SHARED MOBILITY IN SOUTH AFRICA: MISALIGNMENTS BETWEEN RESEARCH AND PRACTICAL REALITIES

G SMITH[1,2,3] and M VANDERSCHUREN[3]

[1]Department of Mobility and Systems, RISE Research Institutes of Sweden, Lindholmspiren 7a 417 56 Gothenburg, Sweden
[2]Institute of Transport and Logistics Studies, University of Sydney Business School, NSW 2006, Australia
[3]Centre for Transport Studies, University of Cape Town, Department of Civil Engineering, 1 Madiba Circle, Upper Campus, UCT, Rondebosch 7701, South Africa
Tel: 021 650 2593; Email: marianne.vanderschuren@uct.ac.za

ABSTRACT

Alongside a growing recognition of sharing as an approach to address the negative externalities of socio-economic systems, shared mobility has emerged as a hot topic in transport research. Scopus identifies 1,599 publications that use the term in the title, abstract, or keywords, all but eight of which were published within the last decade.

However, several limitations misalign this scholarly conversation with the practical realities of many transport systems; a misalignment that is especially pronounced in transport systems across the Global South. The geographical focus is imbalanced: based on the affiliations of corresponding authors, 94% of publications originate from Europe, North America, or Asia, while less than 1% are authored by scholars in Africa. Most studies, moreover, adopt a technology-centred conceptualisation of shared mobility, focusing on modes like ride-hailing and app-based car sharing, while overlooking the long history of shared travel, as well as the significant roles of public transport and informal modes, such as paratransit and hitchhiking.

Based on data from the 2020 South African Household Travel Survey, this paper highlights the effects of a technology-centred conceptualisation of shared mobility across three types of geographical areas in South Africa. It finds that such a perspective only captures 1.2% of current shared mobility trips in metropolitan areas, 0.04% in other urban areas, and 0.01% in rural areas. The paper ends with a brief discussion on the implications of the technology-centred conceptualisation for planning and visioning, as well as on the research needed to align the scholarly conversation with transport transition agendas in the Global South.

Keywords: Shared mobility, South Africa.

1. INTRODUCTION

Shared mobility is by no means a new phenomenon. So-called jitneys emerged in the United States around 1910, a few decades after the invention of the modern automobile, as car owners saw an opportunity to earn extra income by providing and charging for shared rides (McCabe, 2020). In many cities, the jitneys were, preceded by multiple forms of horse-drawn and electric-powered forms of shared mobility, such as the equivalents of buses, taxis, trams, and rental vehicles (Geels, 2005; Terni, 2015; Thompson, 1976).

Today, shared mobility is increasingly discussed as a key component of future sustainable transport systems, alongside the vision of automated and electrified vehicles. For example, Sperling concluded his 2018 book on these *three revolutions in mobility* with the assertion that "going forward, pooling must be the principal focus of our thinking and actions related to transportation", defining pooling as "filling the empty seats in all our vehicles" (ibid., p.189).

Sperling thus focused on the ridesharing component of shared mobility, or *concurrent sharing* (SAE International, 2018), as compared to the *sequential sharing* of vehicles (Shaheen et al., 2019). Most scholars, however, either use shared mobility vaguely without details on which modes or forms of travel are included (Castellanos et al., 2022) or adopt a broader view than Sperling. There are several conceptualisations of shared mobility, which broadly can be categorised into three competing conceptualisations (see Figure 1):

- ***Shared rides or vehicles***: Encompassing all modes in which people share rides or vehicles with strangers (e.g., SAE International, 2018; SUMC n.d.).
- ***Shared rides or vehicles but public transport***: Encompassing all modes of shared travelling in theory, but through examples or other means excluding traditional public transport (e.g., Shaheen & Chan 2016; Shaheen et al., 2019).
- ***Shared rides or vehicles enabled by digital platforms and devices*:** Positioning shared mobility as part of the sharing economy and focusing on the business model and the utilised digital technologies, thus limiting the scope to on-demand mobility services enabled by digital platforms, such as ride-sourcing and electric scooter sharing (e.g., Alemi et al., 2018; Cohen & Kietzmann, 2014; Rayle et al., 2016).

