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Experts' perspectives on shared responsibility for speed management: A thematic analysis informed by systems thinking

Maria Eugenia Keller *, Barry Watson, Sherrie-Anne Kaye, Mark King, Ioni Lewis

Queensland University of Technology (QUT), Faculty of Health, School of Psychology and Counselling, MAIC-QUT Road Safety Research Collaboration, Australia

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ABSTRACT

Sharing responsibility for road safety is a key principle of the Safe System Approach, but little practical guidance has been provided on its implementation. This article utilises a systems thinking lens to explore how the concept of shared responsibility for speed management is understood and operationalised. The study was informed by thirty-three semi-structured interviews with road safety experts and practitioners from varied backgrounds, mostly from Sweden and Australia. A reflexive thematic analysis exploring perceptions around the concept of shared responsibility for speed management and associated emerging challenges was conducted, from which four themes were generated. The first of these themes suggested that responsibility in this context can be understood as being anchored in legal frameworks, in moral imperatives or as related to crash causality factors. The second theme gathered shared patterns of meaning around competing mindsets with very different explanations into how road safety results are delivered, with implications for effectively sharing responsibility for speed management. Theme three suggested that sharing responsibility for speed management can be enhanced by stakeholders' goal alignment. Finally, the fourth theme suggested the need to modify the speed management's governance framework, including reassessing the roles, responsibilities and accountability of stakeholders as well as the transparency of policy processes. This study suggests challenges may arise in some contexts in operationalising the concept of shared responsibility for speed management. Practical implications include developing practitioner guidelines providing conceptual clarity and tools to improve speed management governance and responsibility design, tying performance metrics to individual and collective responsibilities and enhancing transparency.

1. Introduction

The Safe System Approach to road safety is grounded in the principle of shared responsibility. This approach forms the foundation of the United Nations Global Plan for the Decade of Action for Road Safety (2021–2030) (WHO, 2021) and is strongly supported by thought-leading organisations (e.g., Bliss and Breen, 2009; OECD, 2016). Some recent evidence suggests this approach has been effective for improving road safety outcomes (Elvik, 2023; Elvik and Nævestad, 2023; Khan and Das, 2024). Under the shared responsibility principle, individuals are expected to act with care and follow traffic laws, but responsibility is also distributed among those who design, build, manage, and make decisions influencing the safety of the transport system (ITF, 2022). These stakeholders must work collaboratively to prevent road crashes that result in serious injuries or fatalities and to ensure effective post-crash care (OECD, 2016). The Safe System Approach, therefore, represents a departure from the traditional view that road users bear primary responsibility for their safety, and calls for distributing responsibility across the system.

Some explanations of the principle of shared responsibility found in the literature suggest that when safety problems persist, responsibility should shift back to system designers and policymakers. These actors are then expected to review their decisions and actions to ensure systemic safety (e.g., Vision Zero Network, 2018). This extension of the concept of shared responsibility is significant, as it prevents (at least in theory) responsibility from being ultimately placed on road users (Job et al., 2022). Instead, the responsibility is shifted upstream to those with the authority to influence systemic safety outcomes. Nonetheless, it is not common to see this extension being mentioned in the literature on the Safe System Approach (e.g., see Green et al., 2024; ITF, 2022:12), an

* Corresponding author at: Level 2, K-block, 130 Victoria Park Road, Kelvin Grove QLD 4059, Australia.
E-mail addresses: m2.keller@qut.edu.au (M.E. Keller), b.watson@qut.edu.au (B. Watson), s1.kaye@qut.edu.au (S.-A. Kaye), mark.king@qut.edu.au (M. King), i.lewis@qut.edu.au (I. Lewis).

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aspect also highlighted by Khan and Das (2024). This omission could potentially mean that it is an interpretation of the shared responsibility principle that has not been "officially" adopted, or that some disagreements exist around such extension.

The recommendations of the Academic Expert Group for the 4th Global Ministerial Conference on Road Safety included a call for jurisdictions to leave behind "*the tradition of blaming individuals for road deaths*", and instead adopt a new paradigm where organisations internalise road safety by adopting best possible prevention practices (Trafikverket, 2025, p. 7). This process of road safety internalisation can also be interpreted as a process of taking their own share of responsibility. Despite the relevance of internalising responsibility for road safety having been highlighted by experts, it has been acknowledged that the shared responsibility concept still remains one of the most challenging areas of the Safe System Approach (e.g., Fortin et al., 2018). Furthermore, it is not clear whether differences exist in how the concept of shared responsibility is understood and applied to specific road safety policy areas, such as speed management. In fact, speed management has been recognised as a policy area with significant potential for preventing road trauma (e.g., Job and Sakashita, 2016), and speed is acknowledged as the most critical factor to control for achieving improved road safety outcomes (Belin, 2021). Investigating practices, perceptions, and challenges regarding responsibility attribution within this specific policy area is therefore an important step towards advancing speed management.

Sharing responsibility for speed management requires a shift in the mindset of those involved in improving safety within the road system, as responsibility for (speed-related) road crash occurrence has traditionally been attributed to road users. It also entails moving away from traditional governance models, where policies are expected to be dictated solely by governments. Arguably, this innovative governance arrangement remains insufficiently studied and potentially may be being adopted by jurisdictions as part of a larger package (i.e., the Safe System Approach), at times without clear understanding. This situation is likely to bring about difficulties in putting the concept into practice. This research study aims to contribute to addressing this gap in the literature by studying how the concept of shared responsibility is perceived across stakeholders involved in speed management utilising systems thinking. This was achieved by exploring the perspectives of road safety experts and practitioners, mostly from Sweden and Australia.

1.1. Systems thinking

Systems thinking is a theoretical framework that focuses on the way systems operate in a dynamic and interactive manner. Individual behaviours are seen as shaped by systemic patterns through complex relationships and interactions. Systems thinking is meant to provide a way to see the world, a philosophy, together with concepts and tools (Monat and Gannon, 2015), which ultimately are meant to prepare "the thinker" to see both the forest (i.e., the system) and the tree (e.g., the individual) (Richmond, 1994).

Noteworthy is that systems thinking states from the outset that there is a need to deal with complexity. It challenges traditional mindsets by showing that, for some issues (i.e., systemic issues), reductionist ways of solving problems are unlikely to work. There is a need to go "up and out" instead of "down and in", by understanding how the system works, interacts with and is influenced by other systems (Dekker, 2011). This involves identifying the most important elements and interactions that give shape to the system under study, and only then reflect on how the system might be modified to avoid certain problems.

The adoption of a systems (thinking) approach to road safety is not new, but nevertheless is not mainstream within the road safety arena, even despite its increasing popularity in closely related disciplines such as public health (e.g., Carey et al., 2015; Johnson et al., 2019; WHO, 2009). Different authors have explored a systems thinking approach to road safety over the last decade (e.g., Lansdown et al., 2015; Newnam et al., 2017; Salmon et al., 2020). It has been suggested that systems thinking offers a robust theory and an approach that is thorough, systematic, and validated through practical application (Hughes et al., 2015). Contrastingly, the Safe System Approach has a strong semblance of systems thinking, due to it adopting similar terminology, but it lacks most of its theoretical basis (Salmon et al., 2012; Young and Salmon, 2015). In the literature, there is an acknowledgement that the Safe Systems Approach is still evolving (Elvik and Nævestad, 2023; ITF, 2022; Job et al., 2022).

The critical question that emerges is whether systems thinking can offer an innovative platform for advancing road safety, enabling new approaches within the road transport system, particularly concerning speed management policies. Equally compelling is the consideration of whether systems thinking might reinforce the Safe System Approach, facilitating its evolution into a more practical, refined, and effective form.

1.2. Current research study

As discussed above, the literature has acknowledged that speed is a unique factor within road safety that, if correctly managed, can greatly contribute to prevention of road trauma (Job and Sakashita, 2016). At the same time, a growing number of researchers advocate for a broader adoption of a systems thinking approach to road safety, as opposed to the prevailing traditional reductionist approach (Hughes et al., 2015; Salmon and Lenné, 2015). Despite this, speed management is still an unexplored topic within the systems thinking literature devoted to road safety. This study contributes to bridging this research gap by exploring experts' opinions around the concept of shared responsibility for speed management and associated emerging challenges utilising a systems thinking perspective. The research questions identified were:

Research Question 1: How is the concept of shared responsibility for speed management understood and operationalised in practice?

Research Question 2: What are some of the challenges of implementing a "shared responsibility" for speed management?

2. Method

2.1. Study design

This study followed an inductive qualitative design which was informed by the systems thinking literature. Qualitative research seeks to understand how individuals make sense of their experiences (Denzin et al., 2023). The study adopts a relativist ontology, which conceptualises reality as a subjective construct (Moon and Blackman, 2014), and a social constructivist epistemology, where knowledge is shaped through dynamic social interactions (Adams, 2006; Kim, 2001). From this perspective, context is considered crucial, shaping shared social constructions of meaning alongside individual perceptions and positions. It should be noted that reflexive thematic analysis, the method selected for data analysis (explained in Section 2.4.1), is methodologically congruent with the study's overall design.

