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## Welfare consequences for individuals whose driving licenses are withdrawn due to visual field loss: A Swedish example

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### 1. Introduction

Welfare can be conceptualized as individuals' freedom and opportunities to shape their lives according to their own wants and needs, concerning living conditions such as work, income, housing, social activities, leisure and health (OECD, 2013).

Transport generates opportunities and limitations for individuals and groups to access activities associated with welfare creation (Dodson et al., 2004). For many people, everyday activities must be conducted over a geographically spread out landscape whose settlement patterns are adapted to a road network for car traffic, which limits access to activities by other transport modes (e.g., public transport, walking, and cycling) (Hine and Grieco, 2003). In many western contexts, this is explained by the long-term development of car-oriented land-use and infrastructure configurations (Jones, 2011). Accordingly, earlier transportation research stressed that the great "accessibility divide" usually lies between those who can and cannot access car transport (Lucas, 2012).

Individuals with impairments display more transport-related social vulnerability than do individuals without such impairments (Bascom and Christensen, 2017; Casas, 2007). However, studies of the transport-related welfare of individuals with impairments are still rare. According to Blais (2013), the focus has been on the physical adaptation of vehicles and infrastructure (related to sensory and physical impairments), while less work has been done to understand the relationship between access to transportation, impairment, and individual welfare. Regarding individuals with impairments and car use, most research focuses on technical, functional, and road safety aspects (Wilson, 2003). There is clearly a need for further research into how loss of car use affects individuals with impairments in their daily life. An impairment such as visual field loss (VFL) may not itself affect everyday life activities, for example, not preventing individuals from performing their work. However, if an individual who previously commuted to work by car, but whose driving license has been withdrawn and has no available alternative transport mode, this might lead to loss of employment.

Regarding driving, individuals with VFL might have difficulties with speed adaptation and reaction time to events in the visual field periphery, as they do not see certain parts of the normal field of view. However, such visual impairment often occurs gradually over time, and the individual may not even be aware of his or her deteriorated condition. VFL is often discovered during medical examinations, and doctors have a legal obligation to report VFL to the Swedish Transport Agency, which is responsible for driver licensing. In Sweden, approximately 8800 driving licenses are withdrawn every year because the medical requirements for holding a license are not met (Transportstyrelsen, 2018), and among these cases are individuals with VFL. There are no statistics concerning the reasons for each case of withdrawn driving license (WDL) due to strict medical secrecy rules.

There are significant links between transport, accessibility, and welfare (Dodson et al., 2004). The welfare consequences of driving cessation have mainly been explored in research into older people. Such studies show that driving cessation is related to

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poorer mental health, such as depression and isolation (Chihuri et al., 2016; Choi and DiNitto, 2016), less freedom and independence (Adler and Rottunda, 2006; Chihuri et al., 2016; Davey, 2007), identity loss (Musselwhite and Haddad, 2010), and the missing of spontaneous travel (Davey, 2007; Musselwhite and Haddad, 2010). To some extent, these results can also be seen in studies of WDL in individuals with impairments such as traumatic brain injury (Rapport et al., 2008), stroke (Liddle et al., 2009), and epilepsy (Sullivan and Buckley, 2013). However, there are knowledge gaps concerning the welfare consequences when impairment leads to a transport mode loss such as WDL for people of different ages and life phases. This study investigates the welfare consequences for individuals in Sweden who previously used cars for regular transport in their everyday lives, and who have had their driving licenses withdrawn due to VFL. The theoretical starting point is how the capability approach supports the following research question: How do individuals experience driving license withdrawal with respect to transport availability, accessibility, and welfare creation?

## 2. Capability approach

The capability approach (CA) concerns individuals' opportunities and freedom to choose to live as they want to (Mitra, 2006). Several researchers in the field of transport disadvantage have identified CA as a suitable framework for understanding the welfare function of transport (Beyazit, 2011; Hananel and Berechman, 2016). Furthermore, CA has been used in disability research, emphasizing the ability to view the individual from a holistic perspective, by considering how various factors can interact and affect living conditions (Prah and Mitra, 2015; Trani et al., 2011).

