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More than walking and cycling: What is 'active travel'?

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ABSTRACT

Where has the concept of 'active travel' come from and where is it taking us? In this paper, we explore these questions, firstly, through a systematic review that summarises the growth of active travel research over the last 15 years. This suggests a tendency to equate or reduce active travel to simply walking and cycling. We then move on to explore what expanding this definition to include all "travel in which the sustained physical exertion of the traveller directly contributes to their motion" would mean for active travel research and the modes it studies. To do this, we provide a thematic review of the limited transport literature into wider active travel modes (such as running, kick scooting, skateboarding and wheelchair use). The thematic review discusses six threads (emergence, fun, inclusivity, safety, regulation, and design) that explore what is known about these wider active modes and how transport research characterises them. We conclude with a discussion of the likely implications of expanding the definition of active travel more widely for policy, practice and transport-related research. While not risk-free, we argue that embracing an expanded notion of active travel has much to offer and it should be approached more broadly within transport studies than it is.

1. Introduction

'Active travel' is a phrase now commonly used by researchers and policy-makers. Yet where has this concept come from, and where is it taking us? In this paper we explore the development and use of the concept in transport studies through systematic and thematic review methods, highlighting ways in which 'active travel' both unites and divides different modes of transport. Specifically, while the promise of 'active travel' is mode neutrality, our systematic review finds that 'active travel' is often implicitly or explicitly used as a shorthand for walking and cycling.

We can speculate as to why the term has gained currency in its current usage: reasons of convenience; emergence from the field of health; a desire to identify perhaps the most significant feature that the two constituent modes share; an aim of establishing a 'beachhead' for this category of transport in terms of profile and funding. Whatever the reason, use of the term as synonymous with walking and cycling is simply inaccurate: there are other forms of travel that are similarly 'active' but which are not generally included in definitions of 'active travel'.

Many other types of transport, from manual wheelchair use,[1] to skateboarding, kick-scooting, roller-blading, kayaking and running, might equally well be classed as 'active travel' yet we find rarely appear in the literature that sites itself within this topic. Nevertheless, such anomalies can be seen as an opportunity: it has allowed us to ask what 'active travel' *could* or *should* mean, particularly in terms of the modes of transport that could or should be seen to qualify. And, in so doing, we have sought to understand better why certain active modes have been, up to now, largely excluded from the working definition of 'active travel', how transport research has approached and characterised such modes, and what this tells us about the marginalisation of modes and travellers and their struggles to attain transport legitimacy.

Our approach to this work has been as follows and we hope it encourages active travel to be approached more broadly within transport than it is at present:

- We first conducted a systematic review of the use of 'active travel' in the academic literature to understand its development (Section 2);

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[1] We note that some authors consider manual wheelchair use to sit within walking, while others do not.

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- We then reflected on the equating of active travel with walking and cycling (Section 3) leading to the development of a wider and more inclusive definition of active travel (Section 4);
- We next carried out a targeted literature review of active modes beyond walking and cycling, exploring a set of six themes selected to shed light how these wider modes are approached and understood in transport literature, and on why 'active travel' has tended to be limited to walking and cycling (Section 5);
- We then applied these findings, discussing the likely implications of expansion both for policy and practice, and transport-related research (Section 6).

Before proceeding, we should acknowledge that 'active travel' is a relatively new term compared with others that have historically been used to encompass walking and cycling. 'Non-motorised modes' (e.g. Lundberg and Weber, 2014) and, before it, 'slow modes' (e.g. Rietveld, 2001) or 'low-speed modes' (e.g. Rodier et al., 2003) served (somewhat unsatisfactorily) as shorthand for walking and cycling, whilst 'sustainable transport' captured walking and cycling together with other more environmentally friendly modes, such as trains and buses, and more recently 'micromobility' has emerged in relation to lightweight, personal vehicles. Much could be said about all of these and we return to some in our discussion, but our emphasis in this paper is on active travel specifically. The boundaries between these categories are blurry and overlapping (see Section 4) but active travel has its own history and refers to a particular but contested and unclear set of modes that are of increasing prominence. Internationally, 'active travel' was recently included in the final COP26 declaration (Department for Business, Energy and Industrial Strategy & Department for Transport, 2022), while in the UK, Active Travel England will soon be established as an inspectorate and funding body to be led by the National Walking and Cycling Commissioner (Department for Transport and Shapps, 2021), a circumstance that seemingly embodies the slippery and potentially problematic nomenclature we see in research, practice and policy. It is within this debate that we seek to intervene with this paper.

2. 'Active travel': growth of a concept

As 'active travel' forms our starting point, we began with a systematic review of how the term has developed and been used within academic literature. This aimed to establish when and where 'active travel' appears, and its scope/definition. We chose the general 'Web of Science' database and searched for articles published 2000–2020 using terms related to 'active travel' in the title (Table 1). While missing some papers that refer to 'active travel', this focuses upon those for which the concept is important enough to be foregrounded in this way. We limited the search to articles published in English and to full academic papers (including systematic and narrative reviews, but not, for instance, book reviews or conference abstracts).

Table 1
Search terms and strategy.

Database: Web of Science Core Collection
((TI=("active travel*") OR TI=("active transport*") OR TI=("active mode*") OR TI=("active school*") OR TI=("active commut*") OR TI=("active mobilit*")))
Refined By:[excluding]: WEB OF SCIENCE CATEGORIES: (MEDICINE GENERAL INTERNAL OR ENGINEERING ELECTRICAL ELECTRONIC OR OPTICS OR PHYSICS APPLIED OR BIOCHEMISTRY MOLECULAR BIOLOGY OR CHEMISTRY MULTIDISCIPLINARY OR ECONOMICS) AND [excluding]: WEB OF SCIENCE CATEGORIES: (PHARMACOLOGY PHARMACY OR BIOLOGY) AND [excluding]: WEB OF SCIENCE CATEGORIES: (ENGINEERING MECHANICAL OR ENGINEERING MULTIDISCIPLINARY) AND [excluding]: WEB OF SCIENCE CATEGORIES: (CHEMISTRY ORGANIC OR CHEMISTRY PHYSICAL) AND [excluding]: WEB OF SCIENCE CATEGORIES: (CLINICAL NEUROLOGY) AND [excluding]: WEB OF SCIENCE CATEGORIES: (PHYSICS FLUIDS PLASMAS OR PHYSICS MULTIDISCIPLINARY OR PHYSICS MATHEMATICAL OR PHYSICS CONDENSED MATTER OR ASTRONOMY ASTROPHYSICS)

We excluded some clearly irrelevant articles by category exclusions (e.g. physics) but manual inspection of titles, abstracts, and articles was necessary to exclude irrelevant material. From an initial 1214 results, 658 represented articles as defined above covering 'active travel' related topics published in English between 2000 and 2020. Almost all topic-related exclusions were of subjects completely unrelated to our topic, such as medical articles related to 'active transport' of cells. As our aim was exploratory - to see how active travel is defined in the literature - we did not otherwise exclude articles with potential relevance, with one exception. This related to several articles reporting school-based research, which for instance referred to 'active schools' but only covering physical activity on school premises, without any non-school component, such as street exercise or travel to school. Aside from this, we did not make any judgement about the use of the concept (e.g. whether it covered journeys with destinations, for instance).

