Socio-spatial justice through public participation? A mixed-methods analysis of distributive justice in a consultative transport planning process in Germany

Laura Mark, Katharina Holec, Tobias Escher

Suggested Citation:
Mark, L., Holec, K., & Escher, T. (2025). Socio-spatial justice through public participation? A mixed-methods analysis of distributive justice in a consultative transport planning process in Germany. Case Studies on Transport Policy , 20, Article 101467. https://doi.org/10.1016/j.cstp.2025.101467

Case Studies on Transport Policy 20 (2025) 101467

Contents lists available at ScienceDirect

Case Studies on Transport Policy

journal homepage: www.elsevier.com/locate/cstp

Socio-spatial justice through public participation? A mixed-methods analysis of distributive justice in a consultative transport planning process in Germany

Laura Mark *, Katharina Holec, Tobias Escher

Heinrich Heine University Düsseldorf, Department of Social Sciences, Universitätsstraße 1, 40225 Düsseldorf, Germany

ARTICLE INFO

Keywords:
Distributive justice
Public consultations
Urban planning
Political participation
Mobility poverty
Sustainability

ABSTRACT

The transport system contributes to significant socio-spatial injustices, both through its environmental impact and its structural disadvantages for certain groups. While public authorities increasingly include elements of public participation in planning processes it remains unclear whether this results in greater socio-spatial justice. To explore this question, the study examines socio-spatial justice as distributive justice and investigates how consultative planning contributes to sustainability and addresses the needs of disadvantaged groups. For this purpose, the case of the Elbchaussee reconstruction in Hamburg, Germany, is analyzed. Drawing on both qualitative and quantitative data including expert interviews and a public survey, the study finds that the planning process led to modest improvements, such as better conditions for pedestrians and cyclists, which promote ecological sustainability and benefit non-male groups. However, these outcomes fall short of participants' expectations, and the few positive changes cannot be directly linked to public input. The findings suggest that current public participation practices do not automatically lead to greater socio-spatial justice. Achieving this requires more inclusive participation formats, greater influence for participants, and a more explicit focus on socio-spatial justice in planning.

1. Introduction

Modern societies rely on the movement of people and goods. Not being able to get to places represents a substantial disadvantage in accessing locations and services. At the same time, the very transport system that should facilitate this mobility has major negative external effects. Therefore, who is mobile, and how the external costs of transport are distributed, is a major question of distributive justice. This is a normative question whose answer depends on what is considered a fair distribution of these capabilities and costs. Here, we follow a (dominant) approach that defines a just distribution not as one that provides everyone the same capabilities (i.e. total equity in opportunities), but as a distribution that ensures that every member of society is guaranteed at least a minimum standard of mobility-related capabilities and that transport externalities are not disproportionately borne by certain groups (Pereira, Schwanen and Banister, 2017).

Current systems of transport do not fulfil these normative criteria. It is well documented that members of society differ in their mobility-related capabilities: with few exceptions, citizens with higher social status tend to have all mobility options to fulfil their needs while those on the lower end of the social strata experience different degrees of "mobility poverty", meaning not being sufficiently capable to access locations and services (Schwedes et al., 2018). This applies in particular to people with low income and education, but also to non-male people or those with disabilities as the transport system is often ill-suited to their needs (Borgato, Maffii and Bosetti, 2021a, 2021b; Reis and Freitas, 2021). Empirical research consistently shows that lack of spatial mobility is coupled with social exclusion, being both a consequence of and a cause for other disadvantages such as unemployment or poor health (e.g. Dangschat, 2022; Daubitz et al., 2023; Lucas, 2012). At the same time, low-status households are also disproportionately affected by noise, air pollution, and traffic accidents, since they tend to live closer to big roads, are more likely not to own a car, and are more reliant on public space for recreation (Borgato, Maffii and Bosetti, 2021a). What is more, transport leads to climate effects, which are distributed unevenly in that they affect the population of the global south and future generations much more gravely (IPCC, 2022).

This condition is strongly influenced by planning paradigms and

* Corresponding author.
E-mail address: laura.mark@hhu.de (L. Mark).

https://doi.org/10.1016/j.cstp.2025.101467
Received 25 September 2024; Received in revised form 2 April 2025; Accepted 27 April 2025
Available online 8 May 2025

deliberate decisions by public authorities that shape space in ways that further or hinder certain transport options (Banister, 2008; Campbell, 1996; Kutter, 2016; Lucas, 2012; Stark, 2017). A transport policy that would increase distributive justice would have to increase accessibility for these disadvantaged groups as well as further the transition to ecologically sustainable mobility.

The debate on environmental justice as well as on social exclusion has long been concerned with how to achieve such policies that (re-) distribute capabilities in a way that benefits disadvantaged groups and ecological concerns – even at the expense of limiting mobility options for higher status groups (Lucas, 2012; Pereira, Schwanen and Banister, 2017). Among the pursued solutions are procedures that involve more stakeholders and citizens in processes of participation and negotiation (see e.g. Banister, 2008; Campbell, 1996). Here we focus on consultations invited by planning authorities that subsequently consider the publićs input. One of the arguments for increased public participation is that it enables input from a wide diversity of interests whose recognition can form the basis for more just decisions (Campbell, 1996; Young, 2010).

However, as we will review in the next section, previous research casts doubt if public consultations in planning actually increase socio-spatial justice regularly. Not only is there surprisingly little knowledge so far on the effects of participation on planning decisions (further: policy-effect), particularly in terms of socio-spatial justice (see next chapter), but we also know that such consultations regularly lack participants from low-status backgrounds, raising questions as to whose interests are represented (Dalton, 2017; Schäfer, 2012). Therefore, we investigate *how well consultative planning procedures lead to measures that contribute to socio-spatial justice.*

To this end, we have investigated in detail the case study of the reconstruction of the Elbchaussee, a main road in Hamburg, Germany. Drawing on both qualitative and quantitative data, we describe the context, the planning process, and how the measures have been developed, focusing on the characteristics and the role of the participation process in the political decision. To assess if the resulting policy contributed to distributive socio-spatial justice, we combine a criteria-based assessment with assessments by the affected groups.

2. Socio-spatial justice and public consultations

Justice is an essential concept in planning, not least because it is the scale for the distribution of scarce goods. It has also been an important topic in transport planning, as the extant discussion illustrates (see Lucas et al., 2004; Pereira et al., 2017, p. 171; Walker, 2012). Following an established approach from this perspective three different aspects of justice may be distinguished, namely i) distributive justice, i.e. who gets what, ii) procedural justice, i.e. who can participate in what way in the planning process, and iii) recognition, i.e. whose interests are considered.

We focus on the role of public participation, in particular consultations. While participation can contribute to recognition and procedural justice, which are "subject[s] of justice in their own right" (Walker, 2012, p. 47), we will discuss primarily its role in contributing to distributive socio-spatial justice. Regarding distributive socio-spatial justice, the essential question is: What is to be distributed, and how can we recognize a (more) just distribution (see Walker and Day, 2012, p. 70)? We argue that concerning mobility, distributive justice means ensuring both a minimum level of mobility-related capabilities for all social groups and a fair distribution of external costs of transport.

2.1. Socio-spatial justice as fair distribution of capabilities

In light of the high relevance of mobility as outlined above, socio-spatial justice needs to recognize the social implications of (not) being able to use the transport options to satisfy needs and to recognize that social groups have different mobility needs (e.g. safe, barrier-free, cheap, flexible or comfortable transport) that reflect different abilities. Consequently, a transport option such as a public bus can constitute a suitable mobility option for some people but not for others. Whether people can fulfil these mobility needs is influenced by factors on the individual level (Dangschat and Segert, 2011, p. 61; Lucas, 2012, p. 106; Stark, 2017, p. 85) interacting with the contextual level such as the infrastructure and services available to them, e.g. if they own a car or if public transport is affordable and within reach. This connection between individual and contextual factors is captured by the capabilities approach put forward by Sen (1985) and Nussbaum (2009). Concerning mobility, capabilities refer to what mobility is available to people that they are capable of using and converting into resources (Pereira, Schwanen and Banister, 2017). The capabilities approach has the normative aim of providing a certain minimum level of capabilities to all (Pereira, Schwanen and Banister, 2017). As a consequence, transport policies that focus only on providing infrastructure without recognizing the different needs and abilities fall short of addressing the major inequalities outlined above.

While the term and concept of justice are often used, they can represent very different normative principles (for an overview, see Pereira, Schwanen and Banister, 2017). Following the capabilities approach and in contrast to a utilitarian or libertarian conception of justice, we argue that given the vastly unequal mobility opportunities that are structured along socio-economic cleavages such as income, education, gender, age, and health, a focus on increasing socio-spatial justice requires first and foremost to increase the mobility capabilities for such disadvantaged groups (as also argues Fainstein, 2009, p. 26). Summing up, policies that increase socio-spatial justice are ones that redistribute mobility-related capabilities to groups that tend to be disadvantaged.

2.2. Socio-spatial justice as ecologically sustainable transport

The second dimension of socio-spatial injustice is the negative external effects of transport. As argue Walker and Day (2012), distributive justice cannot be evaluated without looking at local and global ecological questions – while the issue of mobility poverty might theoretically be alleviated by more consumption or infrastructure (e.g. giving every individual a car), this would drastically increase global and climate injustice. Based on this, ecological sustainability as such is a question of distributive socio-spatial justice.

Negative effects of the current transport system include local and immediate, as well as long-term and super-regional effects (Brenck, Mitusch and Winter, 2016). The externalities of fossil-fuelled mobility in terms of climate gas emissions, pollutants, noise, and land consumption as well as traffic accidents and congestion require a fundamental transformation (Banister, 2008; Rammler, 2016). As are the positive effects, negative externalities are also distributed unequally among socio-economic groups (Borgato, Maffii and Bosetti, 2021a). On a bigger scale, fighting climate change is a question of justice, since consequences are and will be distributed unevenly. The changes that will occur through human-made climate change will disproportionately affect future generations as well as people with low socio-economic status, especially in the global south (IPCC, 2022).

Therefore, we argue that a measure can contribute to justice if it contributes to the ecological sustainability of the transport system. Ecological sustainability is defined as the extent to which the measures contribute to the sustainable mobility transition, meaning – in this particular order – avoiding (or shortening) trips, shifting trips to eco-modes, and improving the efficiency of the transport system through behaviour change and technological efficiency. We recognize that sustainable mobility includes not only an ecological dimension but encompasses a social and an economic dimension as well. Yet here we focus on the ecological aspect because our first criteria of capabilities already include important aspects of social sustainability in transport.

There exists a wide array of measures to further the ecological

sustainability of the transport system. Most of these aim to reduce the usage of and space for individualized car traffic in favour of modes with a smaller ecological footprint. Strategies include pricing (e.g. increasing the cost of private car traffic or supplementing public transport fees), infrastructural measures (e.g. providing more space for cyclists and pedestrians), or new mobility services (e.g. sharing systems or better opportunities for multi-modal transport). Necessary for a sustainable mobility transition are not only pull-measures that aim to make eco-mobility modes more attractive but also push-measures that increase the cost of private motorised traffic (Banister, 2008; Holz-Rau, 2018, p. 129; Rammler, 2016, pp. 908–910; Schwedes and Rammert, 2020, p. 41).

2.3. The role of public consultations for socio-spatial justice

Participation of the public in political decision-making has been advocated as a means to represent different interests for a long time (Barber, 2003; Pateman, 1970; Young, 2011), including in environmental decision-making (for an early comprehensive review see Dietz and Stern, 2008). We focus on top-down public consultations as one form of public participation, meaning processes initiated and implemented by public authorities that are open to the general public and allow them to interact with each other discursively, but that remain without binding influence on decision-making (Fung, 2006). Public consultations in planning have a long tradition and are now a regular feature of planning required by law (Shipley and Utz, 2012). Politicians and administration as well as the public share the hope that input from citizens improves decisions and increases their acceptance (Gabriel and Kersting, 2014, p. 84). The discursive formats we are focusing on go beyond the minimal formal requirement of single public hearings which still form the dominant participation format of public engagement (Fung, 2015, p. 514). This consultative approach to planning is now commonplace also for transport-related planning, as reflected in scientific planning models such as integrated mobility planning (Schwedes and Rammert, 2020) and institutionalised strategic planning tools such as Sustainable Urban Mobility Plans (European Platform on Sustainable Urban Mobility Plans, 2016). As a result, these are now regularly used in practice. For example, a recent study in Germany found that among the larger cities, every other has conducted consultations on mobility planning in recent years (Mark, Holec and Escher, 2024).

