

Rationalisation and/or relativity - The paradox of perceived fairness in mobility systems

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ABSTRACT

Mobility systems play a crucial role in structuring access to work, services, and social participation, yet their justice is unevenly experienced across social groups. However, perceptions of mobility justice do not always correspond to the distribution of material disadvantage. In this context, system justification theory holds that people are motivated to view existing social arrangements as fair and legitimate. Its strongest claim, rooted in cognitive dissonance theory, suggests that those most disadvantaged by the status quo may be especially motivated to defend and justify it. In contrast, the Relative Deprivation Theory highlights when discontent emerges through comparisons with more privileged individuals/groups. Using a mixed-methods approach, this study aims to understand disparities in perceptions of injustice in the mobility system among advantaged and disadvantaged groups and the motivations that lead disadvantaged groups to reduce dissonance (or not) and justify an unjust system. Quantitative findings show a clear paradox: advantaged groups report more negative evaluations of fairness in transport infrastructure, whereas disadvantaged groups, who theoretically face greater structural barriers, express more positive evaluations. Qualitative interviews explain this paradox, showing how participants normalise financial and infrastructural constraints, but also show when such normalisation breaks down once disadvantages become evident. The analysis demonstrates how mobility justice perceptions are shaped not only by material inequalities but also by psychological and comparative processes. This has important implications for policymaking and society, since efforts to address inequality may face resistance not only from privileged groups but also from those who are disadvantaged, or risk normalising a society in which the disadvantaged accept and reproduce systemic injustice.

1. Introduction

Generally, mobility justice research focuses on what disadvantaged groups would like to improve in the system and/or how the system can be improved to include the needs and perceptions of the most disadvantaged groups (Martens et al., 2012; Karner et al., 2020). Much of this work has highlighted accessibility gaps, infrastructural barriers, and everyday mobility issues faced by disadvantaged socio-economic groups, often drawing on large-scale accessibility analysis, participatory methods or needs-based surveys to capture their lived experiences (Vecchio, 2020; Verlinghieri & Schwanen, 2020). These approaches have been key in showing structural inequalities in mobility systems. However, they tend to operate on the assumption of what is perceived as 'just' or 'unjust' from a theoretical point of view. As Haxhija et al. (2025) point out in their literature review of justice questions in mobility

surveys, no survey posed direct justice questions to their respondents. While this indirect approach offers insights into specific aspects of the mobility experience, it may miss more in-depth subjective views that respondents hold regarding fairness and justice in transportation.

Research in mobility justice has shown that disparities may exist between how researchers and practitioners conceptualise justice and other mobility aspects and how populations themselves evaluate it (Lowe et al., 2023; Soares & Glaser, 2025; Verlinghieri & Schwanen, 2020). When analysing women's experiences in public transport, Geliş and Meinherz (2026) highlighted this disparity by showing how women may report feeling relatively safe in public transport despite frequent experiences of harassment, a finding linked to the normalisation of gendered violence and the expectation of such encounters as part of everyday mobility. In other words, disadvantaged groups may sometimes report more positive assessments of mobility systems even

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when objective barriers remain. This points to a potential blind spot in mobility justice scholarship: perceptions of fairness are not simply a mirror of material disadvantage but are mediated by psychological, cultural, and comparative processes.

Evidence from other domains of social research confirms this paradox. For instance, Jost et al. (2003) argue that individuals often hold beliefs that do not align with their material self-interest. This is the central point of System Justification Theory (SJT), which explains why disadvantaged groups may accept or even defend arrangements that do not benefit them, reducing dissonance through mechanisms such as adapting attitudes and beliefs, rationalisation or downward social comparison (Caricati & Owuamalam, 2020; Jost, 2020; Jost & Banaji, 1994). By comparing themselves to others who are worse off, people can generate more positive evaluations, enhancing acceptance and reinforcing the belief that the system is just or at least tolerable. These cases illustrate how disadvantaged groups may accept structural disadvantages with narratives of acceptance, resilience, or inevitability. In contrast, other theories offer additional insights into when individuals are most likely to feel dissatisfied or treated unfairly by the system. Haxhija and Geliş (2025) argued that in the context of mobility, injustices prevail when disadvantaged groups compare their situations to those groups/situations that they perceive as better off. To further understand and explain perceptions of injustice in this research, Relative Deprivation Theory (Runciman, 1966), which holds that disadvantaged individuals or groups perceive greater unfairness when they compare themselves to others who are better off (upward comparisons), will be used. While individual relative deprivation has been associated with personal enhancement strategies, relative deprivation experienced as a shared group condition is linked to strengthened collective identity and a greater likelihood of collective action, as injustices are interpreted as structural rather than individual problems (Smith et al., 2012; Walker & Smith, 2002).

Taken together, these theories highlight the paradox of perceived fairness in mobility systems: disadvantaged groups may at times normalise or justify constraints, while at other moments they resist them when relative comparisons make inequalities salient. They provide a powerful yet underexplored framework for mobility justice research, which has largely overlooked psychological and social identity theories in interpreting the paradoxical perceptions of mobility justice. Therefore, drawing on both survey and interview data from Berg am Laim, Munich, Germany, this paper is built around these two research questions:

- RQ1: Which group (advantaged vs disadvantaged) perceives the mobility system as more unjust?
- RQ2: To what extent and how disadvantaged groups justify the injustices within the mobility system?

Following a sequential mixed-methods design, quantitative data have been used to compare perceptions of justice between disadvantaged and advantaged socio-economic groups. On the other hand, qualitative interviews were used in this research to show how participants normalise constraints, but also when such normalisation is challenged.

The paper contributes to debates in mobility studies by foregrounding the subjective and comparative dimensions of transport inequalities and by proposing an integrated framework for understanding how individuals negotiate, justify, or contest mobility systems in their everyday lives. For this, Chapter 2 explains the social science and mobility theories used in this research. Chapter 3 shows the mixed-methods approach employed in this study. Findings and results in Chapter 4 initially analyse perceptions of injustice among advantaged and disadvantaged groups (through a neighbourhood-based survey), and qualitative insights explore when and how disadvantaged groups tend to justify the system or not. Chapter 5 provides a discussion on the main theories used in this paper and how they can be further used in

mobility research; while the last Chapter 6 focuses on recommendations for policymakers, activists and researchers in the mobility field.

2. Literature review

2.1. System justification theory

System Justification Theory (SJT) holds that people are willing to preserve the belief that the current social arrangements that they face in their daily life are fair, legitimate, justifiable, and necessary (Jost & Banaji, 1994). In its strongest form, rooted in cognitive dissonance theory, the hypothesis suggests that those who are most disadvantaged by the status quo are more inclined to support, defend and justify existing social systems and outcomes, to reduce ideological dissonance (Jost et al., 2003). If individuals had no motives to justify the system, then anyone facing disadvantage, whether at the individual or group level, would, at the first opportunity, challenge the system and reject it as unfair and exploitative. However, empirical observation shows that disadvantaged groups rarely respond in this way to the problems they face.

It is important to consider that system justification theory has been strongly influenced by cognitive dissonance theory (Festinger, 1957) and other perspectives linked to justification and rationalisation processes. Following this line of thought, dissonance theory extends the argument by suggesting that individuals often rationalise their own suffering in a way that experiencing disadvantage may paradoxically increase their commitment to the very structures that perpetuate it (Wicklund & Brehm, 1976). As Jost et al. (2003) explain, when system justification and cognitive dissonance perspectives are combined, they lead to two main claims: (a) individuals are motivated to defend and legitimise the existing social order, and (b) this motivation may be especially pronounced among those most disadvantaged by it. Based on this, the psychological discomfort created by inconsistency drives individuals to resolve the tension by aligning their beliefs with the system that constrains them. This can be achieved in several ways, such as adapting attitudes and beliefs by altering one's beliefs to make the system more favourable, adapting behaviours that align with system limitations, introducing new thoughts or rationalisations to bridge inconsistency and through downward social comparison, where individuals draw strength in the system by comparing themselves to those worse off.

However, support for the *status quo* is not fixed or universal. In some contexts, motivations linked to self-interest or group identity can become more important than the motivation to justify the system, such as when 'identity politics' highlights group-based inequalities (Blasi & Jost, 2006). These moments of reduced system justification are particularly important because they create the conditions under which dissatisfaction can be recognized and articulated, laying the foundation for perspectives that emphasize perceived injustice and relative disadvantage.

