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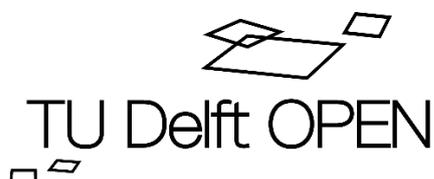
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Linking experienced barriers during daily travel and transport poverty in peripheral rural areas: the case of Zeeland, the Netherlands

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People living in peripheral rural areas are often considered to be prone to transport poverty and inaccessibility to activities. Previous identifications of transport poverty have mainly relied on accessibility measures based on land-use and transport data. However, such measures may be very different from how people themselves perceive accessibility. Therefore, explicitly considering perceptions of accessibility may be valuable in evaluating the nature of accessibility issues such as transport poverty. By conducting semi-structured focus group discussions in Zeeland, a rural area of the Netherlands, this paper shows that the mechanisms behind transport poverty are mediated by individual perceptions of accessibility. Local social norms related to accessibility appear to be important in shaping these perceptions. In peripheral rural areas, norms reflecting the dominance of the private car add to the negative appropriation of other transport options and shape expectations with respect to accessibility. It is concluded that taking account of perceptions of accessibility, and the ways these are shaped, adds to the understanding of the nature of accessibility issues and is considered vital in designing responsive policies.

Keywords: accessibility, perceived accessibility, transport poverty, social exclusion, mobility, rural.

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1. Introduction

Many peripheral rural regions across Europe are confronted with a decline in services and populations as a result of centralization and urbanization forces (Martinez-Fernandez et al., 2012). For inhabitants of these areas, this entails a need to cover larger distances to reach services and to engage in activities. When distances are large, those with less potential to be mobile may be constrained in participating in the economic and social life of the community due to reduced accessibility to opportunities, services and social networks (Currie, 2010). This situation is often referred to as 'transport poverty', and seen as potentially resulting in a process of social exclusion with significant implications for subjective wellbeing given that rewarding out-of-home activities are missed out on (Delbosc and Currie, 2011; De Vos et al., 2013; Ettema et al., 2013; Lucas, 2012). It has been predicted that one in five Dutch municipalities will experience population decline by 2030 (PBL, 2019). Mobility, in terms of yearly kilometres travelled per inhabitant, has risen between 2005-2015 in peripheral rural regions facing population decline (Tillema et al., 2019). This trend has mainly been attributed to longer distances travelled and contrasts with the pattern found in growing urban concentrations. The question arises how these spatial transformations may result in experiences of transport poverty in these rural regions.

The identification of transport poverty has mainly relied on analysing accessibility measures and/or revealed mobility and activity participation patterns (e.g. CBS, 2018; Lucas et al., 2018; Panteia, 2019; Stanley et al., 2011). However, it has been argued that in order to properly evaluate the inaccessibility of activities and transport-related social exclusion, one should take into account what are considered 'normal' and desired levels of participation and mobility in a local community (Kenyon et al., 2002). As such, the identification of transport poverty by setting thresholds for accessibility measures, or levels of activity participation, can be considered as a normative practice that potentially lacks a link to experienced accessibility (Farrington and Farrington, 2005). Which activities are considered to be within reach depends on an individual's own evaluation of their capacity to become mobile, or 'motility' (Kaufmann et al., 2004). The relevance of these subjective appropriations regarding mobility makes assessing the scale and social impacts of transport poverty challenging for, for example, policymakers (Jorritsma et al., 2018). Calculated measures of accessibility using land-use and transport data frequently fail to match individual self-reported perceptions of accessibility (see e.g. Lättman et al., 2018). To gain an understanding of the scale and nature of transport poverty in a region, it is essential to understand what mechanisms play a role in shaping perceptions of accessibility.

This paper sets out to unravel these mechanisms by establishing the barriers that inhabitants of peripheral rural areas encounter in their daily patterns of activities. These experienced barriers are evaluated using an analytical model based on Lucas's (2012) conceptualization of transport poverty in which transport and social disadvantages interact to cause an inaccessibility of activities. This paper adds a layer of subjective perceptions regarding these disadvantages, and a specific geographical component, to establish the role of the local geographical context in shaping accessibility perceptions. Through this, this paper contributes to a deeper understanding of the role and construction of subjective evaluations, embedded in the local geographical context, of accessibility in experiences of transport povserty.

The Netherlands provides an interesting context in which to analyse the mechanisms behind transport poverty in peripheral rural areas. Accessibility levels in Dutch peripheral areas may be considerably higher than elsewhere, due to higher population densities than in other, more sprawling, contexts, where rural accessibility issues have been analysed (see e.g. Ahern and Hine, 2012 and Delbosc and Currie, 2011 for examples from the UK and Australia respectively). In many instances, regions that are widely perceived to be rural in the Dutch context exceed related OECD population density thresholds (Haartsen et al., 2003). Additionally, Dutch rural regions tend to have very dense road networks and close links to urban centres. This potentially decreases the risk

of inhabitants experiencing transport poverty. Nevertheless, some Dutch peripheral regions, including Zeelandic Flanders and Schouwen-Duiveland in the province of Zeeland, which have been selected as case study areas for this research, show similar patterns of decline as other peripheral rural regions in Europe, albeit on a lower scale. Furthermore, while these regions have close links with urban concentrations, they are considered strongly peripheral and rural in the Dutch context (Haartsen et al., 2003). Therefore, given the possible role of local social norms attached to mobility embedded in the local geographical context (Kenyon et al., 2002), the selected study areas provide a relevant context to evaluate the mechanisms behind transport poverty in peripheral rural areas.