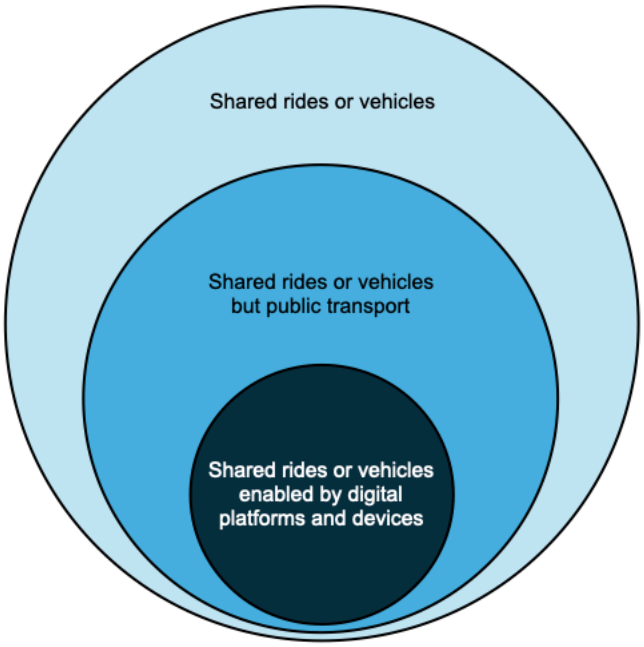


Figure 1: The relationship between three competing conceptualisations of shared mobility

Viewing shared mobility as a segment of the sharing economy, facilitated by advancements in digital technology, remains the dominant perspective among transport scholars (see e.g., Cohen & Kietzmann, 2014; Shaheen & Chan, 2016; Shaheen & Cohen, 2019). However, perspectives that exclusively focus on the sharing of resources are more directly aligned with the overarching ambition of optimising transport efficiency, which can be defined in terms of accessibility achieved per vehicle or per vehicle-kilometre travelled

(Wong et al., 2020; see also the *substitution* and *shift* strategies in Banister, 2008). How users access the modes and how providers generate profit are arguably of comparatively less importance. Sharing-centric and technology-neutral conceptualisations also resonate better with ambitions to create stronger linkages between public transport systems and other forms of active and shared travel (Smith & Hensher, 2020), a vision that many public transport organisations have adopted in recent years (e.g., UITP, 2016; 2019).

The academic literature on shared mobility, moreover, relies heavily on studies conducted in North America, Western Europe and Asia (see e.g., Axsen & Sovacool, 2019), thus overlooking both current conditions and potential pathways to more sustainable and just transport in Africa and South America. This is problematic given the distinct characteristics of these transport systems, such as the significance of informal shared transport, and since almost 20% of the world population live in Africa alone. A recent paper proposing a taxonomy for shared mobility, for example, carefully argues why public transport, taxi, and car rental should not be regarded as shared mobility, but fails to acknowledge the existence of paratransit (see Castellanos et al., 2022), which is the second most frequently used mode of travel in South Africa, surpassed only by walking (Vanderschuren & Lane-Visser, 2025).

This paper aims to explore this shortcoming. The underpinning objective is to enhance the understanding of how well various conceptualisations of shared mobility align with shared mobility realities in the Global South. Specifically, it is guided by the research question: to what extent do existing conceptualisations of shared mobility capture current shared mobility practices in South Africa? The paper, moreover, discusses what implications the dominating, technology-centric conceptualisation might have for planning and visioning, as well as the research needed to align the scholarly conversation with transition agendas in the Global South, which emphasizes the pursuit of inclusive, equitable, and environmentally sustainable transport systems tailored to the unique contexts of developing countries.

2. LITERATURE REVIEW

A search on Scopus, performed in October 2024, identified 1,599 publications that use the term shared mobility in the title, abstract, or keywords. All but eight of these were published within the last decade. As outlined in Table 1, the affiliation address of the corresponding author (which was reported for 1,267 of the publications) indicate that the geographical focus is imbalanced: 94.5% of publications are written by authors based in Europe (46.6%), North America (23.6%), or Asia (24.3%), while only 0.6% are authored by scholars in Africa.