Fig. 1 shows the results by date, with rapid growth in 'active travel' over our study period. In the early 2000s, few if any articles used these terms in the title, but after 2007 there was substantial year-on-year growth. For instance, in 2020, twice as many articles used the term as in 2015. The geographical diffusion of the term has equally expanded over this timeframe, extending beyond the US, UK and Australian core of early active travel papers.

The articles covered represent two main disciplines, transport and health. Looking at the journals in which the research is published, the interdisciplinary *Journal of Transport and Health* comes top, with 93 papers. It is followed by four health journals: the *International Journal of Environmental Research and Public Health*, the *International Journal of Behavioral Nutrition and Physical Activity*, the *Journal of Physical Activity and Health*, and *BMC Public Health*. Only two purely transport journals make the 'top 10' - *Transportation Research Record*, and *Transportation Research Part D: Transport and Environment*, with 19 and 10 respectively.

Of course, this does not mean that transport journals are ignoring modes such as walking or cycling. Rather, it points to the history and connotations of 'active travel', which foregrounds physical activity rather than purpose or, apparently, mode. Looking at (non-exclusive) research areas to which the articles are assigned on Web of Science (note that this was only done systematically from 2011), three are clearly dominant: public, environmental, and occupational health (337); transportation (169); and environmental sciences and ecology (109).

Fig. 2 compares the change in article categorisation between 2011 and 2020. Broadly speaking, the trend for both research areas tracks the wider growth in articles. However, during 2011–2013 only seven articles categorised as 'transportation' were published, compared to 39 classed as public health (it is important to note, however, that public health is the larger field). The pattern of growth in 'active travel' articles in both fields is thus similar, but the term seems more to originate in the public health field before spreading to the transport field, perhaps replacing previous terms (non-motorised modes, low-speed modes) in the field's nomenclature.

Author keywords are another way to explore the field. Fig. 3 shows that after excluding 'active travel' related phrases, physical activity is by far the most used keyword, but followed closely by walking. Indeed, even combining 'cycling' and bicycling', walking 'wins' with 117 compared to 96. By contrast, other terms that might be used to describe types of transport or mobility aid (e.g. skateboard, wheelchair, running) were rarely used (<10 articles) which reflects their very limited presence in the transport literature generally.

414 articles referred to walking at least once in the abstract; although in some cases this was merely to define active travel (such as "active travel, i.e. walking and cycling" [Hankey et al., 2017, p. 527]; although we also found more inclusive examples such as "the use of non-motorised travel modes such as walking, running and cycling" [Larouche et al., 2014, p. 1], or "walking, bicycling or skating (active commuting) to and from school" [Heelan et al., 2005, p. 341]). Somewhat fewer, 333 articles, mentioned cycling at least once in the abstract. 190 (28%) of articles did not refer to walking or cycling in the abstract,

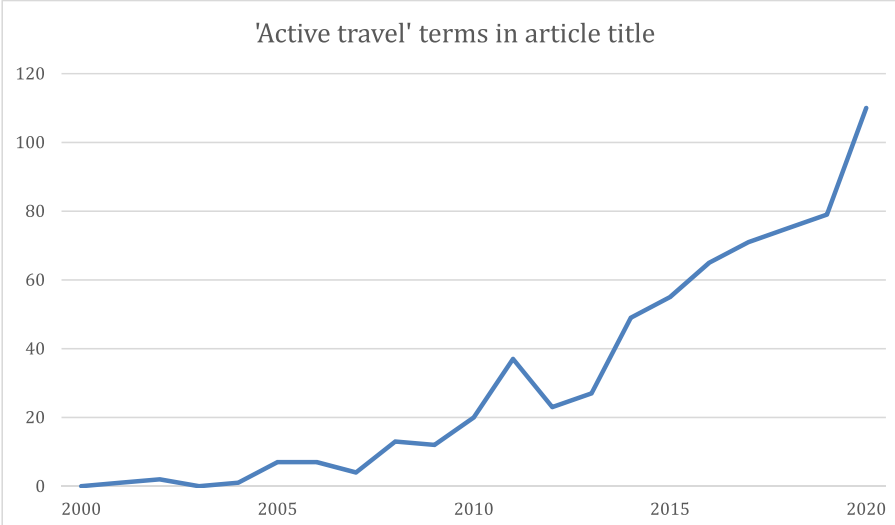

Fig. 1. Articles with 'active travel' and related terms in the title, 2000–2020.

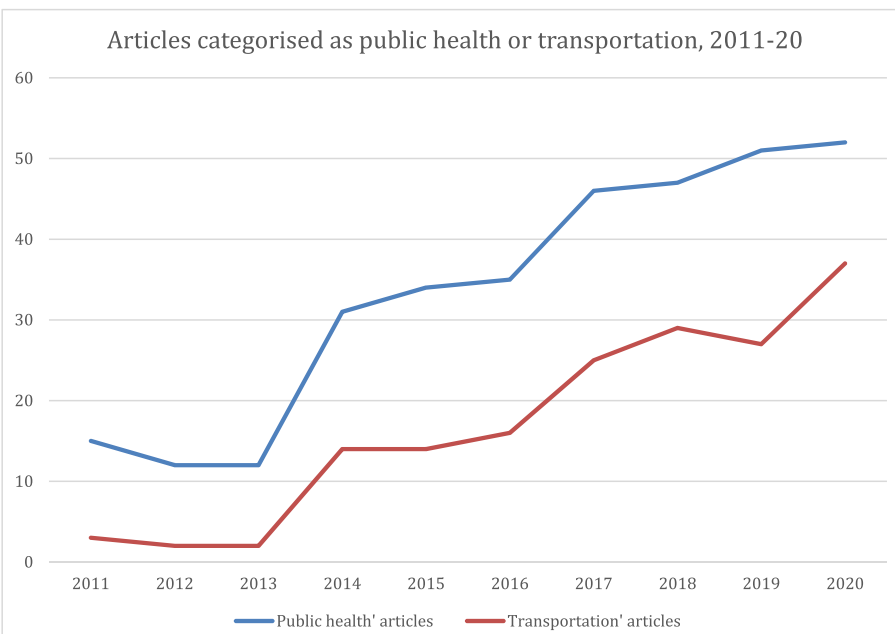

Fig. 2. Field of categorisation of articles, 2011–2020.

this proportion being higher among articles categorised as public health (31%) versus those categorised as transport (24%). There were three mentions for running, nine for skating, and four for wheeling.