The range of experienced barriers during daily travel was established by conducting semi-structured focus group interviews with a total of 21 participants living in Zeelandic Flanders and Schouwen-Duiveland, broken down into groups of commuters, seniors and school-going adolescents. Commuters were included because employment imposes a very dominant time-space constraint on participation in non-discretionary activities (Farber and Páez, 2011). A similar constraint applies to school-going adolescents, with additional transport disadvantages such as not being able to drive a car. Seniors desire very diverse activity patterns and are commonly regarded as a group vulnerable to transport poverty due to decreasing mobility competences (Lucas, 2004).

Section 2 below elaborates further on transport poverty in rural areas and the role of subjective insights in analysing accessibility problems with respect to this geographical context. In Section 3, the case study areas and methodological approach are explained. Section 4 presents the study results which are followed by a discussion including policy implications in Section 5, with conclusions drawn in Section 6.

2. Conceptual framework

2.1 Transport poverty in rural areas

Given that most activities that humans engage in are spatially dispersed, the ability to access these activities through transportation is a key factor for inclusion in society and wellbeing (Currie and Delbosc, 2010; Lyons, 2003; Preston and Rajé 2007; Social Exclusion Unit, 2003; Stanley et al., 2011). The concept of geographical accessibility is at the heart of our analysis of the possibility to engage in activities that are at a distance. Following Geurs and Van Wee (2004), accessibility is defined as *'the extent to which land-use and transport systems enable* [...] *individuals to reach activities or destinations by means of a (combination of) transport mode(s)'* (p. 128). In this sense, factors that lie within the individual, as well as geographical factors relating to the spatial dispersion of destinations and the transport system, determine the possibility to participate in desired activities. Lucas (2012) posits that transport poverty arises from a combination of transport disadvantages (e.g. no access to a car, poor public transport provision) and social disadvantages (e.g. low skills, ill-health, low social capital). Being transport-poor links to lower participation in higher education, lower access to health services, higher rates of unemployment and less involvement in social networks, amounting to a process of social exclusion (Kenyon, 2011; Lucas, 2012; Mackett and Thoreau, 2015; Preston and Rajé, 2007; Stanley et al., 2011). Studies identifying groups most likely to be at risk of transport-related social exclusion often list the elderly, youth, those with impairments, ethnic minorities, those on low incomes and those with little or no access to cars (Delbosc and Currie, 2011).

Rural areas are often considered to be particularly prone to transport poverty, not only due to low densities and the decline of local services but also because they often have ageing and declining populations (Scott and Horner, 2008). While the decline in facilities in these areas predominantly occurs due to the absence of agglomeration benefits and the competition with nearby urban areas, which are reachable by many rural residents, population decline may add to the pressure on local facilities and public services in peripheral rural areas (Bosworth and Venhorst, 2018; Van Dam et al., 2006). As a result of activities becoming dispersed, mobility has become an essential part of

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everyday rural life (Milbourne and Kitchen, 2014). Lower densities and longer distances have resulted in a strong reliance on private cars in rural areas, offering the flexibility needed and expected in modern societies (Gray et al., 2001; Urry, 2004). Since most rural households counteract the consequences of declining facilities by enhancing their mobility through car-use, public transport has become marginalized in many rural areas due to rising operating costs and budget cuts (Steenbekkers and Vermeij, 2013; Veeneman et al., 2015).

This rising car dependency in rural areas can have significant impacts on the structuring of daily travel and activity participation. As Farber and Páez (2011) show, both theoretically and empirically from a time-space geography perspective, the accessibility benefits gained from access to a car may be negated by the dispersion of activities facilitated by auto-oriented development. Here, one can refer to specific geographical disadvantages in terms of the distances involved in the creation of transport poverty in addition to, and interacting with, transport and social disadvantages identified by Lucas (2012). In the UK, Smith et al. (2012) argued that low income households in rural areas are highly dependent on cars to access services and are disproportionally affected by rising fuel costs and the overall rising costs of running a car. This dependency was earlier suggested by Dargay (2002), who found that rural households' car ownership levels are less sensitive to rising motoring costs than those of their urban counterparts. Kamruzzaman and Hine (2012) found that rural carless and low-income individuals were more limited in participating in activities within their local area than people with cars and with higher incomes. The risks for older people in rural areas have been especially well documented. Results from Spain show that the rural elderly use health services almost three times less frequently than urban elderly because of transport problems (Fernández-Mayoralas et al., 2000).

2.2 The role of subjective experiences in identifying transport poverty

While the spatial distribution of activities and the availability of transport are central elements in their accessibility, these only represent the potential for reaching services and activities. An individual's actual experienced level of accessibility will be different. Personal evaluations of accessibility can be either more positive or more negative than calculated measures would suggest. Kaufmann et al. (2004) stress that the maximum opportunity set regarding participation in activities is constrained by one's appropriation of the possibility of movement (i.e. motility). The appropriation of mobility options, based on individual perceptions, feeds down to experienced accessibility. For example, Van Exel and Rietveld (2009) found that car users systematically overestimate public transport travel times. This way, even when an individual is capable of using a certain transport mode, this option may not be appropriately valued due to one's subjective appropriation. While perceptions may be inaccurate representations of reality, numerous studies have found that incorporating perceptions related to mobility and accessibility show greater behavioural realism than calculated measures using data on land-use and transport systems (e.g. Kitamura et al., 1997; Lättman et al., 2018; Scheepers et al., 2016).