2.2. Relative deprivation

Relative Deprivation (RD) occurs when an individual is denied an outcome to which they believe they are entitled (Olson & Hafer, 1996). The concept of relative deprivation serves as a key tool for social scientists in predicting outcomes across multiple domains, including collective mobilisation, individual success and deviance, intergroup attitudes, and psychological and physical health (Smith et al., 2012). Within the literature, distinctions exist between personal and group RD. Personal RD refers to an individual's sense of disadvantage compared to other people on a personal level, while group relative deprivation refers to the perception that their social group is unfairly disadvantaged relative to other groups (Runciman, 1966; Olson & Hafer, 1996). In a separate study, Walker (1999) found that group deprivation, especially when coupled with strong group identification, fosters a readiness for

collective action, while personal deprivation is more closely linked to individual emotional outcomes and personal well-being. The distinction between the two types of relative deprivation is important because it can be used to predict two different responses to inequality.

Although in mobility research, no studies so far have explicitly adopted RD theory, several do address closely aligned concepts of comparative disadvantage in mobility. For examples, in their study of perceptions of injustice in mobility, using a mixed methods approach, Haxhija and Geliş (2025) moved beyond objective metrics of inequality and used more subjective evaluations to show that individuals perceive more injustice as a result of the car-based infrastructure, especially when making comparisons to other neighbourhoods that are better off or comparing among different road users, e.g. car drivers vs cyclists, or cyclists vs pedestrians. Moreover, the same study shows that perceptions of injustice also arise when comparing one's own circumstances to those of other disadvantaged individuals, groups, or situations perceived to be more advantaged. For example, older people found public transport pricing unfair, especially when compared to other disadvantaged groups receiving discounts or their peers in other countries where public transport is free for seniors.

However, with a few exceptions, most studies in mobility mainly document objective inequalities (costs, time, access), leaving room for future work to integrate the comparative aspects of relative deprivation, for instance, how people feel deprived relative to others in terms of transport opportunities.

2.3. Transport-related social exclusion

Transport disadvantage is a multi-dimensional construct which is characterised by location, access to mobility and the limitations on personal access associated with the physical, social and psychological characteristics of individuals (Delbosc & Currie, 2011). This study specifically focuses on the last aspect of transport disadvantaged, which is linked to limitations on personal access associated with physical and social barriers. When transport disadvantage becomes an obstacle for allowing individuals to fully participate in society and access opportunities, social exclusion can happen (Ward & Walsh, 2023). Moreover, as overall mobility in society increases, the disproportionate costs of externalities of mobility, such as exclusion, are suffered more by specific groups (Kenyon, 2003; Lucas, 2012).

In the transport literature, disadvantaged groups are defined based on the challenges they face related to accessibility, the availability of transport services, and the inclusivity of those services. To develop a more comprehensive list of groups that may encounter barriers to using transport services, this study incorporates insights from research on transport disadvantages, equity, justice and poverty. The literature provides useful frameworks for systematically differentiating these groups, which are categorized according to cultural, demographic, economic, geographical, social, and health-related criteria (Di Ciommo et al., 2020; Haxhija et al., 2025; Karner, 2020).

Focusing on self-reported measures of transport problems, Delbosc and Currie (2011) make an analysis on how transport disadvantage and social exclusion separately and together reduce subjective well-being, comparing groups who are transport disadvantaged only, socially excluded only, both, or neither, based on a survey in Victoria, Australia. The findings suggest that additional research and policy interventions targetting specifically “Vulnerable/Impaired” group may be more effective in addressing transport-related social exclusion. Similarly, Goodman-Deane et al. (2021) refer to people with disabilities and incorporate people with a migrant background. People with a migration background have been studied also linked to mobility of care and the urban form (e.g. built environment and road connectedness) of their daily mobility environment (Matsuo, 2016). Additionally, carless households, primarily single people, elderly women, disabled individuals, and single-parent families, who are more common in urban than in rural areas, travel far fewer kilometres and sometimes struggle to

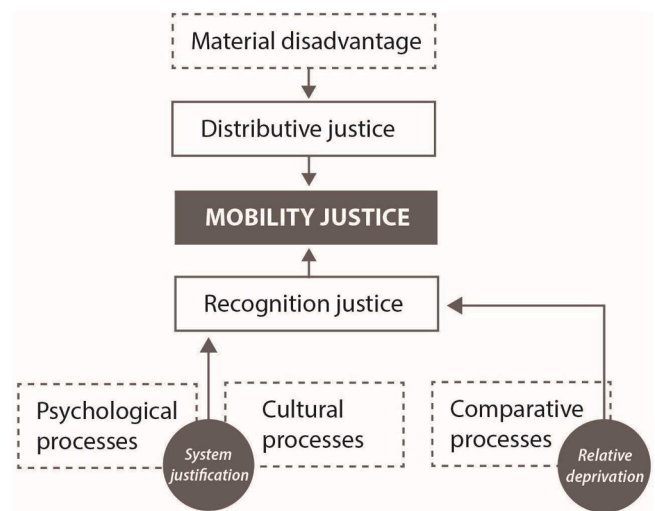


Fig. 1. Conceptual framework of the proposed theories informing mobility justice.

reach services and destinations without assistance from others (Titheridge & Solomon, 2008; Jeekel, 2014). Low-income households and individuals are a constant disadvantaged group in mobility studies, with researchers focusing on different topics causing transport-related exclusion for this group such as, difficulty to reach job opportunities (Lowe, 2014), accessibility to food for rural and urban low-income households (Páez et al., 2010), carsharing uptake and benefits when combined with public transport (Mitra, 2021), technological barriers in transportation planning (Yan et al., 2021).

Taking into consideration the insights from the literature a list of disadvantaged groups that may encounter barriers when using/needing transport services was produced: older people, people with a migration background, low-income, people with disabilities and single parents.

3. Methodology and research design

3.1. Case: Berg am Laim

With a population of over 1.5 million, Munich is Bavaria's capital and the largest city in the region. The study examines disadvantaged socio-economic groups, defined by financial constraints, social or physical vulnerability in accessing mobility, and geographical concentration in particular neighbourhoods.

The analysis centres on the district of Berg am Laim chosen based on the Mobility Justice Framework (Haxhija et al., 2024). Berg am Laim is close to the city centre and is characterised by its relatively good provision of transport infrastructure, including public transport and cycling options. This makes Berg am Laim a critical case (Flyvbjerg, 2006): a location where mobility injustice might be considered “least likely” to emerge, given the infrastructural conditions. However, the district has a high proportion of disadvantaged socioeconomic groups.

This case selection is theoretically important for the present study. Because Berg am Laim is comparatively well-served in terms of public transport and cycling infrastructure, the district allows us to examine whether perceptions of justice and system-justifying mechanisms persist even where objective infrastructural provision is relatively strong. In other words, the case enables us to analytically distinguish material conditions (rooted in distributive justice theories) from the psychological and comparative processes explored through System Justification Theory and Relative Deprivation Theory. In doing so, it further engages with recognition-oriented dimensions of justice by understanding how individuals perceive, interpret, normalize, or contest inequalities in everyday mobility experiences. Fig. 1 shows in a conceptual way the additional contributions to mobility justice that this research is

