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Barriers and facilitators to social participation after driving cessation among older adults: a cohort study

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Barriers and facilitators to social participation after driving cessation among older adults: a cohort study

Abstract

Background. Driving cessation is a challenging transition for older drivers. It is indeed often associated with reduced mobility, loss of autonomy and poor quality of life, as in individuals with acquired disabilities. We examined factors that inhibit or facilitate out-of-home occupations after driving cessation (shopping, visiting/helping friends/family, leisure, and associative activities) in older adults, with particular focus on the role of anticipation.

Methods. This longitudinal study was conducted with the SAFE MOVE cohort (n=1,014 drivers aged ≥70 years). Socio-demographic, health, cognitive, mobility and out-of-home occupations data were collected at home at baseline and by a postal questionnaire at 2-year follow-up.

Results. In total, 48 (5%) participants stopped driving between baseline and follow-up, at a mean age of 81.8 years; 71% of drivers who stopped reported that driving cessation affected their out-of-home occupations. Participation in social occupations started to decline before driving cessation. Retired drivers were older, had poorer health, poorer cognitive abilities, drove less at baseline but used more public transportation than active drivers. As compared with participants who did not consider driving cessation at baseline, those who did were more likely to expect a better quality of life in the event of driving cessation and to use public transportation at baseline and follow-up despite their older age and poorer health.

Conclusion. Some factors associated with reduced social participation and driving cessation are inevitable, such as health status. However, other factors may facilitate maintenance of social participation, including anticipation of driving cessation and mobility habits. Our findings highlight

the need for appropriate interventions that are widely available to older drivers before driving cessation occurs and for public policy actions facilitating alternative transport systems.

Key words: occupations, adaptation, longitudinal study, mobility, public transportation

Introduction

Driving is the predominant means of transportation facilitating community mobility among older adults in developed countries [1]. However, because of age-related decline in many sensorimotor and cognitive functions that are required for driving [2] and multiple health problems that commonly occur with old age, many older adults have to concede to driving cessation [3].

Driving cessation is a challenging transition for older drivers [4-6]. Losing the ability to drive reduces opportunities for older drivers to move around the community, which in turn can negatively affect health and quality of life. Evidence indicates that driving cessation has negative consequences, including isolation, loss of autonomy, depression and decline in health [7]. Also, driving cessation is strongly associated with reduced out-of-home activities, such as community work, paid employment and leisure [8, 9]. Similar findings are commonly reported in adults with disabilities. For instance, individuals with a history of stroke are less likely to drive and participate in work and leisure activities than those without a history of stroke [10].

However, the adaptation process that occurs throughout driving cessation, which could begin before or after driving cessation, especially in older adults, is much less understood [11]. A better understanding of the adaptation process could ease the transition for older drivers and improve quality of life after driving cessation.

The purpose of this study was to determine the impact of driving cessation on out-of-home occupations among older adults and to explore factors that restrain or promote continuation of

occupations. We hypothesized that anticipation of driving cessation would help maintain out-of-home occupations after driving cessation, whereas health problems and cognitive impairments would reduce out-of-home occupations and limit the use of alternatives to driving.

Methods

Participants

In this cohort study, the population consisted of drivers ≥ 70 years old who took part in the "SAFE MOVE for older drivers" project (Project-ANR-11-VPTT-0001). The main objective of this cohort was to help older drivers maintain their mobility by investigating the determinants of driving regulation. Participants were recruited from electoral rolls of 2 French administrative areas (Rhône and Calvados) [12]. Data were collected at baseline between May 2012 and June 2013 and at the 2-year follow-up between July 2014 and June 2015. The present study included the 1,014 participants of the SAFE MOVE cohort for which the driving status was known at both inclusion and 2-year follow-up.

The study was approved by the Institutional Review Board of the French National Institute of Health and Medical Research (IRB INSERM No. 12-069) that is registered with the Office for Human Research Protections (OHRP) of the US National Institutes of Health. The study also received approval from the French Data Protection Authority (CNIL DR-2013-018). This observational epidemiological study focusing on driving regulation is not an applicable clinical trial. Each participant provided written informed consent. This study was conducted in accordance with the STrengthening the Reporting of OBservational studies in epidemiology (STROBE) statement.