Strong links can be drawn here with psychological analyses of travel behaviour. Following Ajzen (1991), the intentions to perform a certain behaviour depend on three factors: (i) attitudes, referring to personal opinions and beliefs on the outcomes of that behaviour; (ii) subjective norms, referring to opinions and beliefs of others on the outcomes of that behaviour; and (iii) perceived behavioural control, reflecting the extent to which one thinks one is capable of engaging in the relevant behaviour. Some may have positive attitudes towards the use of public transport, but may consider themselves unable to make use of it due to a lack of perceived physical and/or organizational skills, or unawareness of its availability. Some elderly, for example, have been found to have limited perceived competences with respect to accessing public transport (Shergold and Parkhurst, 2012). Also, it has been documented that favourable attitudes towards car use compared to public transport not only result from instrumental motives such as flexibility, but also through affective motives such as comfort and symbolic motives relating to senses of freedom and self-control (Steg,

2005). In this sense, perceived limitations on the potential to travel may lower feelings of competence and self-reliance (Nordbakke, 2013).

As attitudes and feelings of control with regards to transport are also influenced by social norms (Ajzen, 1991), the local geographical context can play an important role in the subjective evaluation of accessibility. Differing norms with regards to transport between geographical contexts have, for example, been identified by Milakis and Van Wee (2018), reporting different acceptable commuting times in the US and Europe. In rural areas, the car may be, more so than in urban regions, a reference point, while other forms of mobility may be burdened with social stigma. If using the car is the norm, other transport options may be considered less as a viable option. In rural areas, community transport solutions have been found to carry a social stigma, seen as being only for women and the 'less able' (Ahern and Hine, 2012; Shergold and Parkhurst, 2012). Relying on social networks to meet transport needs can be characterized by reluctance and as undermining feelings of self-reliance due to the creation of relationships in which the individual feels indebted to the lift-giver, resulting in avoiding non-essential trips (Ahern and Hine, 2012). These factors may strengthen local norms and habits regarding travel and thus the risk of transport poverty for the less mobile. For those without a car, such norms may contribute to the experience of transport poverty. This process has been previously identified in rural areas of the UK where the non-car population, despite its lower potential mobility, seem to have adopted the same aspirations as its car-owning neighbours but does not have the means to satisfy them (Nutley, 2005).

While personal evaluations of travel and accessibility may add to the constraints on reaching activities, subjective evaluations may also have a mitigating role in the mechanism behind transport poverty. Long-term limited access to transport can result in lower accessibility expectations because individuals may tune their attitudes to their environment (Delbosc and Currie, 2011; Lucas, 2004, 2006; Van Wee et al., 2019). Overall desires with respect to accessibility could then become lower in rural areas. This is in line with findings that residential dissonance with respect to travel preferences may only be temporal in some cases (De Vos et al., 2018).

2.3 Analytical model
Following the theoretical discussion presented above, an analytical framework has been developed to analyse the mechanism behind transport poverty in peripheral rural areas (see Figure 1). The model builds on Lucas's (2012) framework of transport poverty and transport-related social exclusion, in which transport disadvantages and social disadvantages (personal competences) combine to cause transport poverty. However, Lucas's model does not explicitly consider space as a factor in determining transport poverty. Given its considered relevance, a geographical component has been added to explicitly address the role of distance in the experience of transport poverty. It may be that, following arguments from the time-geography field, households without any transport and/or social disadvantages, as applied in Lucas's model, are still limited in terms of accessibility due to there being large distances to activities (see Farber and Páez, 2011). These large distances could impose constraints in terms of the available time to engage in multiple activities. These constraints might especially come to the fore in peripheral rural areas, which have therefore been selected as study areas, where distances are larger than in urban areas.

Further, another layer that addresses perceptions of the factors that determine transport poverty has been added to explicitly allow for a role of subjective experiences. Perceptions regarding the transport component are based on the importance of the appropriation of travel options as considered by Kaufmann et al. (2004), which may be based on personal attitudes and social norms. As such, these may include subjective evaluations of available transport modes. Perceptions regarding the social aspects include one's appreciation of one's own skills and possibilities, such as physical and organizational skills. Perceptions of the local geography are linked to the perception of distances and one's travel horizons as well as local social norms influencing one's

evaluation of accessibility. In this sense, how the transport system, personal competences and the geographical context interact, and are evaluated, influences the perception of what is within reach.
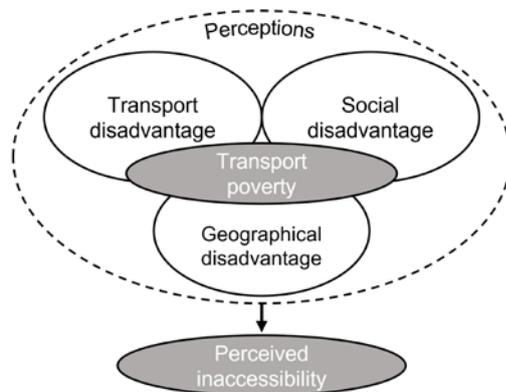