2.2. Materials, procedures and data collection

A semi-structured interview guide was developed by the first author based on current knowledge as reported in the literature, which was subsequently reviewed and revised in collaboration with the research team. The final version comprised 13 questions focusing on key actors, governance arrangements, and tools utilised to foster collaboration across the board, with a particular emphasis on speed management. The interviews formed part of a broader study on speed management policies and practices, governance arrangements, innovation and challenges and barriers; however, the present paper focuses specifically on issues related to shared responsibility in the context of speed management. Additional topics on policy management systems were explored during

the interview, however related findings are not reported in this paper. Example questions included, 'Who has the final responsibility or accountability for reducing speed related crashes in your jurisdiction?', and 'To what extent is shared responsibility for speed management a reality in your jurisdiction?', as well as other questions related to speed management initiatives and actors involved.

Interviews were conducted by the first author, who encouraged participants to talk about sharing responsibility for speed management. The semi-structured format enabled in-depth conversations, allowing participants to articulate their views using their own language and framings. This flexibility was particularly valuable for unpacking perceptions around the concept of responsibility as applied in practice in the field of speed management. Seven interviews were conducted in person, three responses to the questions were submitted in written form by email, and 23 were held virtually. All interviews were conducted in English. Participants were provided with an information sheet outlining the project and a list of questions in advance. Informed consent was obtained in both written and verbal form prior to the interviews. The project received ethical approval from the QUT Ethics Committee (Approval number: 7155).

2.3. Participants and recruitment

The primary data source for this study consisted of 33 interviews with road safety practitioners and expert informants possessing in-depth knowledge of road safety and speed management systems, particularly in Sweden (n = 8) and Australia (n = 23), and within the latter jurisdiction, there was a focus on the state of Queensland. Five interviewees provided additional international perspectives, given the global scope of their work, and one offered a local perspective from a leading European city.[1] Additionally, five follow-up interviews were conducted (three face-to-face, two in writing) to clarify specific extracts or explore certain statements in greater depth. It should be noted that 14 other potential interviewees were contacted during recruitment, but either declined the invitation (1), did not respond to the invitation and reminder emails (10), or could not arrange a suitable interview time (3).

Participants were initially contacted via e-mail. Eligibility required participants to (a) be professionals, advocates, or experts actively involved in road safety, (b) have direct knowledge of governance arrangements, actors, policies, and strategies related to speed management within their jurisdiction, and (c) be able to converse in English. Interviews were conducted between June 2023 and August 2024, averaging approximately 56 min in duration (ranging from 42 to 100 min). While some interviewees spoke officially as organisational representatives, most participated as subject matter experts.

Participants were purposively selected to capture key informants' perspectives that reflect a diversity of institutional roles and experiential standpoints relevant to speed management. Purposeful sampling allows the selection of information-rich cases from which the researcher will be able to learn in-depth about the matter at hand (Patton, 2015). Recruitment was carried out through academic and policy networks, referrals, and direct engagement at the 2023 Vision Zero Conference and during a post-conference workshop on speed management practices in Sweden and Australia. Recognising the broad range of actors involved in road safety, efforts were made to include participants from diverse backgrounds, organisations, and sectors. The final sample consisted of 12 female and 21 male participants, comprising engineers, decision-makers, senior bureaucrats, grassroots practitioners, police representatives, economists, consultants, designers, urban and transport planners, and researchers. These participants had direct experience in academia (n = 6), local government (n = 4), other levels of government (n = 10), non-governmental organisations (n = 7), and the private sector (n = 7). The adequacy of the sample size was continuously evaluated throughout the research process, particularly during the data analysis stage, which took place concurrently with data collection. Participants contributed to identifying relevant stakeholders we had not initially planned to interview. This enabled us to remain flexible in the number and nature of interviewees we spoke with yet purposeful in our approach, aiming to capture a broad range of diverse viewpoints, thus aligning with recommended qualitative research practices concerning emergent sampling (Patton, 2015). The final sample was determined by considering the richness, depth, diversity, and complexity of the collected data, alongside its relevance to the study objectives and coherence with established qualitative methodologies (Malterud et al., 2016). It should be noted that data saturation is not considered to be consistent with the values and assumptions underlying reflexive thematic analysis (RTA), because RTA is grounded on the notion of knowledge generation as an open-ended, interpretative process shaped by researcher subjectivity, where there is always the potential for new insights, making the idea of a fixed endpoint like saturation theoretically incompatible (Braun and Clarke, 2021b, 2022; Braun and Clarke, 2024a).

2.4. Data analysis

2.4.1. Reflexive thematic analysis

Given that the specific features of RTA may not be widely known, this section provides a brief introduction to the method. Different (at times conflicting) approaches to data analysis coexist under the broad and evolving umbrella of 'Thematic Analysis' (TA) (Braun and Clarke, 2021a:330). This study adopts RTA, a distinct approach within that diverse landscape.

While TA approaches share a focus on 'capturing patterns in data' (Braun and Clarke, 2021a:333), RTA stands out by treating researcher subjectivity as a resource rather than a limitation. It promotes reflexive engagement with theory, data, and interpretation, valuing reflexivity, creativity, and subjectivity throughout the knowledge production process (Braun and Clarke, 2021a, 2022, 2023; Byrne, 2022). RTA is thus defined as a purely qualitative approach that departs from positivist assumptions, aligning instead with qualitative, 'Big Q' paradigms (Byrne, 2022). Other TA approaches do not share this philosophical grounding or emphasis.[2]

RTA is typically articulated into six flexible, non-linear but iterative steps: 1) data familiarisation and taking researchers' notes; 2) systematic data coding; 3) preliminary theme identification; 4) theme development and review; 5) theme refinement and name assignment; and 6) report writing (Braun and Clarke, 2021a). However, as various methodological publications stress, good-quality RTA (and arguably any qualitative research) involves more than simply following a procedure: it demands that researchers articulate a clear epistemological, ontological, and philosophical stance, while engaging in ongoing reflexivity and ensuring transparent reporting (Braun and Clarke, 2019:591; Braun and Clarke, 2024b; Gough and Madill, 2012).

2.4.2. Analytic procedure

Interviews were conducted and transcribed by the first author and deidentified prior to analysis. A preliminary open coding was conducted by the first author to familiarise herself with the data and to build a preliminary understanding of its content. NVivo 12 software was utilised for this first step.

[1] Although the recruitment process primarily aimed to gather perspectives from Swedish, Australian, and global experts, one interviewee from a local government in a Nordic European jurisdiction outside the targeted regions was also included. This interview was retained in the analysis both in recognition of the time and effort contributed by the participant and due to the relevance and alignment of their insights with those provided by other interviewees.

[2] See Braun & Clarke, 2024a for an explanation of the different approaches to TA.

A RTA of the complete data corpus (n = 33) was undertaken following the steps pragmatically outlined by Braun and Clarke (2006), but adhering to the authors' contemporary approach to the method (Braun and Clarke, 2019, 2021a, 2022, 2023). First, the researcher in charge of the analysis (M.E.K) familiarised herself with the data by reading and re-reading transcripts to gain initial insights and make research notes. Key features of the data were then systematically identified and coded. These codes were grouped into broader themes that captured patterns of meaning across the dataset. The themes were iteratively reviewed for coherence and relevance, ensuring they accurately represented the data. Each theme was then clearly defined and named, reflecting its essence and alignment with the research objectives. Finally, a detailed narrative was produced, integrating the themes with illustrative data extracts to present the findings in a coherent and meaningful way. This process enabled a systematic but flexible exploration of participants' perspectives while addressing the study's research questions. While analysis was primarily led by the first author, regular team consultations were conducted to review criteria, address challenges, and discuss preliminary findings. Furthermore, coded data and working documents were reviewed by the team for consistency. The analysis relied on text editors and spreadsheets rather than specialised software, which were deemed sufficient for the research objectives.

3. Results

The analysis generated four broad themes: (1) 'Conceptualizations around (shared) responsibility in speed management vary'; (2) 'Mindsets shape understandings of shared responsibility in speed management'; (3) 'Shared responsibility for speed management is enhanced by the alignment of stakeholder goals'; and (4) 'The need to reassess the governance of speed management in relation to stakeholders' accountability, roles, responsibilities, and the transparency of policy processes'. The four themes identified revolved around how the concept of shared responsibility for speed management is understood and framed, its importance for achieving improved road safety outcomes, and how it is interpreted as being instrumental or as a challenge for practical policy implementation. A thematic map is presented in Fig. 1, providing a visual summary of themes, subthemes, and their relationships.