Measures

At baseline, data were collected at home by a psychologist and 2 years later by a postal self-report questionnaire or by phone if participants did not return it. The interview at home (approximately 1 hr) was performed by 3 psychologists who received 2 days of standardized training. In addition to sociodemographic data, participants were asked about their health (self-rated health and health compared to others, 5-point Likert scale) and number of medications used daily. They also completed the 4 Instrumental Activities of Daily Living test (4-IADL scale) [13], and cognition was assessed with the Trail-Making Test A and B [14] and the Digit Symbol Substitution Test of the Wechsler Adult Intelligence Scale [15], considered a good indicator of risk of car accidents [16] and associated with unsafe driving [17]. Regarding community mobility, participants were asked about driving habits (e.g., how often, reasons and frequency for trips; i.e., visiting or helping family and friends, engaging in leisure or associative activities, and going shopping) and feelings related to driving (e.g., fear, pleasure, needs). They were also asked if they ever had considered driving cessation, how their life would be if they could no longer drive, and if they had health problems that make driving difficult. Finally, they were questioned about accessibility and use of public transportation.

At 2-year follow-up, sociodemographic, health, and mobility data were again collected. Additional questions were also asked, including about health, cognitive problems and number of car accidents since baseline; whether participants needed more time to perform daily activities; and use of on-demand transport. Furthermore, drivers who stopped driving since baseline, further called “retired drivers,” were asked new questions: date and reasons for driving cessation, consequences of driving cessation on engagement in occupations, help received with transportation after driving cessation, and who provided help. The participants who did not return the postal survey were contacted by phone to answer a number of relevant questions, including whether or not they were still driving.

Outcome measures

Two outcome measures were considered: participants' driving status at 2-year follow-up (retired vs active drivers) and consideration or not of driving cessation at baseline.

Data analysis

Descriptive analyses were used to characterize retired drivers (age, and reasons for and consequences of driving cessation on out-of-home occupations). Socio-demographic, health, and mobility characteristics were compared, separately at baseline and follow-up, by chi-square test or Fisher exact test and *t* test as appropriate, according to 1) participants' driving status at 2-year follow-up (retired vs active drivers) and 2) consideration or not of driving cessation at baseline. Statistical analyses were performed with SAS v9.4 (SAS Institute Inc., Cary, NC). $P<0.05$ was considered statistically significant.

Some of the data have been previously published in a French book on "Engagement, occupation and health" in the context of a French speaking congress in occupational therapy [18].

Results

Specific characteristics of retired drivers

Among the 1,014 participants, 48 (5%; 26 women) stopped driving between baseline and 2-year follow-up (mean [SD] 25 [2] months). Among the 48 retired drivers, only 24 fully completed the questionnaire. The flow of the participants in the study is in Figure 1. Driving cessation occurred 1 year on average after inclusion in the study (mean age 81.8 [6.1] years). Men stopped driving 3 years on average later than women (mean age 83.0 [5.1] vs 80.8 [7.1]) but this difference was not statistically significant.

The main reason reported for driving cessation was medical (73%). In addition, 10% of participants no longer wanted to drive, 5% were advised by family, 8% were afraid of driving, and 13% stopped driving for another unspecified reason. Of note, 5% reported 2 or 3 reasons for driving cessation, including a medical reason. Retired drivers perceived their health significantly deteriorated between baseline and follow-up (23 participants reported "good" and "very good" health at baseline versus only 6 participants at follow-up (p = 0.012). Fourteen percent reported a sudden medical problem that could have affected driving, at least temporarily (stroke, infarct, brain injury and cancer).

Most retired drivers (71%) reported that driving cessation affected engagement in out-of-home occupations. However, 78% received help to move outside their home after driving cessation, mainly from their family (33%) or spouse (30%).