Figure 1. Analytical framework of transport poverty

3. Methods

3.1 Case study areas

This study has been executed in the areas of Zeelandic Flanders and Schouwen-Duiveland in the Dutch province of Zeeland (see Figure 2). Zeeland is one of the most sparsely populated provinces in the Netherlands with a total population of 380,000 and a population density of 215 inhabitants per square kilometre (CBS, 2019). Although the province exceeds the OECD 'threshold' of 150 inhabitants per square kilometre to be regarded as 'rural' (Brezzi et al., 2011), the individual municipalities, except for Terneuzen in Zeelandic Flanders (218 inhabitants per square kilometre), do fit the OECD population density criterion, and the European Union regards the whole of Zeelandic Flanders, including Terneuzen, as predominantly rural (Eurostat, 2019). Further, regions neighbouring Zeeland are home to large urban centres. The study areas are commonly perceived as rural and peripheral in the Dutch context (Haartsen et al., 2003) and the region is confronted with declines in population and services (CBS, 2019; Haartsen and Venhorst, 2010; PBL, 2019; Tillema et al., 2019).

The province of Zeeland has a rather centralized structure of services as is common for peripheral rural areas. Services and employment are centred in the main cities and villages. The average distance to basic everyday services in Zeeland is around 3 kilometres, well above the national average (Tillema et al., 2019). These services include primary and secondary education, supermarkets and general practitioners. Additionally, the peninsular geographical nature of the province imposes barriers to travel between regions. This results in very localized functional areas with over 50% of the employed inhabitants in the study areas working within the municipality where they live, compared with the national average of 38% (CBS, 2017).

The road networks in the study areas are fairly dense and all the major population clusters are connected with each other and nearby population centres outside the province by primary roads or motorways. Both a toll tunnel and a ferry connect Zeelandic Flanders with the central peninsula of Zeeland. The main public transport network predominantly follows the same structure with regular bus services on weekdays and weekends from 6 a.m. to 10 p.m. and a train link on the central peninsula. Gaps in the main network are filled by a secondary network. A local bus system, which is only scheduled on weekdays, connects smaller villages with small buses. There is also a school bus service, which only runs during peak hours and only for school children. Additionally, there is a subsidized taxi service covering withdrawn bus routes. This follows a regular schedule

but is only operated if it has been reserved at least one and a half hours in advance. This 'bus taxi' service also replaces the regular bus services during weekends.

Figure 2. Study areas and their topographical context

In short, the study areas are considered to be rural peripheral areas in the Dutch context and share patterns of services and population decline combined with centralization. Regular public transport services follow the centralized structure, while the network connecting smaller towns has been marginalized. As an additional constraint on movement, the peninsular structure of Zeeland adds a natural geographical barrier to travel between regions, which may increase the risk of transport poverty. Thus, overall, Schouwen-Duiveland and Zeelandic Flanders are considered relevant areas in which to study the mechanisms behind transport poverty in peripheral rural areas.

3.2 Focus group discussions

In October 2018, three semi-structured focus group interviews were conducted to collect perspectives on daily travel experiences. Behavioural attitudes, motivations and intentions (related to travel behaviour) may be shaped by local social norms and these interactions would not be represented in in-depth interviews. Although focus groups provide an opportunity for interaction between participants, one disadvantage of focus groups, compared with individual interviews, could be a reluctance by participants to elaborate on experiences of social exclusion as a result of transportation problems as this might be felt too sensitive to discuss within a group.

Compared to quantitative approaches such as survey methods or using travel behaviour data, the number of participants (21) in our study might appear rather low. However, conducting discussions with larger groups would likely constrain the interactions within them. Further,

increasing the number of group discussions may not lead to new insights if data saturation has already been achieved and only imposes additional burdens on potential participants. Furthermore, as the data structure is textual, additional discussions would not allow statistically generalizable outcomes. As the main interest of this research was to understand possible mechanisms behind transport poverty in peripheral rural areas, rather than present or make statistical inferences on the consequences of the mechanisms uncovered on processes of social exclusion, group discussions were considered the preferred method.

Separate sessions were held for groups of daily commuters, elderly and secondary school students. Participants were recruited from the panel used by the Dutch survey agency TNS NIPO in corporation with the marketing research agency KANTAR Public, through social media outlets of the Province of Zeeland and through promotion at a vocational education institute in the city of Goes, Zeeland. The composition of the focus groups can be found in Table 1. Most of the participants resided in Zeelandic Flanders, reflecting the overall population figures of both study areas. It can be argued that individuals likely to be at risk of transport poverty are well represented in the sample. Most participants were female. Only 8 (38%) of the participants used a car as their primary mode, with a similar proportion using public transport as their primary mode of transport. Car-use in the elderly focus group was higher than within the commuter group. In total, 20% of the participants, mainly within the elderly group, had some form of impairment.

All the discussion sessions were held in a small conference room in a hotel in Goes and each lasted about two and a half hours. Participants could choose to be brought to the site by taxi or to be reimbursed for their travel expenses if they preferred to travel to the site on their own. Discussions during the sessions centred around daily travel needs and patterns, and what barriers were experienced in reaching their desired services and activities. To avoid steering the discussions, questions relating to travel behaviour were posed in an objective way without explicitly referring to common rural accessibility issues such as car-dependency and poor public transport.