Key concepts in CA are *capabilities* and *functionings* (Sen, 1999). *Capabilities* are sets of the opportunities and freedoms of individuals to choose and act, in order to achieve what they value. Capability sets comprise combinations of resources (e.g., access to public transport), individual factors (e.g., impairment, age, gender, and preferences), and environmental factors (e.g., physical, social, economic, and political factors). *Functionings* refer to what individuals do and can perform (e.g., work), including desirable conditions. Functionings are what jointly constitute welfare, whereas capabilities concern the individual's opportunities to realize the functionings (Mitra, 2006; Verd and López Andreu, 2011).

Transport researchers using CA define the collective opportunities to access activities as a capability (e.g., Beyazit, 2011; Pereira et al., 2017). According to Pereira et al. (2017), this capability comprises two interconnected components: one concerns the individual's capability to access transport modes and transport systems; the second relates to the interaction between transport systems and land-use patterns, and its impact on the individual's capability to use transport to access activities and achieve desired goals. The authors denote this a *combined capability*. These CA-inspired conceptualizations are beneficial for answering the research question about respondents' access to transport and thereby participation in activities associated with welfare creation.

## 3. Methods

As the study concerns the participants' own lived experiences, interviews were conducted. These were organized using the narrative method of the "life story", i.e., the story a person tells about his or her life, or about selected parts of it. In this way, knowledge can be gained of both external conditions and the individual, and of the individual's place in a societal context (Patton, 2002). The narrative method was combined with CA, in line with previous research advocating this combination when investigating a complex issue (Verd and López Andreu, 2011).

### 3.1. Participants

Participants were recruited through a previous study by the Swedish National Road and Transport Research Institute (VTI) of a simulator-based test ( $n = 790$ ) measuring the driving ability of individuals with VFL (see Andersson and Peters, 2016). In this group, the participants consisted mainly of older men. However, travel patterns vary depending on, for example, age, gender, life phase, household composition, and residential location. Thus, to collect varied information on the welfare consequences of WDL, we conducted a non-probability, purposive sampling (Patton, 2002) based on personal and sociodemographic information about the participants in the larger VFL study. Seventeen people were asked to participate in the study, of whom two declined and one did not respond. None of the participants had temporary VFL. Background information about the respondents is presented in Table 1.

Interviews were conducted with fourteen individuals (including one pilot interview), i.e. seven women and seven men, who had their driving licenses withdrawn due to VFL. At the time of the interviews, the respondents were 28–82 years old (average age, 52 years). The time without a driving license ranged from four months to 18 years (average time, five years). The types of VFL varied, as did the reasons for it (e.g. glaucoma, stroke, brain tumour, congenital deficiency, accident, diabetes, and unspecified reason). Seven respondents were married and seven were single; three married and two single respondents had children living at home. The respondents had different employment backgrounds: eight were employed, one was self-employed, three were retired, and two were unemployed. The respondents came from different parts of Sweden, distributed between urban and rural areas.

### 3.2. Procedure

The participants provided written informed consent via letters, and those who had signed consents were contacted to determine a time and place for the interviews.

An interview guide was used in conducting semi-structured interviews covering the following topics: background, WDL, consequences, and time perspective. However, the participants could speak freely, in accordance with narrative theory and method