This brief overview of our findings suggests that (i) 'active travel' is a growing field, especially in the past ten years, (ii) the field is represented more in the public health literature than the transport literature, although this trend appears sharper when looking at journal title than by research area classification, (iii) although many of the health papers used 'objective measurement' of physical activity which is in principle mode-neutral, most papers, both for public health and for transport, specified walking and cycling in their abstracts but not for instance running or skating. The limited literatures on these less studied modes notwithstanding, these findings raise intriguing questions about why 'walking and cycling' appears so central to the definition of 'active travel', despite its initial genesis within a public health field. As public health is traditionally more concerned with the outcomes of active travel (e.g. benefits to physical and mental health) rather than the process, we might expect a mode-neutral approach.

3. Active travel = walking and cycling. How did we get here?

Considering how we have arrived at the current two-mode orthodoxy may be insightful in probing why active travel is mostly equated with walking and cycling. We discuss below how issues of measurement, imagination and satisficing may have contributed. A common refrain in the social sciences is that 'what is measured is what matters' (e.g. Bevan and Hood, 2006). Researchers working with existing data may want to include some of the wider active modes explored later in the paper, but if travel surveys or traffic counts only record walking and cycling then the modes that can be included in analysis is limited to just those two. 'Active travel (walking and cycling)' denotes, therefore, a category for which many variants exist, but only two are possible to discuss meaningfully and with any certainty. Such data availability creates a vicious circle where funding and policy attention are directed towards walking

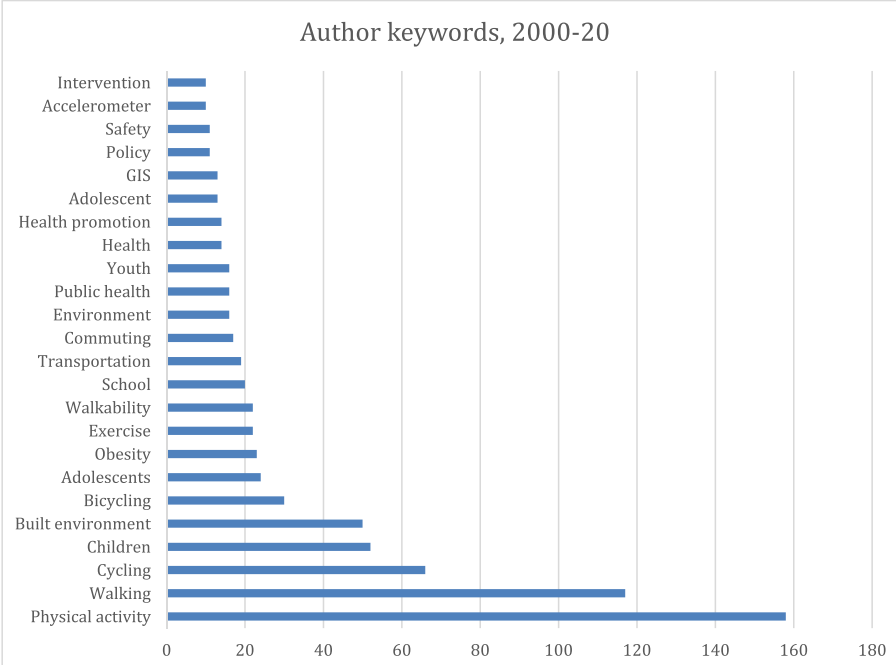

Fig. 3. Author keywords mentioned in at least ten articles, 2000–2020.

and cycling, further entrenching their positions as key modes and marginalising other active travel modes.

But this does not explain how those two modes rose to this privileged position. An obvious answer would be that they are the most common forms. Given limited usage data for wider active modes, this is hard to evidence beyond our shared street experience and rough suggestive estimates (e.g. Cook, 2021 suggests run-commuting rates are around 10% of cycling travel rates in the UK). However, if we assume walking and cycling either are or are perceived to be the most common active modes, 'active travel (walking and cycling)' becomes a category of travel within which wider active modes may be absorbed, but only walking and cycling are worthy of serious academic and policy consideration. Why bother researching modes that may struggle to join the conversation and may lack existing frames of reference or pathways to impact? We return to this discussion later in exploring how the hybrid nature of some other active travel modes, operating at the boundaries of fun and function, may be problematic for their acceptance in the active travel field.

A final suggestion for the reductionism of active travel relates to the newness of the field. As demonstrated by the literature review, attention to active travel has exploded in the last 15 years. It may simply be that, preoccupied with other research priorities, the transport community has not yet got round to developing a more nuanced definition. 'Active travel (walking and cycling)' was therefore a 'good enough' definition and effective shorthand when the field was young and attention to any part was novel and needed, but this no longer suffices. The ready-inclusion of kick-scooters within children's active travel literature demonstrates the potential for these definitions to evolve and expand. In this instance, conceptualisations of children's active travel expanded as a result of popularity: 83% of homes in Ireland with children aged 4–14 have a microscooter (Kiely et al., 2003) and scooting now regularly appears in school travel plans, is provided with parking, and has a Scootability training programme in the UK (Team Rubicon, 2020). While we see popularity-based expansion as problematic - some modes (especially adaptive modes) may never reach high enough penetration to be included but are not without value - this does provide a justification for the rethinking of active travel definitions.

4. A wider definition of active travel

Seeking to extend the scope of active travel and broaden horizons beyond walking and cycling, we tentatively offer this wider and more inclusive working definition of active travel: **Travel in which the sustained physical exertion of the traveller directly contributes to their motion**. In this section, we briefly explore how we came to this definition and how it may be applied as a basis for our thematic review and our discussions of the possible implications of adopting it that follow.

Our definition leaves open the *intensity* of exertion in active travel. In doing this, we reflect that stipulating any given minimum level might prove unhelpfully exclusive – we argue that walking, running, scooting, wheeling, at any pace, whatever its effect on heart rate, is active movement. However, we necessitate that the contribution exertion makes to motion is sustained. The need to 'kick' start an e-scooter or e-skateboard, for example, after which no further physical exertion is needed to maintain movement is substantively different to modes where exertion must be sustained to keep moving, that they fall outside of our definition of active travel.