Table 1. Focus groups and their key characteristics

	Commuters	**Seniors**	**Adolescents**	**Total**
Number of participants	7	8	6	21
Age structure	19-64	65+	12-18	-
Area				
Schouwen-Duiveland	1 (14%)	3 (38%)	3 (50%)	7 (33%)
Zeelandic Flanders	6 (86%)	5 (63%)	3 (50%)	14 (66%)
Gender				
Female	5 (71%)	4 (50%)	4 (66%)	13 (62%)
Male	2 (29%)	4 (50%)	2 (33%)	8 (38%)
Primary mode of transport				
Car	2 (29%)	6 (75%)	-	8 (38%)
Bus	3 (43%)	2 (25%)	3 (50%)	8 (38%)
Bicycle	2 (29%)	-	3 (50%)	5 (24%)
Impairments				
Wheelchair	1 (14%)	1 (13%)	-	2 (10%)
Visual impairment	-	2 (25%)	-	2 (10%)
No impairment	6 (86%)	5 (63%)	6 (100%)	17 (81%)

* Percentages may not add up to 100% due to rounding.

4. Results

In this section, the main findings of our analysis regarding the role of subjective experiences, embedded in the local geographical context, in the experienced transport poverty are presented.

The main themes brought forward in the group discussions included: the availability and quality of the transport system; social determinants related to individual competences and social networks; and geography relating to time-space constraints and local social norms. The findings are structured following the analytical model proposed in Section 2.3. The component focussing on the transport system has been broken down into perceptions of the availability of transport and subsequently, given this availability, the quality of the transport system. The social component, which relates to disadvantages on the individual level following Lucas (2012), is broken down into perceived individual competences and then on how social networks play a role in mitigating difficulties in accessing activities. Finally, the geographical component is split into the land-use structure that imposes travel barriers and on how local social norms play a role in shaping perceptions of accessibility.

4.1 Transport disadvantages

Availability
The availability of transport relates mainly to the supply side of mobility. Factors at play are the availability of a car and the nature of the public transport system. Participants with access to cars reported few barriers with accessing transportation at times they wanted to. Only when wanting to travel from Zeelandic Flanders to the central parts of Zeeland do the routes that involve a ferry or a toll tunnel impose additional costs. These costs were, for some, a barrier to accessing activities in the main population centres of the province:

'We never go to [the central parts of] *Zeeland actually, it's just way too expensive.'* (Adolescents)

When considering the public transport infrastructure, plenty of public transport stops were perceived to be within walkable and cyclable distances. During the daytime, reaching employment and education was reported as doable, especially when travelling between the main villages and cities. This was especially because the bus schedules were tailored to regular school schedules. However, these positive evaluations change when considering more discretionary activities conducted in the evenings and weekends. Public transport availability is then more limited and after 10 p.m. no public transport is available. These conditions make it very difficult to participate in activities beyond cycling or walking distance by using public transport:

'I would love to join a dancing school in Goes, however there is no possibility for me to get back by public transport [in the evenings].' (Seniors)

In discussing the public transport network, participants raised the issue that they felt that routes and schedules were constantly changing. They experienced a lack of communication from the transport providers. This could result in very differentiated perceptions of what transport options are available. Frequent changes in schedules without proper communication are especially problematic for the elderly. Our discussions showed that seniors undertake more discretionary, non-routine, trips to various destinations, which require thorough planning. The lack of information on the changing availability of public transport services was perceived as problematic and could change one's perception on the availability of transport options:

'When I arrive at the bus stop, I suddenly see this plastic bag over the bus stop sign. Now I know that there will no longer be a bus, but then there's no sign of where I could get that bus now.' (Commuters)

Quality
Alongside the availability of transport options, the personal evaluation of the quality of the system also contributes to the overall perceptions of the ease in which activities can be reached at a distance (i.e. accessibility). The main elements of quality are comfort and ease of use (both in terms of planning and during the trip itself). These mainly reflect actual travel experiences, which were elaborated upon extensively in all discussions. The quality of public transport was frequently set

against the use of the private car. Two components of quality frequently raised were travel times and ease of travel. All groups mentioned greater journey complexities combined with longer travel times for public transport compared to the car:

'If I would have to travel from Noordgouwe to Brouwersdam by bus, I would have to change, which is quite a hassle. By car it is only 20 minutes.' (Seniors)

Experiences during waiting at stations add to the evaluation of the public transport system. Next to physical characteristics of these infrastructural elements, contextual factors such as weather conditions and perceptions of safety determine these experiences:

'When you've just missed your bus and you'll have to wait for an hour on an iron bench in the cold ... that's just the worst.' (Seniors)

'My mum doesn't like it when I go by bus or bike at night, so she picks me up in the car.' (Adolescents)

Delays were also reported to be common and especially the ways public transport providers handle these delays was an issue. Delays are problematic when the journey involves changing buses. All groups reported a lack of adaptivity in the system when delays occur:

'When you arrive at the bus station [on a delayed bus], *you see the bus that you then have to take is already there. Then you see the doors closing and you know that you have to wait for half an hour. If they would just coordinate that, it would help a lot.'* (Seniors)

This lack of adaptivity and flexibility was also reported when communicating directly with the public transport suppliers in the event of problems being encountered. Customer service was reported as unfriendly in many instances. This adds to the negative experience, and eventual aversion to public transport, when travel disruptions occur:

'When I called customer service [when a schedule disruption occurred] *they said it's just bad luck and you just have to wait for an hour. You feel like ... I'm a customer of yours and I make your salary possible and then you get an answer like that. I'd like to say that I'm going to another company, but you can't.'* (Commuters)

