



## Transport and mobility

Science topic n°9

# Transportation, mobility and security: a matter of gender?

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# TRANSPORTATION, MOBILITY AND SECURITY: A MATTER OF GENDER?

By **Marie-Axelle Granié**,  
Researcher in developmental social psychology,  
TS2<sup>1</sup> Department, LESCOT<sup>2</sup> Laboratory

The difference between the sexes has long been ignored in the fields of both planning and transport. In the past, transport planners made no distinction between individuals on the grounds of their sex. Nevertheless, decisions were primarily taken by men, based on their interests and experience<sup>a</sup>. This failure accentuated and perpetuated inequalities between men and women with regard to mobility<sup>b</sup>. In this context, social beliefs that disparage women drivers appeared at the same time as the motor car, with the implicit aim of keeping women at home<sup>c</sup>. Are the current challenges that face us in the areas of transport, mobility and safety a matter of gender?

## Sex, gender: Whazat?<sup>d</sup>

### Why do we talk about differences between the “sexes”?

In scientific studies, the word “sex” is used to define the biological and physiological differences between men and women. “Men” and “women” correspond to two sexual categories.

### What about “gender” then?

“Gender” refers to the beliefs and stereotypes that relate to each sex. It also refers to the activities, roles and personality traits a society deems to be more appropriate for men or women and which it values as “masculine” or “feminine”.

The concepts of “masculine” and “feminine” therefore relate to “gender”.

### Does the question of “gender” provide us with a new way of seeing things?

“Gender” is a social construct that creates a hierarchy between men and women. While the biological differences between the sexes are relatively stable, the social expectations that are linked to gender vary from one time or place to another. If we wish to investigate gender, we therefore need to consider both men and women and the similarities and differences between them.

This thematic file presents IFSTTAR's research on gender in transport, mobility and safety, a topic to which the public authorities are attaching ever greater importance<sup>e</sup>.

This research confirms that men and women do not use the same transport modes, and do not share the same frequencies or purposes of trip-making. Such differentiation appears very early in life and continues throughout it: elderly women stop driving sooner than men.

These differences may be partly due to a higher perception of risk. Women feel greater unease in public spaces and when using public transport. This perception of risk may explain some of their travel choices, such as their low level of interest in motorised two-wheelers. It may also explain their behaviours as drivers, motorcyclists and pedestrians, and their lower pass rate in the practical driving test<sup>f</sup>. Taking account of women in transport research suggests new ways answering old questions. It requires us to redefine our current areas of concern and give women a role not only as subjects for research but also as active participants in the framing of policies for urban areas and transport.

1. TS2: Transport, Health, Safety Department

2. LESCOT: Laboratory Ergonomics and Cognitive Sciences applied to Transport

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f. The project entitled “Permis\_HF. Différence de sexe dans la réussite au permis de conduire: des paradoxes constatés vers les explications” got under way in 2017. It is the outcome of collaboration between IFSTTAR (TS2-LMA and TS2-LESCOT), Aix-Marseille Université and Université Lyon 2, and is financed by the Road Safety Directorate at the Ministry of the Interior



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# 1 WOMEN ARE SHAKING UP THE PRINCIPLES OF MOBILITY

By **Ariane Dupont-Kieffer**,  
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Transport systems and the organisation of mobility are the basis for the construction of an inclusive society which provides concrete sustainable solutions that are accessible to all. Such a society is one in which each individual is able to participate in all economic, social and cultural activities while at the same time developing his or her potential aptitudes, to the benefit of society as a whole. Can women's increasing involvement in the creation and sharing of wealth lead to the replacement of the current principles of mobility with a sustainable and inclusive model?

## Men and women: different types of mobility?

Although some signs of convergence are appearing<sup>a</sup>, there are still important differences in men's and women's mobility. They differ in terms of the number of trips, their distance budget, their time budget and their modal choice<sup>b</sup>.

The explanation for these differences lies in the social role assigned to women, by the division of tasks within households and by differentiated participation in the jobs market. More women than men are engaged in part-time work, and they also favour teleworking more and choose jobs near their home<sup>c</sup>. This results in specific mobility choices: they travel outside peak hours, and make sequences of trips which are shorter than those made by men<sup>d</sup>.