**Table 1**  
Description of respondents. The respondents' names are fictitious.

Respondent	Sex	Age	Residence	Family	Accommodation	Employment	Impairment and cause of VFL	Year since WDL	Additional impairment
Simon	M	28	Small city, South West Sweden	Partner, no children	Apartment, central in town	Retrained; previously a truck driver	Brain tumour	2013	
Peter	M	45	Small urban area, North Sweden	Partner, one child in preschool age and one in school age	House, small community	IT industry	Diabetes	2014	
Johan	M	50	Middle-sized city, East Middle Sweden	Single, no children	Apartment, central in town	Technician	Consequence due to surgical, retinal retardation	2017	
Adam	M	54	Region to a big city, East Middle Sweden	Married, two adult children	Apartment in suburb	Self-employed	Eye defect due to accident	2012	Movement difficulties due to surgical, Herniated disk
Lars	M	61	Middle-sized city, East Middle Sweden	Married, one adult children	Apartment, central in town	Office services	Glaucoma	2013	
Roland	M	70	District to a big city, East Middle Sweden	Partner, two adult children	Apartment in suburb	Retired	Diabetes	2013	Movement difficulties
Bertil	M	82	Middle-sized city, East Middle Sweden	Single, no children	House, central in town	Retired	Glaucoma	2013	Movement difficulties due to polio as a child
Malin	F	29	Middle-sized city, West Sweden	Single	Apartment outside town	Warehouse worker	Cause unknown	2017	
Sara	F	39	Village on countryside, East Middle Sweden	Single, two children in school age	House; previously in apartments in town and countryside	Unemployed	Congenital VFL	1999	Movement difficulties due to fibromyalgia
Karin	F	43	Middle-sized city, North Middle Sweden	Married, one child in school age	Apartment central in town	Office	Stroke	2005	Weakness lateral, right upper limb due to stroke
Maria	F	48	Middle-sized city, North Sweden	Single, one child in school age	Apartment outside town	Nurse	Stroke	2014	
Lena	F	51	Big city, Southern Sweden	Single, two adult children	Apartment centrally; previously lived at countryside	Unemployed and partly sick-worn	Stroke	2012	
Ingrid	F	60	Village on countryside, North Sweden	Married, two adult children	House	Administrator	Diabetes	2012	Movement difficulties due to consequences of diabetes
Birgitta	F	75	Small city, Southern Sweden	Single, two adult children	Apartment outside town, and detached house in countryside	Retired	Glaucoma	2017	

(Åstedt-Kurki and Heikkinen, 1994).

The interviews were conducted by the first author (JN), and the participant could choose where to be interviewed, for example, at home, at the workplace, or in a neutral place (e.g., a library). One interview was performed by phone: due to the WDL, this respondent felt too depressed to handle an interview face to face. The interviews lasted between one and 2 h and were conducted between June and October 2017.

With the approval of the participants, the interviews were recorded digitally, then transcribed verbatim by the interviewer. The participants' names used in the "Results" section are fictitious. The transcribed interviews were analyzed independently by the first author (JN), and were validated by the other authors (ÅA and TS) during the research process (Patton, 2002). The study was approved by the Regional Ethics Board of Linköping (reference No. 2017/128-31).

### 3.3. Analyses

The analysis was conducted in four steps, according to a combination of narrative method and CA. The first step concerned the interview transcription, including processing and selection (Patton, 2002). In the second step, each interview was summarized in a "profile" in accordance with narrative method. This made it possible to identify what is common to all stories, without disintegrating the individual stories (Ayres et al., 2003). In a third step, the interviews were analyzed with support from key concepts of CA (Verd and López Andreu, 2011). Identified *functionings* were categorized in five welfare dimensions. Within these, different *capability sets* were identified, in terms of resources and individual and environmental factors, regarding access to transport and thereby to functionings. In a fourth step, the interactions between individual and environmental factors were further analyzed abductively (Patton, 2002), with the WDL being interpreted in light of CA.

## 4. Results

Generally, one's residential location is the point of departure for everyday transport. As the respondents had established their lives before the WDL, their residential locations were not chosen for the availability of alternative transport to access needed and wanted activities, in time and over space. One joint feature of this "established life dilemma" is restricted individual time budgets allocated for transport, and that alternatives to the car generally are more time consuming. The results show that spatial, mode-based and time-related mismatches make the WDL generate a range of welfare consequences, which will be described below according to the following dimensions: *Living*, *Working life*, *Leisure*, *Shopping and service errands*, and *Self-image*.

### 4.1. Living

For several respondents, access to alternative transport in order to maintain daily activities raised the question or the need to move to another residential location with better transport opportunities (e.g., bus and train) and/or proximity to various activities/amenities. After WDL, the accessibility and ease of reaching desirable activities/amenities was prioritized by some respondents, who moved from village to city. This was the case for Karin (43 years old), who experienced the WDL twelve years ago. Though Karin lived within walking distance of her workplace, the WDL became very significant as her son grew older and began sports activities in the city, with only her husband being able to drive him there. This was the main reason for the family's decision to move into the city, to be near the stadium and to the train taking Karin to her workplace, located near the train station in the village where she lived before.