Also the service quality, such as the friendliness of the bus drivers, was mentioned frequently by all groups. As such, it seems that these moments of personal contact are important in the evaluation of the entire public transport system. Additionally, driving behaviour and the related comfort of travel were sometimes mentioned, with bus drivers often characterized as being 'rushed':

'They get tunnel vision to run the service as fast as possible in order to stick to the schedule and they forget they still have people on the bus.' (Commuters)

4.2 Social disadvantages

Individual competences
Difficulties experienced with the transport system can be enforced or strengthened by limitations on individual competences. Public transport availability was evaluated more negatively by those with physical limitations. Those that were visually impaired reported that they sometimes saw the bus coming too late, and then not stopping to pick them up. In terms of wheelchair accessibility, only the large buses on the main network have a few spaces available. The risk of not always being able to enter the bus with a wheelchair makes it impossible to rely on the system for such users:

'Sometimes I can't enter the bus with my wheelchair. Then I have to wait for another hour.' (Seniors)

Here, some linkages with the quality component of transport provision can be made. Individuals with limited physical competences may need more assistance and are therefore especially vulnerable when the service quality is low in public transport. As those with limited competences

have higher demands regarding service quality, negative experiences in this domain can have a greater impact on evaluations of quality:

'*I have had a lot of bad experiences with bus drivers when I travel in my wheelchair. They sometimes don't want to let me on the bus* [because of the hassle]. *Those kind of things have to do with the fact that they have to keep to a schedule and don't have time* [to assist me].' (Commuters)

Planning a trip by public transport can be a complex undertaking, especially for those with limited digital skills as virtually all information on public transport services is now presented online. On top of that, all groups reported that using the public transport system has become more complex because of the marginalization of the system. Today, multiple systems including regular and local buses, with multiple ticketing and planning conventions, have to be combined to create a single trip, rather than using just one system. A lack of digital skills, an issue especially for seniors, and, consequently, insufficient information on the transport system may lead to individuals not considering the public transport option as appropriate:

'*Those people* [who do not know how the internet works] *did not ask to be old, and we make life harder for them by promoting the use of internet. If you buy a paper ticket, you have to pay 10 euros extra. I don't think this is fair.*' (Seniors)

Additionally, not all the available transport options were known by all the participants. This was especially true for the local 'bus taxi' system. Those who had heard of it, considered it to be too complex and unclear, making it hardly an option to even consider:

'*That bus taxi, even I* [as a frequent public transport user] *don't understand it. Am I really that stupid? I just don't get it.*' (Seniors)

Social network
If one's perceived competences, or lack of, are barriers to reaching activities at some distance, one's social capital can sometimes mitigate these disadvantages. Especially when trips are only perceived as practical by car, some participants reported relying heavily on their social network. Adolescents are often driven by their own or their friend's parents to sports or social activities. This places a burden on those family members who are able to drive, which may constrain them in their own activity patterns:

'*It feels like you've been running your own taxi company for years. Picking* [the children] *up from Terneuzen or, if it was after 10 o'clock, from Goes.*' (Commuters)

A similar picture can be drawn for the elderly, who rely on family or their partner to drive them to activities. However, in contrast to the adolescents, seniors pictured this dependence as problematic. They feel they are excessively burdening family or friends, and worry about their future mobility if the people they rely on also lose the ability to drive:

'*I just don't want to think about when both my partner and I can no longer drive a car, then I don't want to live here anymore.*' (Seniors)

4.3 Geographical disadvantages

Time-space constraints
Given the relatively large distances to activities compared to in more urban environments, activity patterns can still be constrained due to long travel times even if there are no limitations on transport options or the ability to use them. With respect to car use, the peninsular nature of the region results in the road network being perceived as fragile when disruptions occur, especially if the toll tunnel becomes blocked. Our sample perceived using public transport to cover long distances as difficult due to the lengthy travel times and trip complexity. Especially during weekends, public transport does not start sufficiently early to arrive at some destinations outside the region in time for some

activities. Similarly, with return journeys, since public transport does run deep into the evenings, some participants would rely on family members at the destination letting them stay overnight:

'Then I'll just call my daughter in Goes and say: "I'm sleeping at your place tonight."' (Seniors)

Some participants reported that the increasing distances to specific services would eventually result in them wanting to move from their current area. This particularly came to the fore when increased distances were coupled with a risk of losing mobility options:

'If I and my wife are no longer able to get to the general practitioner quickly because neither of us can drive anymore: that feels scary.' (Seniors)

Local norms
The peripheral nature of the geography has shaped attitudes towards transport and accessibility through local social norms. The position of the car as the dominant mode of transport became clear in all the group discussions, with other transport modes being repeatedly evaluated against the car in terms of speed, comfort and reliability. This norm may have been behind the view that car-ownership is desirable, reflected in the attitudes of adolescents when reflecting on their future mobility strategies:

'I'm going for the car anyway, not a moped or a scooter.' (Adolescents)

Furthermore, participants stated that they did not understand why no action was being taken to improve their accessibility and, in this sense, they feel left behind by the government. This was especially the case for participants from Zeelandic Flanders, who repeatedly reported feeling locked out and excluded from the rest of the Netherlands as there was no easy way to cross the water:

'That we don't matter. I think that's an overall feeling. I think that, as a region, we already feel like we're behind the rest of the Netherlands.' (Commuters)