## A supply of services that has to be modified

While men's trip-making is chiefly explained by their occupational activities, women's trip making is -determined by family caring and domestic tasks. They also have less access to a car (due to not holding a driving licence or not owning or having access to a vehicle)<sup>e</sup> and tend to travel by foot or on public transport, of which they are the principal users.

However, the level of services does not appear to match their needs: outside peak periods, public transport is infrequent, and transport and public space are unsafe because of the danger of harassment, and it is difficult to travel with persons of reduced mobility, children and when carrying loads.

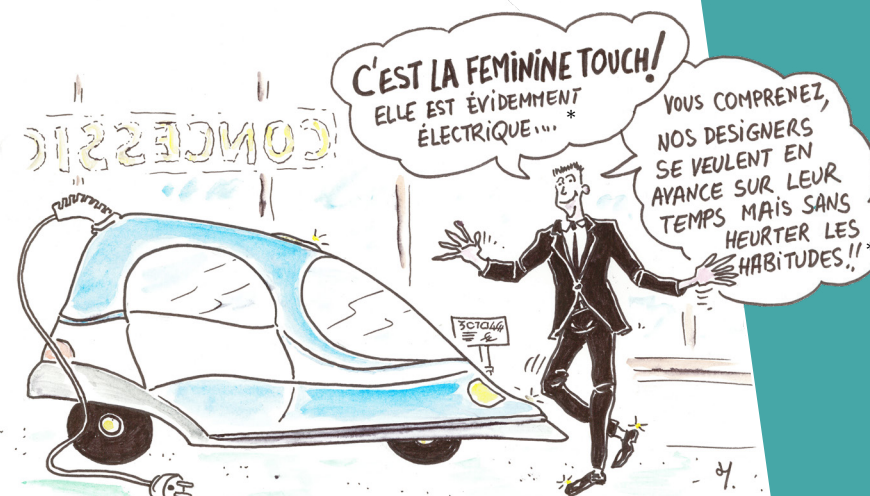
## Women are taking control of their mobility

Nevertheless, the combined impact of a number of trends is reducing the differences between women and men: women's participation in the jobs market is increasing and the youngest women are inventing new mobility behaviours which older women can replicate<sup>f</sup>.

Women are choosing their mobility, and are very sensitive to the issues of climate change and pollution, in particular. When purchasing an electric vehicle they are more concerned about preserving the environment while men are more attracted by the vehicle's technological performance<sup>g</sup>.

Raising the question of women's mobility forces us to focus on users' needs and implement user-centric mobility models. The aim is no longer to see how users adapt to the transport system - or do not because they prefer to cancel

certain journeys - but how the transport system permits economic and social development for one and all. This change in outlook forces us to revise the utilitarian approach which currently determines how transport projects are evaluated (COST TEA action).



\* That's the female touch! Of course it's an electric one...  
You see, our designers want to be ahead on their time while still respecting tradition!!

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# 2 SOCIAL INEQUALITIES AND GENDER IN RELATION TO ROAD RISK

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All road users, whether or not they use a motor vehicle, can be exposed to road risk. To prevent and limit road accidents UMRESTTE's researchers study the most vulnerable populations. The interaction between social inequalities and gender seems to have a marked impact on our travel conditions, both in terms of access to mobility and exposure to road risks.

## Identifying at-risk groups

In France, the police or gendarmerie record all the relevant data for every road traffic accident in which a person is injured.

This is fed into the "database of injury traffic accidents", known in French by its acronym of BAAC. For a given period, researchers exploit this information simultaneously with the data from the National Travel Survey (ENTD). This analysis enables them to define the characteristics that are shared by populations and thus to assess their road risk. At a local level, our researchers merge the data from the mobility survey (the Lyon Household Travel Survey (EMD)) with accident data from the Rhône Department Road Trauma Register (ARVAC)<sup>d-g</sup>.

This work of identifying at-risk populations is refined by conducting additional studies. Thus, the perception of road risk among all the road users in the Rhône Département has been analysed<sup>a-b</sup>. Another study ranked the risk factors for road crashes among young people, ranging from 14 to 17 years of age<sup>i</sup>. Their attitudes and behaviours have also been deciphered, in relation to their mobility practices and their socio-territorial environments<sup>h</sup>.

## Access to mobility

IFSTTAR's researchers are further deepening their research by conducting a large number of surveys on our travel habits<sup>3</sup>.