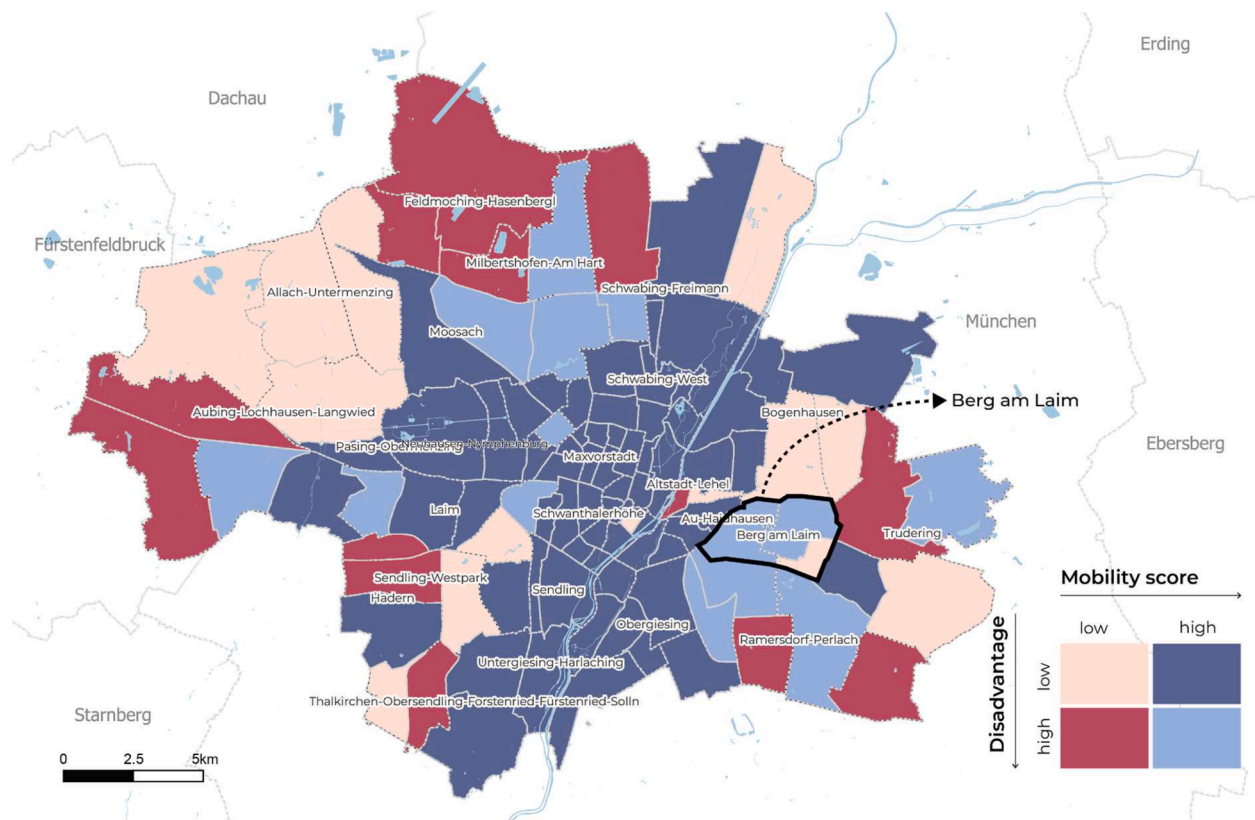


Fig. 2. Munich neighbourhoods showing mobility disadvantages and social disadvantages. Source: Haxhija, 2025.

exploring further.

Had the study focused exclusively on severely underserved neighbourhoods, it would have been more difficult to disentangle perceptions

emerging from infrastructural deprivation itself from those produced through justificatory or comparative mechanisms. Importantly, neither the survey nor the interviews suggest the absence of mobility injustices

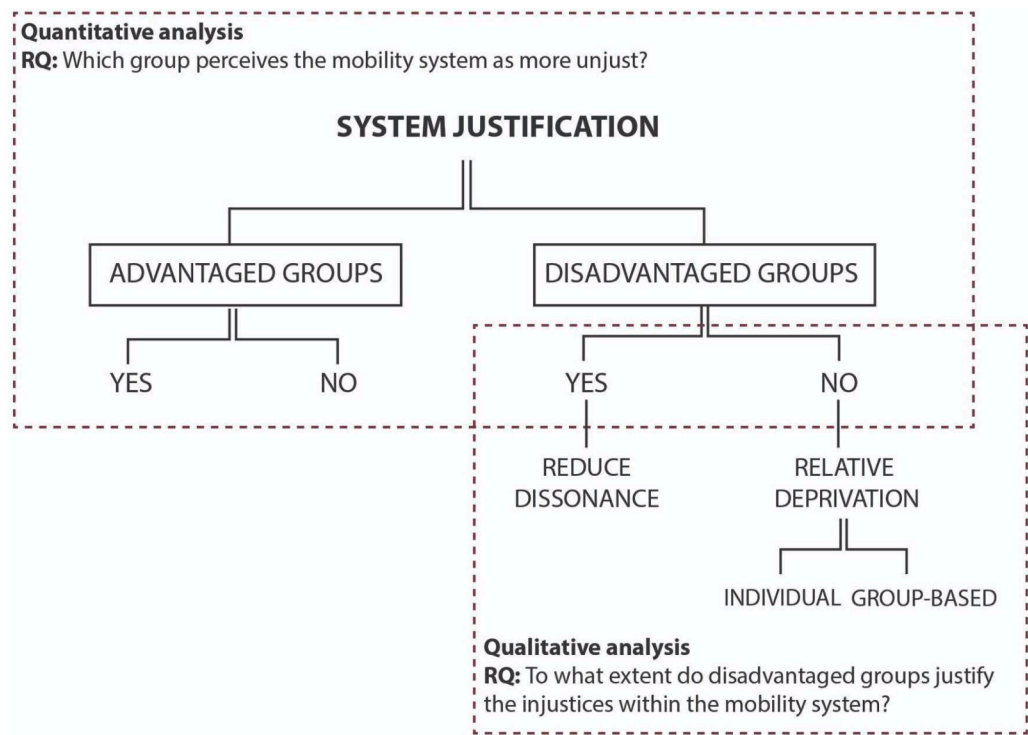


Fig. 3. Analytical framework of the mixed-methods approach.

within the district. Participants still reported barriers related to affordability, accessibility, travel times, mobility restrictions, and uneven access to mobility opportunities. Rather, the comparatively strong infrastructural provision of Berg am Laim allows the study to examine how disadvantaged groups interpret and negotiate persistent inequalities even within an urban context that is generally considered well-served. In this sense, Berg am Laim functions as a “least-likely” case for the emergence of mobility injustice perceptions, thereby strengthening the theoretical relevance of the findings. At the same time, the study does not assume that disadvantaged groups in less well-served neighbourhoods would evaluate mobility systems similarly. Rather, future comparative research across neighbourhoods with varying infrastructural conditions could further examine how different urban contexts shape system justification and relative deprivation processes.

As seen in Fig. 2, three neighbourhoods that comprise the Berg am Laim district were considered for this analysis, namely Berg am Laim Ost, Echarding and Josephsplatz. Compared to Munich’s average, all three Berg am Laim neighbourhoods show a higher percentage of disadvantaged socio-economic groups such as single-parent households, low-income people, older people, and people with a migration background.

3.2. Mixed-methods approach

This study employs a mixed-methods design to examine how perceptions of fairness in mobility systems are shaped by both material inequalities and psychological processes. Following a convergent parallel design, we collected quantitative and qualitative data in parallel, analyzed them independently, and then compared findings (Johnson & Onwuegbuzie, 2004; Şahin & Ozturk, 2019). This design allows the strengths of one dataset to offset the limitations of the other and provides a more comprehensive response to the research problem. Fig. 3 illustrates how this mixed-methods study was conducted, considering the relevant theories introduced above and the main research questions.

3.3. Quantitative study

The data used in this research is based on a survey instrument developed to directly capture perceptions of fairness in mobility. The questionnaire was structured into three modules: (1) socio-economic characteristics, (2) mobility needs (public transport, cycling, walking), and (3) distributive justice perceptions. Respondents were asked to assess the perceived fairness across dimensions such as accessibility, affordability, subsidies, and the allocation of public space. In this context, perceptions of adequacy or insufficiency (e.g., “too little” or “too much” space allocation) were used as indicators of distributive fairness, reflecting how respondents perceive mobility resources and urban space to be allocated across different modes and social groups. Responses were measured using ordinal scales ranging from 1 (“fair” or “way too little”) to 5 (“unfair” or “way too much”), depending on the item category.

To reach a final subset of questions to be asked in the distributive justice section of the survey, we followed two approaches: (1) a literature review to understand what is asked in mobility justice surveys (for a fuller account, see Haxhija et al., 2025), (2) a stakeholder workshop to reduce items generated from the literature review and to come up with a subset of questions that met the needs of partners involved in the project. The Mobility Justice Survey is considered to be highly innovative due to its distinctive character of asking direct ‘justice’ questions. So far, mobility surveys have not explored direct perceptions of what is just and unjust (Haxhija et al., 2025). Instead, they have focused on analysing different mobility-related elements such as safety, security, accessibility, exposure to negative road traffic effects, infrastructure barriers, quality of public transport service, etc. Data collection was carried out between November 2023 and January 2024 through two complementary strategies: (1) an online survey distributed to 10,000 households in the Berg

Table 1

Interview participants.