We argue that consultations have potential for distributive socio-spatial justice. First, because of their official and codified nature, there is a higher likelihood that the participation will influence the political decision. Second, while participation in such more formalised formats does require certain skills that can act as a barrier for certain groups, their managed nature provides more opportunities to directly address disadvantaged groups and support their involvement. Citizens are empowered to express their life realities and thus to refine these decisions which holds great potential when aiming for social justice (Young, 1997). Third, there are established mechanisms in local policymaking that ensure representing and balancing (conflicting) interests, even those that might be absent from the participation process – ensuring that a small group of non-representative participants will not exert too much power. In top-down consultation procedures, local governments can still influence the decisions. This clear monitoring enables substantial representation of those not included in the participation procedure and thus social justice to a higher extent.

2.4. Gaps in the literature and research questions

Despite this promise, the academic literature on the effects of public consultations on more just transport planning remains incredibly thin. More generally, there are few studies at all that investigate the effects of public participation by citizens in planning on the resulting policies. Some studies were able to show that public consultations on transport issues can have at least some effect on final decisions (Antonson, 2014; Chen and Aitamurto, 2019; Coelho, Cunha and Pozzebon, 2022; Schwanholz, Zinser and Hindemith, 2021)[1] – but it remains unclear who benefits. The few studies that focus on the role of participation for socio-spatial justice of the resulting measures in the field of transport usually found no contribution. Boisjoly and Yengoh (2017) found that participation in transport planning had limited impact, with marginalised groups' concerns underrepresented, a finding echoed by Elvy (2014), who showed no link between participation efforts and policies for disadvantaged groups in UK transport plans. Looking beyond the narrow issue of transport, citizen participation has a rather weak track record when it comes to contributing to justice, as Fung (2015) concludes in his review of two decades of participatory governance. This is not a limitation of participatory formats per se, but rather that the authorities responsible often have no particular interest in ensuring more rights for disadvantaged and marginalised groups. In contrast to these rather disappointing findings concerning the interest representation of disadvantaged groups, there is a significant number of studies that assert positive environmental effects of participation in planning (however, not in the field of transport). For example, Dietz and Stern (2008) as well as Jager et al. (2020) found that public participation generally improved environmental quality and that giving participants more power would enhance these outcomes.

While we have made the case that public consultations have particular potential to further socio-spatial justice, there is little empirical research testing whether this potential is realized in actual practice. Few studies investigate the role of public consultations in planning for achieving socio-spatial justice in terms of capabilities and the few that focus on transport find no increase in socio-spatial justice. While there is more evidence on the contribution of participation to ecological sustainability, there remains a gap in research that investigates the role of the regularly used public consultations for achieving socio-spatial justice in the specific area of transport. Our research offers an innovative new approach to this debate by investigating both dimensions of justice and combining different perspectives on justice (criteria-based as well as subjective).

Therefore, our contribution is to provide new empirical evidence on the questions of *how well consultative planning procedures lead to measures that contribute to socio-spatial justice.* Following our theoretical discussion above, we pursue three research questions that build on each other. First, we are interested in whether the results of planning processes with public consultations increase socio-spatial justice by contributing to the sustainable mobility transition (RQ1). Second, we investigate if such consultations increase socio-spatial justice by improving the mobility-related capabilities of disadvantaged groups (RQ2). Third, we explore how the participation of the public contributes to these two dimensions of distributive socio-spatial justice (RQ3).

3. Case study and Methodology

3.1. Case study Description

The reconstruction of the *Elbchaussee* in Hamburg is concerned with the redesign of the Elbchaussee, a representative main road of 9 km in length that connects the Elbe suburbs with the central city. The residential housing there is sparse, but it belongs to some of the most expensive areas in the city of Hamburg. Its main function is to provide commuter access between the centre and the wider area, with around twenty thousand motor vehicles per day (LSBG, 2021). The transport situation has been the subject of political discussion for some time, with the main criticism being the lack of infrastructure for cyclists. However, no satisfactory solution had been found due to a difficult spatial

[1] Others have found no considerable policy-effects (e.g. Bickerstaff and Walker, 2005; Sutcliffe and Cipkar, 2017; van Tatenhove, Edelenbos and Klok, 2010).

situation (IV-Pol-1; IV-Pol-3). The opportunity for an essential redesign, which would require extensive construction work, presented itself when the water pipes had to be renewed urgently.

The declared goal of the planning processes was to improve the situation for bicycle traffic and to make the road and in particular bus-stops more accessible for pedestrians, although it was stipulated from the outset that the capacity of motor vehicle traffic should not be reduced because the road was of importance to the city as a whole (LSBG, 2021). As such, the case study represents a common scenario in transport planning: the aim and need to redistribute space in favor of environmentally friendly transport modes on main roads that have traditionally been planned solely for motorized transport, while facing organizational and legal constraints rooted in decades of car-focused planning.

While the planning process addressed these essential questions, from a perspective of sustainable mobility the project had only a limited scope. The reconstruction had significance for the whole area, but the planning and the reconstruction itself were not integrated into a wider mobility concept that would for example introduce additional public transport or alternative mobility services, or that would integrate different means into multi-modal transport. The participatory planning process ('Elbchaussee Dialogue') started in 2018 with two phases of online consultations and workshops. Subsequently, construction work for the first section with a length of 4 km started in 2021. The participatory elements mainly consisted of two phases of online consultations, each followed by a public in-person workshop. All events were open to the general public and anyone was free to join. As such, the formats offered align fairly well with what is regularly provided by consultation efforts in German municipalities that rely predominantly on participation formats in which participants self-select for engagement (Mark, Holec and Escher, 2024). In the participation formats, the public was informed of the project objectives, the scope, and the restrictions, however, the background of the discussion regarding the performance of motor vehicle traffic was not made transparent. The consultation was prepared through stakeholder conversations and advertised through public information booths, mailshots, an email distribution list, and public displays (IV-Adm-1).

Before the reconstruction, the road with one wide car lane per direction did not have any infrastructure for cycling (for a summary of the initial state and the drafts see Table 4 in section 4.3). The bicycle traffic was guided in mixed traffic at a speed of 50 km/h and allowed on the sidewalk, which, however, was narrow and partly not paved. The situation was dangerous and uncomfortable for bicycle traffic and the street was avoided by many cyclists (IV-Pol-1; IV-Pol-3). The planning process resulted in narrower motor vehicle lanes, a widened and barrier-free footpath, some additional pedestrian crossings, and a small speed-reduced section. In addition, a one-sided bicycle path was installed which was separated from motor vehicle and pedestrian traffic by curbs ("Copenhagen-style" cycle paths) as well as road markings in parts of the motor vehicle lane calling for greater consideration for cyclists ("sharrows") (LSBG, 2021).

3.2. Methodology

This research combines an assessment of the planning process and its results based on qualitative interviews and externally set criteria, with a more subjective assessment of those affected by the decision based on a quantitative survey (for overview, see Table 1).

We use a qualitative in-depth analysis with expert interviews for a detailed overview of the process. In total, we conducted 10 semi-structured ex-post interviews with process participants from different spheres, specifically from organised civil society, politics, administration, and participation service providers. The interviewees were selected gradually on the basis of documents and newspaper articles and later also on the specific recommendations of other interviewees. The aim was to cover all stakeholder spheres and as many different perspectives as possible on the planning process and mobility needs. To cover diverse perspectives, the participation officer and an external service provider were interviewed, who had previously spoken to a large number of stakeholders and whose aim was to have all perspectives represented in the planning process.

Table 1
Overview of reserach questions and respective data sources.

Areas of Interest		RQ	Methods	Data Sources
Socio-spatial justice in the proposed measures	Effect on **ecological sustainability**	1	Qualitative: Analysis of the planning results regarding ecological sustainability Quantitative: Citizens' assessment of results and which modes of transport benefit most according to ● socio-economic groups (status, gender, disability) ● transport choices (i.e. modes of transport used)	planning documents, literature survey data
	Improvement of mobility-related capabilities for disadvantaged groups	2	Qualitative: Analysis of the planning results regarding effect on socio-economic groups Quantitative: Citizens' assessment of representation of interests according to: ● socio-economic groups (status, gender, disability) ● transport choices ● basic mobility needs	planning documents, literature survey data
Effect of participation		3	Qualitative: Analysis of the planning process and the role of the participation Quantitative: Citizens' assessment of representation of interests according to: ● participation in the consultation process	Interviews, contributions of the public, planning documents survey data

They were interpreted using qualitative content analysis (Gläser and Laudel, 2010). In combination with a systematic analysis of planning documents (list see Appendix) and an analysis of the contributions made in the participation (overview see Appendix, Table 9), this data allows us to describe the process and how decisions about the resulting policy were being made. The data was used to reconstruct various theory-based causal mechanisms on how the consultation could influence the policy-decision, therefore exploring in detail the role of the consultation and relevant influencing factors (see Mark, 2025).

On this basis, we then assess the contribution of the measures to the two dimensions of socio-spatial justice. The more a measure contributes to avoiding and shifting trips and introducing push measures, the more it is expected to contribute to ecological sustainability. Given the scope of the planning was on the reconstruction of the road space, this assessment primarily considers how the proposed infrastructural measures

will impact travelling by car, public transport, bike, or foot.

The dimension of capabilities is evaluated through the expected effects for the disadvantaged groups as defined below. The qualitative findings are complemented by the subjective assessments of those people who live in the area of the respective road or have taken part in the consultations. For the quantitative survey, we chose a random sample of 1,258 people aged 16–90 in the affected districts of Hamburg (Nienstedten, Blankenese, Othmarschen, Ottensen, Altona-Altstadt) which yielded 411 responses. In addition, we also surveyed 19 participants in the participation procedure. Both surveys cover a total of 61 people who have participated in the Elbchaussee Dialogue (for an overview of the sample composition see Table 7).

Our analytical aim is to investigate possible variations in the perceptions of different groups. As such the sample need not be representative of the population as long as members of these different groups are included. Nevertheless, as the profile of the sample exhibits the usual strong biases of survey respondents towards individuals with higher socio-economic status and in particular education,[2] there is a chance that those (comparatively few) members from disadvantaged groups included in the sample might not represent all relevant perceptions that exist in their respective groups. Therefore, we should be careful to generalise from the few people in our sample to the whole group of people with lower status and this is also the reason why we decided against weighting techniques. However, we still believe that these people can offer some important insight into the differences between the status groups: For example, our respondents with lower income require more affordable transport, those with lower education indicate a higher need for understandable mobility, and groups with mobility impairments, lower income or non-males need more barrier-free accessibility (see Table 8 in Appendix) – which matches both theoretical expectations and existing empirical findings about the mobility patterns and requirements of disadvantaged groups (Aberle et al., 2022; Hudde, 2022a; Lucas, 2012). While the sample is largely representative of those with high education, it remains indicative for those with lower formal education. To account for the fact that the sample is biased towards those with high education, we report differences in attitudes between those groups in instances where we do not already control for education (such as in the OLS regression).

The subjective assessment of ecological sustainability is linked to three questions about how the proposed measures will affect car traffic, safety of cycling, and quality of stay. To measure how capabilities have changed we also surveyed respondents about if the measures satisfy their interests and the interests of all relevant groups respectively (questions see Table 5 in the Appendix). These subjective assessments will first be differentiated along *socio-economic groups*. We focus on disadvantaged groups with low social status, non-male gender, or disabilities.[3] Second, we control for *transport choices*, namely the frequency with which certain modes of transport are used. As this is often more a reflection of what is available, thirdly we distinguish by different *basic mobility needs*. We chose to include safety and security, low costs, barrier-free accessibility, and understandability in our later models. These are most important for mobility and most often unfulfilled among disadvantaged groups, as is documented not least by our data (see Table 8 in Appendix). Finally, we control these effects for differences between citizens who have participated in the Elbchaussee Dialogue, and those who have not, to investigate the potential effects of the consultation.

