence of safety concerns.

A convergent parallel design will be employed; wherein qualitative and quantitative data are collected concurrently and analysed separately before being integrated during interpretation.

3.2 Participant Recruitment and Sampling

Participants were recruited using purposive sampling. The sample consisted of 24 women known to the researcher, drawn equally from three UK towns/cities: Birmingham city centre, Sutton Coldfield and Tipton. This sampling strategy ensures geographic diversity and facilitates comparative analysis across different urban contexts in Birmingham.

The eligibility criteria will include:

- Self-identification as a woman.
- Aged 18 or older.
- Willingness to discuss personal experiences related to travel and safety.

While the sample is non-random and relatively small, it is strategically selected to reflect a range of socio-demographic backgrounds, including variations in age, ethnicity, employment status, and travel habits.

3.3 Qualitative Data Collection: Semi-Structured Interviews

Each participant took part in a semi-structured interview lasting between 30–45 minutes. Interviews were conducted in person and via video conferencing, depending on participant preference and logistical feasibility.

The interview guide was designed to elicit narratives about invisible journeys. Key areas of inquiry include:

- Experiences of feeling unsafe while traveling.
- Specific journeys avoided (e.g., walking alone at night, using public transport, visiting certain areas).

- Decision-making processes behind travel avoidance.
- Emotional and psychological impacts on restricted mobility.
- Perceptions of safety in their local area and across different modes of transport.
- The impact of safety concerns on travel frequency, destination choice, and mode selection.

All interviews will be audio-recorded with informed consent and transcribed verbatim.

3.4 Quantitative Data Collection: Survey Administration

To complement the qualitative interviews, a structured survey was administered to the same cohort of 24 participants. The survey was designed as a trip diary mapping exercise, in which participants annotated a local area map with journeys they have made (indicated in green), those they have consciously avoided (indicated in red) and those where this may vary depending on factors such as time of day (indicated in orange). The annotated maps were digitised using Geographic Information Systems (GIS).

This approach facilitates provides a spatial lens through which to understand how safety concerns shape women's mobility decisions. The integration of socio-demographic data with spatial patterns will support statistical analysis of correlates and potential predictors of travel avoidance, contributing to a more comprehensive understanding of gendered mobility constraints across different urban environments.

3.5 Quantitative Data Analysis

Survey data was analysed manually, without the use of statistical software. This approach was chosen due to the sensitive nature of the topics explored and the highly individual experiences reflected in the data. Manual analysis allows for a more careful, context-aware interpretation of responses, ensuring that the nuances of each participant's account are respected and preserved.

3.7 Ethical Considerations

Given the sensitive nature of the topic, the following ethical protocols will be strictly followed:

- Informed consent will be obtained from all participants prior to data collection.
- Anonymity and confidentiality will be maintained throughout the study.
- Participants will be informed of their right to withdraw at any time without consequence.
- Support resources will be provided for participants who may experience distress during interviews or survey completion.

3.8 Validity and Reliability

To ensure the rigour of this study, steps will be taken to enhance both validity and reliability across the qualitative and quantitative components.

In the qualitative phase, validity will be supported through drawing on interviews, surveys, and spatial data to cross-check findings. A consistent interview guide will be used, and transcripts

will be reviewed carefully. Transcripts will be stored on a personal password protected laptop and will be discarded once the research paper is completed and submitted. Where appropriate, inter-coder checks will be conducted to support reliability.

Quantitative data will be analysed manually to allow for a more sensitive and context-aware interpretation, given the personal nature of the topics. By integrating multiple data sources and maintaining consistency in data handling, the study aims to produce findings that are both credible and reflective of the lived experiences of participants.

3.9 Limitations

This study acknowledges several limitations. Firstly, the sample is small and non-random, consisting of 24 women known to the researcher. While this allows for depth and trust in the interviews, it limits the generalisability of the findings.

Secondly, all data is self-reported, which may introduce bias or inaccuracies due to memory, perception, or social desirability. However, the use of open-ended interviews and manual survey analysis allows for a more nuanced understanding of individual experiences.

Thirdly, the GIS component relies on publicly available data, which may be incomplete or outdated. As such, spatial representations should be interpreted with caution and viewed as indicative rather than definitive.