It emerges from these that women are less likely than men to choose certain modes of transport. This applies not only to motorised two-wheelers, but also to bicycles and, to a lesser extent, cars.

While the analyses do not reveal any significant difference in access to supervised driving<sup>4</sup>, the researchers have identified a significant difference in driving licence access among 18-24 year olds. The findings show that a young man in this age group has a 45% greater chance of holding a driving licence than a young woman, all other things being equal. Whether the young person's parents own a vehicle, no vehicle or several vehicles, or whether the young person lives in a poor or wealthy municipality, increases this disparity in access to a driving licence<sup>e</sup>. However, once the young person has a licence, access to driving seems to depend more on their socio-economic background, the availability of a car within the family and the residential area, than on their gender<sup>e</sup>.



\*Maybe, but we've got a licence!

\*\*This is the worst car on the estate!! It doesn't even go!!



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### Exposure to road risk

With regard to road risk among young people under 25 years of age, a comparative analysis between the populations of municipalities which have and which do not have a designated sensitive urban area (ZUS<sup>5</sup>), reveals a significant excess risk of injury accidents in municipalities with a ZUS. This excess risk applies more to young males than females and is even higher among children under the age of 15<sup>f-g</sup>.

As far as risk exposure is concerned, for the general population, men are generally 2 to 3 times more likely to be killed than women. On one hand, this is explained by their more dangerous behaviour, and on the other hand, women appear to be less exposed to high-risk types of travel (night driving, driving on country roads, use of motorcycles, etc.)<sup>c-d</sup>.

“ **Taken together, these findings show that, in the study of social and/or territorial inequalities in relation to road risk, gender exerts a persistent cross-cutting effect that must be taken into account. It is therefore necessary to pay particular attention to this determinant.** ”

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1. TS2: Transport, Health, Safety Department

2. UMRESTTE: Epidemiological Research and Surveillance Unit in Transport, Occupation and Environment

3. Enquêtes Nationales Transports Déplacements (ENTD) and Enquêtes Ménages Déplacements (EMD)

4. Based on very small samples (the 2015 Lyon Household Travel Survey)

5. Zone urbaine sensible





# 3 WOMEN'S EXPERIENCE IN PUBLIC TRANSPORT

*By Gonçal Cerdà Beneito,*

*Second-year Master's degree student in Transport and Mobility (École d'Urbanisme de Paris)*

*Academic supervisor: Sandrine Wenglenski, lecturer in urban planning, development and sociology (LVMT, UPEM)*

Public transport plays an important role in daily mobility. In the Paris region, more than one in five journeys every day are made using public transport modes<sup>a</sup>. Women and men both use them to a similar degree. However, more than half of the women state that they do not feel safe. Researchers are studying the reasons for their apprehension which tends to limit their participation in social life.

## A social space to be shared

In public transport, the social relations between strangers are regulated by social control. A principle of polite inattentiveness reigns, meaning that everyone can discreetly respect the presence of others<sup>b</sup>.

But, as gender studies have been pointing out since the 1980s, such social control depends on norms which still attribute different social roles and positions to men and women.

Extreme situations of harassment and aggression aside, day-to-day experience can cause unease and have an impact on public transit practices.

## Unease in day-to-day experience

A research project that employed a number of qualitative techniques (observations, individual and group interviews) has captured the experience of female students who use public transport in the Paris region.

This study<sup>c</sup> highlights several categories of male attitudes: invasion of territory, staring, verbal comments on women's physical appearance,

or physical contact. The sociologist Erving Goffman<sup>d</sup> used the term "modes of violation", to describe the fact that these attitudes cause personal offence. Among the surveyed women they lead to unease at the very least, combined with varying degrees of anxiety.

Some of these attitudes are perceived as natural or irrelevant by the young women in the survey, during this period when they are learning to be independent. They may link their reactions to a kind of guilt, putting their fears down to their personal « paranoia ».

## Implementing strategies

Women do react to these affronts, but often more preventively or defensively than offensively. They admit to usually showing discretion and employing avoidance tactics (looking away, wearing headphones, etc.). More direct responses, in which they confront the disturbing attitude, are reserved for situations and times where they feel the most at ease. They change their behaviours in the evenings and in situations which they consider to be the most risky.

They can implement various tactics and strategies, from changing their behaviour in situ (greater vigilance, care in choosing a seat) to avoiding situations they deem problematic (by taking a taxi, going home earlier than they would have liked, changing their route or appearance, or not travelling home on their own).

