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A new evolution for transport-related social exclusion research?

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Abstract

This paper provides a brief overview of the transport-related social exclusion (TRSE) literatures and discusses the proliferation of this increasingly active research domain within transport geography over the last twenty years. It then focuses on a rapid evidence review of the implications for TRSE of major future innovations in the transport domain and the new mobility landscapes that will emerge from these technological, behavioural and policy changes. The key findings of the study were that more dedicated research is needed on the differential social and equity impacts of new mobility technologies and future policies to better understand the effects of these changes on already disadvantaged and marginalised groups. Transport geographers and sociologists have a particularly important role to play in the promulgation of these future research enquiries because in-depth socio-spatial research is needed to determine the people and places that will be mobility and accessibility included or excluded by these new innovations, and to help policymakers to determine how best to maximise their benefits and minimise their negative effects on future populations.

Introduction

This paper provides a brief overview of the transport-related social exclusion (TRSE) literatures and discusses the contribution of this Journal to the proliferation of this increasingly active research domain within transport geography over the last twenty years. It identifies that the Journal has encouraged new areas of research of TRSE to emerge and provide a locus for the development of new methodological approaches to its investigation. The paper then reports on a rapid evidence review of the implications for TRSE of major future innovations in the transport domain and the new mobility landscapes that will emerge from these technological, behavioural and policy changes. The key findings of the study were that more dedicated research is needed on the differential social and equity impacts of new mobility technologies and future policies to better understand the effects of these changes on already disadvantaged and marginalised groups. Transport geographers have a particularly important role to play in the promulgation of these future research enquiries because in-depth socio-spatial research is needed to determine the people and places that will be mobility and accessibility included or excluded by these new innovations, and to help policymakers to determine how best to maximise their benefits and minimise their negative effects on future populations.

Transport-related social exclusion (TRSE) has been a research topic championed within by the *Journal of Transport Geography* (JTG) over the fifteen or more years, demonstrating growing pace, vigour and enthusiasm from both its authors and readers over this period. The origins of the TRSE research agenda can partly be dated back to the, by now infamous, *Making the Connections* study (SEU, 2003), although some academics were already publishing papers on this topic prior to this (e.g. TRaC, 2000; Church et al, 2000; Kenyon, 2003). The SEU study firmly established that if people do not have good levels of access to jobs, goods, services and other essential activities, a lack of adequate transport resources can contribute significantly to social exclusion and feelings of social isolation. The worst effects of road traffic can also lead to reduced quality of life due to high levels of exposure to pedestrian casualties and fatalities, and traffic-related air and noise pollution, especially in dense urban areas. The study also found that these transport inequalities are highly correlated with social disadvantage, which means that some social groups are more at risk from TRSE, than others, and are also more vulnerable to the health-related externalities of transport systems.

Reviewing the past contributions of JTG to the TRSE research-base

In a previous review of the TRSE literatures since 2003 Lucas (2012) concluded that a social exclusion approach to the study of transport inequality has both opened up new areas of research enquiry and promoted the development and application of new methodologies. A brief review of articles in JTG over the last twenty years serves to identify that the Journal has been a major contributor to this increasingly popular area of transport studies research.

The earliest signs of TRSE research in JTG can be traced back to a 1997 Special Issue on the topic of an integrated US and European research agenda based around five core themes for sustainable transport, one of which is identified as social change (Leinbach and Smith 1997). An invited paper by Button and Nijkamp (1997) identifies the main driving forces for societal change, noting the continuing need to provide for *geographical accessibility and social equity*, which are the two key underlying principles of the TRSE policy agenda. In particular, the authors draw attention to the issue of 'mobility deprivation' and highlight the difficulty of: a) providing public transport services in more peripheral urban and rural areas, and; b) continued financial support to access transport for socially deprived populations within a

deregulated policy context. In a second paper in this same Issue, Giuliano and Gillespie (1977) identify the common research themes which they recommend as relevant to to the topic of societal change and transport. Among those trends that can be loosely associated with TRSE they identify: i) increasing urbanisation and at the same time decentralisation of housing and other activities within cities; ii) the changing nature of the workplace, both in terms of its flexibility and skills-base; iii) the increased prevalence of private car ownership within households; iv) the growth in elderly populations; and v) the likely continued increase in foreign migrants, who will be mostly residing within cities. However, the potential for increased transport inequalities and resulting exclusion from social participation under these changing conditions is not directly mentioned by any of the authors at this point in time.