Table 1: Geographical distribution of corresponding author addresses

Continent	Total	Articles	Conference Papers	Books and Sections	Other
Africa	8 (0.6%)	4 (0.5%)	3 (1.5%)	0 (0.0%)	1 (1.6%)
Asia	308 (24.4%)	239 (26.1%)	48 (23.7)	9 (10.2%)	12 (19.7%)
Europe	591 (46.6%)	400 (43.7%)	122 (60.1%)	35 (39.8%)	34 (55.7%)
Oceania	39 (3.1%)	25 (2.7%)	8 (3.9%)	4 (4.5%)	2 (3.3%)
North America	299 (23.6%)	230 (25.1%)	21 (10.3%)	39 (44.4%)	9 (14.8%)
South America	22 (1.7%)	17 (1.9%)	1 (0.5%)	1 (1.1%)	3 (4.9%)
Total	1,267 (100%)	915 (100%)	203 (100%)	88 (100%)	61 (100%)

Table 2: Geographical and conceptual distribution of the publications with 100+ citations

No	Paper	Cites	Paper Origin	Data Origin	Conceptual Focus
1	Rayle et al. (2016)	842	United States	United States	Ride-sourcing
2	Cohen & Kietzmann (2014)	706	Chile	N/A	Shared mobility services
3	Das et al. (2020)	671	United States	N/A	Electric vehicles
4	Kamargianni et al. (2016)	359	England	N/A	Mobility-as-a-Service
5	Alemi et al. (2018)	348	United States	United States	Ride-sourcing
6	Shaheen & Chan (2016)	323	United States	N/A	Shared mobility services
7	Pfrommer et al. (2014)	269	Germany	England	Bike-sharing
8	Jin et al. (2018)	267	United States	N/A	Ride-sourcing
9	Tirachini (2020)	248	Chile	N/A	Ride-sourcing
10	Shaheen & Cohen (2019)	243	United States	North America	Shared mobility services
11	Martinez & Viegas (2017)	231	Portugal	Portugal	Shared autonomous vehicles
12	Sperling (2018)	221	United States	N/A	Shared autonomous vehicles
13	Acheampong & C_ (2019)	219	England	Ireland	Autonomous vehicles
14	Raviv & Kolka (2013)	218	Israel	Israel	Bike-sharing
15	Mourad et al. (2019)	215	France	N/A	Shared mobility services
16	Wong et al., (2020)	185	Australia	N/A	Mobility-as-a-Service
17	Machado et al. (2018)	178	Brazil	N/A	Shared mobility services
18	Nazari et al. (2018)	162	United States	United States	Shared autonomous vehicles
19	Lan et al. (2017)	157	England	China	Bike-sharing
20	Tong et al. (2018)	149	China	China & US	Ride-sourcing
21	Becker et al. (2020)	146	Switzerland	Switzerland	Shared mobility services
22	Shaheen et al. (2019)	143	United States	N/A	Shared mobility services
23	Menon et al. (2019)	142	United States	United States	Shared autonomous vehicles
24	Eccarius & Lu (2020)	139	Taiwan	Taiwan	Electric scooter sharing
25	Cohen & Hopkins (2019)	138	England	N/A	Autonomous vehicles
26	Clewlow (2016)	137	United States	United States	Carsharing
27	McKenzie (2020)	136	Canada	United States	Scooter sharing; ride-sourcing
28	Thomopoulos & G_ (2015)	136	England	N/A	Autonomous vehicles
29	Wang et al. (2018)	135	United States	United States	Bike-sharing
30	Qi et al. (2018)	132	Canada	N/A	Ride-sourcing
31	Mathew et al. (2019)	130	United States	United States	Scooter sharing
32	Vidhi & Shrivastava (2018)	129	Unted States	India	Electric vehicles
33	Axsen & Sovacool (2019)	127	Canada	N/A	Shared mobility services
34	Bieliński & Ważna (2020)	124	Poland	Poland	Scooter sharing; bike-sharing
35	Awad-Núñez et al. (2021)	123	Spain	Spain	PT & shared mobility services
36	Zhu et al. (2016)	123	China	N/A	Multiple shared mobility modes
37	Wen et al. (2017)	117	United States	England	Mobility-on-Demand
38	Ke et al. (2019)	116	China	China	Ride-sourcing
39	Aguilera-García et al.(2020)	112	Spain	Spain	Moped sharing
40	Gehrke et al. (2019)	112	United States	United States	Ride-sourcing
41	Spurlock et al. (2019)	111	United States	United States	Ride-sourcing; autonomous vehicles
42	Shokouhyar et al. (2021)	106	Iran	International	Shared mobility services
43	Hörl et al. (2019)	105	Switzerland	Switzerland	Shared autonomous vehicles
44	Haider et al. (2018)	104	United States	United States	Bike-sharing

A closer look at the most influential publications, here interpreted as the publications that have been cited more than 100 times according to Scopus, tells a similar story. None of

these are led by authors based in Africa, and only one by an author in South America. They also do not report any primary data collected in Africa or South America, see Table 2.