Characteristics of participants according to driving status at 2-year follow-up

At baseline (Table 1). As compared with the 966 active drivers at follow-up, the 48 future retired drivers were significantly older (p<0.0001), included a higher proportion of women (p=0.01), were less educated (p=0.01), reported poorer self-rated health (p<0.0001), had worse self-rated health compared to others (p=0.003) and more daily medications (p=0.02), and had lower cognitive performance (p=0.03). In addition, the future retired drivers were more likely to consider driving cessation at baseline (p<0.001), travelled significantly less in distance (p<0.001), used their car significantly less to participate in leisure (p=0.003) or associative activities (p=0.02), and reported being significantly more afraid of driving (p=0.002) and having significantly less access by foot to public transportation (p=0.0005). Whatever their driving status, most older drivers drove at least once a week, mainly for shopping (the main reason for which they used their car), and most considered that their life would be less good or a disaster if they stopped driving. Of note, all

participants in the cohort were fully autonomous (score of 1 for each item of the 4-IADL) and had retired from work.

Two years later (Table 2). Overall, 979 participants (955 active drivers and 24 retired drivers) answered all the relevant questions of the follow-up questionnaire. Questionnaire completers and non-completers among retired drivers did not differ in socio-demographic, health and mobility characteristics at baseline. As compared with active drivers, retired drivers reported poorer health (p<0.0001), more daily medications (p=0.008), more time to complete daily activities (p=0.0006), more concentration problems (p=0.01), and more trouble memorizing new information (p=0.02) and managing an unexpected event (p<0.0001) since baseline. Retired drivers also reported significantly less access by foot to public transportation (p=0.002) and less use of buses (p=0.0003). Conversely, they declared using on-demand transport more frequently. Few participants reported a car accident between the first and the second data collection, with no significant intergroup difference.

Characteristics of participants according to considering or not driving cessation at baseline

At baseline (Table 1). Only 4% of the 1014 participants considered driving cessation at baseline, even though most older drivers (85%) reported that their life would be worse or even "a disaster" in the event of driving cessation. However, those who considered driving cessation were significantly less likely to anticipate a lower quality of life after driving cessation than those who did not considere it (p<0.0001). In addition, as compared with drivers who did not considered driving cessation, those who did were significantly older (p=0.05), included a higher proportion of women (p=*0.*05), reported poorer self-rated health (p=0.02), were more likely to live alone (p=0.005), and had poorer cognitive performance (p=0.04). Older drivers who considered driving cessation also drove significantly less in distance (p=0.05) and frequency (p=0.03), reported significantly more health problems that made driving difficult (p=0.0002), were more afraid of driving (p=0.03), had

less pleasure in driving (p=0.001), considered themselves as poorer drivers (p<0.0001), and used their car significantly less for visiting their family (p=0.05) and for leisure activities (p=0.003). Furthermore, the number of participants who used public transportation did not differ between groups; however, public transportation was more frequently used by participants who considered driving cessation at baseline than those who did not (21% vs 8% used the tram at least once a week; p=0.02) (data not shown).

Two years later (Table 2). As compared with participants who did not consider driving cessation, those who did reported poorer health (p=0.01), more time to complete daily activities (p=0.02) and more concentration problems (p=0.007) since baseline and used the tram and train twice as much (p=0.003 and p=0.03, respectively).

Discussion

To the best of our knowledge, this is the first study exploring factors that restrain or promote continuation of occupations, in particular the role of anticipating driving cessation, after driving cessation in older adults. Overall, 71% of the older drivers who stopped driving in the 2-year study period reported that driving cessation affected engagement in out-of-home occupations. Before driving cessation, these drivers were older, had poorer health and poorer cognitive abilities, drove less, but used more public transportation than those who were active drivers at follow-up. Retired drivers also more frequently considered driving cessation at baseline. Most of the participants (85%) viewed their life negatively in the event of driving cessation. However, surprisingly, and despite the advanced age of the participants, less than 4% considered driving cessation at baseline, and those who did also had a particular profile in terms of age, health, living habits and mobility habits. Specifically, those who considered driving cessation were more likely to use public transportation at both baseline and 2 years later than those who did not consider it.

Socio-demographic, health and mobility characteristics of older people who stopped driving confirmed that driving cessation is multifactorial. Some of these characteristics may also explain the reduced engagement in out-of-home occupations after driving cessation; however, others seem to foster the maintenance of occupations. The association between driving cessation and reduced engagement in occupations outside the home for most retired drivers is consistent with previous studies [8, 9]. Given that decreased engagement in occupations after driving cessation may have a major negative impact on quality of life of older adults, improved knowledge of the factors involved should help orient preventative actions. Our findings suggest that some of these factors are inevitable, but others could partly be avoidable. These 2 points will be discussed successively.