The following table summarises the sources of data for the respective research questions.

4. Results

As the next sections will outline, both qualitative and quantitative analyses tell the same story: a planning process incorporating participatory elements that largely fails to incorporate citizens' ideas into the concrete reorganisation and to represent the interests of disadvantaged groups.

4.1. Contribution to environmental sustainability (RQ1)

Compared to the previous state of the road, space has been redistributed in favour of the environmental modes but only to the slight detriment of the private car. Subjective and objective safety and comfort for cycling will presumably increase. Providing safer infrastructure can provide incentives for people who are interested in cycling but face obstacles such as feeling unsafe in mixed traffic. Dill and McNeil (2016) identified this group as a major potential for mode shift to cycling. Therefore, the protected infrastructure might enable unsafe or inexperienced cyclists to make the switch, however, it is not provided consistently on the whole street. Also, the protected bike lane with a width of less than 2 m might make it hard for experienced cyclists to pass slower cyclists and therefore make the commute less comfortable (Meschik, 2008, p. 69). The situation for pedestrian traffic (and public transport use) is also improving because the sidewalk is no longer open to bicycle traffic and is barrier-free while the bike lanes will be physically separated from pedestrians, reducing the risk of collision (Meschik, 2008, p. 72). The lane widths for motor vehicle traffic will be decreased. The measures might therefore slightly contribute to a shift to the eco-modes.

The "Copenhagen-style" bike path is a "pull"-measure. On the "push" side, while space for the motorised modes is taken away, it is not enough restriction to likely create a significant "push"-effect away from them. Through the requirement to maintain the performance of motor vehicle traffic, the potential for further mode shift is not utilised, since the speed limit of 50 km/h is maintained for the most part and the lane width "must" not be reduced further. This means that also the "pull"-effect will be reduced since there is not enough room for two-way bicycle infrastructure. Thus, one side always remains in mixed traffic, accompanied by the "sharrows". With the current motor vehicle volumes (LSBG, 2020b), this creates a complicated and potentially dangerous situation.

The subjective perceptions of the citizens mirror these criteria-based assessments. When prompted to provide their judgement on the proposed measures, citizens indeed perceived slight improvements both concerning cycling safety and walking. In contrast, there is no clear trend regarding the citizens' opinion on whether these measures will impair car traffic. There are few differences in the assessment of people with higher formal education (for which our sample is largely representative) and those without (for which our sample can offer no fully representative picture): The former perceive somewhat more improvements for cycling safety and quality of stay (see Table 6 in the Appendix for details). Therefore, overall trends in opinion closely match our expert assessment.

However, the quantitative data allows us to dive into these general assessments in more detail. Table 2 reports the results of OLS

[2] Unfortunately, detailed comparative data is not available for the sub-district level we surveyed. The comparison to the population of Hamburg shows strong overrepresentation of people with high education (87% of respondents vs. 43% in Hamburg) and in employment (1% unemployed of respondents vs. about 7% in Hamburg). While there is an undeniable bias towards highly educated people, it can be assumed that the surveyed quarters in the district of Altona have a higher average level of formal education than Hamburg as a whole.

[3] We chose to exclude age from our analysis since most problems arising from age are reflected in disability and correlation between both variables is high. We separately control for income and education in our OLS regression models, since we assume differential effects according to the different patterns of movement of low education, low income groups versus high education, low income groups (probably students).

Table 2
OLS Regression on perception of measures introduced by the planning process.

	Model 1.1 No Negative Impacts on Car Traffic	**Model 1.2** No Negative Impacts on Car Traffic	**Model 2.1.** Safety for Cyclists	**Model 2.2.** Safety for Cyclists	**Model 3.1.** Quality of Stay	**Model 3.2.** Quality of Stay
Predictors	Estimates	Estimates	Estimates	Estimates	Estimates	Estimates
Intercept	2.75 ***	1.31 **	3.87 ***	3.46 ***	3.44 ***	2.38 ***
	(0.10)	(0.60)	(0.09)	(0.53)	(0.09)	(0.54)
Socio-Economic Groups (Range 0—1)						
Gender: not male	−0.06	−0.15	0.03	−0.00	0.28 ***	0.22 **
	(0.12)	(0.13)	(0.10)	(0.11)	(0.11)	(0.11)
Equivalence Income below Median	0.04	−0.05	0.03	−0.03	0.07	−0.04
	(0.12)	(0.13)	(0.10)	(0.11)	(0.11)	(0.12)
Low/Medium Education	−0.13	0.04	−0.62 ***	−0.33 *	−0.29	−0.09
	(0.20)	(0.23)	(0.17)	(0.20)	(0.18)	(0.20)
Disabled	−0.10	−0.11	−0.00	0.17	0.03	0.15
	(0.21)	(0.23)	(0.18)	(0.20)	(0.19)	(0.21)
Transport Choices (5-point scale from 1 ((almost) never) to 5 ((almost) daily)						
Frequency Car Use		−0.06		−0.01		−0.02
		(0.05)		(0.04)		(0.04)
Frequency Bike Use		0.13 ***		0.11 ***		0.08 *
		(0.05)		(0.04)		(0.04)
Frequency Walking		0.00		0.03		0.05
		(0.06)		(0.05)		(0.05)
Frequency Public Transport Use		0.10 *		0.08 *		0.08
		(0.06)		(0.05)		(0.05)
Basic Mobility Needs (5-point scale from 1 (completely unimportant) to 5 (very important))						
Safety		−0.01		−0.01		0.07
		(0.08)		(0.07)		(0.07)
Security		0.00		−0.08 *		−0.13 **
		(0.06)		(0.05)		(0.05)
Low Costs		0.03		−0.00		−0.01
		(0.07)		(0.06)		(0.06)
Understandability		0.21 ***		0.03		0.18 ***
		(0.07)		(0.06)		(0.06)
Barrier Free Accessibility		0.03		−0.01		−0.01
		(0.05)		(0.05)		(0.05)
Participation						
Participated in Elbchaussee Dialogue		−0.36 **		−0.26 *		−0.21
		(0.18)		(0.15)		(0.16)
Observations	352	322	355	326	354	325
R^2	0.004	0.104	0.041	0.091	0.026	0.104
R^2 adjusted	0.008	0.063	0.030	0.050	0.015	0.063

* $p < 0.1$ ** $p < 0.05$ *** $p < 0.01$
Note: Coefficients are non-standardized beta-coefficients and standard errors (in parentheses). Dependent variables are measured on 5-point scale from 1 (not agree at all) to 5 (completely agree).

regressions[4] that first measure the perceptions depending on our disadvantaged groups of interest here (models 1.1, 2.1, and 3.1). As outlined earlier, these socio-demographic groups share little common transport interests and subsequently diverge in their assessments of the measures. Hence these simple models explain very little variance. Model fit considerably improves once the transport choices and the prevalence of different mobility needs are considered (models 1.2, 2.2, and 3.2). Those people that are already using ecological modes of transport more often do perceive improvements in cycling safety and quality of stay while being sceptical of the potential to reduce car traffic. In other words, the groups that gain the most from a transformation towards more sustainable mobility agree with the criteria-based assessment.[5]

Therefore, in terms of *ecological sustainability*, both assessments indicate that there is some improvement in ecological mobility that might lead to a shift in mode choice, but the potential to create a mode shift is not fully realised. While those already using environmentally friendly modes of transport perceive positive changes, it seems unlikely that more groups (especially those with high security needs, see below) will be motivated to make a change.

4.2. *Increasing mobility capabilities for disadvantaged groups (RQ2)*

In terms of a redistribution of mobility capabilities towards greater socio-spatial justice, different groups will likely be affected differently by the measures. As previously stated, based on a qualitative analysis, cyclists and pedestrians benefit, while car drivers and public transport users might have slight disadvantages. This is also relevant from a social justice point of view. Promoting non-motorized mobility tends to benefit

[4] All dependent variables in the following statistical analyses are answers to questions on a five point Likert scale numbered from 1 (do not agree at all) to 5 (fully agree). Nominally, these variables are ordinal but a common approach is to assume basically equal spacing between the answer categories and treat them as metric data (Wu and Leung 2017, pp. 527–528) for which OLS regression models are appropriate. This is usually justified acknowledging that OLS estimators produce robust results even when some of the assumptions are violated (Norman 2010, p. 627). To additionally test the robustness of the OLS estimators, we also ran multinomial logistic regression models (using the first category as reference category). The results support the significant effects predicted by the OLS models, therefore we have decided to present the results of the OLS regressions as these are more straightforward to interpret. For all OLS regression models (both in Table 2 and in Table 3) we tested for multicollinearity (via VIF scores), heteroskedasticity (via Breusch-Pagan tests) and normality of the dependent variable and the residuals (by visual inspections) to ensure that all of the linear regressions assumptions are satisfied.

[5] Still, the models account for only 5–7% of the observed variance, implying that perception of these measures is strongly influenced by factors not observed here.

disadvantaged populations since households with lower income are more likely not to own a car (Nobis and Kuhnimhof, 2018, p. 35) and are often cost-sensitive, which makes cycling a good option. However, cyclists are often those with higher education (Hudde, 2022b), so the measures might benefit those with low income and high education, but hardly the most vulnerable groups with low education and low income.

On a positive note, the "Copenhagen-style" cycle lane might help to recruit new target groups for cycling. The groups that are expected to make a mode change due to increased comfort and safety are people who are not used to cycling, often vulnerable groups (Meschik, 2008, 57,68) including women, older people, and respondents with children. The problem remains that this protected infrastructure is only on one side of the road, contradicting the essential bicycle-planning principles of cohesion, directness, and comfort (CROW, 2016, pp. 64–68). This might counteract the mode-shift effect for vulnerable groups.

Pedestrians will benefit since their infrastructure will be improved, which is positive from a social justice point of view. Qualifying the sidewalks and reducing barriers will make them more accessible for physically impaired or insecure people (Gehl, 2010). However, only parts of the sidewalks are improved and they will also be used by cyclists, decreasing safety and comfort. Car drivers and public transport users might be affected negatively if congestion increases. Slowing down bus traffic would be a negative effect since people with lower income use public transport relatively often (Aberle et al., 2022, p. 18) (see Figure 2 in the Appendix for our data). However, since the lanes were only made narrower and not reduced in number, this effect will probably not be significant. Also, public transport users benefit from improved accessibility for pedestrians.

How about the subjective perceptions of individual capabilities? Table 2 above shows that demographic group affiliation in most cases does not affect the assessment of the measures. However, we observe a significant effect of not being male on the perception of the quality of stay. This is a positive finding indicating that this group could gain an advantage when walking or spending time there. A negative finding is that low and medium-education groups do not perceive cycling as becoming safer after the reconstruction ($p < 0.1$).

As argued, it is important to look beyond socio-economic characteristics and into more particular mobility patterns and needs. As the survey data shows, for those with a higher need for security we find negative effects on both the variable of cycling becoming safer and improvement of quality of stay. Thus, this result can be a sign that the planning process did not sufficiently change the built environment in terms of security, which is especially relevant for vulnerable groups. This casts doubt on the hope that vulnerable groups will be encouraged to cycle by the new infrastructure. More positively, groups with a higher need for understandability rate quality of stay higher which could indicate that they are more likely to use it.

Moving on to the more general question of which groups feel represented in the planning results, on average the people in our sample rather agree than disagree that their interests have been represented in the process (3.4 as mean value, median at 4, see Table 6 in Appendix). They also tend to agree to all interests being represented in the process (3.2 as mean value), but the picture is not that clear in this regard. To investigate how these perceptions might differ between the groups of interest here, we conducted OLS regressions with the same factors already discussed previously (see Table 3).