Interviewees	Gender	Age Range	Selection Criteria	Further Disadvantages
AT	male	35 - 44	Migration Background	
CD	female	55 - 64	Low income	Mobility impairments, migration background
HJH	male	65 or over	Older age	
HY	female	25 - 34	Migration Background	
JC	female	35 - 44	Migration Background	Single caretaker
JM	female	35 - 44	Single parent	Low income
KM	female	25 - 34	Low income	
KS	female	55 - 64	Low income	Migration background, mobility impairments
LN	female	45 - 54	Low income	Migration background, mobility impairments
MÖ	female	25 - 34	Migration Background	
MP	female	65 or over	Older age	Low income, mobility impairments
ND	female	35 - 44	Single parent	Low income
RD	female	35 - 44	Single parent	-
RS	female	65 or over	Older age	Mobility impairments
SB	female	45 - 54	Single Parent	
SV	male	65 or over	Older age	

am Laim district of Munich, and (2) face-to-face surveys with targeted disadvantaged groups. This process yielded a valid sample size of 734 responses, among whom 392 identified with one or more disadvantaged socio-economic characteristics (e.g. low income, migration background, single parenthood, mobility restriction). Statistical analyses included descriptive tests, chi-square and Wilcoxon tests, as well as Pearson correlations to identify links between mobility needs and fairness perceptions.

3.4. Qualitative study

In parallel, qualitative data were gathered through semi-structured microstory interviews (Vecchio, 2020). To make sure that the data is representative and comparable with related regional research, the disadvantaged groups analysed in this study were defined using the population categories used in the German national *Mobilität in Deutschland* (MiD)¹ survey. Sixteen participants were selected, evenly distributed across four groups: low-income households, older adults, individuals with a migration background, and single parents. Several participants also reported mobility restrictions or occupied multiple disadvantaged positions, allowing for intersectional perspectives. Recruitment drew primarily on survey respondents who had indicated interest in further participation and was complemented by recruitment in the neighbourhood.

Table 1 provides an overview of the interview participants, including age, gender, primary selection criteria, and additional intersecting disadvantages represented within the sample.

Interviews were conducted between February and April 2024, primarily in person, and ranged from 25 to 80 min. The interviews followed a semi-structured microstory approach (Vecchio, 2020) and explored four interconnected domains: (1) participants’ socio-demographic characteristics, (2) valued daily and leisure activities, (3) mobility

¹ The MiD is a nationwide household survey of everyday mobility commissioned by Germany’s Federal Ministry of Transport: https://www.bmv.de/EN/Services/Statistics/Mobility-in-Germany/mobility-in-germany.html?utm_source=chatgpt.com

Table 2
Overview over the identified themes.

Main theme	Subtheme	Illustrative focus
Changing beliefs and attitudes	Recalibration of expectations	Normalisation of inconvenience and constraints
Changing beliefs and attitudes	Reframing structural limits as preferences	Presenting constrained choices as voluntary
Changing behaviour	Practical adaptation	Route changes, leaving earlier, relocation decisions
Adding cognitions	Self-responsibilisation	Individualising mobility difficulties
Adding cognitions	Deflection of responsibility	Redirecting blame toward other users
Adding cognitions	Downward comparison	Comparing oneself to worse-off groups
Relative deprivation	Upward comparison	Comparing oneself to better-off systems/groups

practices, including modes, services, travel times, and costs, and (4)

Table 3
Mobility justice perceptions among advantaged and disadvantaged groups.

Values represent mean scores derived from survey responses on 5-point Likert scales. Each pair of values indicates the average score for the first group listed versus the comparison group (e.g., “2.75 – 2.75” under “Older people vs younger people” represents the mean score for older respondents followed by the mean score for younger respondents). Scale interpretations vary by indicator category and are specified in the corresponding section headings (e.g., for street space distribution: 1 = “way too little space” and 5 = “way too much space”; for subsidies: 1 = “fair” and 5 = “unfair”). Higher values therefore indicate greater perceived unfairness depending on the item measured.

Justice variable	Older people vs younger people (mean)	Migrants vs non-migrants (mean)	Lower income (<1000eu/month) vs Higher income (>1000eu/month) (mean)	Mobility restriction vs no mobility restriction (mean)
Street space distribution 1 (way too little space) - 5 (Way too much space)				
Sidewalks	2.75 - 2.75	2.85 - 2.72	2.8 - 2.71	2.65 - 2.8*
Cycle paths	2.27 - 2.19*	2.58 - 2.14*	2.38 - 2.17	2.22 - 2.25
Bike parking	2.38 - 2.07*	2.35 - 2.03*	2.19 - 2.03	2.1 - 2.2
Car lanes	3.43 - 3.18*	3.18 - 3.48*	3.13 - 3.43*	3.36 - 3.42
Car parking	2.82 - 2.92	2.55 - 3.05*	2.97 - 2.67	2.91 - 2.91
Public transport	2.8 - 2.7	2.75 - 2.71	2.63 - 2.71	2.62 - 2.76*
Parking for shared mobility	2.55 - 2.33	2.35 - 2.35	2.41 - 2.32	2.33 - 2.4
Traffic light time distribution 1 (Way too little time) - 5 (Way too much time)				
Cars	3.39 - 3.18*	3.22 - 3.42*	3.36 - 3.4	3.34 - 3.37
Pedestrians	2.35 - 2.18	2.26 - 2.27	2.3 - 2.24	2.33 - 2.13*
Cyclists	2.83 - 2.77	2.81 - 2.77	2.85 - 2.75	2.71 - 2.81*
Wheelchair users	1.96 - 1.64*	1.69 - 1.65	1.79 - 1.64	1.55 - 1.75*
Public transport	2.79 - 2.85	2.93 - 2.81*	3 - 2.83*	2.4 - 2.33
Public transport pricing 1 (too cheap) - 5 (too expensive)				
	3.8 - 3.97*	3.99 - 3.93	4.07 - 3.91	3.94 - 3.96
Availability of urban elements 1 (fair) - 5 (unfair)				
Public toilets	4.25 - 4.17	4.23 - 4.17	3.86 - 4.19	4.09 - 4.23
Seating options	3.19 - 3.15	3.21 - 3.14	3.16 - 3.15	3.21 - 3.13
Street lighting	2.31 - 2.5	2.56 - 2.46	2.56 - 2.46	2.62 - 2.43
Green spaces	2.37 - 2.46	2.36 - 2.47	2.21 - 2.47	2.52 - 2.43
Water elements	3.6 - 3.81	2.94 - 2.74*	4 - 3.74	3.88 - 3.74
Flat and smooth path	2.67 - 2.7	2.38 - 2.81*	2.83 - 2.73	3 - 2.55*
Direction and information	2.69 - 2.87		2.76 - 2.89	2.96 - 2.81
signs	3.19 - 3.5	2.65 - 2.94*	3.42 - 3.5	3.54 - 3.43
Tactile pavement	2.86 - 3.05	3.36 - 3.53	3.05 - 3.1	3.24 - 2.93*
Zebra crossings		2.72 - 3.13*		
Time spent to reach destinations 1 (fair) - 5 (unfair)				
Workplace	2.45 - 2.5	2.48 - 2.5	2.76 - 2.46	2.63 - 2.44
Education/training	2.14 - 2.78	2.91 - 2.68	3.3 - 2.71*	2.78 - 2.77
Business errands	2.62 - 2.71	2.88 - 2.63	2.92 - 2.64	2.91 - 2.62
Shopping	2.38 - 2.26	2.42 - 2.23	2.54 - 2.26	2.46 - 2.2*
Accompany others	2.48 - 2.63	2.78 - 2.53	3 - 2.62	2.81 - 2.46*
Leisure destinations	2.28 - 2.59*	2.67 - 2.51	2.76 - 2.53	2.67 - 2.51
Leisure activity	2.42 - 2.7	2.89 - 2.58*	2.85 - 2.6	2.89 - 2.57*
Subsidies 1 (fair) - 5 (unfair)				
Walking infrastructure	1.64 - 1.65	1.8 - 1.59	1.68 - 1.63	1.7 - 1.63
Cycle lanes	1.96 - 1.83	2.08 - 1.75*	2.03 - 1.79	1.93 - 1.81
Bike parking	2.17 - 1.99	2.22 - 1.92	2.29 - 1.95	2.04 - 2
Road infrastructure	2.29 - 2.29	2.27 - 2.29	2.22 - 2.32	2.5 - 2.25
Car parking	2.99 - 2.95	2.82 - 2.99	2.36 - 3.06*	3 - 2.93
Public transport	1.8 - 1.84	2.02 - 1.76	2.1 - 1.8	1.81 - 1.92
Shared services	2.98 - 2.82	2.89 - 2.83	2.43 - 2.84	2.71 - 2.9

*pvalue<0.05.

perceptions of mobility justice and fairness. Questions related to justice were addressed explicitly throughout the interviews, particularly in the later sections of the guide, where participants were invited to reflect on whether mobility systems were equally accessible for different groups, whether they felt represented in mobility planning, how they compared their situation to others, and what a fairer mobility future would look like. The full interview guide is included in [Appendix 1](#). All participants provided written informed consent prior to participation. Interviews were audio-recorded with permission, transcribed verbatim, and anonymised during transcription. The analysis followed a reflexive thematic analysis approach ([Braun & Clarke, 2019](#)), which understands coding and theme development as interpretive and reflexive rather than aiming at producing coder consensus. Initial coding was primarily conducted by one researcher and subsequently discussed iteratively within the research team to refine interpretations, strengthen reflexivity, and deepen theoretical engagement with the data.