In addition to the visual summary, the online supplement provides the results of a mapping exercise to demonstrate how each theme and subtheme anchors to the data, in which each interview transcript was assigned with a numerical ID, to protect participants' identity. This mapping exercise was undertaken with the aim of strengthening the transparency and trustworthiness supporting the current study and is not meant to be a quantitative measure of relevance of the topics being

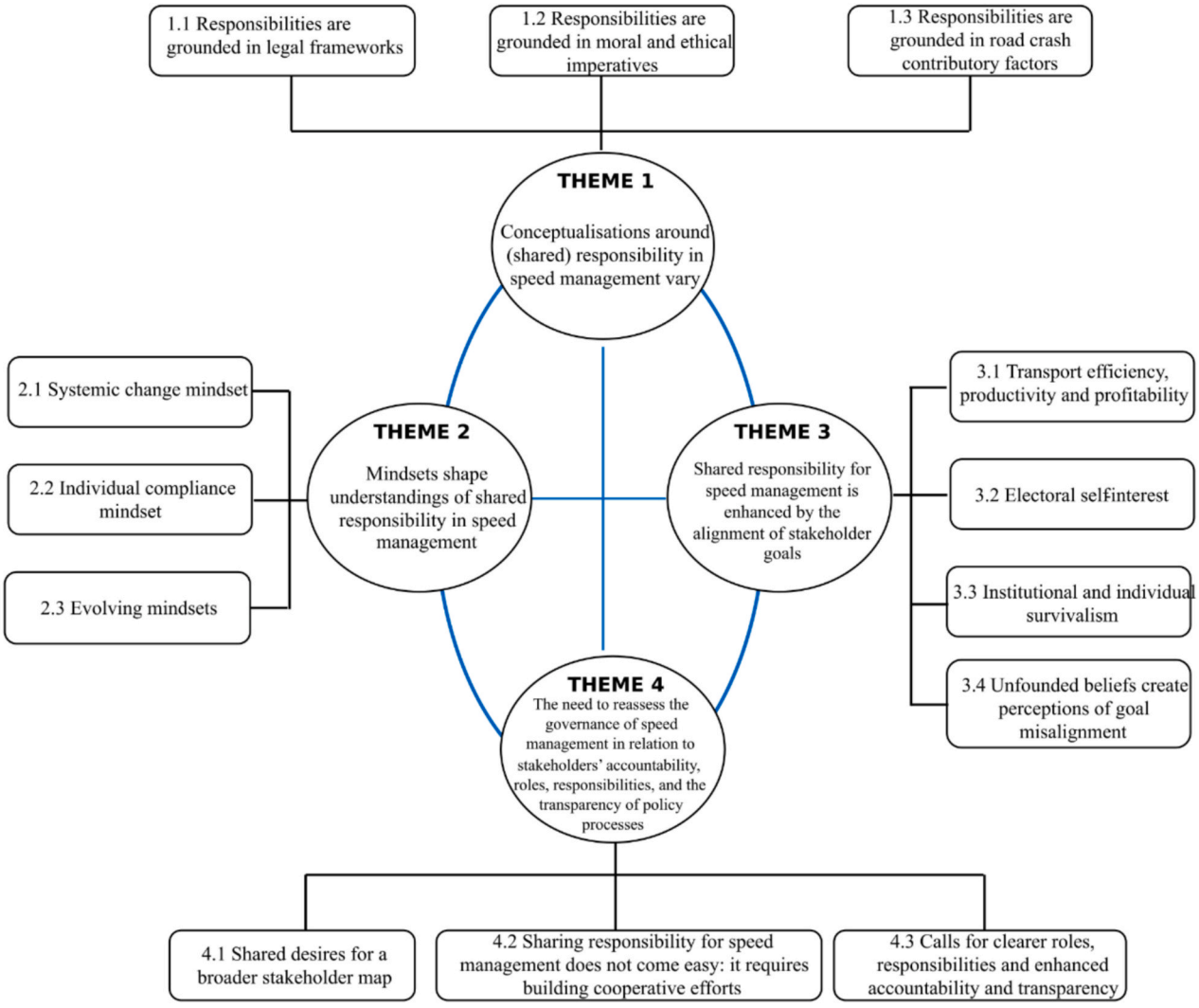

Fig. 1. Keller, M.E., Watson, B., Kaye, S.-A., King, M., Lewis, I., 2025. A thematic map of sharing responsibility for speed management. CC BY 4.0. https://doi.org/10.6084/m9.figshare.29095799.

presented (Braun and Clarke, 2022, 2023).

It should be highlighted that although participants were reminded during interviews and through question framing that the research specifically targeted issues around how speed management policies and practices are managed, the inherent overlap between speed management and broader road safety policies at times created ambiguity in some narratives. The lack of a clear distinction between speed management countermeasures and general road safety practices meant it was occasionally uncertain whether participants referred specifically to speed management or to the wider context of road safety, though potentially their comments likely applied to both domains. Where possible, preference was given to quotes in which participants explicitly addressed issues of responsibility for speed management, rather than those framed more generally. When a participant's statement was paraphrased and integrated into the narrative, the sector they represent was included whenever possible if by doing so, anonymity was preserved.

3.1. Theme 1: Conceptualisations around (shared) responsibility in speed management vary

Participants were interviewed about their perceptions of shared responsibility for speed management, without being provided an explicit definition of the term "responsibility". Within this theme, the various understandings and connotations participants attributed to the term are captured, including responsibilities as being grounded in legal frameworks (Subtheme 1.1), in moral and ethical imperatives (Subtheme 1.2) and in crash contributory factors (Subtheme 1.3).

Subtheme 1.1: Responsibilities are grounded in legal frameworks.

Several participants described responsibility for speed management as being fundamentally linked to institutional roles grounded on existing legislative and regulatory frameworks. Different interviewees explicitly tied responsibilities to the institutional obligations established in laws and policies, frequently emphasising that road authorities bear ultimate responsibility for speed management:

> "*Ultimately,* [state road authorities] *are legislatively responsible for the safety of their own network*" (Australian federal organisation representative)

In this context, the centrality of speed limit setting capabilities within speed management was highlighted by multiple interviewees, including both the processes for determining appropriate limits, the periodic review of existing ones, and the regulation of road design and operations to prevent speed-related crashes.

Some participants emphasised that state and/or federal road authorities (depending on jurisdictional arrangements) hold greater responsibilities for speed management than local governments, as established by legal frameworks:

> "*The local government is a creature of the state government. The state government can pass a law or a framework that the council would have to follow*" (Active mobility activist, Australia)

For instance, higher-level authorities develop speed-management guidelines, laws and regulations that local governments need to follow. Despite this central role, participants also noted other stakeholders, such as the police, hold significant speed management responsibilities beyond those of road authorities. Improved speed management outcomes were described as contingent upon these additional stakeholders effectively fulfilling their roles. The dynamic between legislation and implementation was sometimes described as strained, highlighting difficulties in translating regulations into effective real-world practices. While laws provide a framework for roles and responsibilities, participants argued that practical implementation often relies on factors such as political will and community buy-in.

Subtheme 1.2: Responsibilities are grounded in moral and ethical imperatives.

This subtheme captures the belief expressed by some participants that responsibility for speed management was a moral or ethical imperative, over and above formal legislative obligations. These participants positioned a wide range of stakeholders as moral agents with inherent obligations to improve speed management outcomes. Politicians and decision-makers were particularly identified as being morally responsible for their decisions, due to their decisive influence in implementing or hindering evidence-based measures and hence in advancing this policy area according to some interviewees:

> [Speaking about political decisions that set back speed management progress] "*…where's the morality of the decision? But this is the sort of thing you see politicians doing routinely"* (Global road safety expert)

Similarly, moral responsibility was attributed to industry stakeholders, including vehicle manufacturers and transport operators, although some interviewees acknowledged these actors typically require additional incentives (particularly commercial ones) to fully engage in their responsibilities.

Additionally, a few participants framed road users and the wider community as being morally accountable, highlighting individuals' ethical duties towards personal and collective safety, including protecting themselves and others:

> *"*[Road users] *all make individual decisions, whether they're thinking their individual decisions related to the safety of someone else… that's in my mind is where that would be a really shared responsibility-type culture"* (Road authority representative, Australia)

Society as a whole was also described as morally responsible for shaping decision-makers' priorities through collective attitudes, values, accountability claims, support and acceptance of road safety measures.

It should be noted that among participants who described responsibilities as morally grounded, most expressed that these responsibilities were often not fulfilled, either explicitly or by framing them as aspirational rather than actual.

Subtheme 1.3: Responsibilities are grounded in road crash contributory factors

This subtheme captures the idea that responsibilities for speed management are closely related to road crash contributory factors. Participants reporting this view articulated that responsibility for preventing speed-related crashes ultimately depends on what factors contribute to crash occurrence, and who "owns" such factors, in the sense of controlling or having an influence on them. For instance, an Australian academic noted that fleet managers might know drivers are speeding through in-vehicle monitoring systems, which could provide the basis for holding drivers responsible. However, this participant suggested that responsibility would be shared with the company if it pressures drivers with tight delivery schedules, thereby increasing their crash risk. In a similar vein, another interviewee emphasised that road users are usually responsible, given their significant contribution to crash occurrence:

> "*Yeah, I think drivers held responsibility. Sometimes I do see things, the majority of them make the responsibility of the drivers as well* (…) *Yeah, it's just drivers, I would say the majority, maybe drivers-related*" (Local government representative, Australia)

3.2. Theme 2: Mindsets shape understandings of shared responsibility in speed management

Theme 2 captures participants' diverse worldviews on how road safety is enhanced, including the role attributed to speed management policies within this process. Participants mostly described this process from a systemic change (Subtheme 2.1) or an individual compliance mindset (Subtheme 2.2) yet acknowledged the evolving nature of these mindsets (Subtheme 2.3). These broad perspectives shape shared

patterns of meaning regarding responsibility and governance in speed management, particularly regarding stakeholder interactions and the mechanisms by which safety outcomes are achieved collectively.