Non-male persons tend to see their interests represented in the process more strongly as compared to male persons with an estimate of 0.29 even in the full model (Model 1.2) including modes of transport. They additionally more often agree to the statement that all relevant interests were represented in the process (Model 2.2). In terms of socio-spatial justice, this is a desired effect. However, this remains the only disadvantaged group positively perceiving their interest representation in the process. Instead, we find a negative significant effect for low/medium education respondents compared to people with higher education in Model 1.1. This effect becomes insignificant when we add transport choices and might reflect high car/public transport use in the respective groups (see Figs. 1 and 2 in the Appendix) which will lead to a lower likelihood of feeling represented in a procedure aiming at improving the cycling infrastructure.

The results show that socioeconomic characteristics on their own (model 1.1) explain little about the representation of interests, but transport choices do. Regular cyclists more often perceive their interests as represented in the process. The effects are substantial (0.15 for each level of cycle use), no doubt reflecting some of the expected improvements to cycling as discussed in the previous section. In addition, public transport users also feel more represented, even though the proposed measures would hardly affect public transport. In contrast, the more that people rely on their car as a means of transport, the less they feel represented.

Those results show again that groups who prefer ecologically friendly modes of transportation are better represented in the measures than car users. However, these effects hardly extend to those groups in greatest need. For one, there is no effect on people with lower social status as reported above. This is also reflected by the fact that individuals who value low-cost perceive less interest representation. There is only a slight (and marginally significant) positive perception for people with higher needs for safety, and there are no effects of other basic mobility needs on the perception that one's own interests are represented in the process.

All in all, the project does contribute to some extent to socio-spatial justice through increasing capabilities, since it makes the non-motorized modes safer and more accessible. However, it does not go far enough to enable more and diverse people to make a sustainable mode shift. Those already cycling or using public transport feel represented. There is also a positive effect for gender and people with a need for more safety, but not for other disadvantaged groups. Again, the objective and subjective assessments largely align. It cannot be ruled out that the regression analysis would have detected more significant effects in a larger and more balanced sample (e.g. including more people with lower formal education). Yet given this close match between the subjective assessments and the criteria-based assessment, we believe this to be unlikely.

4.3. Role of participation for socio-spatial justice (RQ 3)

The consultation process consisted of several participation formats. The first online dialogue generated around 1.000 contributions. At the first "dialogue event", comments could be made in the plenum and questions could be put to the planners. Half of the 120 participants were residents, half regularly used the road, one-third by bicycle, and one-third by car (SUPERURBAN, 2018a, 2018b). In the second phase of online participation, different variants were presented, which could then be commented on. About 130 people left roughly 500 contributions. In the following workshop, the 110 participants discussed variants of the cross-sections in small groups (Freie und Hansestadt Hamburg, 2018; SUPERURBAN, 2018c). In the interviews, all stakeholder groups described the workshops as constructive, but partly conflicting and even aggressive (IV-Adm-1; IV-Mod; IV-Pol-1; IV-PSP-2). The neutral moderator who ensured a fair distribution of time for each contributor was valued highly (IV-PSP-1). The contributions were then evaluated by the administration as well as the commissioned planning company, and minutes and summaries were published.

To trace the potential impact of the participation process, we start by investigating which interests were voiced by the participants in the consultations, and how these influenced the measures that the planning authority finally proposed. Judging from the contributions that received the most support from participants, the main point of discussion was the cycling infrastructure. There was great dissatisfaction with the status

Table 3
OLS Regression on the perception of own/general interest representation in the planning process.

	Model 1.1 Own Interest Representation	**Model 1.2** Own Interest Representation	**Model 2.1** General Interest Representation	**Model 2.2** General Interest Representation
Predictors	Estimates	Estimates	Estimates	Estimates
Intercept	3.26 ***	2.87 ***	3.13 ***	2.90 ***
	(0.10)	(0.57)	(0.09)	(0.56)
Demographics				
Gender: not male	0.41 ***	0.29 **	0.31 ***	0.21 *
	(0.12)	(0.12)	(0.11)	(0.12)
Equivalence Income below Median Income	0.09	−0.05	−0.01	−0.12
	(0.12)	(0.12)	(0.11)	(0.12)
Low/Medium Education	−0.43 **	−0.15	−0.18	−0.16
	(0.19)	(0.21)	(0.18)	(0.21)
Disabled	−0.13	0.03	−0.18	−0.05
	(0.21)	(0.22)	(0.19)	(0.21)
Transport Choices (5-point scale from 1 ((almost) never) to 5 ((almost) daily)				
Frequency Car Use		−0.09 *		−0.06
		(0.05)		(0.05)
Frequency Bike Use		0.15 ***		0.04
		(0.05)		(0.05)
Frequency Walking		0.06		0.08
		(0.06)		(0.06)
Frequency Bus Use		0.09 *		0.09 *
		(0.05)		(0.05)
Importance of Basic Mobility Needs (5-point scale from 1 (completely unimportant) to 5 (very important))				
Safety		0.09 *		0.09 *
		(0.05)		(0.05)
Security		−0.03		−0.06
		(0.08)		(0.07)
Low Costs		−0.09		−0.11 **
		(0.05)		(0.05)
Understandability		−0.01		0.01
		(0.06)		(0.06)
Barrier Free Accessibility		0.07		0.09
		(0.07)		(0.07)
Participation				
Participated in Elbchaussee Dialogue		−0.63 ***		−0.44 ***
		(0.17)		(0.17)
Observations	355	326	353	324
R^2	0.048	0.183	0.025	0.117
R^2 adjusted	0.037	0.146	0.014	0.077

Notes: * $p < 0.1$ ** $p < 0.05$ *** $p < 0.01$;
Coefficients are non-standardized beta-coefficients and standard errors (in parentheses). Dependent variables are measured on 5-point scale from 1 (not agree at all) to 5 (completely agree).

quo concerning comfort and safety. A continuous and safe bicycle traffic routing was desired, to a large extent also accepting a restriction of motor vehicle traffic. Non-exclusive bike lanes[6] were not considered sufficient and were clearly rejected (Freie und Hansestadt Hamburg, 2018; SUPERURBAN, 2018c).

While there were also voices in favour of keeping up the performance of motor vehicle traffic and e.g. routing the bicycle traffic through parallel roads, all in all, the most dominant and vocal demands in the consultation were in favour of prioritizing infrastructure for cycling along the Elbchaussee. Many demands were voiced that did not correspond to the fixed framework conditions, including a two-sided bicycle lane or a management of motor vehicle traffic as a one-way street, or even expropriation of adjacent properties.

This affinity for cycling-infrastructure that becomes apparent in the contributions does not necessarily reflect the opinion of all participants: While some interview partners have noticed a bias towards a clientele with an affinity towards cycling, encouraged by local initiatives (IV-CS-1; IV-Mod; IV-PSP-1), the quantitative data from our own survey that includes only a limited number of participants (N = 61) does not suggest that participants had a higher cycling affinity than the rest of the population. Our quantitative survey also shows that participants were divided on their vision for future mobility in the district: While two-thirds of participants were in favour of more space for cycling in Altona, 42 % did not want any reduction in car traffic in Altona.

Regardless of who participated, the consultation seems to have given somewhat more visibility to demands for measures that would lead to more ecologically sustainable mobility. Such demands – if they were realised – would contribute to socio-spatial justice. At the same time, improving capabilities for disadvantaged groups has rarely been an explicit demand, and public transport and barrier-free access were discussed rather on the margins and not explicitly in terms of justice.

The question is whether the consultation had any policy-effect. Table 4 compares the status quo, planning premises, participation results, and different drafts of the plan.

Even though the final version of the plan (LSBG, 2021) shows some resemblance with the consultation results – namely focus on cycling and "Copenhagen-style" bike lanes – a closer look at the planning process shows that the consultation results have not played a substantial role in shaping the planning results. First, the general emphasis on cycling infrastructure had already been defined as a premise and was therefore not a result of the consultation. The demand for bolder solutions at the possible expense of the performance of motor vehicle traffic (that had received considerable support in the citizeńs contributions) was not followed and the paradigm of motor vehicle traffic performance remains untouched.

Moreover, looking at the planning process in detail shows that the first version of the plan, developed directly after the consultation, proposed non-exclusive bike lanes (LSBG, 2019), which had been criticised

[6] Bike lanes separated with only a dashed line that can be used by other vehicles as well (German: "Schutzstreifen").

Table 4
Comparison of consultation results and different drafts of the plan. Figure modified from Mark (2025).

	Initial Situation	**Premises**	**Main demands from the consultation**	**First Draft**	**Second Draft / Final Draft** *Revision, as parts of the first draft were not approved; new planning team*	**Final Draft (revised)** *Revision due to the planning guidelines developed with the cycling initiative*
Cycling	Mixed traffic; partly option to use the sidewalk	Improve conditions for cycling	Clear prioritisation of cycling, non-exclusive bike lanes rejected; "Copenhagen-style" cycle lanes favoured; if necessary, bike lane or one-way street for the benefit of cycling Partly: alternative routing	Mix of different cycling layouts, with non-exclusive cycle lanes, partly mixed traffic or cycling on the sidewalk, alternative routing	Mix of different cycling layouts, less non-exclusive cycle lanes, partly mixed traffic or cycling on the sidewalk, in the eastern section, alternating one-sided cycle lanes	Mainly combination of „Copenhagen-style" bike lanes and mixed traffic
Motor vehicle traffic	Two lanes with extra width, 50 km/h speed limit	Maintain performance: Two lanes, 50 km/h speed limit	Restriction of motor vehicle traffic (speed limit, reduction of lane width) Restriction of the performance of motor vehicle traffic Partly: maintaining performance	Two lanes for motor vehicles, speed limit 50 km/h	Two lanes for motor vehicles, speed limit 50 km/h, section with 30 km/h	Two lanes for motor vehicles, speed limit 50 km/h, section with 30 km/h
Pedestrian traffic, quality of stay and public transport	Narrow and not barrier-free sidewalks; bus stops not barrier-free	Barrier-free development of sidewalks and bus stops	Preserve tree population and green space; Sporadic comments regarding sidewalks and crossings	Barrier-free development of pavements, shared use by cyclists; barrier-free development of bus stops	Barrier-free development of pavements; Additional pedestrian crossing; barrier-free development of bus stops	Barrier-free development of pavements; Additional pedestrian crossing; barrier-free development of bus stops
Parking	26 parking spaces	Preventing „wild parking"	Mainly: Reduce the number of parking spaces in favor of bicycle traffic	48 parking spaces	11 parking spaces	11 parking spaces

by many participants during the consultation. After some criticism and the failure to obtain approval from the Department of the Interior, a second version was drafted by a new planning team (LSBG, 2020a; LSBG, 2020b). They reviewed all the contributions again, apparently trying to include some. They incorporated further details that had also been requested in the consultation (IV-Adm-2), however, the small changes can hardly be attributed to the consultation, but rather to the fact that the plan would otherwise not have been approved.

Broader changes were implemented in a third version of the plan very shortly before construction started (LSBG, 2021): the protected "Copenhagen-style" cycle lanes and the "sharrows" were included, even though this had been deemed "not foreseen" in the regulations before (SUPERURBAN, 2018c; LSBG, 2018 p. 3). However, these changes cannot be attributed to the consultative procedure, which at that time was already several years ago. Rather, as was highlighted in the interviews, they can be attributed to a city-wide bottom-up bicycle initiative ("Radentscheid Hamburg") (IV-Pol-3; IV-Adm-2/3). The initiative was able to bring its concerns into the political sphere as the signatures they had collected raised the possibility of a popular legislative procedure. This led to a resolution of the state parliament on the design of main roads, in which the demands of the cycling decision were partially included (Bürgerschaft der Freien und Hansestadt Hamburg, 2020).

This resolution then had a major impact on the Elbchaussee due to a change in the political landscape that occurred shortly after and that saw the Green Party gain more political influence in matters of transport policy: the new administration seemed to view the redesign of the Elbchaussee, which was about to start construction, as an opportunity to start implementing the new regulations directly and with a high public profile (IV-Pol-3). In the words of an interviewee, when asked about the reason for the new Copenhagen bike lanes: *"At the request of the senator, but also indirectly via the public, namely via the 'Radentscheid', which also basically made the statement that… yes, or also the standing with the signatures, with the people who signed in favour."* (IV-Adm-3).