Participants from Zeelandic Flanders even consistently set themselves apart from the rest of the province, which they referred to as 'the other side' or 'Zeeland'. This perceived isolation, in which activities in other parts of Zeeland are not even considered, has led to a focus on neighbouring Belgium when it comes to participation in activities:

'Ghent is, for Zeelandic Flanders, the other place to go. You just don't go to the "other side", if you do something you go to Belgium.' (Commuters)

5. Discussion

5.1 Synthesis of the findings
Synthesizing the participants' experiences of daily travel barriers, it can be argued that, alongside instrumental factors, perceptions embedded in the local geography play a role in their evaluation of their experienced accessibility. The appropriation of transport options is not only determined by physical and economic constraints. As already argued by Kaufmann et al. (2004), cognitive factors such as evaluations of the quality of the transport system and perceived competence in terms of planning and using it were found to be crucial in one's perceived potential to access activities. These evaluations seem to be coloured by negative past experiences, as these were reported more vocally and frequently than positive experiences across all groups. This bias may contribute to the discrepancies between calculated and perceived accessibility levels.

The local geographical context plays a role in the mechanisms behind transport poverty both in a direct and in an indirect way. Directly, large distances are likely to heighten the perceived barriers in the transport and social domains. Larger distances reduce the possibilities to engage in multiple activities in a day, even when a car is available (Farber and Páez, 2011). Furthermore, larger

distances add complexity to public transport journeys, increasing the likelihood of schedule disruptions and consequently perceptions of unreliability. As such, it is not only objective distances and travel times that play a role here, but also how these are perceived. Participants from Zeelandic-Flanders illustrate this by seeing the other parts of the province as 'the other side' and as places you would not normally travel to. Additionally, when people are not able to travel independently, relying on social networks resulted in dependency relationships, especially within households with children. Parents could become limited in terms of their own activity participation by feeling obliged to chauffeur their children, a constraint often referred to in the time-space geography literature (e.g. Farber and Páez, 2011).

Indirectly, geography also plays a role in that local social norms also seem to shape travel behaviour (see Ajzen, 1991). In a geographical context where many travel long distances by car, the ability to cover considerable distances and access to a car become increasingly important for inclusion and social status (Mattioli and Colleoni, 2015). Determinants of quality, such as travel times, journey complexity, experiences while waiting, on-ride experiences such as the driving behaviour of the bus driver and customer service, were benchmarked against the use of the car. This is not that surprising as the car has generally been found to be the preferred mode, especially in rural areas (Steenbekkers and Vermeij, 2013; Steg, 2005). The benchmarking of other transport options against the car was reflected by many adolescents resolutely opining that they wanted a car as soon as possible, a trend also found by Nutley (2005) in the UK and Ireland. This view contrasts with observations that the car may be losing its role in providing social status among younger generations, as one of several factors reflecting delays in life-stage milestones in the millennial generation, resulting in a decline in those having driving licences (Delbosc, 2017; Delbosc and Currie, 2013). Here, only the costs of running a car were mentioned as a limiting factor, which may be linked to car-related economic stress which is particularly found in rural regions (Smith et al., 2012).

Furthermore, the consistent benchmarking of other transport options against the car suggests that, unlike elsewhere, there is no lowering of accessibility desires as a consequence of the constraints imposed by the spatial environment (see Delbosc and Currie, 2011; Farrington and Farrington, 2005; Lucas, 2004, 2006). This study indicates that desires regarding accessibility, and therefore the experience of transport poverty, may reflect the accessibility levels that are considered 'normal' as reflected in local social norms (Kenyon et al., 2002). This study indicates that, in regions characterized by high levels of car use combined with high accessibility benefits from car use, those without cars adopt their accessibility desires to the norm, which is travelling by car. Therefore, those who are transport disadvantaged may only modify their accessibility desires in regions where inequality in accessibility is limited and poor accessibility is considered 'normal'. This idea suggests that it is important to consider local social norms when analysing the relationship between the built environment and travel attitudes (e.g. Van Wee et al., 2019). In Zeelandic Flanders, the perceived geographical barriers, such as the toll tunnel, could impose limitations even on those with cars. Participants living there indeed hinted at feelings of isolation and exclusion from other parts of the Netherlands, which has led them to not even consider engaging in activities in other parts of Zeeland. However, this does not indicate any lowering of expectations regarding accessibility as many inhabitants of Zeelandic Flanders have shifted their activity spaces towards Belgium.

Overall, we show that identifying transport poverty on the basis of accessibility thresholds misses central elements such as the individual's appropriation of accessibility and how this appropriation is embedded in the local geographical context. Rather, accessibility threshold measures might be seen as setting the context for accessibility, while the extent to which individuals recognize and utilize this potential will vary. The factors addressed above that seem to capture this appropriation of accessibility can be helpful in explaining the discrepancies found between perceptions of accessibility and calculated accessibility measures (e.g. Lättman et al., 2018).

5.2 Policy implications

When designing responsive policy measures to enhance the accessibility of those at risk of transport poverty, perceptions of accessibility should be taken into account. If not, there is a risk that solutions implemented to enhance accessibility are rejected by target groups and accessibility is consequently not perceived as having been enhanced. However, due to the small sample size, it is not possible to derive specific recommendations to enhance perceived accessibility in the study areas. Nevertheless, the mechanisms underlying transport poverty uncovered in this paper make it possible to identify policy implications on the conceptual level.