Subtheme 2.1: Systemic change mindset.

This subtheme reflects a shared understanding that road safety improvements are achievable through transformative changes to the entire system. The mindset emphasises addressing systemic problems with systemic solutions, acknowledging the interconnectedness of system elements, promoting shifts in prevailing systemic dynamics (e.g., social norms), and engaging key stakeholders.

A core idea expressed by some interviewees was that greater influence over the system entails increased responsibility. Stakeholder salience depends on their ability to drive systemic change, typically directed upwards in organisational hierarchies. For instance, within private organisations, leaders such as CEOs bear greater responsibility than employees:

> "*It's leadership in the companies that have the ultimate responsibility… The driver is just part of the chain of command, but if the company says, 'you need to be there at two o'clock', then leadership is the key here*" (Professional association representative, Sweden)

Similarly, political leaders and decision-makers were perceived by some interviewees as being primarily responsible due to their influence over systemic outcomes like road safety. However, participants noted that elected officials represent citizens who often lack a clear understanding of traffic-speed risks, highlighting the critical role of experts and government policy advisors in progressing speed management policies.

Road authorities were portrayed as central to speed management efforts due to their coordinating role and broad responsibilities regarding infrastructure, vehicle safety features, and road users. A widely shared belief among systemic-change mindset participants was that road authorities bear ultimate accountability for achieving improved road safety outcomes, due to their privileged position for driving systemic change. While individual road users were described as expected to comply with road rules, participants acknowledged their behaviour, particularly speed choice, is heavily influenced by external factors. For instance, one Swedish consultant explained that compliance with 30 km/h speed limits needs to be reinforced by vehicle technologies, as perceptual cues might otherwise encourage faster driving. Influential factors were described as controlled to some extent by system providers, causing responsibility to revert back to them when compliance issues arise.

Some of the participants with a systemic-change mindset also emphasised the role of social norms, understood as system-level behaviours that exert a strong influence on traffic speeds. They viewed "going upstream" as a policy opportunity for influencing these norms which could help achieve significant benefits by focusing at a corporate rather than individual level:

> "*It will take 5 min to call the five CEOs of the taxi companies here in Stockholm, and say, you know… 'how many hours do you need to slow your culture down?'. And they will say: 'Not hours, but a few days'*" (Road safety consultant, Sweden)

In other words, these participants argued that rather than trying to change behaviour by influencing each and every single individual, it would be more effective (and potentially would result in a much larger effect) if there was a lever to exert influence over a large group of road users. Such a lever, as noted by these participants, would be the leaders in organisations who are responsible for the safety of the people they employ, but also for that of third parties. This idea reflected the social nature of traffic (as opposed to individual) that interviewees tried to convey.

Some interviewees further highlighted the interdependency of stakeholders' roles and responsibilities, reflecting the complexity and interconnectedness of speed management elements. Risks associated with speed depend heavily on infrastructure, vehicle, and road-user interactions. These participants emphasised no single stakeholder can independently achieve effective speed-management outcomes. Instead, comprehensive governance networks grounded in cooperation were seen as essential. Clearly defined and aligned stakeholder roles were viewed as critical for preventing speed-related crashes; hence, sharing responsibility requires attention to how these roles collectively function:

> "*I've sort of spoken about the importance of all the stakeholders. One can't work without the other. Now, there's no doubt that those people that are enforcing this program have a role, but the road manager also have a role. It's no good building the best road and then putting in place a 60-kilometre limit when in fact it's designed, constructed and can absorb speed limits of 100*" (Retired practitioner, Australia)

Swedish participants predominantly viewed road safety through a systemic change lens, whereas perspectives within the Australian subsample were more varied.

Subtheme 2.2: Individual compliance mindset.

This subtheme gathers participants' ideas reflecting an individual compliance mindset, viewing road safety as an outcome achieved primarily through improving compliance with traffic regulations and framing it predominantly as a behavioural issue. From this perspective, the role of particular stakeholders becomes more salient, such as road authorities responsible for speed limit setting and police for enforcing these limits. Within speed management, the focus is on increasing speed limit compliance through enforcement, awareness raising, and ensuring credible and consistent speed limits.

Speed limit setting authority was seen by participants as central, particularly regarding its contribution to achieving high compliance levels. Road authorities were thus depicted as safeguarding the credibility and consistency of speed limits. Yet, interviewees noted authorities face a difficult trade-off between safety, credibility, and consistency, potentially hindering their ability to simultaneously meet these objectives at the same time. For their part, stakeholders contributing to education and behavioural-change activities were also depicted as playing a key role in speed management. Some participants highlighted shared responsibilities among stakeholders for road-user education. However, positively influencing road-user speed-related behaviour through education was recognised as challenging:

> "*Everyone says it's an education point of view, but we've tried education with the community to try and understand* [speed] *risk, and that's not sticking clearly because this is just an ongoing issue*" (Industry representative, Australia)

Within this mindset, road users were described as expected to play an active role in speed management by internalising the importance of road rule compliance and becoming more mindful of the risks associated with speeding. While some participants highlighted the importance of road users' cooperation for achieving road safety goals, some others went further. These participants expressed that individual drivers hold ultimate responsibility for their speed choices and, consequently, for the prevention of speed-related crashes, a perspective that arguably is not aligned with the principles of the Safe System Approach:

> "*The ultimate responsibility for speed is the person driving, and everything else is …we're just trying to influence their decision*" (Consultant, Australia)

Those participants holding an individual compliance mindset generally found it difficult to identify a specific institution or group of people (such as drivers) that should be held accountable for preventing speed-related crashes. Instead, they tended to emphasise the fact that the responsibility for speed-related crashes, as well as for road safety, is broadly shared among stakeholders:

> "*I don't think there's a final responsibility for speed-related crashes. Because you could argue, on one hand, that it's the individual*

responsibility to adhere to speed limits, for example. So, reducing speed-related crashes is a collective responsibility" (Road authority representative, Australia)

The responses of several Australian interviewees reflected this individual compliance mindset, in some cases possibly influenced by their involvement in behaviour-change initiatives.

Subtheme 2.3: Evolving mindsets.

This subtheme captured participant responses that suggested that the mindsets described in subthemes 2.1 and 2.2 were not fixed but evolving over time and across contexts. For instance, the responses of some Australian participants suggest that an individual compliance mindset coexists and sometimes conflicts with critical voices advocating systemic change, suggesting evolving perspectives. Some Australian interviewees critiqued the current behavioural intervention emphasis, advocating a broader focus on systemic issues, including speed-limit appropriateness. Tensions arising from conflicting mindsets were reported by an Australian participant involved in city council road safety discussions. This participant expressed shock when during a stakeholder meeting they were in, another stakeholder with an individual compliance mindset attributed responsibility to a mobility scooter user fatally injured in a crash, disregarding systemic issues such as inadequate infrastructure. Participants with a systemic change worldview perceived an excessive fixation on behavioural issues as problematic for responsibility allocation for speed management, placing ultimate responsibility on road users for compliance failures:

"*I think the responsibility is still being put on the road user, the majority of the time, especially in speed management. I still think authorities would expect to set the speed limit and then just expect compliance from the road user*" (Consultant, Australia)

In Sweden, where a systemic change mindset seems to be more broadly shared across different participants' testimonies, evolution over time was also noted. Shifts in stakeholder attitudes were highlighted in different narratives, such as the automobile industry currently advocating for lower speed limits to ensure the effectiveness of their vehicles' safety features, a previously unthinkable position according to a Swedish road safety advisor. The growing acknowledgment of the private sector's role in preventing speed-related crashes was identified as reshaping conceptions and distributions of responsibility. However, Swedish participants also described that different worldviews still coexist within this context. For instance, a Swedish consultant explained how they perceived the judicial system, including stakeholders such as the police, prosecutors and courts, among others, as still predominantly holding a mindset very much focused on individual compliance, instead of looking at more systemic ways of influencing safety outcomes such as corporative compliance.

3.3. Theme 3: Shared responsibility for speed management is enhanced by the alignment of stakeholder goals

This theme captures participants' views on how stakeholders' goal alignment affects fulfilling speed management responsibilities. According to participants, when objectives align with speed management needs, collaboration tends to improve, which enhances overall progress. Conversely, they noted that misaligned goals often create friction, hinder cooperation, and weaken both commitment and a sense of shared responsibility. Economic, productivity, and efficiency concerns (Subtheme 3.1), electoral self-interests (Subtheme 3.2), and survivalist motivations (Subtheme 3.3) were identified as barriers and/or enablers of alignment. Participants also noted that friction sometimes arises from unfounded beliefs that certain speed management policies conflict with their goals (Subtheme 3.4).

Subtheme 3.1: Transport efficiency, productivity and profitability.