While it cannot be ruled out that the consultation provided additional motivation for the final redesign, all in all, the consultation did not significantly shape the policy in this case. The policy-effect through the bottom-up bicycle initiative was more substantial but was not part of the consultative planning processes organised by the planning authority. Both forms of participation were not able to challenge the underlying notion of car-oriented planning. We attribute this lack of impact to the underlying political and regulatory framework conditions that could not be challenged by the planners. This means that context factors played a significant role in inhibiting policy-effects.[7]

To investigate subjective assessment we compared the perceptions of participants and non-participants (see Table 2 and Table 3). In almost all instances participants' perceptions are more negative than those of non-participants. Most notably, those who took part significantly ($p < 0.01$) less often feel their interests are represented. The findings are similar for the perception of the representation of all interests with a somewhat lower negative effect ($p < 0.05$). It becomes clear that those who participate do less often perceive a contribution to socio-spatial justice. Again, the analysis would have benefited from a larger sample that included more people who actually participated ($N = 52$) but as we discuss below, previous research has found too that participants tend to

[7] See Mark (2025) for an extensive discussion of influencing factors.

be more negative towards the results of a participation process.

5. Discussion

5.1. The contribution of the consultation for socio-spatial justice

The findings show that the consultative planning process resulted in measures to support the transition to sustainable mobility (RQ1) but only to a limited degree. Qualitative and quantitative analyses show that there is an improvement for cycling and walking, but not at the expense of car traffic. In particular, no push measures were proposed. Slight mode shifts are possible since the infrastructure is now safer, but it seems likely that the increase in safety is not sufficient to effect a major mode change, especially because it is not consistent and intuitive. A shift to environmental modes would be helpful to increase mobility-related capabilities for disadvantaged groups (RQ2). However, cycling – the main focus – is particularly used by higher socio-economic groups (Hudde, 2022a, 2022b), so for disadvantaged groups, the main improvement was the improved quality of stay. This is particularly relevant for those with care work, which explains the greater approval of the measures and interest representation by non-male persons. In turn, the measures offer little improvement for people with a low socio-economic status, disabilities or particular mobility needs such as lower costs, security, or accessibility. Therefore, the data shows only very little improvement in mobility-related capabilities – for selected issues (cycling safety) and groups (e.g. low/medium education) we even find negative changes. Overall then, the potential to increase ecologically sustainable transport is not fully used, especially considering that the construction work for the water pipes has provided a unique opportunity for a fundamental redesign. This leads us to conclude that this planning process has made only a small contribution to socio-spatial justice.

Finally, we were interested in the role of the consultation process (RQ3). We derive three important insights from the results. First, the most vocal citizens in the participation process were *more progressive in terms of sustainable mobility* than public administration. This is not to say that all participants supported measures to benefit cycling at the possible expense of car transport, but such progressive proposals clearly received many more endorsements from participants (e.g. in the forms of likes on the platform) than the ones that rejected such improvements. If these contributions would have been incorporated more extensively, the resulting measures would have been more ecologically sustainable. As such our results resonate with previous findings in that participants in such processes can make meaningful contributions (e.g. Chen and Aitamurto, 2019; Schwanholz, Zinser and Hindemith, 2021).

A second insight is that the participation process had very *limited policy-effect*. Notwithstanding the difficulties in tracing and attributing policy change to participation, our qualitative analysis could not find convincing evidence that the consultation substantially impacted the policy. The consultation seemed to play a role in the second draft of the plan, supporting marginal improvements for cycling and pedestrians. Indirect influence cannot be ruled out. We can attribute this limited policy-effect to power relations which could not be challenged through the consultation, in contrast to the bottom-up bicycle initiative that had the means to exert pressure.

A third insight is that participants in the process were mainly *focused on a few selected issues* which would improve ecological sustainability but that would not substantially improve the capabilities of disadvantaged groups. If anything, we could argue the measures are currently rather beneficial for groups with higher socio-economic status. As part of the redesign, a genuinely safe and continuous pedestrian and cycle infrastructure would have been a good starting point to address marginalized groups. Addressing socio-spatial justice in a more fundamental way would, however, require a broader spatial and sectoral perspective (Aberle et al., 2022). Such measures to improve the capabilities of disadvantaged groups were not explicitly addressed, neither by the planning authority nor by the participants. Therefore, we argue that in terms of this aspect of justice, the participation process had a blind spot.

Our quantitative analyses also showed that participants had a more negative perception of the representation of their own interests compared to non-participants. The same is true for the perception of the representation of all interests. We argue that this can be explained by mainly two conflicting approaches. The first explanatory path suggests that citizens need to reach a certain threshold of dissatisfaction with the status quo to be motivated to participate in consultations. The other possible explanation may be that the process fails to incorporate participants' ideas process outcomes and thus the process creates this dissatisfaction among citizens.

Our cross-sectional data does not allow us to answer conclusively if the participation process lowered satisfaction – a longitudinal design would be required to fully explore the conflicting paths of explanation. Given previous findings, we expect it to reflect the fact that participants are more dissatisfied with the status quo to start with. After all, that is what motivates them to participate (Christensen, 2018; Rottinghaus and Escher, 2020), and it coincides with the qualitative findings that cyclists participated disproportionally high. Based on this, they also have higher expectations regarding the planning results. As such we believe it is not so much the participation process that creates this dissatisfaction, but it has also not succeeded in resolving it. The low explanatory power of the models indicates that there might be more to the whole picture than we currently capture with our theoretical frame. Future research could start here and elaborate on the missing elements such as participants' values or motivations.

5.2. Implications for the role of public consultations for socio-spatial justice

What can be learned from this individual case study for the role of public participation for socio-spatial justice more generally? First of all, it is important to note that the reconstruction of the Elbchaussee represents a common scenario for transport planning in that there exist conflicting interests as well as external constraints which inevitably means that, ultimately, the planning authority needs to make a decision that will satisfy some interests more than others. The conflicts over the extent to which the existing infrastructure should be transformed to allow more space for sustainable mobility options (in this case in particular cyclists and pedestrians) are typical for the challenges faced by municipalities when starting to adapt existing transport to more sustainable mobility. In the case of the Elbchaussee, the external constraints were both physical, i.e. first and foremost the available space, as well as political, here in particular the predefined target that any solution could not come at the expense of a reduction in car traffic capacity. While the particular external constraints might differ for other cases, such restrictions and conflicts are a common theme in planning for sustainable mobility, since regulations and procedures are rooted in a car-centered planning paradigm and any changes affect the daily lives of people directly (Kutter 2016). What is more, the participation formats used for this particular consultation are very common among the existing participation efforts in German municipalities. So shows our research that mobility planning across Germany almost exclusively relies on such formats with self-selection of participants and that the combination of online and offline formats is a commonly used approach (Mark, Holec and Escher, 2024).

As such the Elbchaussee represents a typical case (Yin, 2018) that is instructive in order to study the implications of the decision for socio-spatial justice and the role of the participation process. Consequently, it should not come as too much of a surprise that we confirm the lack of any substantial contribution of participation to socio-spatial justice reported by previous studies, in particular in relation to capabilities (Boisjoly and Yengoh, 2017; Elvy, 2014). While this does not imply that every public participation process will fail to substantially further socio-spatial justice, the fact that our findings resonate with previous research leads us to argue that this limited contribution is not merely rooted in

deficiencies of the particular case (that certainly exist), but points to more general limitations of the current practice of public consultations and public participation for achieving greater justice. In the following section, we will discuss the limitations of consultative procedures identified in this study and suggest key insights that can be applied to similar case studies.

The first limitation is that such consultations usually draw a particular crowd with *socio-economic biases*. As much of the research on different forms of public participation in decision-making shows, most of these are plagued by two problems: Low numbers of people engaging, and substantial biases in the socio-demographic profile of participants. These problems seriously limit the opportunity to achieve just policies as many interests are not represented. The interests of disadvantaged groups are particularly lacking, as these are the ones most often abstaining from participation (Dalton, 2017; Marien, Hooghe and Quintelier, 2010; Michels, 2011, p. 285; Schäfer, 2012). This is confirmed by the data presented here.

To some extent that can be addressed by following good-practice advice on how to mobilise participants from such backgrounds. These include a detailed requirements analysis involving relevant target groups before the participation, personalised invitations, the combination of different participation formats catering to the different abilities and requirements of different groups as well as dedicated formats that address underrepresented groups and offering means of support during the process (Bryson et al., 2013; Dietz and Stern, 2008; Lütters et al., 2024). A promising avenue are citizen assemblies (also known as mini-publics or citizen juries) that aim to engage a random sample of citizens in joint deliberation together with experts to facilitate recognition of different interests and the development of joint recommendations. While these have been utilised with some success (Boswell, Dean and Smith, 2023) also in German mobility planning (Schröder et al., 2024), these are still not widespread. For example, a recent study in Germany showed that less than 5 % of consultations would employ any targeted selection of participants (Mark, Holec and Escher, 2024, p. 257).

The second limitation is the *limited scope of influence for participants*. Inherently, public consultations are marked by power asymmetries. Yet the influence of participants is additionally curtailed by what the planning authority puts on the agenda and what it deems possible. In the Elbchaussee the potential for a sustainable transformation suffered because of the requirements that were put in place ex-ante. At the very least, the restrictions, their origin, and possible means to change them should be communicated transparently and made subject of discussion. Giving citizens more influence over the agenda and the measures might also address the greater dissatisfaction among participants. We have argued before that it is one of the strengths of top-down participation that it does not leave the decision to simple majorities, but it should ensure a fair representation of all interests through the involvement of representatives and public administration. In this case, this did not happen. Indeed, public participation regularly lacks this power, not least because often authorities do not have an interest in transferring power to citizens, as Fung (2015) concludes in his review. Yet even within the formally strictly advisory role of consultations, it is possible to provide citizens with more influence. One means to do this is to define broad criteria that a decision needs to meet (e.g. minority protection) but then leave the actual decision to the participation process. This has been practised extensively with citizen budgets that set aside dedicated sums of money and that are also often used for planning purposes (Cabannes and Lipietz, 2018). Another approach is the use of dedicated citizen or stakeholder advisory committees with usually about 20 people who are committed to accompanying the planning process over a longer time and who are tasked with regular feedback (Sutcliffe and Cipkar, 2017). Often these are formed to explicitly include otherwise underrepresented interests. For example, in the German city of Marburg, there was such a group during the multi-year planning process for a transport concept, in which representatives from disability organisations and randomly selected citizens were represented (Universitätsstadt Marburg, 2023, p. 10).

We assume that the third limitation is that in many of the public consultations, *socio-spatial injustice is not explicitly addressed*. In particular, the needs of disadvantaged groups are not in focus. This was certainly the case for the Elbchaussee. Dedicated efforts to improve the capabilities of these groups are required, and to evaluate proposed measures also from this perspective. Besides bringing more people from affected groups into the process, the agenda of the planning authority matters. Echoing Boisjoly and Yengoh (2017) we argue that socio-spatial justice has to be made an explicit goal of public participation. This is already recognized and implemented in some instances such as in the English local transportation plans investigated by Elvy (2014).

While addressing these three limitations does not guarantee that the eventual outcome will be more socio-spatially just, it is important to recognize and proactively address these limitations as otherwise good results are less likely. What is more, it is important to recognize that improving justice for disadvantaged groups – in matters of mobility and beyond – requires more than just more opportunities for these groups to voice their concerns in consultative procedures. Given the empirically established tendency of referenda to disadvantage minorities (Gamble, 1997), more opportunities for direct democratic decision-making are also not likely to improve their situation. Instead, interests of people with limited mobility capabilities need to be better represented in decision-making bodies – not just in processes. As the research for gender representation has shown, quotas have a good track record of improving descriptive representation of women and as consequence also of improving substantive representation (Schwindt-Bayer and Mishler, 2005). In addition, as discussed at the beginning, mobility poverty is intertwined with other forms of marginalisation including economic deprivation and educational inequality – it is these root causes that also need to be addressed by policy makers. For example, at the time of our research, in response to the pandemic, Germany introduced a nationwide public transit ticket, initially for a monthly fee of 9€ which has tremendously increased the mobility capabilities of low-income groups. Another important step would be the empowerment of marginalized groups to improve and access their competences in order to, for example, enable them to travel by bicycle. (Aberle et al., 2022).