The most influential element of the definition is the term 'directly', used in order to exclude (as we believe we should) driving or travel by motorised collective transport, for example, where there may be *some* physical exertion (in pressing pedals, turning steering wheels, maintaining balance and comfort etc) but its connection to the traveller's motion (towards their destination) is at most indirect.

This definition would mean that modes qualifying as active travel include: running, skateboarding, travel by manual wheelchair, swimming, canoeing, kick-scooting, cycling using a power-assisted bicycle, roller-skating and roller-blading among others (see Fig. 4). Modes not qualifying as active travel include the use of any vehicle powered wholly by its motor (e.g. monowheels and e-mopeds) or sustained wholly by its motor (e.g. e-scooters and e-skateboards). This is not to say that such modes are without merit but that, according to the definition adopted, they cannot be seen as 'active'. Equally, horse-riding sits outside of our definition, despite appeals for its inclusion in active travel (Minting, 2021), as it is not the physical exertion of the traveller than directly contributes to the motion. Under the definition adopted, horse-riding is

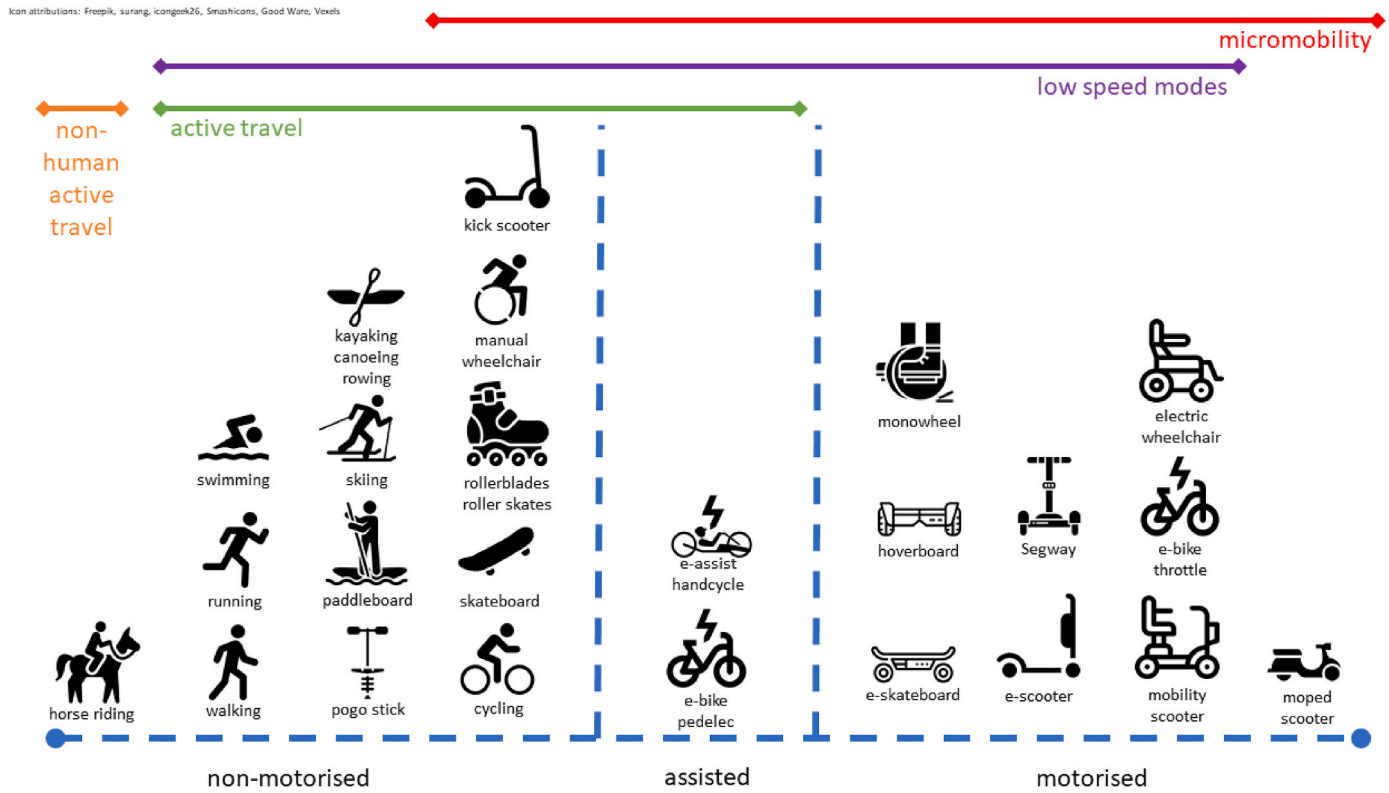

Fig. 4. Taxonomy of active travel modes and related categories.

active travel for the horse, not the human.

5. More than walking and cycling: thematic review

If walking and cycling are overwhelmingly the modes that are cited as examples of/synonyms for active travel, what of the 'other' active modes? When they do make it into the transport literature, how are they characterised, and what can this in turn tell us about active travel, as we have defined it? We have chosen here to focus on the transport literature because it is traditionally most concerned with specific types of transport, whereas the health literature (when dealing with transport) is mostly interested in health impacts of different activities.

To these ends, this section presents a thematic review of literature examining wider land- and water-based active travel modes. This review used our definition of "travel in which the sustained physical exertion of the traveller directly contributes to their motion" to identify literature on relevant modes within transport studies or in adjacent fields where the transport potential/context of the mode is highlighted. This resulted in identifying 132 papers and a diversity of modes, including running, wheelchair use, kick-scooting, skateboarding, roller-skating, rollerblading, inline-skating. canoeing, kayaking, swimming, paddleboarding, longboarding, pogo-sticking and pram strolling. These modes have been researched to different degrees, with some receiving greater attention – such as running (Cook, 2021) and skateboarding (Fang and Handy, 2019) – and others receiving little more than passing acknowledgement – such as pogo-sticks (Litman, 2006). This is necessarily a limited review: it has been conducted in order to elucidate how these modes are treated and understood in transport studies and with no claim that its results are exhaustive.

Many of these wider active travel modes are hybrid, blurring lines between transport, sport, recreation, leisure, play and exercise mobilities. They are more commonly considered as belonging to spheres outside transport and this is a productive tension that scores many of the ideas presented here. This productive tension underpins each theme we explore in this section, as we consider the ways transport literature emphasises different attributes of these modes, the way different modes are characterised within this, and what this tells us about how transport researchers think (or don't) about wider active travel. This alterity also helps us better understand why 'active travel' tends to be reduced to walking and cycling, they are the hegemony that helps establish the novelty of research into wider active travel modes and against which comparisons are made.