The study did not aim for saturation in a strictly positivist sense of

exhaustively capturing all possible experiences. Rather, participants were purposely selected to provide analytical depth across different disadvantaged socio-economic groups. While the interview sample included four participants per target category, several participants occupied multiple disadvantaged positions simultaneously. This intersectional overlap among participants increased analytical richness and enabled recurring justificatory and comparative mechanisms to emerge across a range of perspectives and lived experiences.

Coding was carried out with the aid of MaxQDA software following a two-stage analytical process:

- The first stage involved more inductive coding grounded in participants' narratives, focusing broadly on everyday mobility experiences, constraints, adaptations, and evaluations.
- In the second stage, themes were revisited and refined through engagement with System Justification Theory and Relative Deprivation Theory, enabling the identification of justificatory, adaptive, and comparative mechanisms across the dataset. Theme development was refined iteratively through reflexive discussions within the research team.

Table 2 provides an overview over the main themes, subthemes and illustrative focusses identified during the coding process.

3.5. Method integration

Both the quantitative and qualitative strands of the research were given equal weight. Survey and interview data were analyzed separately and only compared after completion of the respective analyses. This ensured that neither strand predetermined the other. By combining quantitative breadth with qualitative depth, the mixed-methods design allowed us to explore not only the structural conditions of mobility justice but also the psychological and comparative processes that shape how fairness is perceived.

4. Findings and results

Data integration revealed a paradox: while the quantitative data suggested disadvantaged groups often evaluated mobility systems as fairer than advantaged groups, the qualitative data uncovered how this apparent positivity was sustained through normalisation of constraints and only disrupted when comparisons to others made inequalities visible.

4.1. System justification: disadvantaged vs. advantaged groups

Using quantitative data, injustices were captured by analysing the availability of urban elements, street space distribution, accessibility, subsidies, affordability, and traffic light time distribution. Wilcoxon tests were performed between the social category and the injustice variables to identify significant correlations of injustice perceptions between the disadvantaged and more advantaged groups. Table 3 shows the comparisons among advantaged and disadvantaged groups across all these different categories.

As shown in Table 3, apart from the mobility-restricted group and those without, most other advantaged groups perceived various elements of the mobility system as comparatively more unjust. A comparison between younger and older people shows that the former perceived more injustices within the mobility system, criticising the space and time allocated to cars at crossings compared to pedestrians and cyclists. The affordability of public transport is also perceived as more unfair among younger people, showing an increasing concern for public transport pricing among this target group.

The findings show important differences in perspectives on car-based infrastructure between migrant and non-migrant populations, highlighting how different backgrounds shape views on mobility priorities

and, therefore, injustices. While both groups support more cycling infrastructure (cycle lanes and parking), non-migrants have a stronger preference for reallocating space towards these developments. Moreover, non-migrants support using tax revenue to fund cycling infrastructure more than migrants, indicating a stronger preference to invest in sustainable transportation options. In contrast, migrants consider the space allocated for car parking to be insufficient (unjust).

When comparing the lower-income group and the higher-income group (Table 3), a significant difference is observed in the time needed to reach education facilities for the lower-income group, highlighting an accessibility gap that can reinforce existing socio-economic inequalities. This difference suggests that educational resources, essential for personal and professional development, may be disproportionately difficult to reach for lower-income residents.

A significant difference regarding smoother and flatter paths was found for the group with and without mobility restrictions (Table 3). Overall, the group with mobility restrictions perceived the most injustices in the mobility system. Strong injustices were observed among all categories of street space distribution, traffic light time distribution, and zebra crossings. This strong perception of injustice highlights important challenges faced by individuals with mobility restrictions, who may encounter obstacles that significantly hinder their ability to navigate urban environments safely and efficiently compared to other disadvantaged socio-economic groups.

4.2. How disadvantaged groups justify mobility injustices

This section examines the qualitative data to reveal how disadvantaged groups understand, interpret, and justify mobility injustices within Munich's urban transport system. Following the System Justification Theory, the analysis identifies several interrelated justificatory mechanisms through which participants render mobility injustices comprehensible, tolerable, or morally acceptable.

4.2.1. Changing beliefs and attitudes: recalibration of expectations

A primary mechanism through which participants cope with mobility constraints is the adjustment of beliefs to align more closely with the lived realities of limited infrastructure, long distances, or high costs. Rather than perceiving mobility restrictions as systemic inequities, participants frequently reinterpret them as normal, tolerable, or personally insignificant.

First, participants frequently normalise burdens that, objectively, indicate structural limitations such as prolonged commuting times, difficult connections, peripheral housing, or inadequate cycling infrastructure. ND captures this neutralisation by the following evaluation of long commutes:

"I'm not someone who minds driving. It doesn't really bother me." – ND

Similarly, CD who has difficulties walking minimises the impact of mobility obstacles on her everyday life:

"There are a few [stations] that are difficult to reach. Then you have to walk for ages [...]. That won't kill me either. Then I sit down somewhere and later walk a little further." – CD

In both cases, the individual acknowledges inconvenience but immediately redefines it as harmless or trivial. Such reframing represents a cognitive shift: expectations are lowered so that constraints appear ordinary rather than unjust.

LN offers another example of expectation recalibration. Although she expresses genuine frustration about the price of public transport...

"Why is that? What have I done to deserve paying this price?" – LN

... she ultimately resigns herself to the situation:

"I have had the Germany ticket for a year or two." – LN

Here, belief change occurs as an emotional acceptance of high costs

as inevitable. The perceived injustice remains implicitly recognised but is later cognitively blunted.

Second, similar mechanisms also manifest when participants interpret structural constraints as voluntary preferences. ND, for example, rationalises a longer travel route as a personal decision to avoid transfers:

"For example, I prefer to take the U2 so that I don't have to deal with that annoying change." – ND

When asked whether she chose her workplace to minimise travel time, she responds positively, stating that:

"Otherwise, it would have been endless. Driving around would have taken up working time." – ND

These interpretations shift the role of constraints from externally imposed limitations to expressions of individual agency. Beliefs are adjusted so that systemic restrictions appear as personal optimisation rather than necessity.

These statements reveal how individual inconveniences are extended into generalised beliefs about system-wide adequacy. Here, limits are cognitively reframed as evidence of justice.

4.2.2. Changing behaviour: practical adaptations to structural constraints

In addition to modifying beliefs, participants frequently adapt their behaviour in ways that align actions with their revised expectations and perceived limitations. These behavioural modifications, including choosing certain routes, shifting modes of transport, or altering trip timing, are not only pragmatic responses; they also serve to resolve dissonance by demonstrating personal control within constrained circumstances.

For instance, KM exemplifies behavioural adaptation when she describes choosing to cycle instead of relying on slower or less direct public transport:

"I find it an unpleasant time that needs to be endured. That's why I prefer to ride my bicycle." – KM

Therefore, she not only adjusts her expectations of what travel entails but also changes her actions to minimise discomfort. Even when acknowledging suboptimal cycling infrastructure, she justifies her behavioural choice through personal preference:

"The cycle paths there are worse, but I put up with them because it's my favourite cycling route." – KM

This dual reorientation in adjusting both beliefs and behaviour illustrates adaptive preferences to accommodate challenges.

Other behavioural adjustments include choosing longer routes to avoid transfers (ND), leaving early to pre-empt delays (SB), or selecting housing or workplaces to reduce travel time (ND). These actions align behaviour with what participants perceive as manageable or controllable within the system. SB, for instance, takes personal responsibility for timing when commuting by bicycle:

"If I leave on time, that's it, it's up to me. When I'm stressed, it's stressful, and when I leave on time, everything is fine." – SB

Here, the behaviour resolves dissonance by producing the desired outcome and reinforcing the belief that system shortcomings are surmountable through personal effort.

4.2.3. Adding cognitions: rationalisations, comparisons, and deflections

The third mechanism involves the introduction of additional thoughts that resolve contradictions between personal experience and the belief that the mobility system is generally fair or functional. These added cognitions allow participants to preserve a positive evaluation of the system while acknowledging inconveniences.