From this earliest identification of transport as a social equity issue, JTG has progressed to publish a number of Special Issues and Editions focusing on the travel needs and concerns mobility and accessibility disadvantaged social groups. In one such edition, Schwanen and Paez (2010) highlight the travel needs of older people and the implications of this for the delivery of sustainability mobility in the context of nations with structurally ageing populations. Their introductory article identifies that older people regularly do not leave the house on a given day, make fewer trips on days when they do go out and travel over shorter distances and make greater use of non-car transport than do younger cohorts. This demonstration of immobility can in part be explained by a reduced need to travel in later life, but has also been empirically proven to be an externally imposed driver of reduced social participation, isolation and exclusion, which is often related to a lack of adequate travel resources (the lack of a car, inaccessible public transit, insufficient paratransit services), and more personal factors within the local travel environment, such as fear of crime or of falling. These problems firmly established ageing as an important focus for TRSE research.

From the opposite end of the age spectrum, Ron Buliung et al. produced a 2012 edition of the Journal on child and youth mobility, with a specific focus on their lived travel experiences and the production of patterns of mobility that can be very different from that of adults (2012). A contribution to the edition by Emond and Handy (2012) also identifies some important gender differences in the travel of high-school children in the US, noting that female students were much more likely to have their travel freedoms curtailed by wary parents than their male counterparts, with some serious consequences for their participation in out-of-school activities, and thus their social and skills development. Macdonald's paper in the same edition (2012), and also focusing on the US context, identifies that, although boys are more likely to cycle to school that girls, walking also differs depending on geographical locations. This is trend is due to a decline in walking overall, rather than an increase in female students who walk to school. However, increasing car dependency inevitably means that children living in households without cars are more likely to suffer reduced travel choices in all but the best served areas of public transit. As such, children and young people as well as gender differences also provide a fruitful line of enquiry for studies relating to TRSE. The edition also demonstrated an emerging interest in the adoption of more qualitative methodological approaches to transport geography research that has emerged more strongly within the literatures, which has certainly helped in the identification of the process of TRSE over the last ten to fifteen years.

The Special Issue by Lucas and Jones (2012) sought to bring to the fore ideas and discussions about TRSE from researchers working outside the mainstream transport domain. A key aim of the issue was to present their research on the social consequences of TRSE for other important areas of activity participation, such as employment, education and skills acquisition, healthcare and housing. In their

introductory chapter, the authors identify accessibility (used in its broadest sense to include affordability, safety, security, etc. to reflect people's ability to reach key life-supporting activities). They identify three geographical scales of accessibility that are important to consider in terms of the positionality of TRSE research; micro-level pertaining to personal individual factors, meso-level concerning factors relating to the neighbourhood or local area and macro-level related to the strategic level or whole-systems. They recommend that a disfunction at any one of these three scales can lead to a complete break in accessibility, which if it persists over the longer term will lead a process of social exclusion.

This focus on accessibility to activities over mobility of itself is major dimensions of the Journal's contribution to innovative methodological departures in subsequent years. In fact, from about 2006 onward, it is possible to identify a growing number of nationally-focussed case studies using accessibility models to identify differences in the spatial availability of transport services to identify under-served places and populations groups. It is not possible to offer a comprehensive review of all of these literatures within the confines of this article, so only a few notable developments are included.

In one early paper building on the notion of 'accessibility planning' as recommended by the SEU study and later adopted by the UK Department for Transport (2006), Preston and Rajé (2007), developed a useful Schema to identify whether mobility or accessibility is the main problem experienced by socially disadvantaged groups. They identify that, within the UK context at least, this very much dependent on the geographical locations in which people live, their socio-economic characteristics and activity needs. So that, older people living in a small market town might not experience TRSE, whereas young people living in the urban periphery might be highly excluded from jobs, training and social activities if they do not have access to their own private vehicles. Their identification of this extreme variance within the TRSE phenomenon is an important contribution to the field, as subsequent research increasingly attempts to add multiple layers of complexities to its analyses, with mixed results and conclusions.

For example, as part of a major Australian study to look at the relationship between transport disadvantage, social exclusion and wellbeing, Delbosc and Currie (2011) found only a small relationship between transport disadvantage and social exclusion, but that transport disadvantage had a particularly negative affect on wellbeing in the regional outskirts of the Metropolitan City Region. This was largely because most poorer people tended to live in close proximity to both public transport and their daily activities, whereas their more affluent counterparts had moved to the car-dependent suburbs and needed to drive long distances at high costs to access employment in the city.

More recently in the Canadian context, Deboosere and El-Geneidy (2018) developed a fine-grained, GIS-based spatial model of individuals' accessibility to low-income jobs by public transport, specifically taking account of the realised travel times of low-income individuals. This study illustrates general trend by academics towards the development and application of increasingly complex and sophisticated spatial modelling techniques in light of considerable advances in both micro-scale datasets and geographical software programmes. These incremental studies are to be welcomed within the academic space, as they us to better understand TRSE over time, space and individual life courses. Unfortunately, such analyses are all still too rarely adopted by policymakers and integrated into mainstream transport decision-making.