Two respondents reached another decision, and remained living slightly outside the city. One of them was Ingrid (60 years old): If you lived where I live, you wouldn't even think about moving./ ... /I'm sitting in my armchair, looking out the window, and I can see the lake ... It's actually very nice here.

Ingrid's statement illustrates something expressed by several other respondents: the connection between residential location and quality of life as a reason for not moving. Thanks to her husband's ability to drive Ingrid to her workplace in a settlement near the city, and for shopping, etc., they can stay in their current home. This preserves the couple's quality of life, which is linked to the residential location.

Karin's and Ingrid's stories reveal how WDL can affect relatives as regards residential location. For Karin, the accessibility of her son's activities was a priority. For Ingrid, with grown children, the priority was staying in the residential location that she and her husband loved, and she added that her husband would never want to move. However, for Ingrid, this decision exacted a price in the form of a new negative consequence: the decline of transport access and thereby access to various desirable activities/amenities, resulting in reduced independence and increased isolation.

### 4.2. Working life

The WDL affected the working life of several respondents, by affecting their access to transport to the workplace or due to the need for a driving license in their profession.

All nine respondents who were employed had previously commuted to work by car. After the WDL, they had to find new transport modes. Peter (45 years old) described how he initially thought that the WDL would be a catastrophe, forcing his family to move closer to his workplace. However, the family found ways to handle everyday transport, and Peter has changed from travelling by car to bus, saying, "By car it takes twenty, so 30 min [by bus to the workplace] is not that bad". This illustrates that the time available for transport is a major concern. Several respondents noted the negative time-consuming effects of bus travel. One of them was Johan (50

years old), single and living in a central city area with many activities and services nearby. Nevertheless, he found going by bus unthinkable from a time-management perspective, as the buses do not connect well with his workplace, located in the outskirts of the city. Johan therefore changed his transport mode for work commuting from car to bicycle – not a difficult choice, as he enjoys cycling. Furthermore, he hoped to regain his driving license after an appeal, seeing the WDL as just a short interlude in his life. Another respondent, Ingrid, has experienced muscle pain and motion reduction, leading to difficulties walking to the bus stop, especially when it is slippery in winter. Instead, her husband drives her to the workplace located 2 km away, and she added that she feels uncomfortable asking others for rides. She works part-time and walks home using walking poles. Her employer has allowed her to work several days a week from home in the winter, to avoid the troublesome trips. An additional strategy is to take her holiday in winter instead of summer: “Then I take a vacation, like no other person does”. However, her husband does not take his holiday in the winter: “He, like everyone else, wants his holiday in the summer!”

Some respondents experienced difficult choice situations between keeping up work/working hours for economic reasons and obtaining a functional daily life, due to lack of suitable transport. One example of this is that of Maria (48 years old), a single parent, who after work must pick up her son from after-school day-care, make purchases, and run miscellaneous errands. Since the WDL, Maria has done these errands by bicycle or on foot, as this is faster than taking the bus. Nevertheless, this is more time consuming than travelling by car, so she has had to give up certain activities. Maria would like to work less due to the increased transport time, and still be able to undertake desirable activities, but her economic situation does not allow this.

For professional drivers, WDL means the end of one's profession. This was the situation for Simon (28 years old), a truck driver who had just begun his career:

And I worked as truck driver at a freight forwarding company./ ... /I drove long and wide transports, to Norway./ .../I had to change my entire career.

Simon had been planning to start his own business when all his driving licenses were withdrawn. After being unemployed for one year, he retrained.

Two respondents, Lars (61 years old) and Adam (54 years old), had each built up established companies, and their businesses required customer visits. This required high flexibility in transport, and they used to make these visits by car, considering public transport impractical. Their stories are similar thus far, but they chose very different ways to handle their situations after the WDL. Lars sold his company and found different work that did not require a driving license. He said that during the four years without a driving license, he has adapted to the new life situation, though he added with bitterness: “So now I am sitting in front of a computer, six to 8 h a day, taking calls”. Adam, since the WDL five years earlier, has continued driving to make customer visits so he can keep his company, which he described as his life-work. His working life has thus not changed due to the WDL. However, Adam's choice has had a negative consequence, as he now feels like a criminal, and he added that the illegal driving is “a very bad habit”.