With respect to tackling perceived disadvantages related to the *transport system*, a paradox arises: while the provision of infrastructure and public transport is to a large extent universal, perceptions of these services are shaped on the individual level. It should be recognized that not only availability matters but also the way transport options are offered. This challenges governments to provide a universal transport system that matches individual needs. Following recent ICT developments, considerable attention has been given to innovative and demand-responsive solutions such as ride-sharing platforms and Mobility-as-a-Service initiatives (MaaS) (Geurs et al., 2018). Such demand-responsive solutions appear promising as they provide universally available individual solutions. However, in order for these innovative solutions to succeed in overcoming barriers related to accessibility, subjective factors in the mechanisms behind the experienced barriers should also be acknowledged when designing such systems. These include perceived availability and quality of service. Ensuring that solutions are perceived as feasible adds to the challenges related to the technical and financial feasibility of providing high quality transport services in rural areas.

The way in which the transport system is perceived by an individual links to the *social component* of transport poverty. Public transport services should match the perceived competences of potential users. Among those relying on public transport are people with impaired mobility and maybe limited digital skills. To achieve the perception that the service is available, and a realistic option, information on the existence of the service needs to be provided in an inclusive manner. For the service to be perceived as feasible, it needs to be executed in an inclusive way. If not, marginal groups are forced to rely on their social networks, which are not always present, and their use can be perceived as burdensome. That means, for example, that planning a trip should also be possible for the digitally excluded and that services should be accessible for those with impaired mobility. These observations again underline that not only the technical and financial feasibility but also the perceived feasibility by potential users are factors in determining the success of a transport solution.

We saw that perceptions related to accessibility depend on the *local geographical context*, and so solutions to improve accessibility should also be designed to reflect local norms with respect to accessibility. This study showed that people compare their accessibility to levels of accessibility and means of travel that they believe are normal and acceptable in their local context. Therefore, an analysis and understanding of these norms can be vital in tackling accessibility issues. It may be that where the private car is the norm, transport solutions for those who cannot meet this norm should match the accessibility enabled by the private car as far as possible if the solution is to be perceived as feasible. This implies that policies are not necessarily transferable between seemingly similar geographical contexts in terms of land-use structures, as local social norms with respect to travel behaviour could still be very different. For example, volunteer-based public transport services that require strong social ties within a community may have different outcomes in different rural regions due to heterogeneous arrangements of social capital and beliefs with respect to what travel behaviour is feasible.

6. Conclusions

This paper has examined mechanisms behind experienced transport poverty in peripheral rural areas in the Netherlands by evaluating perceptions of accessibility held by commuters, seniors and adolescents. Building on Lucas's (2012) model of transport-related social exclusion, perceptions of the transport system and one's own competences have been addressed through semi-structured focus group discussions with commuters, school-going adolescents and seniors. Additionally, the role of the geographical context in shaping perceptions of accessibility has been established.

The analysis has shown that the mechanisms behind transport poverty go beyond observable factors such as transport availability and land-use structures. While these factors set the scene for potential access to activities, a complex interplay of qualitative elements determines actual perceptions of accessibility and possible experiences of transport poverty in peripheral rural areas. These elements include: knowledge on the availability and the use of transport options; evaluations of the reliability of travel modes; perceptions of safety; on-ride comfort and quality of service; and perceptions on what can be asked of social networks. These perceptions are embedded in the geographical context through local social norms and practices. The peripheral nature of the geography adds to the experienced transport poverty through activities being more dispersed and a perceived lack of transport possibilities to cover larger distances. Social norms related to the dominance of the car add to the negative appropriation of other transport options. Additionally, collective feelings of being 'left behind' by the government in tackling accessibility issues and providing sufficient public transportation were found contribute to processes of social exclusion.

A limitation in the use of focus groups may be that participants are unwilling to discuss sensitive topics like social exclusion as a result of activities being inaccessible. To examine this further, in-depth interviews could be held to evaluate these more sensitive topics. Given that there were only 21 participants in this study, it should be acknowledged that the sample is unlikely to be representative for the study areas as a whole or for peripheral rural areas in general. Given that the aim of this study was to explore mechanisms behind experienced barriers in daily travel, rather than provide a representative picture on transport poverty, this is not considered as problematic. Future research could evaluate determinants of accessibility problems in other contexts to examine whether these mechanisms hold in other contexts. This would also deepen understanding of the role of geography in shaping local social norms. Another promising avenue of research would be to attempt to quantitatively model the interrelationships between measured accessibility and an individual's appropriation of potential mobility (i.e. motility, Kaufmann et al., 2004). However, measures to assess motility are still to be developed (Shliselberg and Givoni, 2018). Another approach could be to test the mechanisms uncovered in this paper in quantitative assessments of perceptions of accessibility for which measures are available (see Lättman et al., 2018). A final avenue for further research could be on how mobility solutions in rural areas could be made responsive to the needs of inhabitants by explicitly considering how perceptions of accessibility are shaped.

To conclude, this study posits that considering subjective appropriations of the transport system and individual abilities will add to the understanding of experienced transport poverty. Identifying transport poverty by simply setting accessibility thresholds may easily ignore central elements such as individual perceptions of accessibility and how these are embedded in the local geographical context. That is, this study argues that calculated measures of accessibility only indicate a potential for activity participation. Further, in order to design responsive policies, one should consider factors that influence how this potential is appropriated. If not, there is a real risk that solutions designed to improve accessibility levels will do nothing to improve experienced accessibility.

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