Some participants attribute mobility difficulties not to infrastructural issues but to their own choices or failures. SB's earlier statement

regarding dealing with public transport delays exemplifies this stress on personal responsibility. This cognitive strategy protects the perceived legitimacy of the system by locating any inconvenience within the individual rather than the structural environment.

Responsibility is also redirected toward other users rather than city planning or infrastructure. HJH illustrates this in regards to tension among cyclists.

"However, this is not the fault of the city of Munich, but rather of the cyclists themselves." – HJH

By blaming cyclists for congestion or conflict, he absolves the system of responsibility and attributes frustration to individual behaviour instead.

In addition, downward comparison emerges as a major added cognition that reaffirms system legitimacy by emphasising others' greater disadvantages. For instance, AT contrasts the mobility system in Moscow and Munich starkly:

"The comparison [of Munich] with Moscow is like comparing heaven and hell." – AT

JC notes the mobility difficulties of older adults in passing at the green light for pedestrians which she evaluates as too short:

"I think older people don't walk as fast. [...] That one street is quite a wide street and you have to walk, I wouldn't say super quickly but you know at a fairly good pace to get across at a green light. [...] I don't know how elderly people do it." – JC

RD highlights pensioners' financial vulnerability in the context of public transport pricing:

"The public transport pricing is not fair if someone only has a pension of 400 euros." – RD

AT introduces local comparison:

"You would have to ask a ninety-year-old woman at the end of the street. There is most likely only one bus connection there, with the bus running once every half hour. You would have to ask her if that is fair to her. Perhaps she cannot get on the bus because it is too high for her." – AT

SV and JC add a disability comparison for public transport usage:

"People with restricted mobility are also disadvantaged. The others always manage. All platforms should have functioning lift systems that connect to the underground and suburban railways. Not all trams have wheelchair access aids either. I believe the new models do, but not all of the older models. That should be the case. I don't know whether wheelchair users can board buses at any time." – SV

"I feel sorry for disabled people... the U-Bahn stations and access to lifts are not straightforward." – JC

Even MP, who herself has mobility restrictions, situates herself relative to those with more severe impairments with regard to the availability and functionality of escalators at metro stations:

"There are people who are even older and more disabled than I am. How often do I help people up or down, or people with prams? [The escalator] is not working again. Then it will be repaired. The repair will take three weeks." – MP

On another note, RD reduces perceived financial burden by comparing her expenses for public transport favourably to car drivers:

"When I listen to colleagues who drive cars and have to fill up with petrol, I would say that [public transport] is rather cheap." – RD

These comparisons diminish one's own hardship and reinforce the belief that the system functions well enough for "people like them." Here, systemic injustice is often displaced onto "others," preserving the speaker's positive evaluation of the system for themselves.

Finally, participants often balance criticism with immediate counterbalancing and even praise. RD exemplifies this:

"Sometimes I get annoyed when it takes a long time and there is a disruption that delays everything. [...] But that's not because of the journey itself. It doesn't stress me out and doesn't have a negative effect." – RD

MP critiques senior ticket prices yet concludes:

"In my opinion, everything is going well here. If everything stays the same, but nothing stays the same. Unfortunately, that's the point. Something needs to be done about the prices so that everyone can use it. It is what it is." – MP

KS similarly cushions critique in a general summary of her evaluations:

"Many of my friends complain that it is becoming increasingly expensive. Sometimes it doesn't work, then it's late. Many say it's becoming more expensive, more unreliable and less punctual. I still think the transport connections in Munich are great overall. The underground and suburban railways run. Occasionally, they don't come. But that's normal as long as there are alternatives to get you where you need to go." – KS

These "softeners" preserve system-level positivity despite repeated inconveniences.

Even participants facing time poverty, limited access or high costs compared to their income, resist categorising themselves as disadvantaged. This observation supports SJT's prediction that disadvantaged individuals often defend the system more strongly than advantaged counterparts, precisely to avoid confronting personal vulnerability. Across the interviews, participants show a combination of changing attitudes, behavioural adaptation, and added cognitions to reconcile mobility constraints with a sense of fairness or functionality: Beliefs change through lowered expectations and reinterpretation of systemic barriers as normal or individually chosen; behaviour adapts to align with these revised beliefs, enabling individuals to feel competent within a restrictive system; and added cognitions fill remaining gaps, reinforcing the perception that the system works "well enough." Taken together, these mechanisms illustrate how disadvantaged groups sustain a sense of autonomy and dignity within a structurally unequal mobility landscape, even as the constraints themselves remain unaddressed.

However, while rationalisation and normalisation allow participants to tolerate frequent inconveniences, their effectiveness is limited to when direct comparisons with superior mobility conditions (elsewhere) or better-resourced individuals become evident.

4.3. Relative deprivation: when disadvantaged groups stop justifying mobility injustices

Although the above-described mechanisms stabilise perceptions of justice, we can observe how these justifications falter under upward comparison. Participants confront systemic inequities when comparing themselves with people who enjoy better access, more generous mobility benefits, or superior infrastructure.

One of the ways participants compare is across other German cities and other countries. For instance, KM highlights benefits in the bicycle sharing in Hamburg:

"In Hamburg, the first half hour was free, which made it easy to cover short distances without paying. That is something a city has to provide." – KM

Furthermore, international comparisons provoke recognition of disparities. First, LN contrasts German public transport costs with Italian conditions:

"When I first came to Germany, it was different. We were in Italy before and we paid one euro and we could use [public transport] all the time, 70

min there and 70 min back. Monthly it only costs 25 euros. Everyone has a ticket. This annual ticket is very cheap. You moved around, without end." – LN

Second, RS emphasises public transport benefits for older people in Austria:

"I think it would be good, for example, as it is in Austria, where all senior citizens over 65 travel for free." – RS

These examples demonstrate how exposure to alternative mobility systems reveal feasible alternatives.

Another way, through which participants compared upward, was across social groups within the city. In one example, RS observes wealth-based differences:

"I think that rich people can more often afford to take a taxi, for example, or have a chauffeur, and others have to walk." – RS

Further, MP notes inequities in regard to age-based discounts for public transport tickets:

"I also think it is terrible that the 49-euro ticket is not discounted for senior citizens. Many different people, and students get it for half price." – MP

Finally, LN highlights geographic disparities as someone who cannot afford a car:

"Many people are now getting flats outside the city... but you can't live there without a car." – LN

Thus, upward comparisons make inequities tangible and disrupt the justifications maintained by the previously explained mechanisms.

5. Discussion

5.1. System justification in mobility

Based on the quantitative findings (Table 3), apart from the mobility-restricted group, all other disadvantaged groups perceived various elements of the mobility system as comparatively more just. This counterintuitive finding suggests that advantaged groups, who may have higher expectations for service quality and accessibility, tend to notice and be more sensitive to gaps in mobility infrastructure or service inconsistencies. Similar findings have been reported in other studies focusing on self-reported measures of transport disadvantage. Delbosc and Currie (2011), found out that the majority of those high self-reported transport issues had access to a car, were able to realise average amounts of travel and were not associated with social exclusion. As reported by the study authors, such findings were also present in a UK-based survey which showed that people who were not deprived were just as likely to report difficulty accessing activities than people who were considered severely deprived. For these groups, the perception of injustice could be driven by a sense of entitlement to certain standards of convenience and efficiency. Cognitive dissonance theory suggests that those most disadvantaged by the current system experience a stronger psychological drive to alleviate ideological conflict (Jost et al., 2003). As a result, they are more likely to endorse, defend, and rationalize existing social structures, authorities, and outcomes.

Across interviews, disadvantaged groups justify mobility inequities in structured and predictable ways. They:

1. Normalise constraints, lowering expectations through adaptive preferences and framing systemic limitations as ordinary or personally manageable, e.g. recalibrating expectations by minimising structural constraints, accepting high public transport costs, and reframing public transport limitations as personal preferences; alongside practical adaptations such as choosing alternative cycling routes, taking longer public transport routes to avoid transfers,

- leaving early to anticipate delays on cycling paths, or selecting housing or workplaces to minimise travel time.
2. Compare downward, portraying injustice as something that happens to others and preserving both self-worth and system legitimacy, e.g. comparing Munich to previously lived-in cities; comparing one's own situation to that of older adults in relation to pedestrian crossing times; contrasting personal financial circumstances with pensioners' vulnerability to public transport prices; comparing housing locations and levels of public transport connectivity; comparing oneself to mobility-restricted individuals regarding the availability of lifts and escalators at stations; and contrasting transport modes by framing public transport as cheaper than private car use.
 3. Generate rationalisations, shifting responsibility from structural design to individual behaviour, chance, or choice, e.g. deflections that redirect responsibility to individual cyclists; softening critique through broader contextualisation

These strategies together produce unexpectedly positive evaluations of mobility justice. Yet, these evaluations are psychologically constructed rather than reflective of equitable conditions. Recent research on motonormativity (Walker et al., 2023) shows that dominant mobility configurations are widely perceived as normal, inevitable, and appropriate, even when they generate unequal outcomes (health and social aspects). Within such systems, disadvantaged users internalise mobility norms and evaluate justice relative to what the system currently offers, rather than against standards of equity or rights-based access. This helps explain why positive assessments emerge not from satisfaction with outcomes, but from acceptance of the system's underlying logic.