#### 4.3. Leisure

A common consequence experienced by several respondents is reduced participation in leisure activities, due to reduced access to suitable transport. This could pertain to undertaking spontaneous travel, attending cultural activities, or attending sports practice, as many of these activities occur in locations not well served by other transport modes, especially public transport, from the required points of departure (e.g., the home and workplace).

Regarding sports activities, Johan described how he used to swim one day a week before work, stressing the social importance of this. He went to the swimming hall by car, as it is located on the other side of the city from where he lives and works. Now, he must take the bus if he wants to go swimming. As this means arising too early in the morning, in order to adapt to bus timetables and arrive at work on time, he has stopped swimming.

Regarding leisure time transport needs, some respondents said that they refrained from certain activities if they found it too complicated to access them without driving. Birgitta (75 years old), spoke of being invited to see friends living in another city:

And I gave it up!/.../I called yesterday and said, “That's going to be too difficult”. Besides, one of them wouldn't drink wine because they'd have to drive me to the bus. If I had the car, I'd have just taken it, driving away. Then, it became too difficult.

This passage also highlights the inconvenience that she thinks others experience due to her WDL, a feeling expressed by several respondents.

Some respondents stressed that their driving license was strongly connected to the pleasure of driving. This is illustrated by the case of Sara (39 years old):

For me, the driving license has been a huge thing. For others it might just be a matter of transport, but for me it was life. It really was. It was my identity. I completely disappeared when it was taken from me. Because ... it was my life.

The quotation exemplifies how the driving license could be associated with identity and lifestyle, being an important part of one's life. Sara loved to drive, as well as to watch car racing with friends sharing her interest. After the WDL, these activities became impossible to do or were severely circumscribed, resulting in isolation.

#### 4.4. Shopping and service errands

For most respondents, the WDL influenced their ability to make purchases, conduct service errands, and cater to relatives' transport needs.

With respect to shopping, several respondents described how travel by bus for this purpose often meant increased travel time. Furthermore, the respondents associated bus travel, bicycling, and walking with difficulties transporting goods, for example, from the

supermarket. Some respondents get help from friends and relatives who have cars, who do the shopping for them or let them come with them when going to the supermarket. This generates negative feelings of dependence on others and an involuntary adaptation to others' daily plans.

Roland (70 years old) described the difficulty of visiting and helping his sick, aged mother in hospital. Roland has mobility difficulties, and therefore receives a travel service benefit. However, since only a certain number of travel service trips are allocated per month, he cannot help his mother as often as desired, disappointing his mother.

Roland's story illustrates how the WDL, and the associated reduced transport options, affects family and relatives. This was further described by Maria, as the WDL has meant that her son's opportunities to access leisure activities have been significantly curtailed, isolating him more than before. When the interviewer asked whether her son could go with friends and their parents to undertake various activities, Maria answered that being unable to contribute would make her sad:

But then you feel sad. Then you feel like a really bad mom./ ... /I want to give my boy that. I want to go with him to the swimming hall or to the ski slopes. I want to do that, he's my boy. I want us to have that, together./ ... /He's sad when we can't, and I'm sad because I can't give him that, and it limits his life.

This quotation illustrates how Maria's desire to be a good mother has clearly been negatively affected by the WDL.

#### 4.5. Self-image

The consequences relating to the above welfare dimensions are all connected to a range of additional difficulties and concerns, related to the self-image. One is about respondents who have impairments other than VFL. For instance, Ingrid needs regular exercise at the gym due to functional impairments, but the bus ride to the gym takes a long time and she has difficulties walking to the bus stop. Consequently, she has stopped going to the gym, resulting in the deterioration of her physical health, in turn leading to sadness. Overall, this has negatively affected Ingrid's self-image of being an independent person. Lack of independence and freedom caused by the WDL is also illustrated by Bertil (82 years old):

I have friends who drive me to certain activities. But those are the exceptions! Because they have their own lives. I can't ask people to spend their lives on me./.../I owe such a hell of a debt to half the town./.../I don't know how to handle the amortization! / ... /But that's a strong feeling./ ... /You can decide nothing about your own life!