Seemingly building on the easily debunked assertion that concept, such as ridesharing, ride-hailing, and car sharing "…can only happen because they are enabled by ICT, and particularly, mobile phones, digital/social platforms, and internet connections…" (Castellanos et al., 2022:328), the most influential publications, moreover, generally implicitly or explicitly adopt technology-centric interpretations of shared mobility, arguing that "…the transport sector has been among the forerunners of the sharing economy revolution, with a myriad of technology-enabled new forms of mobility…" (Tirachini, 2019:2012), which "…merge the advantages of mobile communications and instant reservations with the principles of the so-called sharing economy" (Alemi et al., 2018:88).

The most influential shared mobility publications thus primarily focus on digital technology-heavy forms of shared mobility, such as ride-sourcing (e.g. Rayle et al., 2016), app-based bike-sharing and electric scooter-sharing (e.g. Eccarius & Lu, 2020; Pfrommer et al., 2014), and concepts, such as Mobility-as-a-Service and fleets of shared autonomous vehicles (e.g. Kamargianni et al., 2016; Martinez & Viegas, 2017), see Table 2. Accordingly, they do not deal with forms of shared mobility less dependent on developments in digital technology, such as paratransit or hitchhiking, which play key roles in African transport systems (Serumula & Vanderschuren, 2024; Vanderschuren & Lane-Visser, 2025).

There is, however, plenty of research on shared mobility in Africa as well, although it is not always identified as such. Instead, other terms are used to describe the analysed modes, such as paratransit (e.g. Behrens et al., 2016; Falchetta et al., 2021; Woolf & Joubert, 2013), minibus taxis (e.g. Dzisi et al., 2022; Klopp & Cavoli, 2019; Ndibatya & Booysen, 2021), and ride-hailing or ridesharing (e.g. Boateng et al., 2022; Carmody & Fortuin, 2019; Vanderschuren & Baufeldt, 2018).

Still, considering the limited impact of these studies on the shared mobility literature, alongside the prevalent reliance on interpretations shaped by developments in European, North American, and Asian transport systems, this study aims to evaluate how well competing conceptualisations of shared mobility align with the practical realities of transport systems in the Global South, such as those in South Africa (see the research question introduced in Chapter 1), by analysing the extent to which they encompass existing shared travelling practices.

3. METHOD

The analysis is conducted for three types of geographical areas, namely rural areas, metropolitan areas and other urbanised settlements. A metropolitan area is a major city together with its suburbs and nearby cities, towns, and environments over which the major city exercises a commanding economic and social influence. In the South African contest, the following cities are considered metropolitan areas: Buffalo City, Cape Town, Ekurhuleni, eThekwini, Johannesburg, Mangaung, Nelson Mandela Bay, and Tshwane.

The 2020 South African Household Travel Survey is used as the data source. All data was collected before Covid-19 lockdowns (STATSSA, 2020), i.e. between January 27th and March 20th, 2020. Hence, the authors assume that the findings are a good reflection of South African travel behaviour at the time.

Overall, 65,523 households were sampled, distributed over the 9 South African provinces. The sample was stratified by Statistics South Africa (STATSSA), in such a manner that the data provides a true reflection of the approximately 17.35 million household distributed over the country. These households accommodate a population of 59.3 million inhabitants (STATSSA, 2020). Weightings per record are provided to create an accurate reflection for households and inhabitants alike.

The trip-making data is based on the following questions: “Thinking about the travel day, how many trips did you make to the following (purposes)?” and “On travel day, which modes of travel were used by you?” The sum of the weighted number of trips were calculated. This was done for shares mobility modes, following the competing conceptualisations introduced in the Introduction, see Figure 1. In practice, this means that the following modes were included:

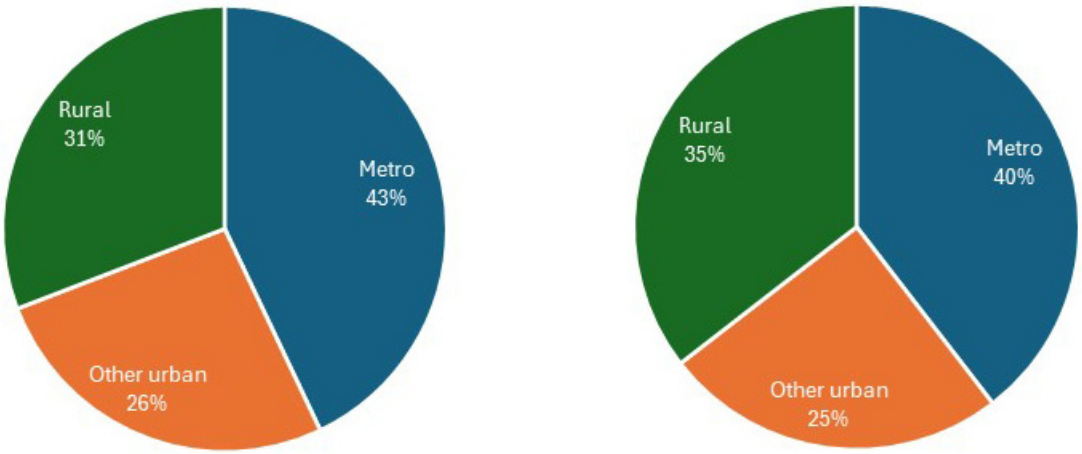
- **Shared rides or vehicles enabled by digital platforms and devices:** App and web based on demand services such as Uber, Taxify and Bolt.
- **Shared rides or vehicles but public transport:** All modes above plus sedan and bakkie taxi, special transit for people with disabilities, short- and long-distance minibus taxi, lift club, and tuktuk.
- **Shared rides or vehicles:** All modes above plus short- and long-distance train (including Gautrain) and bus services (including bus rapid transit).

Passenger rides with cars, bakkies, trucks, lorries, tractors, and trailers were not included as shared mobility, due to the difficulty of separating rides with family and friends versus strangers. Hence, a limitation of the study is that it does not include hitchhiking.

4. RESULTS

4.1 Distribution of Shared Mobility Across Different Types of Geographies

Some 43% of 17.35 million households in South Africa are located in the metropolitan areas (see Figure 2). These households accommodate 40% of the population. Other urban areas accommodate 25% of the population within 26% of the South African Households. The rural population in South Africa accounts for 35% of the population and 31% of the households. These statistics indicate that rural households, on average, are larger than urban and metropolitan households.



a) Household distribution b) Population distribution

Figure 2: Geographical distribution of households and population in South Africa (%)

Overall, 50% of shared mobility trips (using the most inclusive conceptualisation of shared mobility, meaning “all shared rides or vehicles”) are generated in the eight metropolitan areas (see Figure 3). This is significantly more than the household or population proportion in these areas. Hence, the shared mobility activity in metropolitan areas is higher per capita than in other urban or rural areas. Rural areas are responsible for 29% of the shared mobility trips, while this is 21% for the other urban areas.

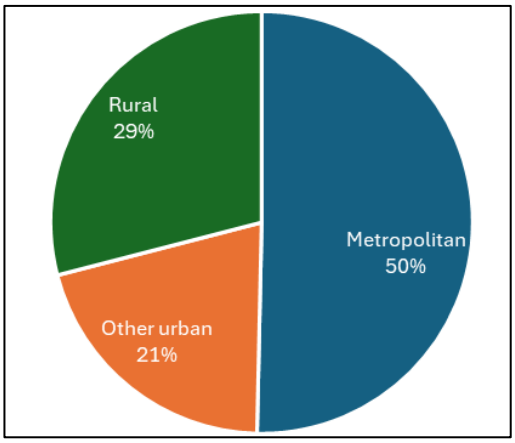


Figure 3: Shared mobility proportion per geographical area in South Africa (%)

4.2 Applicability of the Three Competing Shared Mobility Conceptualisations

Shared mobility enabled by digital platforms and devices is a small portion of shared mobility in South Arica. It accounts for 1.2% of the shared mobility trips in metropolitan areas, 0.04% in other urban areas, and a mire 0.01% in rural regions. On the contrary, the corresponding numbers for minibus services, taxis, special transit, lift clubs, and tuk-tuk’s are 85.6% in metropolitan areas, 89.3% in other urban areas, and 81.2% in rural areas. For public transport, it is 13.2% in metropolitan areas, 10.7% in urban areas, and 18.8% in rural areas.

The proportional distribution of shared mobility in the various geographical areas are depicted in Figure 4. Addressing this paper’s research question, this calculation shows that the conceptualisation of shared mobility as “shared rides or vehicles enabled by digital platforms and devices” (the dark blue inner circle) captures 0.01-1.2% of current shared mobility practices. Correspondingly, “shared rides or vehicles but public transport” (the medium blue middle circle), captures 81.2%-89.4%, while shared rides or vehicles (the light blue outer circle) captures the entire shared mobility market in South Africa.