6. Conclusion

Turning to our main question that is also the title of this article – Socio-spatial justice through public participation? – in our case, we find no evidence that the consultation would substantially increase socio-spatial justice. The few positive aspects of the final policy – that were mainly limited to some ecological modes of transport, while the capabilities of most disadvantaged groups have not been addressed – have very likely not been introduced because of the consultation. From the perspective of socio-spatial justice, this is far below the normative standards already established in theory and practice.

We have highlighted that this is not just a problem of the case we studied, but that it reflects several limitations of the way public consultations and public participation more generally are currently implemented and that are rooted first and foremost in the unequal patterns of participation and the limited scope of influence for participants. Still, enabling the public to have a say in planning is a normative requirement of democracy. The chance of achieving normatively wrong results is not a justification to abandon the process altogether (Dahl, 1989) Beyond this principle, our review has shown that it is indeed possible to make use of public participation in a way that is beneficial for socio-spatial justice (Dietz and Stern, 2008; Touchton and Wampler, 2014). We have detailed a number of ways to address these limitations, among these are more inclusive participation formats, more scope of influence for participants, but also a more explicit effort by planning authorities to tackle socio-spatial (in)justice by putting it on the agenda and considering the effects of measures not only in terms of ecological sustainability but also for mobility-related capabilities.

While our study has provided detailed insights into the particular case of the Elbchaussee and its results in terms of socio-spatial justice, its contributions go beyond these empirical findings. First, we have elaborated on the links between public participation and socio-spatial justice which has helped our understanding of the limitations inherent in the way public consultations are currently undertaken. Second, we have offered advice on how to address these limitations in actual practice. Third, we employed an innovative methodological approach that draws on both criteria-based and subjective assessments of socio-spatial justice that offers a more comprehensive picture of the potential effects of policies. While what increases justice in terms of ecological sustainability and capabilities can be "objectively" evaluated quite well based on previous research, the actual effect of planning measures on traffic choices cannot be separated from the perceptions individuals hold about these. For example, safety-conscious people will usually only start to cycle when they also *feel* safe due to the measures. For the case we studied we could show that both assessments match closely, but it is well possible to imagine scenarios in which a criteria-based assessment diverges from subjective perceptions.

A fruitful avenue for further research could be to investigate this method further as there is a need for tools to assess the fairness of planning decisions as Shipley and Utz (2012, p. 37) identify in their systematic review of literature on public participation in planning: "As for a conclusion at this stage in the evolution of public consultation in planning, the most fundamental tool lacking for planners is not a specific type of consultation technique, literary resource, or even academic/practical training, but rather, a proven tool to evaluate the consultation methods employed for procedural and distributional fairness.".

What is more, clearly a single case study can offer only one part of the picture and further research should aim to corroborate these insights through investigating cases that differ in context, topic, and format. Such studies of planning processes should include longitudinal analysis to track participants' perceptions before and after their participation. We have outlined that the results from our quantitative survey should allow an indicative view into the assessment of disadvantaged groups, but clearly, our study would have benefited from a larger and more diverse sample of respondents. While we used a number of methods to increase survey response rates, including several reminders and an online option for participation, the groups of interest to the question of socio-spatial justice are known to be hard to reach via surveys (Dillman, Smith and Christian, 2014). We chose a quantitative approach in order to enable statistical analysis of different group features but future research could complement these with a qualitative approach that allows further insights into the perceptions of marginalised groups (for a fruitful approach see Aberle et al., 2022). Finally, our analytical approach has shown that the assessment of the measures for ecological sustainability is strongly influenced by factors not observed here and which should be the subject of further research.

7. Funding Statement

This work was supported by the German Federal Ministry of Education and Research within the programme "Social-Ecological Research" (FONA) [grant number 01UU1904].

CRediT authorship contribution statement

Laura Mark: Writing – review & editing, Writing – original draft, Methodology, Investigation, Formal analysis, Conceptualization. **Katharina Holec:** Writing – review & editing, Writing – original draft, Methodology, Investigation, Formal analysis, Conceptualization. **Tobias Escher:** Writing – review & editing, Writing – original draft, Methodology, Funding acquisition, 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.

Appendix

Table 5
Questions for measuring ecological sustainability and interest representation.

Measurements		
Ecological Sustainability		*Scale*
Negative Impact on Car Traffic	Car traffic will not be affected by the reconstruction.	1 'do not agree'
Safety of Cyclists	Bicycle traffic will be safer and more comfortable after the reconstruction.	to
Quality of Stay	The quality of stay for pedestrians will increase after the reconstruction.	5 'fully agree'
Interest Representation		
Own Interest Representation	The measures proposed for the reconstruction fully satisfy my interests.	
General Interest Representation	The interests of all relevant groups of the population are considered within the reconstruction.	

Table 6
Overview of (quasi-)metric variables used in OLS regressions.

Descriptives	Range	Mean	Median	Variance	Standard Deviation
Perception of Measures *(5 point scale from 1 "do not agree at all" to 5 "totally agree")*					
Ecological Sustainability					
Negative Impact on Car Traffic	1–5	2.71	3.00	1.17	1.08
High Education		2.73			
Low/Medium Education		2.51			
Safety of Cyclists	1–5	3.81	4.00	0.95	0.98
High Education		3.89			
Low/Medium Education		3.39			
Quality of stay	1–5	3.59	4.00	1.02	1.01

(*continued on next page*)

Table 6 (*continued*)

Descriptives	Range	Mean	Median	Variance	Standard Deviation
High Education		3.63			
Low/Medium Education		3.50			
Interest Representation					
Own Interest Representation	1–5	3.42	4.00	1.28	1.13
High Education		3.50			
Low/Medium Education		3.08			
General Interest Representation	1–5	3.24	3.00	1.07	1.04
High Education		3.27			
Low/Medium Education		3.10			
Transport Choices *(5 point scale from 1 "(almost) never" to 5 "(almost) daily")*					
Car	1–5	3.12	3.00	2.08	1.44
Bicycle	1–5	3.61	4.00	2.11	1.45
Public Transport	1–5	3.14	3.00	1.09	1.05
Walking	1–5	4.13	4.00	1.32	1.15
Importance of Basic Mobility Needs *(5 point scale from 1 "completely important" to 5 "very unimportant")*					
Safety	1–5	4.92	5.00	0.83	0.91
Security	1–5	3.63	4.00	1.77	1.33
Low Costs	1–5	3.66	4.00	1.07	1.03
Understandability	1–5	2.53	2.00	1.83	1.35
Barrier Free Accessibility	1–5	3.92	4.00	0.86	0.93

Table 7
Descriptives of dichotomous variables from OLS regressions.

	Range	**Share**	**n**
Participation in Elbchaussee Dialogue	0–1	14.31 %	416
Socio-Demographics			
Equivalence Income Below Average	0–1	52.08 %	384
Non Male Gender	0–1	46.67 %	422
Education			
Low/Medium	0–1	12.82 %	407
High	0–1	87.18 %	407

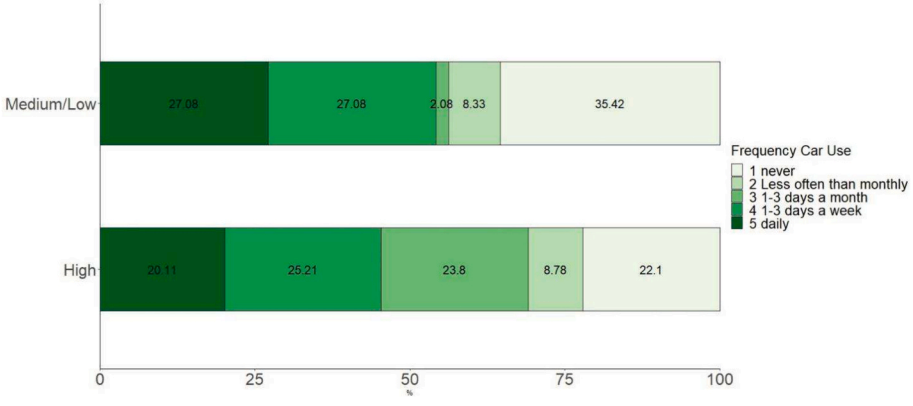

Fig. 1. Frequency of Car Use by Educational Group.

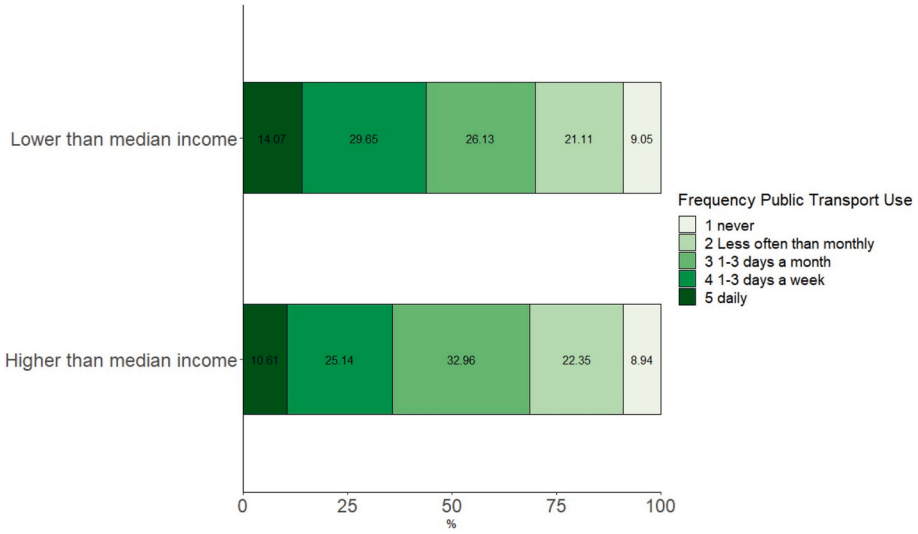

Fig. 2. Frequency of Use of Public Transport by Income.

Table 8
OLS Regression on the importance of basic mobility needs.

	Safety	**Security**	**Low Costs**	**Understandability**	**Barrier Free Accessibility**
Predictors	*Estimates*	*Estimates*	*Estimates*	*Estimates*	*Estimates*
Intercept	4.14 ***	3.45 ***	3.24 ***	3.71 ***	2.04 ***
	(0.08)	(0.12)	(0.09)	(0.08)	(0.11)
Gender: not male	0.30 ***	0.34 **	0.14	0.21 **	0.25 **
	(0.09)	(0.14)	(0.10)	(0.10)	(0.13)
Equivalence Income below Median Income	−0.05	−0.18	0.55 ***	0.08	0.31 **
	(0.10)	(0.14)	(0.11)	(0.10)	(0.13)
Low/Medium Education	0.11	0.44 *	0.08	0.38 **	0.13
	(0.15)	(0.22)	(0.17)	(0.16)	(0.21)
Disabled	0.15	0.21	0.24	0.27	1.58 ***
	(0.16)	(0.23)	(0.18)	(0.16)	(0.22)
Observations	365	366	365	365	364
R^2	0.036	0.038	0.092	0.052	0.177
R^2 adjusted	0.026	0.027	0.082	0.042	0.168

* $p < 0.1$ ** $p < 0.05$ *** $p < 0.01$
Note: Coefficients are non-standardized beta-coefficients and standard errors (in parentheses). Dependent variables are measured on 5-point scale from 1 (not important at all) to 5 (very important).

List of analyzed planning documents

- Commentary and plans on first draft (LSBG, 2019)
- Commentary and plans on second draft (LSBG, 2020b)
- Notes of consideration on first and second draft (LSBG, 2020a)
- Commentary and plans on revised final draft (LSBG, 2021)
- Presentation, minutes, results summary and public feedback of first dialogue event (SUPERURBAN, 2018b)
- Presentation, minutes, results summary and public feedback of second dialogue event (SUPERURBAN, 2018c)
- Summary of online contributions (first phase) (SUPERURBAN, 2018a)
- Summary of online contributions (second phase) (LSBG, 2018))

Qualitative interviews

- IV-Pol-1. Interview with a member of the Altona Transport Committee, transport policy spokesperson of their parliamentary group. Hamburg: 18.11.2021.
- IV-Pol-2. Interview with a member of the Altona Transport Committee, transport policy spokesperson of their parliamentary group. Hamburg: 19.11.2021.
- IV-Pol-3. Interview with a representative of the Hamburg Authority for Traffic and Mobility Transition. Hamburg: 08.12.2021.
- IV-Adm-1. Interview with a representative of the Civil Engineering Office from the City of Hamburg responsible for public participation. Hamburg: 22.05.2021.