Quantitative models to measure TRSE also need to be complemented with qualitative methodologies to understand how people experience and overcome it from the grassroots perspectives of those that are affected, if we are ever to develop more appropriate solutions to the problem. For example, Oviedo Hernandes and Titheridge (2016) use qualitative interviews with the residents of informal peripheral

communities on the outskirts of the Colombian capital city of Bogota to consider the issue of TRSE based on their lived experiences. They identify how people can generate their own coping strategies and solutions to their overcome the peripherality of their residential location in order to provide informal paratransit and vehicle sharing options to access the city, and thus avoids social exclusion. Their study also notes another important departure in the TRSE literature, which is the increasing contribution of studies from Latin America, Africa and Asia. These have partly been encapsulated within invited guest editorials for Special Sections, such as *Mobilities and livelihoods in urban development contexts* (Lucas and Porter, 2016) and *Contested Mobilities in Latin American Cities* (Blanco et al. , 2018), but also increasingly appear in the mainstream content of the Journal.

Updates on TRSE in the present UK context

In the UK at least, many of the issues and concerns regarding the TRSE of individuals and communities that have been raised in past studies remain pertinent to the present day. Jobseekers are still experiencing problems with public transport supply, affordability and reliability. Young people say they often need to use cars to access higher education opportunities, which are located in less accessible locations (Kenyon, 2011; Bourne, 2013). Public transport dependence is also problematic when escorting children to a nursery or to school, and lone parents can have particular problems in this respect due to their sole responsibility for these escorting trips (Kenyon, 2011). Our recent research also suggests that in many instances, the problems of TRSE have, in fact, worsened over time.

For example, our recent analysis of the latest Department for Transport Accessibility Statistics for the Government Office for Science Foresight on Future Mobility project (Lucas et al., 2018) identified that over half of the current UK working age population (57%) live in areas with low public transport accessibility to jobs, of which a quarter are concentrated in areas of high deprivation (compared with 18% living in areas with high job access and low deprivation). Although most secondary school children can reach at least one school within a 30-minute bus ride, 15 percent are only able to access one school in this time, which suggests severe constraints on the policy of parental choice. Alarmingly, our analysis also identified that 66 percent of people over the age of 65 years are unable to access a hospital within 30 minutes by public transport. The relationship holds for other social groups who are public transport dependent but is perhaps more of a concern for older people, who despite the increase numbers driving into older age, still rely rather heavily on public transport for accessing services that are key to their health and wellbeing. Unsurprisingly, accessibility levels have decreased the most where there have been the most significant cuts in bus services due to local austerity measures. These have been more prevalent in rural areas and small towns, but have also occurred in the urban periphery, and especially affect off-peak early morning, evening and weekend services.

Analysis of the UK National Travel Survey for the same study (Lucas et al., 2018) (and also the research of others, internationally) has demonstrated that, persistently over time, car owners and main drivers in households will be the least mobility constrained across all social groups and most geographical contexts (except in highly-congested and car-restricted urban centres). They make more trips over longer distance for all journey purposes, theoretically giving them higher levels of access to activity opportunities. However, there are now increasing concerns about time poverty and reduced social participation amongst individuals who regularly spend excessive amounts of time travelling to their everyday activities (Mattioli et al., 2018).

Car access is still relatively low in the lowest income households, since 40 percent of households in the lowest income quintile still have no car access in the UK. Female heads of households, children, young and older people, black and minority ethnic households and disabled people are overwhelmingly concentrated in this quintile. Gender differences in car use are declining, but women are still less likely to be the main driver in households, whilst people with mobility difficulties remain at roughly 38% car ownership and travel much less than the average population.

However, our research has also demonstrated considerable non-affordability and debt issues with car ownership for many low–income households. Currently, 9% of all UK households experience car-related economic stress annually, due to the excessive weekly cost of running a car, which can affect as many as 67% of car-owning households in the lowest income quintile (Mattioli et al., 2018). The analysis is based on an index of household weekly expenditures on motoring relative to incomes, based on the UK Living Costs and Food Survey, whereby high-cost is defined as twice the median cost share of running a motor vehicle.

In terms of exposures to transport-related risks, which is also an important dimension in a holistic approach to the analysis of TRSE, research has identified that people from deprived neighbourhoods are more likely to be injured or killed as road users (Ward et al., 2007). This is highly correlated with the more hazardous and exposed environments that are associated with deprived neighbourhoods in the UK, which tend to have greater proximity to busy roads and, thus, high volumes of fast-moving traffic. As such, the residents of these locations have higher levels of exposure to road traffic risk, such as road casualties and deaths and traffic-related pollutants, which is exacerbated by their over-reliance on walking, and the lack of safe spaces for children and young people.