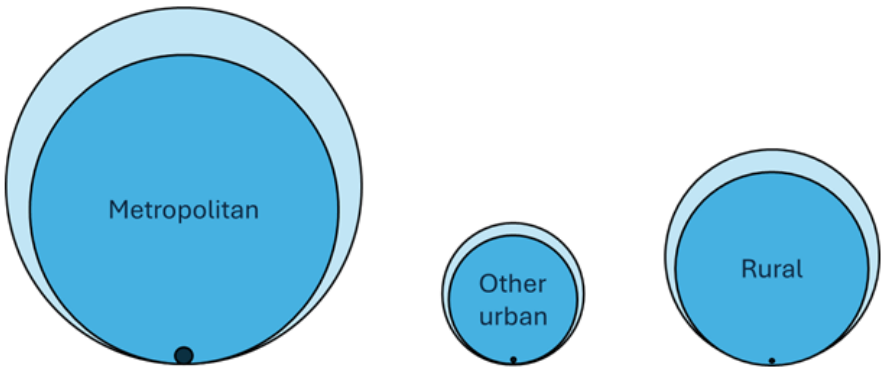


Figure 4: Proportion of shared mobility trips in South Africa captured by the conceptualisations

4.3 Shared Mobility Trip Purposes Across Different Types of Geographies

There is, moreover, a significant difference regarding the reasons for using the different forms of shared mobility in the three types of geographies, as can be seen in Figure 5. Shared mobility trips enabled by digital platforms and devices are in metropolitan areas mostly used for work-related purposes (38%, including work trips and trips to look for work). In other urban areas, shared mobility enabled by digital platforms and devices is instead primarily used to get to and from educational institutions (69%), whilst the most frequent purpose in rural areas is to travel to and from medical services (43%). In all three geographies, shopping trips are the second most common purpose, accounting for 21% to 36% of the shared mobility trips supported by digital platforms and devices.

When including all shared rides or vehicles except public transport in the conceptualisation of shared mobility, work becomes the dominating trip purpose in all three geographies. Together with shopping and education trips, work (including looking for work) explains 85% of the shared mobility trips in metropolitan areas, 78% in other urban areas, and 72% in rural areas using this lens. Adding public transport trips to the mix strengthens the dominance of these three purposes even further, making them accountable for 88% of the shared mobility trips in metropolitan areas, 79% in other urban areas, and 75% in rural areas.

In sum, shared mobility is used for different purposes across different geographies in South Africa, especially the modes enabled by digital platforms and devices. Adopting a technology-centred conceptualisation of shared mobility, focusing on modes like ride-hailing and app-based car sharing, thus risks misrepresenting not only the size of the shared mobility market in South Africa, but also why shared mobility is used in different types of geographies, and how significant shared mobility is for accessing work, educational institutions, and shops across all of them