Despite these limitations, the study offers valuable insights into the often-overlooked phenomenon of invisible journeys and provides a foundation for future research to not only be focused on gendered mobility and safety but also on other marginalised groups such as LGBTQ+ and disabilities (both mental and physical).

4. Discussion of interview transcripts

The thematic analysis of twenty-four semi-structured interviews revealed five key overarching themes that capture women's experiences of invisible journeys and safety-related mobility constraints across Birmingham city centre, Sutton Coldfield, and Tipton. Key quotes from participants are included to illustrate participants' perspectives where appropriate.

4.1 Prevalent feelings of vulnerability

Eighteen out of twenty-four participants reported heightened feelings of vulnerability when traveling alone, particularly during evening hours. Public transport and poorly lit streets were identified as high-risk environments. Women described adopting hyper-vigilant behaviours such as route planning, carrying personal safety devices, and avoiding eye contact with strangers. The distribution of each of these behaviours can be seen below in Figure 1.

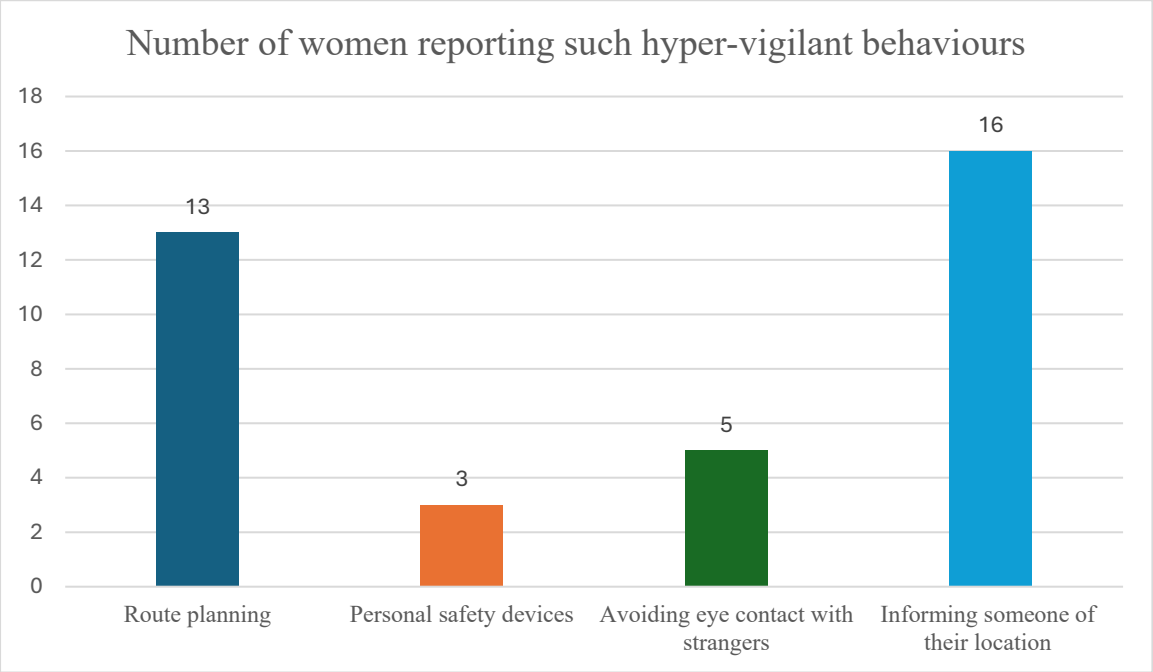

Figure 1: A Bar chart showing hyper vigilant behaviours displayed

The most common hyper-vigilant behaviour was informing someone trusted with their location and providing information such as the time that the individual expects to arrive at the destination and their route. Whilst 16 women reported that they do this, 9 reported that they share their live location in order to allow continuous knowledge of their location.

The experiences described by Participant 03 and Participant 14 exemplify the prevalent feelings of vulnerability and highlights that whilst conventional measurements such as crime statistics and incident reports may not reflect the concerns of individuals, behaviour is significantly altered in certain areas, even if the journey is still made.

Participant 03 reflects:

> "*I always feel on edge when I'm walking home after work in the dark. In the summer it isn't too bad as it is still light but, in the winter, I find myself frequently checking over my shoulder."* (Participant 03, Birmingham)

This statement reveals a pattern of anticipatory fear and hypervigilance, where the participant actively monitors their surroundings to mitigate perceived risk. The seasonal comparison underscores how environmental factors such as lighting and time of day shape vulnerability. These feelings, while deeply impactful, remain hidden from formal safety assessments, rendering them part of an invisible dimension of mobility.