Bertil, who is retired and has motion reductions, described the negative feeling of being dependent on others, a feeling expressed by most respondents. Furthermore, several respondents noted that reduced transport access, and thereby reduced access to desirable activities, resulted in feelings of isolation.

Decline in welfare related to self-image, as a consequence of the WDL is also exemplified by Maria's desire to be a good mother and Sara's view of the driving license as a part of her identity. For Adam, who has continued to drive to keep his business, the illegal driving has generated negative consequences:

You are working, you pay taxes, you try to do the right things./ ... /It's mentally very stressful./ ... /And then it is illegal driving and you are a criminal./ ... /. But what should I do?

Adam is frustrated with his situation, as the feeling of being a criminal clashes with his self-image: an honest citizen. His continuation of driving can be related to Adam's perception of being unfairly judged regarding the WDL, since he considers that he is managing to drive safely. This view applies to all the respondents, and the WDL was often described as coming as a shock: they simply did not regard the VFL as affecting their everyday life, and they perceived themselves as good drivers. They also described prevailing methods for assessing VFL as too blunt, not taking into account actual driving abilities. This has led to a decline in confidence in governments and the judiciary, generating frustration and anger and representing another aspect of how the WDL can affect welfare. In some cases, the perception of being unfairly judged was the main difficulty to be coped with. This was the case for Malin (29 years old), who one week after the WDL went to the health centre, seeking help as she felt too depressed, due to the WDL, to work. Malin has good access to alternative transport modes and she does not talk about troublesome travels or reduced activities due to the WDL. Her story illustrates how the WDL can affect welfare, even in the absence of major transportation problems.

## 5. Discussion

The aim of this study was to investigate the welfare consequences of having a WDL due to VFL for individuals who previously used the car for regular transport. In this context, welfare is conceptualized as an individual's freedom and opportunities to shape his or her own life, concerning living conditions such as work, income, housing, and health (OECD, 2013). An assumption is that access to transport is crucial for individuals' opportunities to participate in activities associated with welfare creation (Dodson et al., 2004). As CA concerns individuals' capabilities to realize functionalities, i.e., individuals' opportunities and freedoms to choose to live as they want to live (Mitra, 2006), it has been used as the theoretical framework.

The results indicate that the welfare consequences of WDL can be classified in several welfare dimensions. In accordance with CA, these dimensions can be labelled as functionalities, identified as *Living*, *Working life*, *Leisure*, *Shopping and service errands*, and *Self-image*. In most cases, the WDL has led to difficult adaptations and reprioritizations, such as decisions about the need to move from a beloved residence, giving up a career, limited or ceased opportunities for leisure activities and socialization, and difficulties managing daily errands. For some respondents, consequences can be seen in all described dimensions, while for others, they apply to only one or two dimensions – though nevertheless of great importance. The WDL has led to a decline in welfare for most respondents in terms of, for example, isolation, dependence, frustration, sadness, and bitterness.

The described welfare consequences are linked to lacking availability of transport alternatives to the car with which to access

needed and wanted activities in time and over space, and within the time available for transport. These findings are in line with Pereira et al.'s (2017), conceptualisation of access to activities as a transport-related capability comprising two major components. The first concerns the individual's capability to access and use transport modes, depending on the interaction of individual factors (e.g., family situation, work, and residence) and external factors (e.g., social environment). The second concerns the interactions between transport modes and land-use patterns and how these affect the individual's transport-related capability. This combined capability is clearly illustrated in the respondents' narratives. For example, even though a respondent has access to public transport, increased travel time due to bus transfers and waiting times between buses to accommodate a multifaceted everyday life might lead the respondent to refrain from certain activities. Individual time-budget restrictions are therefore related to activities conducted in time and space and to the organization of everyday life, depending on external factors such as land-use patterns related to public transport network distribution and frequency of service (Pereira et al., 2017). In fact, for some city-dwelling respondents, biking was often less time consuming than public transport. However, using this mode was restricted by distance, physical health and residential location. Accordingly, residential location has a predominant significance, generally being the starting point of most trips. As the respondents had established their lives before the WDL, their residential locations might not have been chosen with a view to alternative modes of transport to access work, leisure activities, and shopping/errands. Furthermore, adaptation is complicated by the wishes and needs of other household members and relatives.