This subtheme captures interviewees' perspectives on how stakeholders' alignment or misalignment with speed management policies is influenced by motivations related to transport efficiency, productivity, and profitability. Several interviewees noted stakeholders often equate lower speeds with inefficiency and reduced economic productivity and profitability, key goals for many organisations. This perception was framed as hindering progress in implementing effective speed management measures. Institutions described as adopting this stance include societal groups, the corporate sector, and road authorities.

Road authorities were described as having to fulfill multiple goals, which at times might create conflict:

"*We can't just tell the road authority, you're responsible for this, and then walk away. Because we've made them also responsible for other things. And there's a conflict there. So, they cannot adequately carry out their responsibility*" (Federal government agency representative, Australia)

The tension between prioritising transport efficiency while guaranteeing safety was described as creating conflicts of interest for these agencies, potentially obstructing speed management progress. Public opinion on transport efficiency was highlighted as playing a significant role, manifesting as resistance or "community backlash":

"*Road that we lowered from 90 to 80 had to increase to 90 again… Especially local politicians, but the public also was very much against it*" (Road safety advisor, Sweden)

This was mentioned to occur selectively in remote areas in Sweden while, in Queensland, it was also described in urban areas, particularly when reduced speed limits affect "someone else's road". Some participants noted companies reliant on road transport for supply chains or market access might at times prioritise operational efficiency and profitability over safety. One Australian participant working in academia described road safety initiatives as having been degraded during financial hardship, as some companies view longer travel times as threats to objectives, hindering internal safety cultures and fleet management practices. Market pressures (e.g., expecting fresh produce every day at the market) were described as contributing to this issue. Another interviewee representing a Swedish professional association explained that sustainable and safe transport services are costlier, creating tension when market competition prioritises short-term profitability. This participant also stressed that consumers play a role by demanding sustainable products that are backed up by sustainable transport chains, while companies with sustainability claims need to make sure they are relying on transportation services that are socially responsible.

Some stakeholders' pursuit of economic benefits can align with speed-related crash prevention, as some interviewees noted, but sometimes there needs to be an external incentive to help the private sector realise these benefits:

"*You've probably heard about this action in Sweden… in the first round they got ten companies involved to voluntarily limit the speed of their trucks, to follow the speed limits. It was led by the Trafikverket* [i.e., the Swedish Transport Administration]. *They also realised that they save fuel, so they both save money and it's safer*" (Road safety expert, Sweden)

In the corporate sector, road safety incidents were highlighted as a major economic concern, while lower speeds can also reduce fuel costs. Companies (or at least many of them) were described by some participants as improving road safety policies, procedures, and fleet management, though progress varies, and challenges remain.

Subtheme 3.2: Electoral self-interest.

This subtheme captures interviewees' opinions on how political interests can block or enhance speed management progress. Interviewees from Sweden and Australia highlighted that speed management often becomes a political issue. Politicians and political parties were described as sometimes adopting positions contrary to evidence, obstructing speed management and road trauma prevention advancements:

"*Nobody wins elections for reducing speeds on roads*" (Road safety advisor, Sweden).

Such behaviour was attributed to politicians' fear of community backlash, a perceived threat to remaining in power (See Subtheme 3.1), or just a strategic and deliberate vote-buying move. Some ideological political positions, in particular liberalism and right-wing parties, were framed by some interviewees as also being utilised as dogmatic justifications for blocking speed management progress or even undoing it.

Some participants noted politicians often face few consequences for impeding policy progress due to insufficient checks and balances or accountability mechanisms. Furthermore, the introduction of the concept of shared responsibility in the field of road safety was mentioned by a few Australian interviewees as facilitating these powerful interests by sustaining a status quo in which no one holds the final responsibility for preventing fatalities and serious injuries on the road:

"*From my perspective, the concept of shared responsibility provides an opportunity for those to hide from responsibility*" (Interest group representative, Australia)

Yet, political motivations (community backlash, vote-buying, and ideology) were also described as supportive of speed management by some interviewees. Politicians endorsing active mobility, urban liveability, or environmental values were more positively aligned with speed management policies in Queensland. In Sweden, environmental and liveability concerns were described as particularly influential in urban areas, fostering political support.

Subtheme 3.3: Institutional and individual survivalism.

This subtheme captures participants' views on how organisations and individuals prioritise their survival, ensuring their continued presence in institutions or markets. While subthemes 3.1 and 3.2 also express some different forms of survivalism, subtheme 3.3 gathers additional motivations not previously captured.

Several interviewees identified survivalism as key in supporting or hindering speed management and responsibility fulfilment. Some participants described government officials, managers, and technical bureaucrats as compensated for "not rocking the boat":

"*You get compensated in the government service for not rocking the boat. People might get moved into the road safety space, just make sure everything's okay, then move on to the next position, so why would you look at things in a very, very different way?*" (Consultant, Australia)

Preserving the status quo and not challenging current policy delivery frameworks, even when there is abundant scientific evidence for doing so, was perceived to enhance career advancement or institutional survival. Speed management was described as particularly vulnerable due to its political sensitivity. The idea of strong political interests influencing the goals and behaviour of bureaucrats and policy advisors was also described as affecting the capacity of this important stakeholder to drive change and introduce innovations. Regarding research funding, one participant stated that academics and research organisations sometimes avoid criticising funders, highlighting how institutional survivalism may restrict scientists' work scope. Institutional survivalism motivations were hence primarily described as obstructing speed management progress.

However, for some stakeholders, institutional and individual survivalism translated into an opposite effect, as standing out could yield recognition as leaders. Participants emphasised the importance of courageous and passionate individuals and teams advocating for change within road safety. Nonetheless, some interviewees expressed that opportunities for leadership for these individuals occurred "one out of a million times", suggesting the system rarely rewards such behaviour.

Subtheme 3.4: Unfounded beliefs create perceptions of goal misalignment.

This subtheme captures shared patterns of meaning illustrating how misunderstandings, myths, and unfounded beliefs create barriers to stakeholder alignment and cooperation in speed management. Interviewees noted that resistance to initiatives often arises not from actual goal conflicts but from these misconceptions, hindering progress in advancing speed management policies.

One common misconception concerned the perceived impact of reduced speed limits on transport efficiency. Some participants highlighted that this belief often lacks a solid scientific basis and blocks the potential benefits of lower speeds from being released. One Swedish advisor mentioned bus companies rarely recognising advantages of lower urban speeds, which could otherwise enhance public transport attractiveness. Similarly, an Australian practitioner provided an example where speed management measures implemented during a major sports event were reversed due to public pressure, despite evidence demonstrating no negative impact on efficiency or travel times and significant safety benefits.

Some other interviewees highlighted individual perceptions as causing an imbalanced appreciation of travel time savings and safety. Regular experiences of delays contrast with rare exposure to crashes, resulting in prioritisation of travel time savings over safety benefits. Some interviewees suggested that many of these public misconceptions are based on a lack of compelling explanations to the community:

"*I think there is a lot of community support for speed limit reductions and changes, when you explain to the community very clearly why it's needed, how it's needed, and how it would affect their safety*" (Consultant, Australia)

Their reflections are connected also to another misconception reported by some other participants: the belief that there is insufficient public support for reduced speed limits and better speed management. These interviewees claimed community support is likely stronger than commonly assumed, describing supporters as a "silent majority" often overlooked by decision-makers:

"*Sometimes, it's a rather small group that is shouting high*" (Academic, Sweden).

A few participants called for systematic measurement of public support for speed management to capture this perspective accurately.

The overall economic impact of speed limit changes was highlighted as another topic that is generally misunderstood, not well addressed by current policy briefs, and not sufficiently well advocated for. For instance, one Australian academic suggested that concerns about increased travel time are derived from oversimplistic reasoning, while benefits such as lower vehicle costs, reduced emissions, and fewer road trauma incidents are overlooked. Properly accounting for these factors could shift the balance in favour of lower speed limits, according to this participant.

3.4. Theme 4: The need to reassess the governance of speed management in relation to stakeholders' accountability, roles, responsibilities, and the transparency of policy processes

This theme encompasses a range of perspectives shared by participants, reflecting the notion of an evolving governance framework for speed management. Discussions focused on claims for expanding the current stakeholder map (Subtheme 4.1), on efforts to ensure stakeholders take responsibility for improving speed management (Subtheme 4.2), and claims for revisiting and improving the allocation of responsibilities, strengthening accountability mechanisms, and increasing transparency in managing this critical policy issue (Subtheme 4.3).

Subtheme 4.1: Shared desires for a broader stakeholder map.

This subtheme captures participants' narratives regarding the need to build a larger network of stakeholders to advance speed management policies. Some stakeholders, potentially influential in progressing speed management, were described by some participants as being excluded

from policy discussions and decision-making processes. Some participants highlighted that this lack of wider stakeholder engagement limits opportunities to enhance speed management initiatives, possibly due to limited awareness of potential stakeholders who could meaningfully contribute:

> "*We don't know who our stakeholders are. We're missing significant opportunities in this space because of that lack of engagement, and just lack of recognising this is a big problem, and it needs to have the resource to push along*" (Consultant, Australia)

Speed management was recognised by many interviewees as intersecting with broader stakeholder interests not always seen as relevant to this policy area, including those of transportation companies, the corporate sector broadly, organisations focused on child and youth health, environmental and sustainability activists, public health institutions, NGOs, and civil society organisations.