Participant 14 said:

> *"On the bus at night, I feel trapped. If someone makes me uncomfortable, there's nowhere to go."* (Participant 14, Tipton)

This highlights the spatial constraints and loss of control inherent in certain transport environments. Public transport becomes a confined space where escape options are limited, intensifying anxiety and reinforcing feelings of entrapment. Such experiences illustrate how vulnerability extends beyond physical harm to encompass emotional discomfort, an aspect often overlooked in transport planning.

Both accounts demonstrate that Invisible Journeys are not defined by actual incidents of crime but by the persistent, unseen emotional labour required to navigate public spaces safely. These narratives call attention to the need for safety interventions that address not only objective risk but also subjective perceptions of security, ensuring that the hidden burdens of travel are acknowledged and mitigated.

4.2 Avoidance of specific journeys

Across all three locations, participants articulated clear patterns of travel avoidance. Commonly avoided journeys included:

- Walking alone after dark, especially through parks or underpasses.
- Using buses late at night due to perceived lack of security presence.
- Visiting unfamiliar neighbourhoods or areas with reputations for crime.

These avoidance behaviours were most pronounced among participants in Birmingham city centre, with six out of eight participants acknowledging within their interview that urban density amplified safety concerns.

The statements from Participant 02 and Participant 11 illustrate how perceptions of risk lead to the avoidance of certain routes and modes of travel, creating journeys that are invisible not because they occur, but because they never happen. These decisions, which are often made silently and without formal reporting, represent a critical yet overlooked dimension of mobility inequality.

Participant 02 remarks:

> *"I never walk through the park after sunset. It's just not worth the risk."* (Participant 02, Sutton Coldfield)

The phrase "not worth the risk" signals a cost-benefit calculation rooted in perceived vulnerability rather than actual incidents. Such avoidance behaviours are rarely documented in transport data, rendering these foregone journeys invisible to planners and policymakers.

Participant 11 states:

> *"I avoid certain bus routes completely because they go through areas I've heard are unsafe."* (Participant 11, Birmingham)

This reflects spatial avoidance, where decisions are shaped by reputational geographies and second-hand information rather than direct experience. The reliance on hearsay underscores how fear can be socially constructed, yet its impact on mobility is tangible, limiting access to services, employment, and social opportunities

4.3 Decision-Making and Risk Assessment

Women described a complex decision-making process balancing necessity against perceived risk. Factors influencing avoidance included:

- Time of day and lighting conditions.
- Availability of trusted companions.
- Prior experiences or local crime reports.

Participants, such as participant 18, often opted for costlier alternatives (e.g., taxis) or rearranged schedules to mitigate perceived threats.

Participant 18 notes:

> *"If I have to go somewhere late, I'll pay for a taxi even though it's expensive. It's the price of feeling safe."* (Participant 18, Tipton)

This highlights a risk mitigation strategy where financial cost is accepted as a trade-off for perceived security. The phrase *"price of feeling safe"* underscores the emotional value placed on safety, revealing how vulnerability translates into tangible economic consequences. Such decisions remain invisible in transport data, as they do not manifest as reported incidents but as altered travel behaviour.

Current appraisal frameworks often try to focus on the value of outcomes to people rather than monetary values such as willingness-to-pay, but the experiences of women emphasise a need to extend this evaluation to include perceived benefits of interventions, such as improved lighting or staff presence, not just reductions in travel time. Recognising these components ensures that safety-related outcomes are valued appropriately in planning and investment decisions.

4.4 Emotional and Psychological Impacts

Restricted mobility was linked to feelings of frustration, anxiety, and diminished independence. Several participants expressed guilt over imposing travel restrictions on themselves, while others reported heightened stress when unavoidable journeys conflicted with safety preferences. These emotional burdens were compounded for women with caregiving responsibilities, limiting their flexibility.

The statements from Participant 21 and Participant 05 reveal the profound emotional toll that perceived vulnerability exerts on individuals' sense of autonomy and well-being. These impacts extend beyond the physical act of travel, shaping identity, independence, and mental health.