- IV-Adm-2/3. Interview with two representatives of the Civil Engineering Office from the City of Hamburg responsible for the planning process. Hamburg: 19.11.2021.
- IV-PSP-1. Interview with a representative of a private planning firm contracted for technical planning. Hamburg: 18.11.2021.
- IV-PSP-2. Interview with a representative of a private service provider contracted to support the organization of the participation process. Hamburg: 25.11.2021.
- IV-Mod. Interview with the moderator of the public workshops. Hamburg: 05.11.2021.
- IV-CS-1. Interview with the representative of a local cycling initiative. Hamburg: 25.11.2021.
- IV-CS-2. Interview with the representative of a local civic initiative. Hamburg: 12.04.2022.

Table 9
Coding scheme and results of analysis of the contributions from the consultation events (translated version of original table from Mark 2025).

Coding scheme for the comments made during the consultation process:
1a Strengthen cycle traffic (safe, continuous)
1b Alternative connection for cycle traffic
2a Question the efficiency of motor vehicles
2b Maintain motor vehicle traffic
2c Restrictions on motor vehicle traffic
3a Strengthen public transport
3b Strengthen pedestrian traffic and stay
3c Preserve/strengthen green space
4a Preserve parking
4b Less parking
X Other (possibly by number allocation to means of transport, e.g. 2x)
Overview of Results:

Event	Type of evaluation	Most important results
Dialogue events (Phase 1 and 2)	Assignment of all contributions to the above-mentioned categories 40 contributions, extracted from logs and submissions	Strengthen cycle traffic (7 contributions) Questioning the efficiency of motor vehicles (5 contributions) Alternative connection for cycle traffic (5 contributions) Maintain motor vehicle traffic (3 contributions)
Scoring of wishes in the dialogue event (phase 1)	Assignment of the wishes to the above categories, addition of the points awarded per category 16 given suggestions, a total of 445 points distributed by 89 people	Strengthen cycle traffic (120 points) ('Copenhagen-style' cycle paths in particular rated positively here) Restrictions on motor vehicle traffic (97 points) Preserve/strengthen green space (55.5 points) Alternative cycle connections (49 points) Less parking (44 points)
Online participation (phase 1)	The 11 posts with the most reviews (between 52 and 37 reviews), and the 5 posts with the most positive reviews (between 24 and 27 positive reviews)	Strengthen cycle traffic (215 positive ratings) Restrictions on motor vehicle traffic (50 positive evaluations) Question the efficiency of motor vehicles (32 positive evaluations) Maintain motor vehicle traffic (22 positive ratings, but 106 negative ratings) Maintain parking (13 positive ratings, but 71 negative)
Variant evaluation phase 2 (online and offline)	Online: Consideration of votes pro/contra for all variants Offline: Number of pro/con arguments per variant for comparison	Section West: Protective lane on both sides rejected (43 against, 4 in favour) Cycle lane to the north, southern 'service solution', and diversion via Elbe cycle path were assessed rather positively (8 against, 27 in favour) *Offline: same tendency* Section Teufelsbrück: Both variants rejected (40 and 32 contra votes respectively) *Offline: Two crossing options for cycle traffic rated slightly more favourably* Section East: Protective lanes on both sides rejected (40 Contra votes) Cycle lanes on both sides largely rejected (32 votes against, 3 votes in favour) Copenhagen cycle path rated positively on both sides (56 votes in favour, 26 against) *Offline: slightly more positive response to cycle lanes, otherwise similar sentiment*

References

Aberle, C., et al., 2022. Mobilitätsbezogene soziale Exklusion in Großstädten: Empirische Bestandsaufnahme und Strategieentwicklung für Berlin und Hamburg. *Journal Für Mobilität Und Verkehr* 14, 18–27. https://doi.org/10.34647/jmv.nr14.id89.

Antonson, H., 2014. Public participation and written submissions: A transport infrastructure planning case study. *Transportation Research Part a: Policy and Practice* 70, 59–66. https://doi.org/10.1016/j.tra.2014.09.015.

Banister, D., 2008. The sustainable mobility paradigm. *Transport Policy* 15 (2), 73–80. https://doi.org/10.1016/j.tranpol.2007.10.005.

Barber, B.R., 2003. *Strong Democracy. Participatory Politics for a New Age*. University of California Press, Berkeley CA.

Bickerstaff, K., Walker, G., 2005. Shared Visions, Unholy Alliances: Power, Governance and Deliberative Processes in Local Transport Planning. *Urban Studies* 42 (12), 2123–2144.

Boisjoly, G., Yengoh, G.T., 2017. Opening the door to social equity: local and participatory approaches to transportation planning in Montreal. *European Transport Research Review* 9 (3). https://doi.org/10.1007/s12544-017-0258-4.

Borgato, S., Maffii, S., Bosetti, S., 2021a. People on low income and unemployed persons. In: Kuttler, T., Moraglio, M. (Eds.), *Re-Thinking Mobility Poverty: Understanding Users' Geographies, Backgrounds and Aptitudes*. Routledge Taylor & Francis Group, London, pp. 124–134.

Borgato, S., Maffii, S., Bosetti, S., 2021b. Women and gender-related aspects. In: Kuttler, T., Moraglio, M. (Eds.), *Re-Thinking Mobility Poverty: Understanding Users' Geographies, Backgrounds and Aptitudes*. Routledge Taylor & Francis Group, London, pp. 113–123.

Boswell, J., Dean, R., Smith, G., 2023. Integrating Citizen Deliberation into Climate Governance: Lessons on Robust Design from Six Climate Assemblies. *Public Administration* 101 (1), 182–200. https://doi.org/10.1111/padm.12883.

Brenck, A., Mitusch, K., Winter, M., 2016. Die externen Kosten des Verkehrs. In: Schwedes, O., Canzler, W., Knie, A. (Eds.), *Handbuch Verkehrspolitik*. Springer Fachmedien Wiesbaden, Wiesbaden, pp. 401–429.

Bryson, J.M., et al., 2013. Designing Public Participation Processes. *Public Administration Review* 73 (1), 23–34. https://doi.org/10.1111/j.1540-6210.2012.02678.x.

Bürgerschaft der Freien und Hansestadt Hamburg, 2020. 'Fraktionen der SPD und der GRÜNEN der Bürgerschaft der freien und Hansestadt Hamburg; Antrag zu Einigung mit der Volksinitiative Radentscheid Hamburg. Die Fahrradstadt Hamburg wird inklusiver. Drucksache 22/106, 21.04.2020.

Cabannes, Y., Lipietz, B., 2018. Revisiting the democratic promise of participatory budgeting in light of competing political, good governance and technocratic logics. *Environment and Urbanization* 30 (1), 67–84. https://doi.org/10.1177/0956247817746279.

Campbell, S., 1996. Green Cities, Growing Cities, Just Cities? Urban Planning and the Contradictions of Sustainable Development. *Journal of the American Planning Association* 62 (3), 296–312. https://doi.org/10.1080/01944369608975696.

Chen, K., Aitamurto, T., 2019. Barriers for Crowd's Impact in Crowdsourced Policymaking: Civic Data Overload and Filter Hierarchy. *International Public Management Journal* 22 (1), 99–126. https://doi.org/10.1080/10967494.2018.1488780.

Christensen, H.S., 2018. Knowing and distrusting: how political trust and knowledge shape direct-democratic participation. *European Societies* 20 (4), 572–594. https://doi.org/10.1080/14616696.2017.1402124.

Coelho, T.R., Cunha, M.A., Pozzebon, M., 2022. eParticipation practices and mechanisms of influence: An investigation of public policymaking. *Government Information Quarterly* 39 (2), 1–15. https://doi.org/10.1016/j.giq.2021.101667.

CROW, 2016. *Design manual for bicycle traffic*. Crow (Record, Ede, p. 28.

Dahl, R.A., 1989. Democracy and Its Critics. New Haven. Yale University Press, London.

Dalton, R.J., 2017. *The participation gap: Social status and political inequality*, (1). Oxford University Press, Oxford.

Dangschat, J.S., 2022. Verkehrswende - sozial und räumlich ausgewogen. *Journal Für Mobilität Und Verkehr* 14, 2–10.

Dangschat, J.S., Segert, A., 2011. Nachhaltige Alltagsmobilität — soziale Ungleichheiten und Milieus. *Österreichische Zeitschrift Für Soziologie* 36 (2), 55–73. https://doi.org/10.1007/s11614-011-0033-z.

Daubitz, S., et al., 2023. *Mobilität und soziale Exklusion. Alltag – Strategien – Maßnahmen*. LIT Verlag, Berlin.

Dietz, T., Stern, P.C., 2008. *Public Participation in Environmental Assessment and Decision Making*. National Academies Press, Washington, D.C.

Dill, J., McNeil, N., 2016. Revisiting the Four Types of Cyclists: Findings from a National Survey. *Transportation Research Record: Journal of the Transportation Research Board* 2587, 90–99.

Dillman, D.A., Smyth, J.D., Christian, L.M., 2014. *Internet, phone, mail, and mixed-mode surveys: The tailored design method*, 4th edn. Wiley, Hoboken, New Jersey.

Elvy, J., 2014. Public participation in transport planning amongst the socially excluded: An analysis of 3rd generation local transport plans. *Case Studies on Transport Policy* 2 (2), 41–49. https://doi.org/10.1016/j.cstp.2014.06.004.

European Platform on Sustainable Urban Mobility Plans, 2016. *Participation. Actively engaging citizens and stakeholders in the development of Sustainable Urban Mobility Plans*. Brussels. Available at: https://www.eltis.org/sites/default/files/trainingmaterials/manual_participation_en.pdf (Accessed: 12 June 2023).

Fainstein, S.S., 2009. Planning and the Just City. In: Marcuse, P. (Ed.), *Searching for the Just City: Debates in Urban Theory and Practice*. Routledge, London, pp. 19–39.

Fung, A., 2006. Varieties of Participation in Complex Governance. *Public Administration Review* 66 (Issue Supplement s1), 66–75. https://doi.org/10.1111/j.1540-6210.2006.00667.x/full.

Fung, A., 2015. 'Putting the Public Back into Governance. The Challenges of Citizen Participation and Its Future' 75, 513–522. https://doi.org/10.1111/puar.12361. Putting.

Gabriel, O.W., Kersting, N., 2014. Politisches Engagement in deutschen Kommunen: Strukturen und Wirkungen auf die politischen Einstellungen von Bürgerschaft, Politik und Verwaltung. In: Stiftung, B., Baden-Württemberg, S. (Eds.), *Partizipation Im Wandel*. Verlag Bertelsmann Stiftung, Gütersloh, pp. 43–181.

Gamble, B.S., 1997. Putting Civil Rights to a Popular Vote. *American Journal of Political Science* 41 (1), 245–269. https://doi.org/10.2307/2111715.

Gehl, J., 2010. *Cities for People*. Island Press, Washington DC.

Gläser, J., Laudel, G., 2010. *Experteninterviews und qualitative Inhaltsanalyse als Instrumente rekonstruierender Untersuchungen*, 4th edn. (Lehrbuch). VS Verlag, Wiesbaden.

Freie und Hansestadt Hamburg, 2018. *Zusammenfassung des bisherigen Prozesses zur zweiten Dialogveranstaltung: 16.11.2018*. Available at: https://lsbg.hamburg.de/resource/blob/598048/c08a8e61b17b589974f9461878a0bf2d/elbchaussee-2-dialog-veranstaltung-poster-16-november-2018-data.pdf (Accessed: 12 June 2023).