Three types of factors that restrained engagement in out-of-home occupations after driving cessation are unfortunately unavoidable (i.e., age, health and socio-demographic factors). Consistent with age-related decrease in sensorimotor and cognitive ability required for driving [2], our retired drivers were significantly older than active drivers at follow-up. Decreased engagement in out-of-home occupations after driving cessation would also be highly linked to the process of aging. Indeed, aging progressively leads to the replacement of activities outside the home by less strenuous activities performed inside the home [19]. The poor health of the retired drivers could also contribute to the reduced engagement in out-of-home occupations after driving cessation. Indeed, retired drivers reported health deterioration between the 2 surveys as well as poorer health than active drivers, in line with the main reason given (i.e., medical) for driving cessation. However, poor health after driving cessation could be a direct consequence of driving cessation, at least for some participants, as previously reported [20]. In addition, the poor cognitive ability of the retired drivers, as shown by their lower cognitive performance than active drivers at follow-up, and their decline in cognitive ability between baseline and follow-up, would also be an issue for engaging in out-of-home occupations after driving cessation. Known to make driving difficult [3, 17, 21], poor

cognitive ability may also hamper the occupations themselves as well as the use of alternatives to driving such as walking and public transportation. Indeed, finding alternatives to driving requires planning, decision-making, attention and memory skills; so poor cognitive ability can be a significant obstacle throughout the whole travel chain to manage new modes of transportation (e.g., planning the trip, buying tickets, anticipating getting off the bus, implementing strategies to avoid falling, adapting to new situations). This notion is consistent with the fact that use of transportation is often difficult for older people [20] and can be particularly challenging for people with cognitive impairments [22]. Poor executive function would play a major role. Reduced self-awareness of cognitive ability in some older adults could also hinder the decision to stop driving and the implementation of alternatives to driving. Because impaired metacognition can occur in older adults with mild cognitive impairment [23], some older drivers with low cognitive performance, more numerous in participants who have stopped driving, are likely unaware of their cognitive disabilities and would have difficulty implementing a suitable alternative behaviour. Few studies have been reported in this field, although reduced self-awareness of cognitive ability was previously considered an important concern in the context of road safety [24]. About 65% to 93% of older adults with mild cognitive impairment or mild dementia who have objective IADL difficulty lack insight into these deficits [23], and poor driving self-regulation behaviour has been reported in drivers with Alzheimer‘s disease [25]. Our hypothesis of a significant impact of poor cognitive ability on reduced engagement in out-of-home occupations after driving cessation is also consistent with our observation of decreased use of public transportation after driving cessation and more frequent use of public transport when drivers and former drivers are in good health [26].

Several socio-demographic factors seem to influence engagement in occupations after driving cessation. The lower educational level of the retired drivers than active drivers at follow-up would be consistent with less activities with lower educational level. Although the majority of women

among retired drivers agrees with other studies [16], the relation between sex and occupations after driving cessation requires further investigation. More consideration of driving cessation when living alone was unexpected. The role of the family is also questionable because decreased engagement in occupations occurred even though 84% of the retired drivers received help with transportation from their relatives. This finding suggests that help with transportation from relatives would mainly be for almost unavoidable activities, such as medical appointments or administrative issues. By contrast, support for social participation such as leisure and associative activities would be considered secondary, at least in France. It remains that help with transportation facilitates the transition from current driving to driving cessation [27], probably because of the resulting feeling of reassurance for specific needs. Also, because retired drivers asking for help feel they are a burden for others [28], they likely do not ask for help to have a good time. They might prefer to avoid family conflict and tensions that can be associated with the process of driving cessation, as reported in patients with very mild to mild dementia [28].