Participant 21 reflects:

> "I'm tired of living in this constant state of 'what if.' It's exhausting." (Participant 21, Tipton)

This quote captures the cognitive burden of anticipatory fear, where individuals engage in continuous risk forecasting before and during journeys. The phrase "constant state" suggests a persistent, intrusive anxiety that transforms mobility into a source of psychological strain rather than freedom. Such emotional fatigue is rarely acknowledged in transport policy, rendering it an invisible consequence of unsafe or perceived unsafe environments.

Furthermore, Participant 05 states:

> "I used to be so independent, and now I feel like I'm stuck relying on others for lifts or on public transport, which is out of my control" (Participant 05, Sutton Coldfield)

This highlights the erosion of autonomy and the loss of self-efficacy caused by safety concerns. Dependence on others or on systems perceived as uncontrollable undermines confidence and restricts personal agency, leading to feelings of frustration and diminished quality of life. The hidden psychological impacts, fatigue, anxiety, and loss of independence, underscore the need for interventions that address both objective safety and subjective well-being, ensuring that mobility fosters empowerment rather than fear.

4.5 Perceptions of Safety and Infrastructure

Views on local safety varied by location. Sutton Coldfield participants generally perceived their area as safer, citing better lighting and visible policing. Conversely, Birmingham city centre respondents highlighted overcrowded transport hubs and inadequate surveillance as key deterrents. Across all sites, there was consensus on the need for improved infrastructure e.g., enhanced lighting, CCTV coverage, and reliable transport staff presence.

Participant 12 observes:

> *"If there were more staff and proper surveillance, I'd feel much more comfortable traveling."* (Participant 12, Birmingham)

This underscores the role of formal guardianship, visible staff presence and surveillance systems, in reducing perceived vulnerability. The emphasis on "feeling comfortable" suggests that safety is not solely about preventing crime but about fostering an environment of reassurance. The absence of such measures contributes to invisible barriers, where individuals silently alter or avoid journeys due to discomfort rather than actual incidents.

Conversely, Participant 01 states:

> *I rarely feel uneasy in Sutton; the environment feels well-maintained and cared for."*
> (Participant 01, Sutton Coldfield)

This reflects how environmental design and upkeep influence perceptions of security. A "well-maintained" space signals order and control, aligning with theories of defensible space and broken windows, which link physical care to reduced fear of crime. Such positive perceptions enable mobility without psychological strain, contrasting sharply with the hidden anxieties expressed elsewhere.

These quotes demonstrate that infrastructure and environmental features are far from neutral; they actively shape how safe individuals feel and, consequently, how they navigate urban spaces. Visible safety measures such as staff presence and surveillance create reassurance, while well-maintained environments signal care and control, reducing fear. Where these elements are absent, discomfort and avoidance silently alter mobility patterns, producing journeys that remain invisible to planners and policymakers.

5. Socio-demographic participant influence

The research findings demonstrate that socio-demographic characteristics, particularly gender and residential location, are central to understanding variations in travel behaviour and perceptions of safety. All 24 participants in this study were female, which is significant as women often adopt precautionary measures to manage perceived risk, and this was evident in the frequent expressions of anticipatory fear, avoidance strategies, and reliance on risk mitigation measures such as paying for taxis, even at personal financial cost. This pattern reflects how gender intersects with mobility, shaping both the emotional and practical aspects of travel.

Residential location further influenced these behaviours. The sample was evenly distributed across three areas: Tipton (33.3%), Sutton Coldfield (33.3%), and Birmingham City Centre (33.3%). Two participants in Sutton Coldfield described their environment as "well-maintained" correlating with lower reported anxiety and fewer avoidance behaviours. In contrast, those living in Tipton and Birmingham City Centre expressed heightened concerns about safety, particularly during evening travel. These participants reported strategies such as avoiding certain routes, restricting travel to daylight hours, and relying on others for lifts. These behaviours reflect how neighbourhood conditions and infrastructure quality intersect with socio-demographic context to shape mobility choices.

The interplay between gender and location amplifies the concept of Invisible Journeys. While all participants share a gendered experience of vulnerability, the degree to which this translates into altered travel behaviour varies by local context. Women in areas perceived as less safe engage in more complex risk assessments and avoidance strategies, resulting in journeys that are either heavily modified or foregone entirely. These patterns remain invisible in conventional transport data. These findings underscore the importance of considering socio-demographic factors when analysing mobility, as they reveal structural inequalities that influence not only physical movement but also emotional well-being.