Here we present six thematic threads we found common in the literature on wider active travel modes. In doing this, we build on the work of Lorimer and Marshall (2016) but depart somewhat from their set of themes in order to update and expand their brief review and reflect our distinct aims. These themes are not necessarily unique to wider active modes (they may commonly be found in literature on mainstream travel modes too) but the centrality of these themes and relative absence of more 'traditional' transport considerations is what sets them apart in the literature. Hence, bringing these wider modes more roundly into the active travel fold could help break such marginalisation. The six themes we explore are as follows:

- *Emergence and other niches* – wider active travel modes, such as skateboarding and rollerblading, are often presented in the literature as new, unconventional or novel. We discuss the accuracy of these qualities and the impact such representations have.
- *Fun and pleasure* – certain modes, such as scooting, are represented as explicitly and predominantly enjoyable, which may explain their exclusion from the 'serious' transport literature.
- *Safety/injury risk* – users of certain modes are characterised as thrill-seekers and this association with embracing risk may explain a reluctance to include them in a field which consistently seeks to reduce risk.
- *Inclusivity* – the manual wheelchair is both a mobility aid and a form of transport, and we discuss the impact of this dualism in relation to active travel and its inclusive potential.
- *Regulating access and use of space* – modes beyond walking and cycling present policy makers with a challenge in terms of what

should be allowed where. A desire to keep things simple may help to explain the 'othering' of wider active travel modes in literature.

- *Design* – leading on from the above point, designers of the transport system may shrink from trying to cater for a large set of heterogeneous forms of movement and this may also cast light on the currently narrow use of 'active travel' in literature.

5.1. Emergence and other niches

As we found in our systematic review, when modes are specifically cited in papers, 'active travel' generally turns out to mean walking and cycling. Our thematic review provides more detail and insight into how these exclusions are constructed. The coverage of wider active travel modes pulls towards highlighting their possible newness and novelty, and we found this used across a range of such modes regardless of when the device or mobility aid in question was invented or began to be used.

For example, kick scooters, wheelchairs, inline skates and pram strollers are labelled by Landis et al. (2004) as emerging, while skateboarding is cast as unconventional by Fang and Handy (2019) and even feral by Stratford and Harwood (2001). This curiosity also inspires media and public interest that often exceeds the diffusion of these practices and the research into them. Media attention on running as transport (Alger, 2020; Freeman, 2013; Kemp, 2014), urban ski share schemes (Coffey, 2021) and water-based active travel (BBC Capital, 2018; Steussy, 2018; Wainwright, 2012) outstrips academic literature into these modes, for example. In this sense, wider active travel modes are often portrayed as, and garner interest for, being niche - innovative and experimental travel practices from which novel understandings and possibilities for transport can be gleaned and the future of transport informed (Geels, 2012).

While a useful hook for research into such practices, these representations are slightly curious. Firstly, many of these modes are not new. Running, swimming and canoeing have all entrained human movement for millennia and even the more recent technologies, like rollerblades and kick scooters, have been used for transportation for decades. For example, the increasing use of skateboarding for transport was discussed in Stratford and Harwood (2001) yet almost 20 years later, it is still being described as an emerging travel mode (Wu et al., 2020). For how long can these wider transport modes be emergent? Perhaps the lack of sustained attention to these modes within transport studies contributes to this continual sense of newness.

Secondly, why are these wider active travel modes cast as unconventional? What is it about the nature of running, skateboarding and rollerblading, for example, that means they struggle to be seen as normative within transport? They are not unique in blurring the transport, sport, exercise and leisure boundaries; both cycling and driving do the same (Aldred and Jungnickel, 2012; Merriman, 2012), for instance, the idea of the 'Sunday drive' is long-established and yet does not seem to threaten driving's legitimacy as a 'real' transport mode. In employing *feral* as a metaphor to explore various forms of skating, Stratford and Harwood (2001, p. 6) sought to highlight the "contestation between the generative dispositions of skaters and a range of institutional orthodoxies that constitute the meaning of 'proper' transport". Extending this idea, perhaps there are different movements, meanings and experiences at play in wider active travel modes that sit at odds with established transport understandings, but which also invite a rethinking of how transport is defined and characterised.

5.2. Fun and pleasure

One such divergent and unconventional aspect of wider active travel modes regularly highlighted is pleasure. Fun and enjoyment are noted as important in various wider active travel practices, such as kayaking (Lund et al., 2020), running (Cook, 2020), cross-country skiing (Saidla, 2015) and skateboarding (Fang and Handy, 2019). Do such qualities, and their links to other spheres such as sport, play and leisure, inhibit these modes from achieving legitimacy within the transport realm? Or is transport research drawn to exploring these aspects of these modes to emphasise their divergence from mainstream transport? Fun and pleasure are marginalised in adults' transport considerations, anyway. In children's active travel research, ludic motivations are reported with more regularity and significance than in research into adults' transport practices (Villa-González et al., 2018). This may contribute to a wider set of active travel practices being discussed more frequently and with greater legitimacy in children's active travel research, particularly kick-scooting and skateboarding (Hawley et al., 2019; Wolfaardt and Campbell, 2013).

This prompts the questions of whether movement needs to be serious in order to qualify as transport, why pleasure may threaten the ability of some modes to be seen as 'proper' transport but not others, and why such narrations currently exist in transport literature? Within adults' transport literature, pleasurable travel is often analytically-separated from utility travel. We are familiar with a distinction being made in literature between cycling for transport, for leisure, and for sport or health (Heesch et al., 2012). A similar distinction is well-established in walking (see Davies and Weston, 2015; Pollard and Wagnild, 2017). Wider active travel modes are rarely afforded such categorisation, however, being almost entirely categorised outside of transport altogether (see 5.1 and for example, Fang, 2019; Stratford and Harwood, 2001). While noted in other transport modes too (Ory and Mokhtarian, 2005), the liking, enjoyment and pleasure of wider active travel modes are represented as more central to their undertaking than conventional transport thinking permits. As such, fun and its child-like qualities simultaneously pose barriers to wider active travel modes' acceptance as transport and opportunities for doing transport otherwise (Aldred, 2015).