This study identifies multiple factors that may be addressed to facilitate adaptation and engagement in out-of-home occupations after driving cessation in older adults, in particular anticipation, self-regulation of driving, awareness of ability, previous use of public transport, accessibility to public transportation, and availability of alternative transportation. The lack of consideration of driving cessation 1 year before it occurs in more than three quarters of older drivers is surprising for people whose average age is 81. Unforeseen and serious health problems may have occurred shortly after study inclusion in some retired drivers, but they were likely expected that late in life. This lack of consideration contrasts with the 85% of the whole cohort who considered, at baseline, that driving cessation would have a negative impact on their quality of life. This finding could result from a denial or a poor estimate older adults have of their decreased abilities. Most older drivers who experience sensorimotor losses are able to correctly self-regulate driving habits [29], but they

usually take their cognitive decline less into consideration because they are less aware of the need for cognitive ability to drive and that their cognitive performance has declined [30]. This lack of anticipation of driving cessation could explain the difficulties in continuing to engage in occupations after driving cessation. Older drivers who considered driving cessation before it occurred were less likely to expect a lower quality of life after driving cessation than those not considering it.

However, we cannot overlook that decreased engagement in out-of-home occupations would result from an "occupational adaptation", defined as a normal process that leads people to respond to occupational challenges [31]. The fact that 2 years before driving cessation, future retired drivers were already driving less than active drivers at follow-up and that they used their car less for leisure and associative activities allowing social participation suggests that this process of adaptation begins before driving cessation. However, whether their travel reasons resulted from personal choice is unclear. Thus, considering driving cessation before it happens could facilitate the process of adaptation. Further investigations are needed to address this issue.

Habits of public transportation use would also facilitate adaptation and engagement in out-of-home occupations after driving cessation. This is a great opportunity for older drivers. Unfortunately, this cannot benefit older individuals with new disabilities because anticipating the occurrence of a particular disability is more difficult. Using more public transportation at both baseline and 2-year follow-up among older drivers who considered driving cessation at baseline adds valuable information to the fact that a high frequency of public transportation use before driving cessation predicts use of public transportation after driving cessation [32]. Good knowledge of the transportation system acquired before driving cessation probably influences its use after because few changes in travel habits, and thus little new knowledge, are then necessary. Therefore, habits to facilitate use of public transportation should be established while older adults can still drive.

Environmental aspects also influence engagement in occupation after driving cessation. Participants who stopped driving had less access to public transportation within walking distance than active drivers, and the more access they had to public transportation, the more they used it. This agrees with the fact that accessibility by walking to public transportation makes it easier to use [32] and that environmental aspects affect older people's mobility [33]. Overall, these findings support that accessibility promotes a sustainable transportation system to maintain satisfaction with community mobility for seniors. It also suggests the need to promote training for public transit drivers and people in how to access public transportation.

Implications. The results of this study highlight the critical need to develop interventions for older drivers that are specifically designed to prevent the decline of out-of-home occupations after driving cessation. As we show, these interventions should include awareness of the cognitive and motor abilities that are required for safe driving and that commonly decline with age and should reinforce habits for public transportation use. Some interventions have already been developed by occupational therapists to improve community mobility among older adults [34]. Others have focused on retired drivers and older drivers who had already decided or who were advised to stop driving, such as the UQDRIVE and CarFreeMe programs in Australia [26, 35]. An awareness tool for safe and responsible driving (OSCAR) has been developed to improve awareness of changes in driving abilities that occur with age and to enhance use of compensatory strategies [36]. However, these programs are not yet commonly available and rarely focus on helping older drivers anticipate and prepare for the consequences of driving cessation before it occurs. In addition, greater familiarity of older adults with smartphone applications in the coming years should facilitate the use of alternatives to driving, particularly for access to taxis or ride-hailing services, as demonstrated in community-dwelling adults ≥ 65 years old who are familiar with smartphone applications [37]. The

up-coming familiarity with such mobile applications would also facilitate travel by reducing constraints related to the anticipation process. Furthermore, our findings stress the need for public policy actions to facilitate accessibility to public transportation and alternative transport systems. Recommendations and guidelines for older drivers, as realized in a study of the return to driving after brain damage [38], would also be useful for healthcare professionals faced with community mobility challenges for seniors, such as specialists of physical and rehabilitation medicine, gerontologists or occupational therapists.