6. Spatial Analysis of Perceived Safety

6.1 Introduction

The classification of roads into safe, unsafe, and disputed categories is grounded in qualitative data collected through interviews with local residents. Participants shared their lived experiences of walking these streets, providing insights into perceived safety under different conditions.

- **Green roads (Safe):** These were actively mentioned by interviewees as areas they feel comfortable walking at any time. They are perceived as secure due to factors such as good lighting, high pedestrian activity, and a sense of community presence.
- **Orange roads (Disputed):** These roads were described as safe during the day or when other people are around but less secure at night. Interviewees noted that reduced lighting and isolation after dark contribute to heightened caution in these areas.
- **Red roads (Unsafe):** These streets were identified as places where precautions are taken or, in some cases, avoided altogether. Reasons include poor visibility, higher crime reports, or association with anti-social behaviour, particularly during late hours.

This classification reflects real-world experiences rather than solely relying on crime statistics, offering a nuanced understanding of perceived safety in the area.

6.2 Birmingham City Centre

Figure 2 highlights three categories of streets in Birmingham city centre: safe, unsafe, and disputed based on the interviews conducted with eight women per location. Safe areas, marked in green, are concentrated around Corporation Street and the vicinity of Moor Street Station. These roads benefit from high pedestrian activity, strong lighting, and visible security measures, making them consistently secure throughout the day and evening. Their proximity to major transport hubs ensures continuous surveillance and commuter flow, which further reduces crime risk.

Unsafe areas, shown in red, are located on Broad Street and an underpass east of Moor Street Station. Broad Street is associated with nightlife venues such as bars and clubs, which increase the likelihood of alcohol-related incidents and anti-social behaviour after dark. Poor lighting and isolated underpasses in certain sections exacerbate the risk, particularly during late-night hours when foot traffic is minimal. The reported lack of lighting and isolated nature of the underpass led to 3 out of 8 women avoiding it and choosing to walk routes with higher foot traffic such as through the High Street or into the Bullring shopping centre.

Disputed areas, indicated in yellow, include Digbeth and the Chinese Quarter, along with streets surrounding Snow Hill Station. These districts are vibrant and safe during the day due to cultural attractions and market activity. However, they become riskier at night as pedestrian presence declines and lighting is less consistent. While not as dangerous as the red zones, these areas require caution after business hours, especially for individuals traveling alone.

Overall, the analysis reveals a clear pattern: transport hubs anchor safer zones, nightlife corridors correlate with unsafe classifications, and mixed-use districts exhibit temporal safety variation. This suggests that time of day is a critical factor in perceived and actual safety across Birmingham city centre.