5.3. Safety and injury risk

If literature on wider active travel modes has often highlighted fun and pleasure, alongside this is a concern with safety (see Rodier et al., 2003 for a review of the safety of low-speed modes) and a construction of these apparently novel and newsworthy modes as inherently risky. Osberg et al. (2000) note that deaths and serious injuries among inline skating are more prominently reported than other traffic casualties, which along with the unfamiliarity of these modes results in an overestimation of perceived risk (HM Treasury, 2005; Sunstein, 2003). The perception of wider active travel modes as operating outside of social norms, as risky or thrill-seeking (Glenney and Mull, 2018; Kern et al., 2014; Stratford, 2002) is the other side of their construction as fun and novel. This may reduce public sympathy (Lupton, 1993), resulting in poorer formal provision and less considerate interactions, increasing the 'real' riskiness of these practices. Unfamiliarity might create heightened fear in other road users, unused to reading the movements of skateboarders or other travellers using non-standard modes (Stratford, 2016).

Data issues imperil attempts to ascertain the 'actual' risk associated with the use of many wider active travel modes, either to the user or others. For instance, in the UK, police collision data collection forms state specifically that the category of pedestrian includes those using "roller skates or skateboard" (Department for Transport, 2011, p. 69),[2] hence it is not possible in the routine data to separate out these different mode users. Even where information is available, lack of exposure data limits comparison across modes, as non-standard options are often omitted from travel surveys and other data-collection instruments (Fang and Handy, 2017). Hence, we do not know what the distance travelled using skateboards is, for instance, and could not compare the risk per kilometre with that for walking or cycling.

[2] They remain generic pedestrians even where they were injured while holding on to the back of a motor vehicle.

The hybridity of wider active travel modes may also confound comparison of relative risk of use as a vehicle for transport rather than as a leisure activity. This could also be said about cycling. Fang and Handy (2017) were able to separate fatalities and (less successfully) non-fatal injuries sustained in recreation vs transportation trips in their investigation into the safety performance of skateboard travel, but only by examining newspaper reports. Such delineation might be harder for other wider modes given the blurrier separation between their sport, transport, exercise, recreational functions: Would a run-commuter's broken ankle be considered as arising from the activity's transport function or its sporting/leisure one? Of course, the same question might also be asked of a broken wrist sustained by a cycle commuter or a driver being injured while on a Sunday drive to a restaurant. The 'problem' of separating functional or derived-demand transport activities from purely fun or pleasurable ones undertaken for the activity itself exists for other modes but is more prominent for transport options beyond the mainstream.

5.4. Inclusivity

In doing transport otherwise, wider active travel modes may increase the inclusivity of transport practices, through widening the definition of active travel and potentially enabling an expanded set of people to do active travel (and transport more widely). This has been noted in the literature regarding how the use of wider active travel modes by teenagers, young adults and those from lower-income households (Fang, 2016; Fang and Handy, 2019; Harpool, 2018) expands their access to cheap, independent, and active mobility not always afforded to them (Mackett and Thoreau, 2015). This has been argued to be a central matter in the rights to the city (Stratford, 2016), with the consideration and facilitation of different transport modes being integral in the politics of mobility (Cook et al., 2016).

If skateboarding in the literature is sometimes associated with inclusivity, wheelchair use is almost always discussed within this frame, whereas it is less commonly associated with fun, pleasure or emergence. The literature on wheelchairs as transport is dominated by accessibility and more often the lack of it (Bartzokas-Tsiompras et al., 2021; Bromley et al., 2007; Pierce, 1998; Pyer and Tucker, 2017). A general finding is that, despite some positive change, wheelchair users remain effectively excluded from much of public space and public transport. This work is situated within a broader literature that critiques the policy and social treatment of disabled people (e.g. Gaete-Reyes, 2015; Imrie, 2000; Kitchin, 1998; Matthews and Vujakovic, 1995; Sapey et al., 2005) and identifies a radical movement of resistance against ableist hegemony (Velho, 2018).

The positioning of the wheelchair is helpful in demonstrating that the 'inclusive' character of active travel is ambiguous. The transport mainstream has – as the disability literature suggests – often forgotten wheelchair users, even if wheelchair use may be subsumed within 'walking' at times or occasionally low-speed modes (Rodier et al., 2003). However, if interpreted strictly, 'walking' excludes those who cannot propel themselves by means of their feet. The field of 'active travel' might hence be perceived as problematic for disabled people, who may be cast as immobile due often to the constraints that an ableist society places on them. The health and sport literature has recently been criticised for its widespread use of 'sedentary behaviour' as the bad twin of physical activity (Smith et al., 2021), whereas is it quite possible to be physically active while seated, whether on a bicycle or in a manual wheelchair. So while the literature of wheelchair use may take a concern with accessibility and inclusivity, this work is often marginalised within the transport literature, which in turn may contribute to marginalisation of wheelchair users and the mode's lack of inclusion within active travel.

5.5. Regulating access and use of space

The alterity, unfamiliarity and newness of many wider active travel modes has also inspired research to consider where these practices fit - legally, spatially, discursively – within transport and city landscapes. Firstly, a range of literature has sought to explore the current and changing legal statuses of such modes, their access to and use of transport spaces, and perceptions about these aspects. Litman and Blair (2017) provide a summary of the legal status of such modes in the European Union and various states and cities within the USA. This reveals diverse legal stances, that can be "haphazard and confusing" (Lorimer and Marshall, 2016, p. 2), regarding which infrastructures these modes are allowed to use and whether specific safety, speed or age restrictions exist. Their summary also highlights the common attempt to tame the feral nature of wider active modes by aligning and equating them to established active travel modes. Rather than accommodating or legislating for these as distinct modes, attempts are made to fit them into pre-existing frameworks by determining if they are more akin to pedestrians or cyclists, and then extending their respective rights, responsibilities and privileges (Bruneau and Maurice, 2012; Fang et al., 2019). The designations of wider active travel modes as walking or cycling can result in some undesirable positioning. Early work by Birriel et al. (2001) demonstrates that inline skaters believed they should be allowed access to roadways with the same rights as cyclists not possible with their designation as pedestrians, a designation similarly problematic for skaters in Australia (Stratford and Harwood, 2001).

Exploring why such regulatory designations can be problematic has been another key strand within the literature, visible in the focus on the experience and doing of wider active travel modes. Here research has been interested in how practitioners of wider active travel modes use and occupy space, how they interact with other space users, and what that means for their spatial and legislative requirements. Examples include Birriel et al.'s (2001) investigation into the operational characteristics of inline skaters, Fang and Handy's (2017) observations of skateboarders' riding behaviours, Kostrzewska and Macikowski's (2017) experiments into the needs of kick-scooters, and Cook et al.'s (2016) exploration of encounters between runners and pedestrians. Such work demonstrates the distinctiveness of these mobile practices and how they introduce different types of movements, bodies and materials into transport landscapes not yet accounted for in legal and regulatory systems.