Holz-Rau, C., 2018. 'Verkehr und Verkehrswissenschaft', in Schwedes, O. (ed.) *Verkehrspolitik: Eine interdisziplinäre Einführung*, 2nd edn. (Lehrbuch). Wiesbaden: Springer VS, pp. 115–139.

Hudde, A., 2022a. Educational Differences in Cycling: Evidence from German Cities. *Sociology* 003803852110633. https://doi.org/10.1177/00380385211063366.

Hudde, A., 2022b. The unequal cycling boom in Germany. *Journal of Transport Geography* 98, 103244. https://doi.org/10.1016/j.jtrangeo.2021.103244.

IPCC, 2022. Summary for Policymakers, Cambridge UK.

Jager, N.W., et al., 2020. Pathways to Implementation: Evidence on How Participation in Environmental Governance Impacts on Environmental Outcomes. *Journal of Public Administration Research and Theory* 30 (3), 383–399. https://doi.org/10.1093/jopart/muz034.

Kutter, E., 2016. Siedlungsstruktur und Verkehr: Zum Verständnis von Sachzwängen und individueller Verkehrserreichbarkeit in Stadtregionen. In: Schwedes, O., Canzler, W., Knie, A. (Eds.), *Handbuch Verkehrspolitik*. Springer Fachmedien Wiesbaden, Wiesbaden, pp. 211–236.

LSBG, 2018. Infoposter zur zweiten Dialogveranstaltung (Elbchaussee-Dialog). 16.11.2018. Available at https://lsbg.hamburg.de/resource/blob/598048/c08a8e61b17b589974f9461878a0bf2d/elbchaussee-2-dialog-veranstaltung-poster-16-november-2018-data.pdf (Accessed: 22 March 2024).

LSBG, 2019. *GI Elbchaussee - 1. Planungsabschnitt Erläuterungsbericht zur 1. Verschickung*. Available at: https://beteiligung.hamburg/elbchaussee2/sites/default/files/public/downloads/Elbchaussee_von_Manteuffelstrasse_bis_Teufelsbrueck_-_Abstimmungsunterlage_Bericht.pdf (Accessed: 9 September 2024).

LSBG, 2020a. *GI Elbchaussee - 1. Bauabschnitt Abwägungsvermerke Extern zur Schlussverschickung: PSP 12874 Grundinstandsetzung Elbchaussee - 1. Bauabschnitt: Manteuffelstraße bis Parkstraße*. Anlage 3.

LSBG, 2020b. *GI Elbchaussee - 1. Bauabschnitt Erläuterungsbericht zur 2. Verschickung*. Available at: https://lsbg.hamburg.de/resource/blob/597988/2db7851e70bf2bcc5be16d6d4910b0f2/elbchaussee-manteuffelstrasse-bis-parkstrasse-abstimmungsunterlage-2-verschickung-bericht-data.pdf (Accessed: 12 June 2023).

LSBG, 2021. *GI Elbchaussee - 1. Bauabschnitt Erläuterungsbericht zur geänderten Schlussverschickung: 16.02.2021*. Available at: https://lsbg.hamburg.de/contentblob/14126498/71fa27d6782c69cbdccf87f98543404a/data/elbchaussee-manteuffelstrasse-bis-parkstrasse)-abgestimmte-planung-bericht.pdf (Accessed: 12 June 2023).

Lucas, K., et al., 2004. *Environment and Social Justice: Rapid Research and Evidence Review*. London, UK.

Lucas, K., 2012. Transport and social exclusion: Where are we now? *Transport Policy* 20, 105–113. https://doi.org/10.1016/j.tranpol.2012.01.013.

Lütters, S., et al., 2024. *Möglichkeiten und Grenzen digitaler Beteiligungsinstrumente für die Beteiligung der Öffentlichkeit im Standortauswahlverfahren (DigiBeSt)*. Berlin (BASE-RESFOR 026/24). Available at: https://www.base.bund.de/DE/themen/fa/sozio/projekte-ende/projekte-ende.html (Accessed: 12 June 2023).

Marien, S., Hooghe, M., Quintelier, E., 2010. Inequalities in Non-institutionalised Forms of Political Participation: A Multi-level Analysis of 25 countries. *Political Studies* 58 (1), 187–213. https://doi.org/10.1111/j.1467-9248.2009.00801.x.

Mark, L., Holec, K., Escher, T., 2024. Die Beteiligung von Bürgerinnen und Bürgern bei kommunalen Mobilitätsprojekten: Eine quantitative Erhebung konsultativer Beteiligungsverfahren in Deutschland. In: *Raumforschung Und Raumordnung | Spatial Research and Planning*. https://doi.org/10.14512/rur.2239.

Mark, L., 2025. *Verkehrswende durch Öffentlichkeitsbeteiligung? Policy-Wirkung von konsultativen Invited Spaces am Beispiel zweier Verkehrsplanungsprojekte in Hamburg*. LIT Verlag (Mobilität und Gesellschaft), Berlin.

Meschik, M., 2008. *Planungshandbuch Radverkehr*. Springer, Wien.

Michels, A., 2011. Innovations in democratic governance: how does citizen participation contribute to a better democracy? *International Review of Administrative Sciences* 77 (2), 275–293. https://doi.org/10.1177/0020852311399851.

Nobis, C., Kuhnimhof, T., 2018. *Mobilität in Deutschland – MiD Ergebnisbericht*. Bonn, Berlin.

Norman, G., 2010. Likert scales, levels of measurement and the "laws" of statistics. *Advances in Health Sciences Education : Theory and Practice* 15 (5), 625–632. https://doi.org/10.1007/s10459-010-9222-y.

Nussbaum, M.C., 2009. Creating Capabilities: The Human Development Approach and Its Implementation. *Hypatia* 24 (3), 211–215. https://doi.org/10.1111/j.1527-2001.2009.01053.x.

Pateman, C., 1970. *Participation and Democratic Theory*. Cambridge University Press, Cambridge.

Pereira, R.H.M., Schwanen, T., Banister, D., 2017. Distributive justice and equity in transportation. *Transport Reviews* 37 (2), 170–191. https://doi.org/10.1080/01441647.2016.1257660.

Rammler, S., 2016. Nachhaltige Mobilität: Gestaltungsszenarien und Zukunftsbilder. In: Schwedes, O., Canzler, W., Knie, A. (Eds.), *Handbuch Verkehrspolitik*. Springer Fachmedien Wiesbaden, Wiesbaden, pp. 899–917.

Reis, V., Freitas, A., 2021. The predicaments of European disabled people. In: Kuttler, T., Moraglio, M. (Eds.), *Re-Thinking Mobility Poverty: Understanding Users' Geographies, Backgrounds and Aptitudes*. Routledge Taylor & Francis Group, London, pp. 147–161.

Rottinghaus, B., Escher, T., 2020. Mechanisms for inclusion and exclusion through digital political participation: Evidence from a comparative study of online consultations in three German cities. *Zeitschrift Für Politikwissenschaft* 30 (2), 261–298. https://doi.org/10.1007/s41358-020-00222-7.

Schäfer, A., 2012. Consequences of social inequality for democracy in Western Europe. *Zeitschrift Für Vergleichende Politikwissenschaft* 6 (S2), 23–45. https://doi.org/10.1007/s12286-010-0086-6.

Schröder, S., Rasche, B., Thomsen, C., Gröschner, S., 2024. Der Bürgerrat Gemeinsame Verkehrswende in Stadt und Land – Ein gesellschaftlicher Diskurs für eine nachhaltige Mobilität. *GAIA - Ecological Perspectives for Science and Society* 33 (2), 261–262. https://doi.org/10.14512/gaia.33.2.24.

Schwanholz, J., Zinser, L., Hindemith, J., 2021. 'Digital transformation in the public sector: from design to impact', *der moderne staat – Zeitschrift für Public Policy. Recht Und Management* 14 (1–2021), 43–60. https://doi.org/10.3224/dms.v14i1.10.

Schwedes, O., et al., 2018. *Kleiner Begriffskanon der Mobilitätsforschung*. Berlin (IVP Discussion Paper 1/2018).

Schwedes, O., Rammert, A., 2020. *Was ist integrierte Verkehrsplanung? Hintergründe und Perspektiven einer am Menschen orientierten Planung*. Berlin (IVP Discussion Paper 2/2020).

Schwindt-Bayer, L.A., Mishler, W., 2005. An integrated model of women's representation. *Journal of Politics* 67 (2), 407–428. https://doi.org/10.1111/j.1468-2508.2005.00323.x.

Sen, A., 1985. Commodities and Capabilities. *The Economic Journal* 96 (383), 820. https://doi.org/10.2307/2232999.

Shipley, R., Utz, S., 2012. Making it Count: A Review of the Value and Techniques for Public Consultation. *Journal of Planning Literature* 27 (1), 22–42. https://doi.org/10.1177/0885412211413133.

Stark, K., 2017. Mobilitätsarmut in der sozialwissenschaftlichen Debatte. In: Großmann, K., Schaffrin, A., Smigiel, C. (Eds.), *Energie Und Soziale Ungleichheit: Zur Gesellschaftlichen Dimension Der Energiewende in Deutschland Und Europa*. Springer Fachmedien Wiesbaden, Wiesbaden, pp. 79–100.

SUPERURBAN, 2018a. *Auswertung der Beitragsbewertungen aus der ersten Phase der Online-Beteiligung im Elbchaussee-Dialog* (Accessed: 20 April 2021).

SUPERURBAN, 2018b. *Protokoll der ersten Dialog-Veranstaltung zum Elbchaussee-Dialog*. 4.5.2018. Available at: https://lsbg.hamburg.de/contentblob/11078246/bae49b6643cbc9714f6734cfb5ae098c/data/elbchaussee-1-beteiligungsveranstaltung-protokoll.pdf (Accessed: 12 June 2023).

SUPERURBAN, 2018c. *Protokoll der zweiten Dialog-Veranstaltung zum Elbchaussee-Dialog (Planungsworkshop): 16.11.2018*. Available at: https://lsbg.hamburg.de/contentblob/11962206/a542330e65b0dd678ca85da791da125b/data/elbchaussee-2-dialogveranstaltung-protokoll.pdf (Accessed: 12 June 2023).

Sutcliffe, J.B., Cipkar, S., 2017. Citizen Participation in the Public Transportation Policy Process: A Comparison of Detroit, Michigan, and Hamilton, Ontario. *Canadian Journal of Urban Research* 26 (2), 33–51.

Touchton, M., Wampler, B., 2014. Improving Social Well-Being Through New Democratic Institutions. *Comparative Political Studies* 47 (10), 1442–1469. https://doi.org/10.1177/0010414013512601.

Universitätsstadt Marburg, 2023. MoVe 35 Mobilitäts- und Verkehrskonzept 2035 https://www.marburg.de/portal/seiten/move-35-marburg-bewegen-900002325-23001.html. Available at: Accessed: 2 April 2025.

van Tatenhove, J., Edelenbos, J., Klok, P.-J., 2010. Power and interactive policy-making: A comparative study of power and influence in 8 interactive projects in the Netherlands. *Public Administration* 88 (3), 609–626. https://doi.org/10.1111/j.1467-9299.2010.01829.x.

Walker, G., 2012. *Environmental justice: Concepts, evidence and politics*. Routledge, Abingdon, Oxon.

Walker, G., Day, R., 2012. Fuel poverty as injustice: Integrating distribution, recognition and procedure in the struggle for affordable warmth. *Energy Policy* 49, 69–75. https://doi.org/10.1016/j.enpol.2012.01.044.

Wu, H., Leung, S.-O., 2017. Can Likert Scales be Treated as Interval Scales?—A Simulation Study. *Journal of Social Service Research* 43 (4), 527–532. https://doi.org/10.1080/01488376.2017.1329775.

Yin, R.K., 2018. *Case study research and applications : design and methods*, 6th edn. Sage, Los Angeles.

Young, I.M., 1997. Deferring group representation. *Ethnicity and Group Rights* 39, 349–376.

Young, I.M., 2010. *Inclusion and democracy*. (Oxford political theory). Oxford University Press, Oxford.

Young, I.M., 2011. *Justice and the politics of difference*. Princeton University Press, Princeton and Oxford.