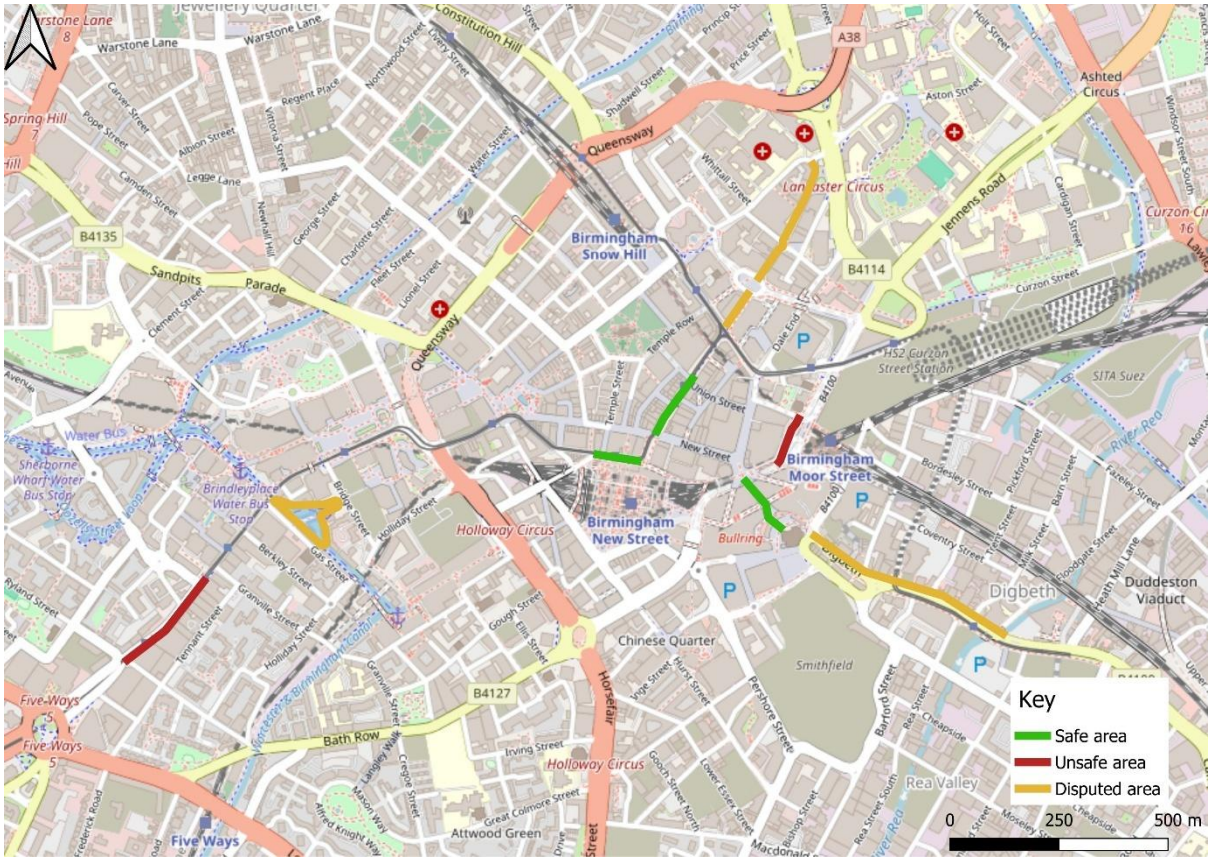

Figure 2: A map showing how women perceive the roads in Birmingham City Centre.

6.3 Tipton

Figure 3 shows safety classifications for roads in a residential area, marked as safe (green), unsafe (red), and disputed (yellow).

Safe areas are concentrated around the northern and eastern sections, including roads near Wednesbury Oak Academy and surrounding residential streets. These zones are likely well-lit, have lower crime rates, and maintain steady pedestrian activity, making them secure both day and night.

Unsafe areas are located along the main High Street in Princes End, marked in red. This stretch is associated with higher crime risk, possibly due to heavy traffic, commercial activity, and proximity to nightlife or poorly lit sections, making it vulnerable after dark. The High Street consists of a post office, takeaway shops and convenience stores. Two women reported that they would not walk along here or use these shops, one further stated that she would rather continue into Dudley on the bus and the other voiced that she often takes a taxi it to locations which provide similar shops such as West Bromwich.

Disputed areas, shown in yellow, include roads around parks and mixed-use zones near the academy and residential clusters. These areas are generally safe during the day due to community presence but become riskier at night when foot traffic declines and lighting is less consistent.

Overall, the pattern suggests that residential streets and school zones anchor safety, while main roads with commercial activity pose higher risks, and park-adjacent roads shift from safe to unsafe depending on time of day.