Similarly, the participants in this study, rather than interpreting long distances, poor cycling conditions, or high costs as grounds for critique, individually demonstrate their capacity to adjust. This behaviour reinforces the belief that the system is workable for "those who plan well," a theme later reinforced through added cognitions such as self-blame and downward comparison. The latter served two complementary functions. First, it mitigated personal dissatisfaction: if others cope with greater hardships, one's own struggles appear minor. Second, it helped to maintain belief in systemic fairness: If "worse-off" groups survive within the system, its functionality is affirmed, legitimising existing arrangements. However, such adaptive strategies to 'mobility-generated inequalities (Urry, 2012) end up perpetuating the same inequalities and reinforcing them. In their study, Ward and Walsh (2023) after interviewing 30 low-income respondents living without reliable personal transportation, found out that not only do transit disadvantaged individuals use adaptive strategies, such as 'I just don't go anywhere', but that these strategies may reinforce their social exclusion.

Recent studies show that downward comparisons can foster self-acceptance, gratitude, and even *adversarial growth* in the face of adversity (Nie et al., 2024). They can also strengthen beliefs in a just world and enhance general life satisfaction, which in turn may encourage altruism (Hu et al., 2024). Among older adults, downward comparisons have similarly been identified as an adaptive strategy to preserve well-being and manage loneliness (Morgan & Burholt, 2022). These findings suggest that comparative processes do not always intensify perceptions of injustice; under certain conditions, they can buffer disadvantage by fostering resilience or prosocial responses. In the context of mobility, such mechanisms may help explain why disadvantaged groups sometimes normalise constraints rather than interpret them as unfair. Importantly, the findings do not suggest that participants necessarily experience mobility as equitable; rather, they reveal interpretive strategies through which individuals maintain a sense of dignity, competence, and emotional equilibrium in the face of structural limitations.

5.2. When system justification in mobility collapses

Finally, justifications collapse under upward comparison when

participants compare themselves against better-off individuals/situations (e.g. cost-reduced bicycle-sharing schemes in other cities; wealth-based advantages such as access to cars or taxis; discounted public transport tickets for students and other selected social groups), better infrastructure (e.g. the ability to live in peripheral areas without mobility-related exclusion due to car dependency), or international mobility systems (e.g. substantially lower public transport prices in Italy; fare-free public transport for older adults in Austria). At this point, injustices become more visible, revealing frustrations with ticket prices, accessibility, service quality, and systemic inequities. Upward comparison exposes structural issues and highlights inequities invisible under internal evaluation or downward comparisons.

5.3. Research limitations

While this study is important to understand how system justification influences perceptions of fairness/unfairness in mobility, it comes with its limitations. First, the use of a survey-based approach may have shaped how system-justifying tendencies were expressed among disadvantaged groups. Prior research suggests that members of disadvantaged groups are more likely to justify existing social systems when evaluations are made in general or abstract terms, rather than through measures that directly highlight group-based disadvantage or injustices (Jost et al., 2003; Sidanius et al., 2001; Spears et al., 2001). In this study, perceptions of mobility justice were assessed through broad evaluative survey questions, embedded within a wider questionnaire, which may have encouraged respondents to draw on prevailing norms about how mobility systems generally work rather than on detailed reflections of their own group position. As Jost et al. (2002) show, system justification among disadvantaged groups is often more evident in such generalised assessments, particularly when they rely on implicit comparisons or socially shared standards. The survey design may have amplified system-justifying responses among disadvantaged participants, reinforcing positive evaluations of mobility justice even in the presence of persistent structural inequalities. Second, a potential bias related to relative deprivation should be acknowledged. Because participants were aware of the study's focus on mobility justice and were recruited based on their disadvantaged socio-economic status, they may have been more likely to emphasise experiences of unfairness or disadvantage, rather than expressing system-justifying interpretations that might otherwise emerge in less explicitly framed contexts. Third, the current study focused on one neighbourhood in the city of Munich, where transport disadvantages are not very strong. Future comparative research across neighbourhoods with varying infrastructural conditions could further examine how different urban contexts shape system justification and relative deprivation processes.

6. Conclusions: justification of the mobility system (or not)

This paper set out to address a paradox in mobility justice research on why disadvantaged groups report relatively more positive or moderate evaluations of mobility systems compared to disadvantaged groups. Drawing on System Justification Theory and Relative Deprivation Theory, and using a mixed-methods case study in Berg am Laim in Munich, the findings demonstrate that perceptions of mobility justice are not straightforward reflections of material conditions. Instead, they are actively produced through cognitive, behavioural, and comparative processes that allow individuals to live with, adapt to, and sometimes defend unequal mobility arrangements.

The quantitative findings revealed a counterintuitive pattern: apart from people with mobility restrictions, most disadvantaged socio-economic groups perceived various elements of the mobility system as comparatively more just than advantaged groups. Rather than interpreting this as evidence of equitable mobility provision, the qualitative analysis showed how such assessments are sustained through system-justifying mechanisms allowing participants to maintain a sense of

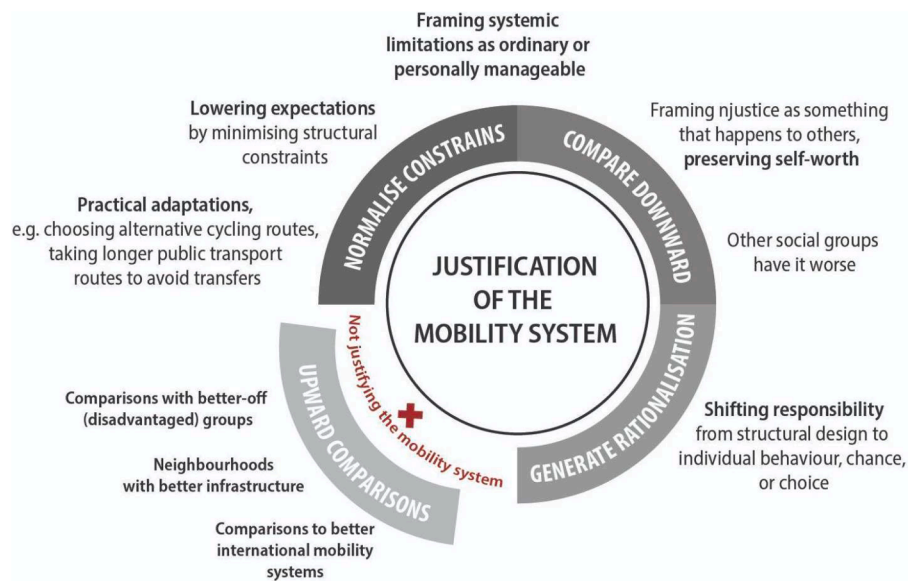


Fig. 4. Justification of the mobility system (or not).

competence, dignity, and agency within a structurally unequal mobility landscape. At the same time, the study shows that system justification is limited. When participants engaged in upward comparisons, justificatory narratives made place to visible inequalities. In these moments, mobility injustices were no longer individualised or normalised but recognised as contingent, opening space for critique and, potentially, for claims-making.

In terms of theoretical contribution, this finding underscores the complementary value of Relative Deprivation Theory: while System Justification Theory explains why inequalities are tolerated, relative deprivation explains when and why they become apparent. In terms of practical contribution, the findings clearly show that a mobility system being widely justified especially by those who are disadvantaged within it does not mean that it is equitable, inclusive, or fair. On the contrary, positive evaluations often emerge precisely because individuals have adjusted their aspirations to constrained conditions, compared themselves to worse-off others, or internalised dominant mobility norms. In this sense, subjective perceptions of fairness can mask, rather than reveal, structural inequalities. For mobility justice research, this has important implications: relying solely on expressed satisfaction or perceived fairness risks misinterpreting adaptation, resignation, or resilience as indicators of justice.