Altogether, the results can be related to previous research findings that car reliance is situated in economic and sociospatial practices supporting car use, with a lack of alternative transport modes possibly leading to social disadvantage and exclusion (Jeekel, 2013; Jones, 2011). Additionally, the results relate to Doughty and Murray's (2016) statement that material conditions, constraints on time, caring responsibilities and the various stresses of modern life are felt ameliorated by the comfort and ease by which one can transport oneself speedily from whatever place (and time) to any other by car.

The respondents' experiences and perceptions were related to a time perspective, in that their feelings and actions were affected by how long they had been without their driving licenses, and by their current life phase. The respondents described the WDL as coming as a shock, and some described how they initially thought that the WDL would be a catastrophe. This indicates the importance of early interventions by authorities, perhaps to help structure the new life situation after the WDL. Furthermore, if a respondent has been without a driving license for several years, his or her general life situation might have changed; for example, the children may have already grown up, generating new activities and therefore new transport needs and strategies for addressing them. Another consideration is that even if a respondent has adapted to life after the WDL, new consequences may arise. For example, the priority to stay in a given residential area due to quality of life considerations might generate new negative consequences such as isolation and dependence, if the alternative transport modes are not completely satisfactory.

Methods for measuring VFL and medical requirements for holding a driving license, leading to WDL, are environmental factors applying to all respondents that individuals cannot influence. The respondents shared the perception of being unfairly judged regarding the WDL. They perceived themselves as good drivers, claiming that the VFL did not generally create difficulties in everyday life. This raises the issue of citizens' trust in government, known to be important as it affects the general level of trust in society (Newton and Norris, 2000). It also illustrates the importance of reliable measurement methods, in conjunction with a need to determine a balance between regulations and medical requirements, on one hand, and the possibility of obtaining a high but safe level of mobility, on the other, to avoid unnecessarily negative welfare consequences. Further research into the impact of reduced confidence is proposed, as well as further R&D on methods for measuring VFL, particularly as concerns driving ability. A complementary quantitative study is proposed as well, regarding the extent of the welfare consequences of WDL and whether welfare differs between individuals having WDL due to VFL and a control group.

Though the interviews convey individual narratives, they display similarities concerning the welfare consequences of "transport loss". Furthermore, these consequences have been identified in previous studies, especially in the wide-ranging research into the elderly (Adler and Rottunda, 2006; Chihuri et al., 2016; Choi and DiNitto, 2016; Davey, 2007; Hyslop, 2017; Musselwhite and Haddad, 2010; Scheiner, 2006). The sample in the present study encompasses various ages and life phases, and the respondents' VFL does not constitute an obstacle to life in general, so this study contributes new knowledge. Altogether, the results may apply to other groups with functional impairments other than VFL, who also do not meet the medical requirements to hold driving licenses (e.g., those with neuropsychiatric diagnoses, epilepsy, and motor disorders after stroke).

### 5.1. Methodological considerations

The participants were recruited via a previous study concerning simulator tests of driving ability. This suggests that the participants perceived that they had been misjudged regarding the WDL, otherwise they probably would not have participated in the previous study. The selection method could therefore be biased. However, the subject is about the welfare consequences of WDL, and these should not differ depending on whether or not the participants feel unfairly judged (except for the feeling of being misjudged).

The findings do not address the significance of the *cause* of the VFL, so the study does not consider whether this could have affected the choices and consequences.

## 6. Conclusions

The results indicate that the studied individuals who previously used the car for regular transport in everyday life and who had their driving licenses withdrawn due to VFL experienced several negative welfare consequences. Due to reduced opportunities for satisfactory transport solutions, valuable activities and conditions in life became circumscribed or terminated, often resulting in

welfare loss. Altogether, the results highlight the links between transport access and welfare. The results also draw attention to car reliance stemming from the long-term development of land use and infrastructure configured for the benefit of automotive vehicles, seen in many western contexts. Furthermore, the respondents shared the perception of being unfairly judged regarding their WDL. Their lack of confidence in government raises the issue of citizens' overall trust in government, as it affects the general level of trust in society. Further research into this is proposed, as well as a complementary quantitative study regarding the extent of the welfare consequences of WDL.

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