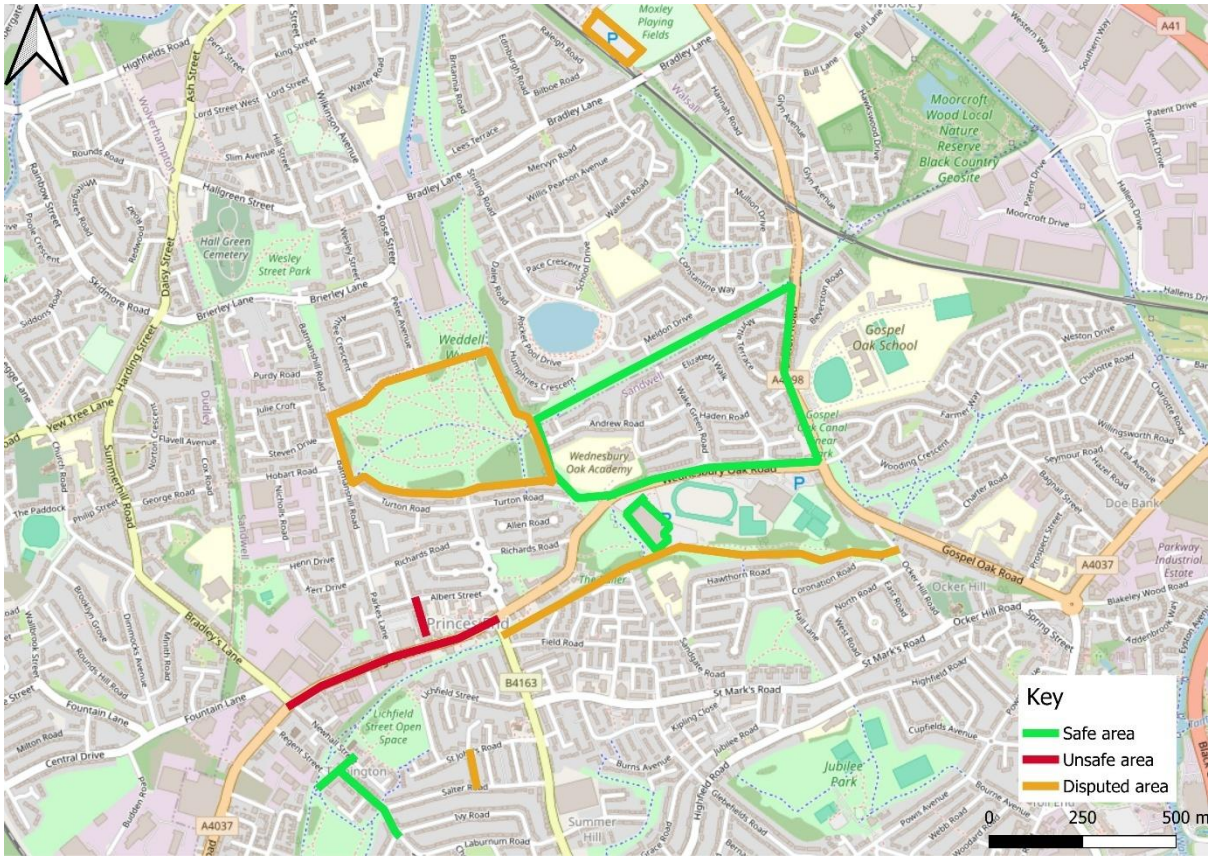

Figure 3: A map showing how women perceive roads around Tipton

6.4 Sutton Coldfield

Figure 4 visualises that safe areas in Sutton Coldfield are concentrated around the town centre, particularly near The Parade and Gracechurch Shopping Centre. These streets remain secure due to strong lighting, CCTV coverage, and constant pedestrian activity, making them reliable both day and night.

Disputed areas, shown in orange, include park-adjacent roads near Sutton Park. Whilst the part was generally perceived as safe during the day due to recreational and cultural activity but become riskier at night when foot traffic declines and lighting is inconsistent on many footpaths.

Notably, there are no roads identified as completely unsafe or ones that women would avoid at all times. This indicates that while certain streets require caution after dark, the overall environment does not present extreme safety concerns.