Health advocates and active travel activists were highlighted for their potential alignment with speed management by some participants, particularly because reduced speeds support increased walking and cycling, activities associated with considerable health benefits. Local schools were emphasised as crucial stakeholders, with parent and citizen associations being potential advocates for safer, slower speeds and alternative transportation modes. Some other participants also described organisations interested in climate change and CO2 emissions as relevant, as linking speed management to emission reductions could garner wider stakeholder support beyond road safety alone.

Some participants further noted that certain actors were actively attempting to be recognised as legitimate stakeholders but encountered barriers in gaining acknowledgment and influence. For example, companies were described as being active in this area within the Australian context, but some participants did not perceive there were significant engagement efforts currently taking place with this stakeholder:

> "*I don't see much evidence that there is any serious collaboration* [between public organisations and the private sector]. *I don't see many examples of government bodies doing more than holding a stakeholder session and inviting volume people*" (Federal government representative, Australia)

Similarly, active mobility activists who were part of this study expressed feeling marginalised from having a say in the speed management decision-making process. One participant indicated that although some councils engaged in discussions on vulnerable road user safety and related policies, including speed management, others remained "completely neglectful". This participant also noted that no vulnerable road user representatives participated in Queensland's local Speed Management Committees, whereas motorised road user interest groups were represented, suggesting an imbalance in decision-making processes. These committees were deemed crucial due to their role in reviewing local speed limits.

Some other participants identified the sub-optimal stakeholder network in speed management partly as resulting from some stakeholders inadvertently overlooking potential benefits arising from improved speed management practices (see Subtheme 3.4). Thus, adopting a broader stakeholder engagement approach was proposed, moving beyond traditional road safety considerations to encompass economic benefits, environmental impacts, and public health considerations (see Subtheme 4.2). Conducting comprehensive stakeholder mapping was highlighted as an essential step:

> "*I think there's many, many stakeholders, and you need to make an exercise to see who, especially under the Safe Systems Approach, who they all are. I don't think that's been done necessarily in Queensland that I'm aware of*" (Consultant, Australia)

Subtheme 4.2: Sharing responsibility for speed management does not come easy: it requires building cooperative efforts.

This subtheme captures discussions centred around the idea that sharing responsibility for speed management demands active, sustained efforts, stakeholder engagement, identification of opportunities, and strategy pursuit. Several interviewees emphasised that a genuine sense of shared responsibility requires more than implementing rules and regulations, underscoring the importance of cooperative engagement with stakeholders. Establishing trustworthy, respectful, and positive professional relationships was described as foundational for fostering collaborative cultures where innovation thrives. Such relationships were seen as prerequisites for effective collaboration, enabling collective efforts towards shared objectives central to the shared responsibility concept:

> "*We worked very hard to have a positive relationship. It's not uncommon across government departments for people to disagree. And when there is disagreement, there is a negative approach to innovation and partnerships. I just couldn't see the value in that. If we did have an area that we didn't agree on, my view was we had to find a way to agree on it and get on with it.*" (Retired practitioner, Australia)

Developing the right communication and negotiation skills was also mentioned as being of paramount importance by a few interviewees when it comes to building a real shared responsibility. Cooperative relationships were described as requiring mutual understanding, respect for each stakeholder's genuine motivations (Theme 3), and beneficial outcomes for all involved:

> "*We need to bring people along and not tell them what to do, it's trying to understand their perspective and you don't want to kind of go to someone and say 'we're going to take this away from you'… you want to talk about what additional things they'll get … will enhance your operation or business, or your children will now be better, or whatever it might be …*" (Consultant, Australia)

A Swedish consultant noted that stakeholders are more likely to cooperate when treated respectfully and provided opportunities to align their actions positively. Some participants suggested mapping stakeholder motivations as useful for negotiating and aligning efforts with road safety objectives. Expanding discussions beyond road safety alone was deemed crucial since stakeholders often find motivation in related areas. One academic from Australia illustrated that trucking companies might initially resist speed management due to perceived economic costs (e.g., increased travel time), but arguments highlighting reduced operating costs, fuel savings, and lower emissions could foster alignment.

Participants also provided examples of employing practical "walk the talk" strategies to demonstrate speed management benefits, surpassing theoretical business cases to show real-world impacts. Mentioned tools included running trials, pilot projects, and creating platforms for stakeholders to share best practices, fostering learning and dialogue. A Swedish voluntary trial involving installing speed limiters on trucks was noted by a few interviewees as an effective demonstration project, helping stakeholders internalise fuel-saving benefits and debunk myths around negative economic impacts.

Many participants reported that sharing responsibility can create cooperative networks of stakeholders motivated towards a common goal. Recognising individual stakeholders' intrinsic motivations was highlighted as essential for designing reward mechanisms reinforcing desired behaviours. For instance, when dealing with changing behaviours of private stakeholders, profit-making mechanisms such as consumer information programs, road safety print indexes, or procurement clauses embedding road safety and speed management requirements, were highlighted as potentially powerful leverage points to alter systemic behaviours:

> "*If you look at car industry and what we did, it was to start a process where they started to compete on safety. I can sell more cars because than you because I am better in safety. We've set up what is now called the NCAP system*" (Consultant, Sweden)

Subtheme 4.3: Calls for clearer roles, responsibilities and enhanced accountability and transparency.

The concept of shared responsibility for speed management was identified as problematic, particularly among Australian interviewees. This subtheme highlights participants' concerns that, while shared responsibility is often seen as a governance ideal, it poses practical challenges, including unclear roles, weak accountability, and ineffective collaboration.

Several participants emphasised the necessity of clearer, more collaborative governance approaches to speed management, highlighting ambiguity regarding agency roles. One Australian participant described the current fragmented jurisdictional collaboration as "*turf warfare*", noting inadequate coordination of roles:

> "*There's a broad range of stakeholders with overall responsibility and no one's got primacy. No one's the one pulling the one lever, they're stitching it together at the top*" (Interest group representative, Australia)

The introduction of the concept of shared responsibility as "the way to go" for road safety governance was perceived as creating role ambiguities among agencies, with participants concerned about undefined national-level leadership roles and unclear accountabilities for advancing speed management. For some interviewees, the introduction of the concept of shared responsibility in the road safety policy field paradoxically facilitated accountability deflection, particularly shifting responsibility onto road users, thus benefiting powerful stakeholders who evade direct accountability:

> "*The problem with the shared responsibility notion is that it creates an environment where very powerful interests with very direct responsibilities have been able to deflect that responsibility onto others, primarily users. And that's essentially what's been happening in speed management*" (Consultant, Australia)

Another Australian interviewee described shared responsibility as an "exogenously implanted" concept into Australia's governance landscape without sufficient practical consideration.

Some interviewees linked unclear roles and responsibilities to poor target-setting and monitoring in speed management, often interpreted as reflecting a lack of transparency. Enhanced target specificity and robust monitoring mechanisms were suggested to foster responsibility ownership and improved accountability:

> "*Because the targets aren't specific enough, it's hard to know who's responsible for delivering. And if we are responsible collectively…, how do we stay accountable to each other at least?*" (Federal government representative, Australia)

Greater transparency concerning data and decision-making processes was deemed essential to progress speed management policies effectively and clarify roles and accountability mechanisms. For instance, an Australian active mobility activist called for greater openness in speed limit-setting processes and supported greater openness towards the community. Another Australian interviewee representing an interest group organisation suggested that the lack of data transparency might be a strategy from some stakeholders to avoid being held accountable for their actions or omissions. A different Australian interviewee who was an activist noted limited access to detailed, updated data on vulnerable road user casualties, hindering effective advocacy, implying that stakeholders' ability to fulfil their responsibilities often depends on other stakeholders fulfilling theirs.

Regarding monitoring and public disclosure of speed-related indicators, Australian participants believed improvements were necessary, as current publicly available data insufficiently supported assessments of average speeds, speed limit compliance, or public attitudes towards speed-related risks and speed management policies. Swedish interviewees explained that there is currently a repository of aggregated publicly accessible data for frequent reporting on speed-related performance indicators related to the state network as well as municipal roads, including data on mean speeds and compliance per speed limit zone and per road type.

4. Discussion

This experts' opinion study examined perceptions and challenges around the principle of shared responsibility, a central principle of the Safe System Approach, as applied to speed management. With this aim in mind, semi-structured interviews were conducted with road safety experts and practitioners primarily based in Sweden and Australia but also including participants with a global perspective. Findings suggest that how the idea of a shared responsibility for speed management is interpreted and practically implemented varies depending to context. Furthermore, its practical implementation may at times be challenging and subject to misinterpretation.