5.6. Design

Alongside a regulatory positioning, literature into wider active travel modes has also considered how they fit into the built environment through elements of design. Good urban design balances technical functionality alongside developing attractive, accessible and equitable public spaces, and therefore is implicit in many themes of this review. This is exemplified in the Complete Streets initiatives in the USA that encourage "streets that can safely accommodate all road users, regardless of mode of travel or ability" (Hui et al., 2018, p. 73). Here, however, the assumption that wider modes of active travel can be treated in the same way as established modes of active travel presents design problems, in addition to regulatory problems. Landis et al. (2004) reviewed the technical requirements of a range of emerging vehicles (including skates, wheelchairs, recumbent and adaptive cycles, and cargo cycles) against design parameters such as path width, stopping distance and turn radii. They found that a path designed to meet only the requirements of a standard cycle would be insufficient to meet the needs of at least one other vehicle type on each of the considered design parameters, as is common knowledge to inclusive cycling campaigners lobbying for the removal of, for example, discriminatory access barriers. Paths designed with only standard cycles in mind are not sufficient to accommodate the range of emerging vehicle types. Kick-scooters and skateboards also require high standards of surface maintenance and cleaning for safe and efficient travel (Lorimer and Marshall, 2016; Platt and Rybarczyk, 2020), which are rarer design considerations for cycling. Accommodating a multiplicity of modes therefore requires greater

consideration and generosity in both initial and on-going design investment. Increasing recognition of the need to design cycle facilities accessible to a range of cycles (Department for Transport, 2020) may result in designs capable of better hosting wider active travel modes too.

Beyond road and built environment design, literature has also explored other design considerations that might encourage or facilitate wider active travel modes. By their nature, these modes are highly dependent on bodily capacities, limitations and material accoutrements to commence and entrain movement. Thus, the design of such materials is key to facilitating, producing comfort, ensuring safety, and managing exposure to the elements within these practices. Such design considerations play a role in the clothing and backpack choices of run-commuters (Cervero, 2016; Cook, 2022), the personal protective equipment choices of skateboarders (Fang, 2016) and inline skaters (Osberg and Stiles, 2001), as well as in identity work of pram strollers (Boyer and Spinney, 2016; Thomsen and Sørensen, 2006), for example. Cumbersome design, however, can hinder and provide barriers to accessibility, something that has also been explored within pram strolling mobilities (Boyer and Spinney, 2016; Jensen, 2018) and is a strong thread within wheelchair use research (Bonehill et al., 2020). Yet these designs and materials are not only salient when on the move. Akin to other active travel matters out of place (Aldred and Jungnickel, 2013), secure storability of wider active travel materials is a key concern for users and the ability to bring these items into buildings is seen as highly beneficial (Fang and Handy, 2019).

6. Discussion: expanding active travel

The above thematic review demonstrates that the reduction of active travel to walking and cycling is inaccurate and that a diversity of wider active travel modes has been researched, which contribute meaningfully to travel patterns, people's mobile lives, and our understandings of transport through the edge cases and blurriness they introduce to the transport realm. Thus, we consider it appropriate to consider seriously the possibility of expanding active travel and so we turn now to the potential implications of adopting a wider definition, in terms of first policy and practice, then transport research.

6.1. Policy and practice implications of expansion

For wider active modes, formal recognition in policy and practice may increase acceptance of these options as legitimate, which could result in greater provision. Legitimising and providing for wider modes may increase safety (Elvik and Goel, 2019) and convenience for current users of those modes as well as increasing uptake, offering greater transport choice and making active travel available to those for whom walking and cycling are not possible or preferred. Moreover, the association of these modes with leisure and enjoyment may increase the attractiveness of active travel. If an expanded definition led, in time, to greater volumes of active travel, this could be expected to extend the benefits currently associated with these forms of travel, in terms of public health, quality of place and local vitality. If increased active travel were associated with reduced car use, further benefits could be claimed in terms of improved air quality and reduction in carbon and noise pollution among the many other benefits of greater active travel use.

Expanding the constituency of active travellers may bring 'strength in numbers' benefits to its members, both in practical terms (an increase in the number of people travelling may make them more salient in other users' minds) and policy terms (active travel being seen to deserve a greater share of policy attention and funding). It may also bring benefits for walking and cycling in terms of provision. For example, in the US, the popularity of e-scooters (not themselves an active mode by our definition, but with characteristics shared by many active options) has led to implementation of infrastructure accessible to e-scooters, cycles and other active modes where previously none was available (Keenan, 2020). An expanded definition may benefit walking and cycling in other ways too. There is growing recognition that the two modes are best treated separately (Department for Transport, 2020) and recognising active travel as encompassing a range of modes with different needs may prevent good walkability and good cyclability being conflated.

An expanded definition of active travel may, however, put at risk some of the progress made in raising the profile of walking and cycling and securing their place in transport policy and provision. Reallocation of space and funds towards walking and cycling is already politically difficult in many countries and cities. Catering for a multiplicity of existing and potential modes would involve asking for more generous provision. If a fixed amount of funding and attention is available for active travel, spreading this across more modes may result in increasingly thin provision which is insufficient to support reliable use of any individual mode and leads to an overall decrease in uptake.

There are also arguments from heterogeneity: an expanded set of active modes would be more difficult to cater to, with the possible result that policy makers felt unable to provide meaningfully for the diversity of needs and interests – in order to avoid appearing to favour one member over another, they might abandon the entire set as 'too difficult'. The diversity of needs may also lead to policy confusion: whilst the elision of walking and cycling is problematic, it is not beyond most people's cognitive capacity, whereas a larger and more heterogeneous set may lead to an intellectual throwing up of the hands: 'what is active travel now?' Our review also revealed cases of conflict between travellers using different active modes (Delaney et al., 2017) – it is not realistic to imagine perpetual harmony across the membership of a wider active-travel community. Particularly within the limits of existing funding and infrastructure, how might a balance be found between the needs and preferences in conflict, such as the considerable difference in average speed across the modes in question? This challenge already exists when considering walking and cycling but would be accentuated by an expanded membership.