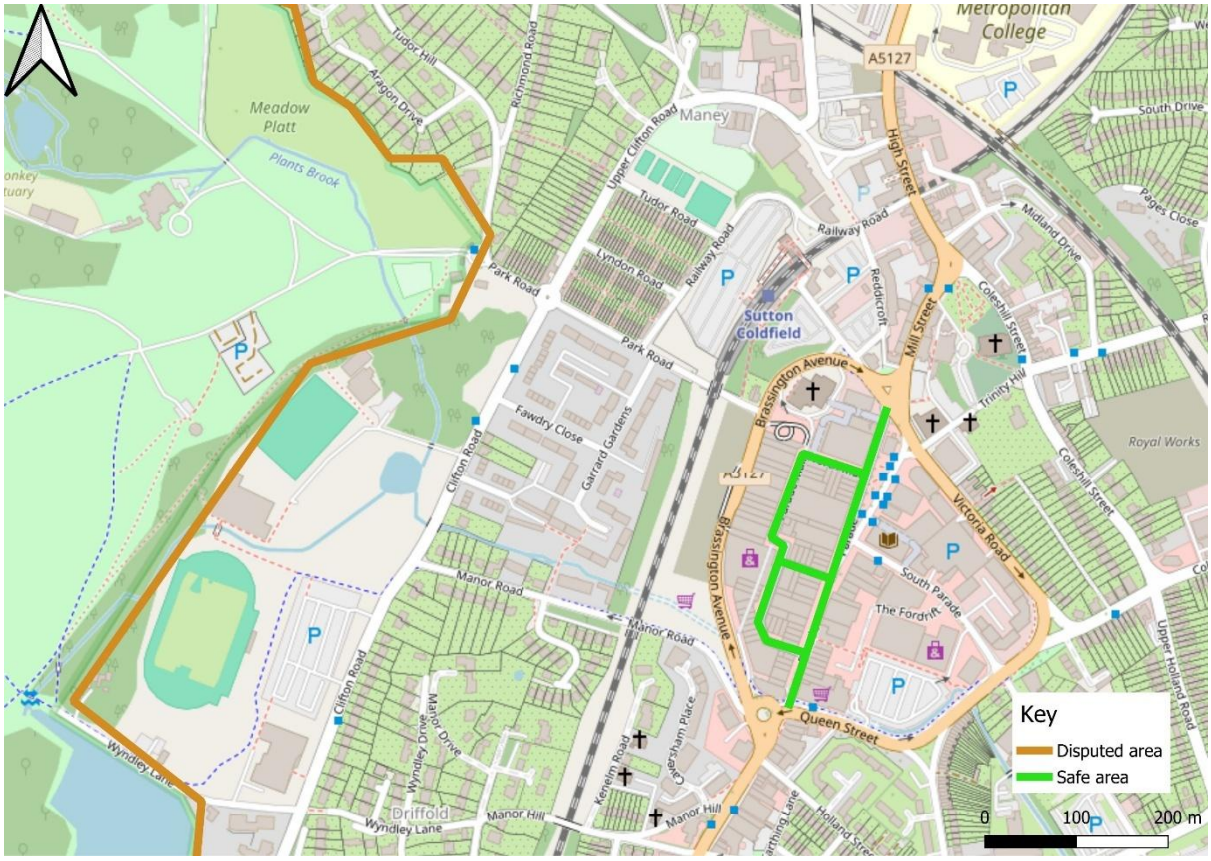

Figure 4: A map showing how women perceive roads around Sutton Coldfield.

7. Planning interventions

Drawing on interview insights and spatial analysis, the following interventions are recommended to address invisible journeys and enhance perceived and actual safety:

- Dynamic Lighting Systems: Implement smart lighting that adjusts brightness based on time of day and pedestrian presence, ensuring continuous visibility on key routes.
- Encourage mixed-use developments along walking routes to maintain natural surveillance and activity after dark.
- Establish staffed safety hubs at transport nodes and park entrances, equipped with CCTV, emergency call points, and real-time assistance.
- Conduct participatory audits incorporating the lived experiences of women, embedding findings into design standards and frameworks.
- Develop integrated apps allowing users to report unsafe conditions, linked to city control rooms for rapid response and infrastructure adjustments.
- Empower local groups to co-design public spaces and monitor upkeep, as well-maintained environments reduce fear and signal safety.
- Introduce lighting corridors and seasonal safety measures to make parks accessible beyond daylight hours without compromising ecology.
- Align bus and train schedules with peak safety windows, reducing long waits in isolated areas and improving night-time connectivity.

8. Conclusion

Findings demonstrate that safety perceptions profoundly shape women's mobility, creating invisible journeys that remain absent from conventional transport data. Interview narratives reveal not only spatial avoidance but also emotional and psychological burdens, including anticipatory fear and hyper-vigilant behaviours. These insights highlight that safety concerns are not limited to physical risk, they impose real costs, such as paying for taxis or altering schedules, which participants described as the "price of feeling safe." Recognising these components is critical for urban and transport planning.

The interventions identified should be explicitly integrated into transport appraisal frameworks, allowing hidden economic impacts to inform value-for-money assessments of interventions like improved lighting, surveillance, and staff presence. Safe roads were consistently linked to visibility and activity, while unsafe and disputed roads reflected temporal vulnerabilities, particularly after dark.

Future research is urged to build on these findings by expanding sample diversity, incorporating intersectional perspectives, and developing methodologies to quantify the economic and social costs of invisible journeys. This will enable planners to design interventions that address both objective safety and subjective security, ensuring mobility fosters empowerment rather than fear.

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