Arguably, no jurisdiction has embraced the Safe System principles for as long as Sweden, as they were inspired from the introduction of Vision Zero in the 1990s (Khan and Das, 2024; Wegman, 2021). Consequently, it is likely that jurisdictions more recently adopting these principles, are still in the early stages of transitioning toward their full and effective integration. Historical and contextual factors might also make the implementation of the Safe System Approach principles more challenging in some jurisdictions than in others. These factors may partly explain variations in how shared responsibility is understood in practical terms in specific contexts.

Our findings also suggest jurisdictions claiming to follow a Safe System Approach may adopt its principles to varying degrees, closer to a spectrum than to a binary classification. Elvik (2023) reached to a similar conclusion after examining Norway's road safety policy and contrasting it with an operationalised definition of perfect compliance with Safe System principles. This author found that Norway does not have a road safety policy fully compliant with such principles, despite an existing commitment of a broad array of stakeholders. The implications for improving road safety outcomes of different degrees of adoption of Safe System principles warrants further research. As there is some recent evidence suggesting that the Safe System Approach has been instrumental to improving road safety outcomes (Elvik and Nævestad, 2023; Khan and Das, 2024), making efforts to better understand how its principles work in the real world, what challenges can be presented, and how can they be overcome, is needed.

The following sections offer a brief discussion of each theme presented in the Results section. It is important to note, however, that the themes are inherently interconnected. This interconnectedness appears to stem primarily from the influence of prevailing mindsets (Theme 2), which shape and provide coherence to participants' narratives. For example, those with a systemic-change mindset often framed 'responsibility' (Theme 1) in moral and ethical terms, whereas participants with an individual-compliance mindset tended to adopt legalistic or crash-related interpretations. As outlined in sub-themes 2.1 and 2.2, Swedish participants predominantly expressed a systemic-change perspective, while both mindsets were present among Australian interviewees.

Given that mindsets are socially constructed interpretations of how the world operates (Parrish, 2024), they likely reflect broader societal beliefs beyond this sample. A widespread understanding that road safety is achievable through systemic change may help explain the stronger accountability mechanisms for speed management found in Sweden, compared to Australia (Theme 4). After all, if responsibility is widely viewed as lying primarily with individuals, then systemic indicators may be deemed irrelevant or unnecessary to report. Similarly, a dominant systemic-change mindset in Sweden may underpin the presence of clearer mechanisms for encouraging non-traditional stakeholders to internalise their share of responsibility for speed management (Theme 3). In contrast, a mindset centred on improving individual compliance, which to some extent seems to be present within the Australian subsample, may lead to a narrower distribution of responsibility, focused

mainly on actors believed to influence road user behaviour directly.

4.1. Theme 1: Conceptualisations around (shared) responsibility in speed management vary

In Theme 1, interviewees articulated three distinct interpretations of the term 'responsibility': responsibility grounded in legal frameworks, responsibility based on moral obligations, and responsibility associated with contributory factors in road crashes. The literature similarly identifies responsibility as encompassing multiple meanings (e.g., Van de Poel et al., 2015). Such diversity might complicate discussions of shared responsibility in road safety or speed management unless explicitly clarified. Indeed, the principle of shared responsibility within the Safe System Approach is considered particularly challenging (Fortin et al., 2018), potentially in part because different individuals may employ a similar terminology yet assign it different meanings.

The attribution of responsibility based on contributory crash factors can reflect a desire to guide prevention efforts, potentially following the causation-prevention paradigm (Gitelman et al., 2024). However, in practice it can align with notions of blameworthiness and legal liability. While suitable in judicial contexts, the position argued here is that this approach is problematic in policy discussions on speed management for several reasons. First, road crashes, including those linked to speed, are typically the result of a complex interplay of multiple contributory factors (Elvik et al., 2009:87; Jakobsen et al., 2023; Newnam and Muir, 2021). Identifying all accountable actors (as based on contributory factors) is a demanding and costly task, likely to still leave responsibilities unresolved. Second, many factors emerge from interactions between elements of the system, such as road user responses to infrastructure and traffic conditions, complicating attribution further. Third, even comprehensive crash investigations may overlook relevant organisational and systemic contributory factors or responsible stakeholders not physically present at the crash site yet still influential in causation (e.g., Newnam and Goode, 2015).

For the reasons stated in the previous paragraph, the contributory-factor-based interpretation of the term responsibility in the context of speed management policies is probably prone to centring blame on road users, potentially neglecting organisational or higher-order responsibilities. It should also be noted that legal and contributory-factor-based responsibilities primarily are derived from past events (i.e., crash occurrence) and hence might be inadequate to provide proactive responses. Furthermore, legal frameworks often evolve slowly, lagging behind rapid technological and societal shifts. Thus, solely framing responsibility for speed management around legal and contributory-factor perspectives might not be enough to achieve meaningful progress in speed management, which likely requires understanding responsibilities as having a forward-looking nature (Van de Poel et al., 2015). Gitelman et al. (2024) similarly describe how the causation-prevention paradigm, linking crash causation with the legal framework and associated responsibilities, might lead to policy and decision-making lock ins, understood as characterised by a sub-optimal policy stability hindering innovative solutions, and hence deterring road safety progress from happening.

Responsibility for speed management could alternatively be interpreted as being grounded in moral obligations. This perspective, although complex, aligns with broader philosophical debates on collective moral responsibility (e.g., Schwenkenbecher, 2018). Adopting moral obligations is not straightforward and requires analysing the capabilities of different stakeholders to be considered moral agents for specific policy settings.[3] Addressing responsibilities through moral obligations warrants further research attention, as it may help advance proactive, systems-based approaches to speed management, better addressing the forward-looking dimensions crucial for preventing future crashes. The position argued is that discussions emphasising forward-looking meanings of the word responsibility are essential, in particular in relation to who is accountable for preventing speed-related serious and fatal road crashes from happening. These discussions, however, should remain sensitive to cultural and institutional contexts.

4.2. Theme 2: Mindsets shape understandings of shared responsibility in speed management

Participants described two distinct ways of perceiving how road safety outcomes are achieved, reflecting fundamentally different worldviews (Theme 2). The systemic mindset is not new to road safety, having existed since the 1950s (Elvik et al., 2009:88). Similarly, behavioural approaches have long contributed to understanding crash causation and prevention (Elvik et al., 2009:91). Both perspectives offer valuable insights and practical tools for addressing challenges within speed management. Neither perspective is inherently right or wrong; instead, using multiple lenses allows new perspectives and solutions to longstanding issues such as speeding behaviour and speed management. The more lenses available, the greater the chances of comprehending complex problems (Parrish, 2024).

Humans are shaped by their experiences, education, interests, culture, and mindsets, serving as filters through which they interpret reality. Under systems thinking, these "mental models" (Meadows, 2008) help us make sense of complex systems, offering simplified representations of reality. Although often aligning with observable phenomena, these models remain inherently incomplete, potentially failing to fully capture system complexities (Jones et al., 2011). No single mindset can claim superiority over another, yet recognising their existence provides an analytical tool to evaluate when shifts in perspective are needed, especially if prevailing views do not deliver desired outcomes.

Alternatively, these mindsets can be examined through the lens of problem-framing literature, an area of policy analysis that explores how policy problems are defined, debated, and addressed (Head, 2022:19). Arguably, framing speed-related crashes as a systemic issue differs significantly from defining them as an individual compliance problem, hence leading to distinct policy implications. Contrasting narratives about the problem a policy area aims to address influence perceptions of the issue's nature, causes, and severity, thereby affecting the choice of policy tools, governance arrangements, and the distribution of stakeholder responsibilities (Peters, 2005). As a result, problem framing affects not only policy choices but also governance arrangements and the distribution of responsibility among stakeholders. Policy framing often strategically advances stakeholders' (sometimes concealed) interests (Bacchi, 2009). Future research of how speed management policies are framed by different actors could reveal the underlying assumptions driving policy arguments, allowing for a critical examination of their potential impacts.

4.3. Theme 3: Shared responsibility for speed management is enhanced by the alignment of stakeholder goals

Findings of Theme 3 suggest that stakeholders' active engagement in speed management initiatives, and their positions as supporters or critics of speed management countermeasures, are closely linked to the alignment between this policy area and their broader goals and responsibilities. When stakeholder interests align, active participation in collaborative efforts to improve speed management outcomes is more likely. Conversely, misalignment was portrayed as hindering progress, as actors may hesitate to engage in initiatives perceived to conflict with their primary objectives. Recognising these underlying interests and exploring ways to foster alignment is thus a critical first step towards creating a self-reinforcing collaborative governance network (Emerson

[3] See Keller et al., 2025, "Actors, roles and responsibilities for speed management: A systems-based analysis of key stakeholders in Sweden and Queensland, Australia", submitted to Safety Science for publication, for a discussion on this topic.

et al., 2012).