These insights point to several avenues for future research. First, more research is needed to better understand how people reduce cognitive dissonance when navigating unjust mobility systems. While this study identified recurring mechanisms, future research could explore how these processes vary across contexts, life stages, and intersecting disadvantages, and how stable or fragile they are over time. Second, future studies could examine how different research designs and question framings activate or suppress system-justifying responses. As suggested by both System Justification Theory and the limitations of this study, abstract or general evaluations of fairness may encourage acceptance of the status quo, whereas questions that explicitly invite comparison or highlight group-based inequalities may elicit stronger perceptions of injustice. Understanding these methodological effects is crucial for interpreting survey-based mobility justice research and for designing instruments that do not inadvertently reproduce the very blind spots they seek to address. Building on this, Fig. 4 shows several avenues for future mobility research aimed at understanding mobility justice through the lenses of System Justification and Relative Deprivation.

Finally, the findings carry important implications for mobility

planners, policymakers, and activists. From a planning perspective, the absence of vocal dissatisfaction among disadvantaged groups should not be interpreted as evidence that mobility systems are working well for them. Quiet acceptance may signal adaptation rather than inclusion. Participatory processes and public consultations therefore need to go beyond asking what people are satisfied with and instead create spaces for comparative reflection across neighbourhoods, user groups, and alternative policy models that can surface latent perceptions of injustice. Highlighting feasible alternatives can weaken the perception that current arrangements are inevitable or “good enough.”

In conclusion, this paper argues that mobility justice cannot be fully understood without attending to the psychological and comparative processes through which people evaluate justice. Disadvantaged groups do not simply experience injustice; they interpret, negotiate, justify, and sometimes contest it. Recognising these dynamics allows mobility justice research to move beyond documenting inequalities toward understanding why they persist and under what conditions they might be challenged.

CRediT authorship contribution statement

Esma Geliş: Writing – review & editing, Writing – original draft, Visualization, Validation, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Sindi Haxhija:** Writing – review & editing, Writing – original draft, Visualization, Validation, Methodology, Investigation, Formal analysis, Data curation, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix 1. Interview Guide (translated from German)

1. Personal details

- Could you please briefly introduce yourself?
- How old are you?
- Which gender do you identify as?
- Where did you grow up?
- What is your highest educational qualification?
- What is your profession?
- How do you feel about your economic and financial situation?
- Who do you live with?
- Where do you live? Have you lived anywhere else before?

2. Activities and places

- Could you give us an insight into your typical daily routine and how you get around?
- What activities are important to you in everyday life?

For each activity

- How often do you do this activity?
- Where do you do this activity?
- Why is this activity important to you?
- How do you get there? What means of transportation do you use? Formal or informal?
- Can you get there easily?
- How much time do you need to get there?
- How much does the journey cost? Is it cheap or expensive for you?
- What kind of knowledge do you need for this trip (e.g. do you know the bus route, the timetables...)?
- How do you find your way around? How do you plan your trip? Do you use any apps?
- How does this mode of transportation affect your physical and mental well-being?

3. General questions about activities and mobility

3.1 Choice of transportation

- What does your choice of transportation depend on? (e.g. distance, time, cost)
- Which means of transportation do you normally prefer?
- To what extent does environmental awareness influence your choice of transportation?
- To what extent do costs influence your choice of transportation?
- Do your social contacts influence your choice of means of transportation?
- What resources are available to you to get around? (e.g. vehicle ownership, public transport tickets)
- Do you use sharing services? Why or why not? Would you find more parking facilities for sharing services useful?
- Have there been any recent changes in your mobility behavior? If yes, which ones and why?

3.2 Achievement of goals

- Is there an activity you would like to do but cannot?
- Are there more places you can or cannot reach in Munich?
- Is it easy for you to be mobile? Why?
- What challenges or obstacles do you experience in your mobility? (e.g. traffic jams, lack of accessibility)
- Do you have the impression that all people can get around equally well in your neighborhood?
- How do you feel about traveling? (e.g. is traveling a comfortable/uncomfortable, safe/dangerous experience?)
- Do you feel safe when you are traveling? Are there any areas or situations where you feel unsafe?

4. Mobility Justice and the Future

- How do you see the future of mobility in this neighborhood? What changes or developments do you expect?
 - What role does justice play in this context? Should people have equal access to mobility? Should mobility planning be geared towards enabling disadvantaged people/neighborhoods to move around more easily?
 - Should certain forms of transportation be given preferential tax treatment (walking infrastructure, cycling, road and parking spaces, public transport, sharing services)? If so, why?
- What improvements or changes would you like to see for mobility in your neighborhood?
- What could a fairer mobility future look like? Which of your mobility concerns/everyday concerns would have to be met in order to feel fair to you? What would it take for you and your mobility concerns to feel represented?

Appendix 2. Survey questions on the 'Distributive justice' module

14. Do you think the **public space** dedicated to the following categories in your neighbourhood is too little, fair, or too much?

	Way too little space	Too little space	Fair	Too much space	Way too much space	No answer
Sidewalks	☐	☐	☐	☐	☐	☐
Cycle paths	☐	☐	☐	☐	☐	☐
Bike parking facilities	☐	☐	☐	☐	☐	☐
Car lanes	☐	☐	☐	☐	☐	☐
Car parking	☐	☐	☐	☐	☐	☐
Public transport facilities	☐	☐	☐	☐	☐	☐
Parking for shared services (e.g. car-sharing)	☐	☐	☐	☐	☐	☐

15. Do you think the **green traffic light time** allocated to the following categories to safely cross the road is too little, fair or too much?

	Way too little time	Too little time	Fair	Too much time	Way too much time	No answer
Pedestrians	☐	☐	☐	☐	☐	☐
Wheelchair users	☐	☐	☐	☐	☐	☐
Cyclists	☐	☐	☐	☐	☐	☐
Cars	☐	☐	☐	☐	☐	☐
Public transport	☐	☐	☐	☐	☐	☐

16. Do you think the current **pricing of public transport** in Munich is cheap, fair or expensive?

	Too cheap	Cheap	Fair	Expensive	Too expensive	No answer
	☐	☐	☐	☐	☐	☐

17. Do you think the **availability of the following urban elements** in your neighbourhood is fair?

	Fair	1	2	3	4	5	Unfair	No answer
Accessible public toilets	☐	☐	☐	☐	☐	☐	☐	☐
Seating options	☐	☐	☐	☐	☐	☐	☐	☐
Street lighting	☐	☐	☐	☐	☐	☐	☐	☐
Green spaces	☐	☐	☐	☐	☐	☐	☐	☐
Water elements (e.g. fountains)	☐	☐	☐	☐	☐	☐	☐	☐

18. Do you think the **availability of the following inclusive infrastructures** in your neighbourhood is fair?

	Fair	1	2	3	4	5	Unfair	No answer
Flat and smooth path	☐	☐	☐	☐	☐	☐	☐	☐
Zebra crossings	☐	☐	☐	☐	☐	☐	☐	☐
Tactile paving	☐	☐	☐	☐	☐	☐	☐	☐
Direction and information signs	☐	☐	☐	☐	☐	☐	☐	☐

19. Based on your trips from last week, do you think the time that you spent to reach the following destinations is fair?

	Fair	1	2	3	4	5	Unfair	No answer
Workplace		☐	☐	☐	☐	☐		☐
Education / training		☐	☐	☐	☐	☐		☐
Business (official channels during work)		☐	☐	☐	☐	☐		☐
Shopping / errands		☐	☐	☐	☐	☐		☐
Accompanying other people (e.g. to daycare)		☐	☐	☐	☐	☐		☐
Leisure destinations (e.g. club, cinema, friends)		☐	☐	☐	☐	☐		☐
Leisure activity (e.g., bike tour, hiking)		☐	☐	☐	☐	☐		☐

20. In Munich, the costs for transportation and related services are paid from various sources, such as taxes and fees. Do you think it's fair that you have to contribute to certain transportation services through your taxes?

	Fair	1	2	3	4	5	Unfair	No answer
Walking infrastructure		☐	☐	☐	☐	☐		☐
Cycle lanes		☐	☐	☐	☐	☐		☐
Bike parking facilities		☐	☐	☐	☐	☐		☐
Road infrastructure		☐	☐	☐	☐	☐		☐
Car parking		☐	☐	☐	☐	☐		☐
Public transport		☐	☐	☐	☐	☐		☐
Shared services		☐	☐	☐	☐	☐		☐

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