And so, the very people who have the least access to cars and the greatest reliance on non-motorised modes, are the same ones who are disproportionally negatively affected by the motorised vehicles to which, in the main, they are denied access. A new problem that has also emerged since the SEU report, is the issue of obesogenic lifestyles and the physical environments and activity trends that contribute to this. In England figures show an increase in levels of obesity over the period 1993 to 2013 from 13.2% to 26.0% for men and 16.4% to 23.8% for women. The figures also show a rise in levels of child obesity (HSCIC, 2015).

Looking to the future of TRSE research: new directions

One major question that remains largely unaddressed within the realm of TRSE research, but one which is highly pertinent to this discourse, is the question of how transport innovations will affect the future equity of mobility and accessibility in the transformed urban morphologies that will inevitably ensue from their introduction and uptake. An overview of the sparse literatures on this topic identifies almost equally split opinion camps. On the one side are the optimists, who believe that the new landscape of autonomous vehicles, robotic deliveries, shared mobility and mobility as a service (MaaS) will allow people who are currently not able to own or drive their own vehicles to have new access to the benefits they derive. On the other side are the pessimists, who predict an increased concentration of transport wealth amongst the already privileged and partial or a total lock-out of the people and places who cannot access these services for reasons of their unaffordability or non-operability within certain spatial contexts, e.g. sparsely populated and remote areas. Whichever scenario will be materialised, and it usually ends up being a blend of the two sides, it is clear that transport geography research has a huge role in the analysis

of these issues, and in at least one important aspect, how they will affect TRSE for future generations. There is also no reason why we should wait to undertake this mammoth research challenge.

For example, in the UK we already have a fairly good understanding what the future transport system will look like by 2040. It will have a few more strategic highways, rail lines and slightly expanded airports, but it will basically link the people with the same places using much the same modes as at present. However, the UK population is projected to look quite different by 2040: it will be significantly bigger (rising from 66 million to 73 million by 2041) and most of those people will live in the major English cities, with more modest growth in the rest of the UK. International migration will account for 77% of this growth, meaning that there will be more ethnic diversity in the population, and more women of childbearing age. Nevertheless, we also know from the balance of births and deaths, that overall it will be a structurally older population; the proportion of people over 85 years is projected to double by 2041 to 3.2 million. Based on current housing development permissions and land use supply, we can also predict that poverty is suburbanising, in other words poorer people are moving out of the cities and into the urban periphery and beyond. Income poverty and polarity is predicted to increase, so there will be more poor people and their income disparities will be harder to overcome (Office for National Statistics, 2014a; 2014b; 2016; 2017).

Even based on this cursory overview of the future UK population profile, it is easy to see that it has significant implications for future transport systems as they are currently planned, unless current travel activity patterns change dramatically. It seems obvious that if there are more people, then there is likely to be more demand for travel overall, even if individual demands decrease. Some people will need to travel more for work, but many more people will economically inactive (either for reasons of their age or because of increasing automation and the changing skills nature of work itself), which places greater emphasis on non-work and off-peak transport services. If more people are located in suburban areas, the demand for travel will be more dispersed and less easy to cater for through mass transit solutions, suggesting that transport services will be more fragmented/flexible. Many households will still not be able to afford cars and so, automated and electric vehicle options will likely remain outside of their ownership. Shared mobility might be an option for some but, as is the case already, there will be greater risks associated with shared ownership in some locations and for some social groups, for example, many companies will not currently rent cars to people living in social housing, or to young people with limited driving experience. Also, some social groups are more reluctant to share their travel spaces with others, for example older people and women. Young men are most often seen as the greatest risk, and so they might also become 'locked-out' of these services.

These inequalities in access to the new transport systems, resources and accessibility opportunities and benefits they can bring are, of course, not inevitable. It is possible that through careful planning and policy regulation and intervention national governments and city planners can intervene to extend their availability to make them as socially inclusive as possible. But it would be a grave mistake if policymakers now failed to recognise the potentially severe TRSE issues that accompany the introduction of these innovations within the future mobility landscape. Here is where transport geography research can be of enormous help. Not only can transport geographers help determine the optimal socio-spatial spaces and conditions in which these new innovations can operate to allow for maximum inclusivity; they can also to provide the experiential knowledge required to understand how different populations might interact with those innovations in different social, culture geographical contexts, and to the inclusion or exclusion of others around them. It is also important that we undertake such analyses not only in the cities of the

Global North, in which they will operate under already mature legal and operational regulatory frameworks, but also in the less mature transport systems of Global South cities where there may be less capacity to halt or slow the speed of their introduction so as to ensure they best serve economic, social and environmental goals.

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