Limitations

The small number of participants who stopped driving within the 2 years restricted the statistical power, and the fact that only 50% of participants fully completed the questionnaire accentuated the statistical gap between groups. Subgroup comparisons that could have provided more insight into the impact of driving cessation on engagement in out-of-home occupations and the role of anticipation should be further tested with larger subgroups. The new follow-up of the entire SAFE MOVE cohort currently in progress (6 years after inclusion) should improve the understanding of the decline in out-of-home occupations, especially with the increased sample of older drivers who should have stopped driving. However, the participation rate at follow-up was excellent (86%) after excluding participants who died (2%).

Conclusion

The transition to driving cessation is challenging for older drivers because it negatively affects their social participation and consequently their quality of life. Some factors inhibiting social participation are inevitable, but others could be avoided. Older adults would benefit from appropriate interventions that are widely available to individuals at risk of driving cessation, and

public policy actions are recommended. Healthcare professionals and older adults should be aware of the adverse consequences of driving cessation upon engagement in occupations, the key role of early planning, and the usefulness of client-centred rehabilitation programs.

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Table 1. Socio-demographic, health, and mobility characteristics of participants at baseline according to driving status at follow-up and consideration or not of driving cessation at baseline (n=1,014)

Characteristics at baseline	Driving status at 2-year follow-up			Consideration or not of driving cessation at baseline		
	Retired drivers* (n=48)	Active drivers (n=966)	*p-value*	Yes (n=38)	No (n=976)	*p-value*
Socio-demographic and health characteristics						
Considered driving cessation at baseline, *n* (%)	11 (23)	39 (4)	<0.001			
Age, mean (SD)	80.6 (6.0)	75.6 (4.8)	<0.0001	77.9 (6.2)	75.8 (4.9)	0.05
Female, *n* (%)	24 (54)	357 (37)	0.01	20 (53)	361 (3)	0.05
Education, < 5 years schooling, *n* (%)	17 (35)	93 (20)	0.01	10 (26)	205 (21)	ns
Living alone *n* (%)	16 (33)	261 (27)	ns	18 (47)	264 (27)	0.005
Municipality size, < 2000 inhabitants, *n* (%)	15 (31)	213 (22)	ns	11 (29)	224 (23)	ns
Self-rated health, “good” or “very good”, *n* (%)	23 (48)	753 (78)	<0.0001	23 (61)	752 (77)	0.02
Self-rated health compared to others: “better” or “really better”, *n* (%)	25 (52)	696 (72)	0.003	22 (58)	693 (71)	ns
Number of daily medications, mean (SD)	3.8 (3.4)	2.7 (2.5)	0.02	3.4 (3.5)	2.7 (2.6)	ns
Low cognitive level[a], *n* (%)	17 (35)	213 (22)	0.03	14 (37)	215 (22)	0.04
Health problems that make driving difficult, *n* (%)	8 (17)	97 (10)	ns	11 (29)	98 (10)	0.0002
Mobility characteristics and driving perception						
Driving mileage/week, mean (SD)	65 (53)	151 (136)	<0.001	136 (224)	147 (130)	0.05
Driving frequency[§], *n* (%)	46 (96)	947 (98)	ns	3 (9)	956 (98)	0.03
Reasons for trips[§], *n* (%)						
Visiting friends or family, *n* (%)	16 (33)	444 (46)	ns	12 (30)	445 (46)	0.05
Helping friends or family, *n* (%)	9 (19)	242 (25)	ns	9 (24)	244 (25)	ns
Engaging in leisure activities, *n* (%)	15 (31)	512 (53)	0.003	11 (28)	571 (53)	0.003
Going shopping, *n* (%)	38 (75)	734 (76)	ns	28 (73)	742 (76)	ns
Engaging in associative activities, *n* (%)	5 (10)	232 (24)	0.02	6 (16)	234 (240	ns
Car accident since inclusion, *n* (%)	6 (13)	87 (9)	ns	6 (16)	71 (9)	ns
Fear of driving, *n* (%)	3 (6)	10 (1)	0.002	2 (5)	10 (1)	0.03
Pleasure in driving, *n* (%)	33 (69)	763 (79)	ns	22 (57)	771 (79)	0.001
Driving considered necessary for autonomy, *n* (%)	45 (94)	94 (94)	ns	35 (92)	917 (94)	ns
Perception of being a good driver, *n* (%)	33 (68)	734 (76)	ns	18 (47)	942 (76)	<0.0001
Perceived quality of life with driving cessation, *n* (%)						
Identical, *n* (%)	10 (21)	145 (15)	ns	15 (40)	137 (14)	<0.0001
Less good, *n* (%)	22 (46)	444 (46)		15 (40)	456 (47)	
A disaster, *n* (%)	16 (33)	377 (39)		8 (21)	381 (39)	
Public transportation accessible by walking distance, *n* (%)	30 (63)	802 (83)	0.0005	30 (79)	810 (83)	ns