Furthermore, by including wider modes in the active travel family, there is a risk that walking and cycling could be 're-othered'. While highlighting their benefits, the association of walking and cycling with 'health' and 'environment', or even with childhood pleasures, has simultaneously also marginalised them, within contexts where 'strategic transport' remains primarily associated with motorised modes (Aldred, 2012). Walking and cycling policy advocates have fought hard to get them seen as 'transport'. We have shown that many wider active travel modes are seen as niche, trivial, outside of 'serious transport'. Could association with such modes risk walking and cycling losing hard-won legitimacy and policy support? This might be particularly likely if one or more of the 'new' active modes had negative associations, in terms of appearing the preserve of a particular societal segment or being associated with unconventional lifestyles. Perhaps the appeal of these wider active modes for transport purposes is inherently limited and their promotion better left to the sport and leisure sector or individuals themselves?

The policy and practice implications of expanding active travel are clearly contentious, however we argue that the case in favour of expansion cannot be summarily dismissed. As such, transport policy makers and providers would have to consider their response to a wider definition of active travel. An embrace of the enlarged set could treat 'active travel' as portmanteau, useful as a way of referring to a set of modes that share one feature but are otherwise too diverse to admit unified treatment. This may suggest a need to operate at the level of individual modes or subgroups of modes for the purposes of policy making, as evident in the recent re-separation of walking and cycling in infrastructure design principles in the UK (Department for Transport, 2020). This could either lead to a scenario of some modes being 'more equal than others' or one where the diversity is accepted and policies that would be suitable and meaningful across the set of constituent modes are pursued. Or, more modestly, to set targets for and/or to allocate funding to the basket of active travel within which pragmatic

decisions are made concerning the identification of subgroups with similar characteristics and the possible selection of 'reference modes' to inform policies relating to design, regulation and other pertinent factors.

However, given the potential challenges discussed of an enlarged set of modes, an alternative, perhaps easier, response would be to maintain the status quo or even retreat from 'active travel' and return to walking and cycling. Given that 'active travel' emerged from the health domain before being absorbed by transport, this would be an understandable path. Doing so would likely leave a policy disconnect: we envisage the health policy community adopting the expanded definition of active travel given that their mode-neutrality would negate having to manage the potential disadvantages described above. It is also reasonable to wonder whether policy makers may seek to discard 'active travel' as a category for purposes of policy making, in favour other categorisation, such as non-motorised or low-speed modes, that may appear less complex. But a moment's consideration shows this to be problematic: an electrically assisted pedal cycle is motorised, though its motor is probably the only meaningful feature that it shares with cars and buses; in policy terms, it seems clearly to belong with its non-motorised sibling. Equally, the use of speed as a distinguishing feature is troubled, given that some people cycle very quickly and much urban car and van traffic fully deserves to be called slow. Thus, it appears that any taxonomy of modes is bound to be vexed. Our re-examination of active travel in this paper is not a claim for this method of categorising modes above all others, but rather is an attempt to reflect critically on a how a popular categorisation within contemporary policy and practice is conceptualised and the implications of this.

6.2. Research implications of expansion

We suggest that a seemingly modest change in nomenclature could have significant impacts for the transport research landscape. While at the very least, this broader definition of active travel necessitates greater terminological care and clarity from researchers as to which modes they are referring to, our intervention signals two principal avenues for future research into wider active travel modes: 1) for active travel researchers to attend to a wider set of modes in their work; and 2) for active travel research to engage more thoroughly with work in adjacent disciplines on these modes, welcoming them into the field and vice versa.

Whether these avenues would be traversed would in part depend on the treatment of individual modes. In the case of modes where travel represents a small share of total movement (skateboarding, say), the research response may be to continue to look those modes through a leisure (or other) lens despite their explicit inclusion in the active-travel family. If so, little would change. If, instead, their placement into the same category as walking and cycling meant they started to be treated as 'orthodox' transport (as we believe they should), this could have at least two implications: first, orthodox transport research methods and concerns may be applied to these modes more than has previously been the case (in terms of better understanding how and why these modes are used for travel, for example); and, second, the dialogue could be enriched between transport research and other fields most relevant to these modes, be that recreation, sport, exercise or disability studies. The last of these deserves explicit mention, given the limited nature of the existing literature on the manual wheelchair as transport. The firm recognition of the wheelchair as a mode may help to establish links between sections of the literature which could be better connected, such as active travel and disability studies.

We can see such a definitional broadening as being easier for some disciplines within transport research to absorb than others. Geographers, anthropologists and sociologists, for example, already seek to contextualise travel and to see it as being more than the 'derived demand' it is often presented to be. In contrast, economists may struggle to assimilate the set of associations (fun, self-expression etc) we have set out here. In particular, the notion that travel is a source of disutility has already come under sustained pressure given, for example, some individuals' preference for walking, despite its often being an objectively slow option. Adding to the set of active-travel modes will intensify the scrutiny: how can we make sense of harder, slower, sweatier modes (Bahrami and Rigal, 2017; Cook, 2021), for example? This challenge for economics extends into the business of modelling transport, given the strong links between them. As for the field of transport engineering, it is possible that the expansion of active travel will shift the balance of attention towards lighter infrastructure and more local networks. This may pose a challenge for research into new and emerging technologies, given the generally 'low tech' nature of many of these modes and practices.

Looking beyond transport, a new dialogue could develop between transport and health. Having received a definition of active travel from the health sector, transport would be returning this definition 'with interest', challenging the health-research community to consider how this wider set might fit into an enriched public-health paradigm.

7. Conclusions

This article has considered the genesis, use and future of the term 'active travel' and has explicitly sought to expand its definition and application to modes beyond walking and cycling. Our more inclusive definition of active travel (travel in which the sustained physical exertion of the traveller directly contributes to their motion) can valuably expand transport's horizons and has much to offer active travel practices, policies, and research. Not only can it better attend to transport use and to important yet marginalised aspects of transport practices, but expanding active travel has the potential to diversify and broaden the appeal of active travel and encourage participation. While not without risk, there would also be significant and (we argue) welcome research implications of expansion. This includes improving our understanding of active travel and enriching dialogues between transport and other fields relevant to these modes, such as sport, recreation and disability studies, as we seek to better comprehend the boundary-blurring, hybrid, and edge-case practices of wider active travel modes. For transport, we think embracing an expanded notion of active travel and the modes that would incorporate has much to offer.

Author statement

Simon Cook: Original and developmental conceptualisation, methodology, thematic analysis, writing - original draft, writing - review & editing. Lorna Stevenson: Developmental conceptualisation, methodology, thematic analysis, writing - original draft, writing - review & editing. Rachel Aldred: Developmental conceptualisation, methodology, systematic review analysis, writing - original draft, writing - review & editing. Matt Kendall: systematic review analysis. Tom Cohen: Developmental conceptualisation, methodology, thematic analysis, writing - original draft, writing - review & editing.

Declaration of competing interest

No potential competing interest was reported by the authors.

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