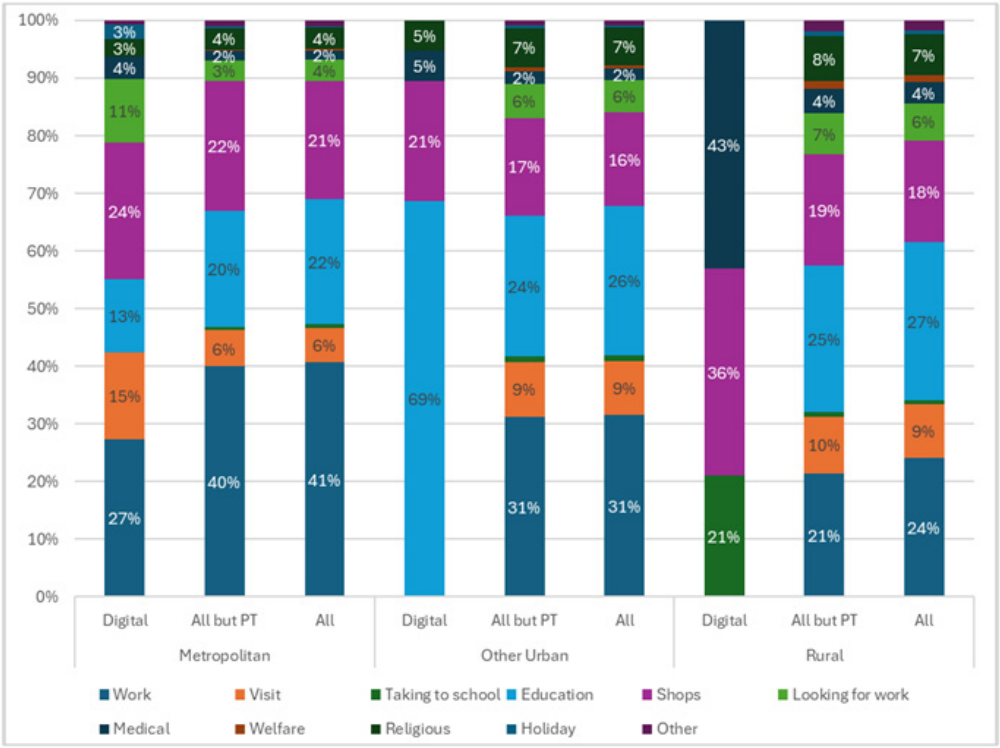


Figure 5: Shared mobility trip purposes per geographical area in South Africa

5. DISCUSSION

Policymakers are increasingly recognising that comprehensive interventions incorporating *avoid*, *shift,* and *improve* strategies are needed to decarbonise the transport sector (e.g. Jaramillo et al., 2022), as well as to address other negative externalities of transport. The *shift* strategy focuses on reducing levels of car use through the promotion of active mobility, such as walking and biking, as well as modes in which people share vehicles and rides, such as public transport, ridesharing, and carsharing (Banister, 2008; Holden et al., 2020).

Alongside this, scholars' interest in shared mobility has grown quickly, amounting to almost 1,600 publications in Scopus in 2024. This paper shows that this body of literature predominantly is written by authors based in Europe, North America, and Asia, and that there is a strong focus on data and insights derived from transport systems in these regions. Furthermore, these studies tend to emphasise digital technology-driven shared mobility modes, such as ride-sourcing, scooter-sharing, and peer-to-peer car clubs.

While the influx of these modes indeed has significantly influenced many urban transport systems, this paper highlight that they account for only a small fraction of shared mobility trips in South Africa. Instead, shared mobility in South Africa is dominated by more low-tech modes, such as informal paratransit and taxis in different forms, complemented by traditional public transport. This disparity highlights a critical disconnect between the global scholarly discourse on shared mobility and the practical realities in South Africa. In fact, the prevailing technology-centric conceptualisation of shared mobility misses 99% of the South African shared mobility market. As illustrated in the Results Section, it, moreover, misrepresents what types of trips shared mobility is used for in South Africa.

Given the wealth of research on shared mobility in South Africa (albeit not explicitly labelled as such), this disconnect might seem like a minor issue. However, the authors contend that it is not, as the shared mobility literature is deeply intertwined with Global policy discussions and investments aimed at improving and complementing public transport, thereby trying to enable more people to be transported with fewer vehicles (i.e. the *shift* strategy). Neglecting the shared modes that provide daily access to work, education, and shopping for millions of people risks missing critical opportunities for policymakers in the Global North to draw inspiration from transport systems in the Global South. It may, moreover, erroneously lead policymakers in the Global South to believe that there is an inherent value in prioritising tech-heavy shared mobility modes in their transport visioning and planning.

To better align the scholarly conversation on shared mobility with local transport transition agendas, there is a need for publications that analyse current shared mobility practices in the Global South and connect these insights to shared mobility concepts and discussions. For instance, more studies are needed to examine how insights from transport systems in the Global South can contribute to the understanding of the future roles of informal and semi-formal shared mobility in sustainable transport systems. Furthermore, we see significant potential and importance in using insights from the Global South, including attempts at digitalising informal modes, to inform ongoing discussions on the equity of shared mobility. This includes, but is not limited to, analysing how user preferences, behaviours, and experiences of shared mobility modes vary based on factors such as gender (e.g. Baufeldt & Vanderschuren, 2023; McIlroy, 2023), racial backgrounds (e.g. Fleming, 2018; Vanderschuren & Lane-Visser, 2025), abilities (e.g. Dill & McNeil, 2020), and geographical area (e.g. Mounce et al., 2020; Poltimäe et al., 2022). Finally, the

authors encourage the development and adoption of shared mobility taxonomies that more effectively capture the full diversity of shared mobility modes.

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