Use of public transportation (yes/no)						
Bus, *n* (%)	29 (60)	647 (67)	ns	25 (66)	654 (67)	ns
Tram, *n* (%)	11 (23)	319 (33)	ns	16 (42)	312 (32)	ns
Metro, *n* (%)	16 (33)	444 (46)	ns	19 (50)	440 (45)	ns
Train, *n* (%)	11 (23)	338 (35)	ns	13 (34)	332 (34)	ns

[*] had stopped driving at follow-up

[§] at least once a week; ns=not significant at $p<0.05$

[a] The cognitive performance from each test (Trail-Making Test A and B and Digit Symbol Substitution Test) was classified into 3 levels (low, intermediate or high) based on percentiles by age groups and educational levels. Low cognitive level was defined as at least 2 tests with a low performance and none with a high performance.

Table 2. Socio-demographic, health, and mobility characteristics of participants at 2-year follow-up according to driving status at follow-up and consideration or not of driving cessation at baseline (n=979)

Characteristics at 2-year follow-up	Driving status at 2-year follow-up			Consideration or not of driving cessation at baseline		
	Retired drivers (n=24)	Active drivers (n=955)	*p-value*	Yes (n=31)	No (n=948)	*p-value*
Socio-demographic and health characteristics						
Female, *n* (%)	12 (50)	348 (36)	ns	14 (45)	346 (37)	ns
Living alone, *n* (%)	16 (67)	698 (73)	ns	19 (61)	701 (73)	ns
Self-rated health, "good" or "very good", *n* (%)	6 (25)	700 (73)	<0.0001	16 (52)	690 (73)	0.01
Self-rated health compared to others: "better" or "really better", *n* (%)	7 (30)	481 (50)	ns	12 (39)	477 (50)	ns
Number of daily medications, mean (SD)	4.2 (2.8)	2.9 (2.4)	0.008	3.3 (2.3)	2.9 (2.4)	ns
Mobility characteristics						
Considered driving cessation at baseline, *n* (%)	5 (21)	258 (3)	<0.0001			
After 2 years you:						
need more time to perform daily activities, *n* (%)	20 (83)	442 (46)	.0006	21 (68)	441 (47)	0.02
have more concentration problems, *n* (%)	12 (50)	254 (27)	0.01	15 (48)	252 (27)	0.007
have more difficulties memorizing new information, *n* (%)	15 (61)	356 (37)	0.02	15 (48)	356 (38)	ns
have more trouble managing an unexpected event, *n* (%)	11 (48)	130 (14)	<0.0001	8 (26)	133 (14)	ns
Public transportation accessible by walking distance, *n* (%)	13 (54)	784 (82)	0.002	27 (87)	770 (81)	ns
Use of public transportation						
Bus, *n* (%)	4 (17)	445 (47)	0.0003	15 (48)	438 (46)	ns
Tram, *n* (%)	3 (13)	272 (29)	ns	16 (52)	259 (27)	0.003
Metro, *n* (%)	4 (17)	337 (35)	ns	14 (45)	328 (35)	ns
Train, *n* (%)	2 (8)	239 (25)	ns	13 (42)	228 (24)	0.03
On-demand transport, *n* (%)	9 (38)	57 (6)	<0.0001	3 (10)	57 (6)	ns
Car accident between baseline and follow-up, *n* (%)	1 (4)	48 (5)	ns	1 (3)	47 (5)	ns

ns=not significant at p<0.05