Participants reported a trade-off between transport safety and efficiency, particularly in relation to traffic speed. For instance, road authorities were described as having to fulfill responsibilities related to these two dimensions, which at times can be perceived as something difficult to achieve. This trade-off was perceived as frequently not being based on evidence but rather based on conventional, uncontested knowledge. The existence of generalised myths around the benefits and costs of traffic speeds is an issue already extensively reported in the literature (e.g., Neki and Job, 2021). Interviewees also emphasised the politically sensitive nature of speed management, noting that decision-makers often resist speed management interventions due to fear of public backlash, a phenomenon previously noted (e.g., Job, 2018; Khan and Das, 2024), or utilise speed limits as the focus of political messaging to gain voters' sympathy (e.g., Linder and Mueller, 2021, p. 155). Our findings suggest, though, that these fears might not always be substantiated by evidence, underscoring the relevance of measuring public support for countermeasures, as well as working on enhancing public understanding around this topic over time. It is nonetheless possible that relying solely on political will to drive change may be ineffective for this policy area, as politicians have been portrayed as often being poorly positioned to lead on complex issues such as speed management (Torfing and Ansell, 2017). Our findings also suggest that stakeholders employ survivalism strategies, sometimes choosing to preserve the status quo due to perceived personal benefit. Acknowledging the existence of primary stakeholder's motivations and uncontested beliefs as portrayed in Theme 3, is a first step towards building strategic stakeholder engagement and building a shared responsibility for speed management, a call captured in Theme 4.

4.4. Theme 4: The need to reassess the governance of speed management in relation to stakeholders' accountability, roles, responsibilities, and the transparency of policy processes

The results presented in Theme 4 suggest speed management governance arrangements are dynamic, with calls to enhance responsibility attribution, accountability mechanisms and transparency. Furthermore, current stakeholder maps were described as missing stakeholder representation. Making responsibilities for speed management a duty of most rather than a few was described as something that should be strategically achieved, instead of naturally occurring. These varied perspectives highlight what is commonly termed the "problem of many hands", referring to situations in collective activities where numerous individuals and organisations are involved, making it difficult or impossible to determine moral responsibility for specific actions (Van de Poel et al., 2015). This complexity creates difficulties when attributing individual responsibilities within collective governance contexts (Van de Poel et al., 2012). Even when individual responsibilities are clear and accepted, interviewees indicated that the speed management challenge likely requires whole-of-sector coordination and cannot be solved by individual organisations alone. Recognising these complexities, participants highlighted the need for new governance arrangements and accountability mechanisms to enable a collective, more effective approach to speed management.

5. Practical implications

The results of this research study suggest a need for improved guidance on what the concept of shared responsibility entails in practical terms for road safety and specific policy areas such as speed management, as well as how this principle can be achieved. This guidance should include strategies to encourage different stakeholders to "own" their individual responsibilities, and ways to coordinate these individual responsibilities to achieve better collective outcomes. Greater clarity regarding the different possible meanings of the term 'responsibility' is also highlighted as being necessary, along with an understanding of the implications and limitations associated with these meanings.

This study identified two mindsets explaining the production of road safety outcomes. While one mindset is not necessarily better than the other, practitioners should be aware of their existence, as this might help them better comprehend the policy implications of adopting one over the other. For instance, stakeholder salience in speed management seems to be influenced by the prevailing mindset in each jurisdictional context. Furthermore, such mindsets could be interpreted as competing ways of framing speed management policies. Different ways of framing a policy problem can be matched with different preferred solutions (Bacchi, 2009). Practitioners potentially will be better prepared to drive change in speed management policies and practice if they are sufficiently trained to identify the existing mindset or policy framing and understand their implications.

This study has also highlighted stakeholder interests having significant influence on effective speed management and the existence of conflicting values and perspectives on this topic. Practitioners should prioritise strategic stakeholder engagement by identifying and explicitly acknowledging these interests, which can facilitate leveraging primary motivations to advance policy objectives. The existence of an imbalance in perceived benefits and costs of speed management policies was highlighted, suggesting practitioners could greatly benefit from strengthening evidence on impacts of speed management interventions and refining how this evidence is communicated. Additionally, implementing voluntary demonstration projects could help stakeholders directly observe and internalise the benefits, strengthening their willingness to internalise their individual responsibilities. Creating market mechanisms that provide economic incentives for improving speed management practices can also contribute to encouraging positive behaviour in the private sector. In summary, it is recommended that stakeholders interested in advancing speed management policies should invest in understanding underlying stakeholder values and actively build common ground among stakeholders and communities.

Another implication of this study is that, besides better defining and working on internalising stakeholder-based responsibilities, a strong coordination of individual roles is necessary to steer speed management policies and actions across stakeholders. Road authorities might, in some contexts, be well positioned to fulfill such coordination role. Establishing clearer and more transparent speed-related metrics and policy processes is highlighted as a crucial step for ensuring clearer accountability. Selected metrics should adequately represent: a) countermeasure implementation (e.g., percentage of the network under speed camera surveillance); b) intermediate outcomes (e.g., average speeds on 40 km/h urban roads); and c) final outcomes (e.g., road crash fatalities and serious injuries). Arguably, tying individual stakeholder responsibilities to metrics in category a) might be more straightforward than for metrics in category c), as these latter metrics reflect the outcome of collective responsibility.

Last, this study highlights that systems-thinking —understood as a philosophy, a language and a set of tools, see Monat and Gannon (2015)- training might be valuable for road safety practitioners. The advancement of road safety science in the last decades has been arguably remarkable, yet challenges persist, and road trauma stagnation or regression is a reality in many contexts. This study highlighted that individual responsibilities for speed management are interlinked (e.g., some stakeholders might not be able to correctly fulfill their responsibility, or the effectiveness of their actions might be diminished, unless other stakeholders correctly fulfill their own responsibilities). This suggests that the whole is more than the sum of its parts, which could indicate that speed management is a complex policy area that requires adopting perspectives that acknowledge such complexities and embed them into practical approaches. Systems-thinking prioritises the study of the whole rather than isolated elements, which is deemed to be a useful way of understanding and dealing with complex phenomena.

6. Strengths and limitations

The present study has several strengths that are worth highlighting. By analysing speed management challenges through a systems thinking lens, this study contributes to expanding current analytical horizons, by critically examining an important principle of the widely adopted Safe Systems Approach to road safety, contributing to enrich practitioner and academic discussions by providing new perspectives. This study also offers an application of systems thinking lenses to the analysis of speed management governance issues, advancing the understanding of this critical area.

Given the active role of researchers in the analysis, the study acknowledges that its outcomes may be influenced by researcher subjectivity. Here, subjectivity is considered a resource rather than a limitation, with knowledge seen as co-created between researchers and participants rather than simply discovered. Subjectivity guided both interviewing and analysis processes, facilitating the interpretation of participants' explicit and implicit verbal meanings, as well as non-verbal cues.

Some limitations should be considered when interpreting this study's findings. The results presented are limited to the experiences of interviewees, meaning that it is possible that other experts and practitioners could have a different opinion about sharing responsibility for speed management. Additionally, most participants in this study could only refer to personal experiences in two jurisdictions, Sweden and Australia, which limits the generalisability of results, as contextual factors significantly are expected to shape research outcomes (Yin, 2018). While direct generalisation is constrained by the research design, the conceptual contributions of this study may inform future theories that could be tested in broader contexts (Flyvbjerg, 2006). Further research is needed to expand the generalisability of these findings.

7. Concluding comments

This research has contributed to advancing the understanding of shared responsibility for speed management by critically exploring perceptions and conceptualisations through a systems-thinking lens. Key findings revealed several factors that affect how this concept is implemented in practice and associated challenges. The first theme identified highlighted that participants attributed multiple and diverse meanings to the term "responsibility", potentially generating confusion around the principle of shared responsibility itself, suggesting the need for clearer definitions and operationalisations of the concept. The second theme identified two distinct yet evolving mindsets among stakeholders regarding how road safety outcomes are generated. This theme also provided examples about how these mindsets (one more behavioural and compliance-oriented, the other more systemic and holistic) shape how shared responsibility is understood and operationalised. The third theme identified the critical role that goal alignment or misalignment plays in stakeholder engagement with (and support to) speed management policies, highlighting the importance of actively building stakeholder alignment through strategic engagement, effective communication, and practical demonstration projects. The fourth and last theme conveyed the idea that speed management governance goes through an adaptive and evolutionary process. Recurrent claims from participants pointed towards the necessity of broader stakeholder involvement, clearer delineation of roles and responsibilities, and enhanced accountability mechanisms. Overall, this study suggests that systems thinking offers an innovative analytical framework beneficial for both academics and practitioners involved in the field of speed management, as it could help stakeholders develop collaborative solutions that reflect the multifaceted reality of road safety challenges, ultimately facilitating a more effective and sustainable governance of speed management initiatives.

CRediT authorship contribution statement

Maria Eugenia Keller: Writing – review & editing, Writing – original draft, Visualization, Software, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Barry Watson:** Writing – review & editing, Visualization, Validation, Supervision, Methodology, Conceptualization. **Sherrie-Anne Kaye:** Writing – review & editing, Visualization, Validation, Supervision, Methodology, Conceptualization. **Mark King:** Writing – review & editing, Visualization, Validation, Supervision, Methodology, Conceptualization. **Ioni Lewis:** Writing – review & editing, Visualization, Validation, Supervision, Methodology, Conceptualization.

Declaration of competing interest

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

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.aap.2025.108185.

Data availability

The data that has been used is confidential.

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