## The role of "socialisation"

Although all the respondents expressed their anxiety about some male attitudes, the level of this varies. Two socialisation situations seem to affect the differences in their perceptions. First, being used to a highly urban residential environment and early use of public transport result in lower levels of anxiety. Also, the young women who are the most worried described a family environment which made them very aware of their vulnerability.

“ Ultimately, while apprehension in public transport is not confined to women, their ordinary experience shows that the issue of the place of individuals in society and in physical space remains an important determinant of their mobility, and consequently their ability to take part in social life. ”



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## WOMEN'S EXPERIENCE IN PUBLIC TRANSPORT (END)



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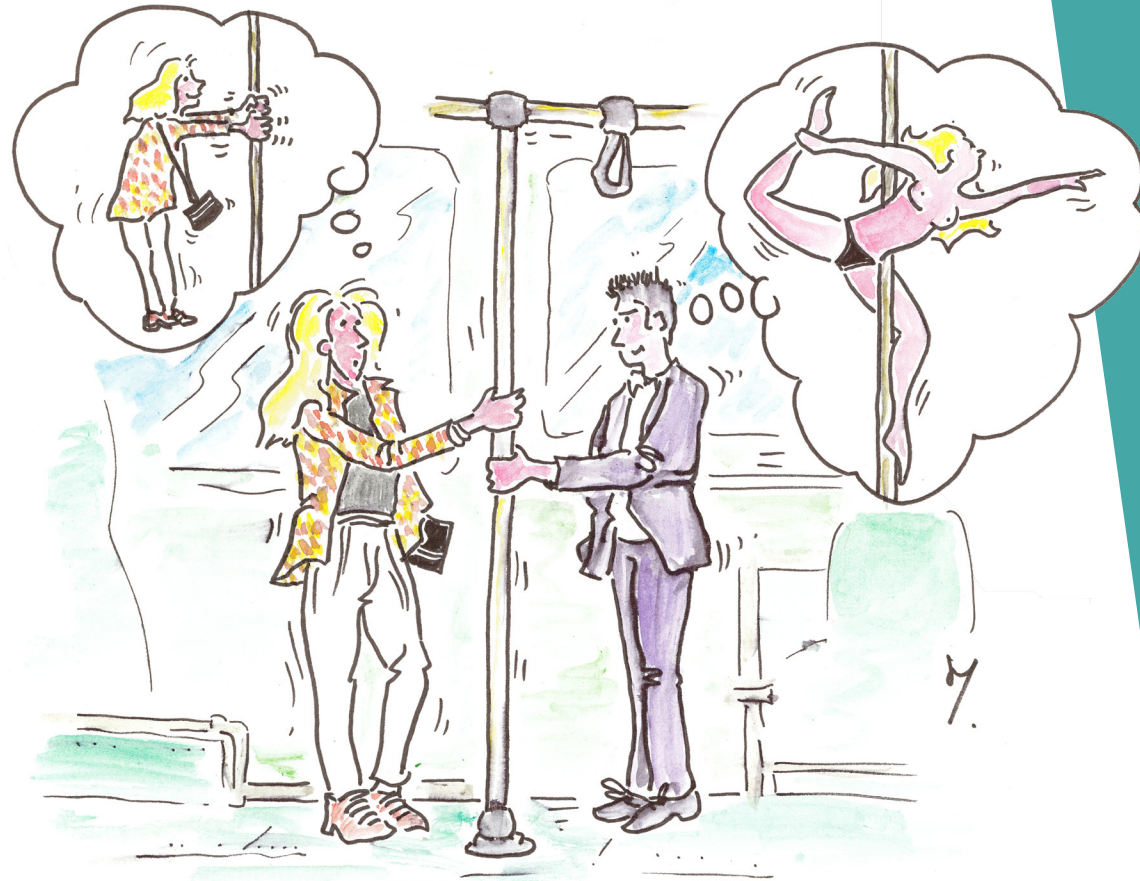
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# 4 DRIVING-RELATED SEX STEREOTYPES

By Marie-Axelle Granié,

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TS2<sup>1</sup> Department, LESCOT<sup>2</sup> Laboratory

The concepts of femininity and masculinity make it possible to distinguish between men and women socially and culturally. They play a role in the construction of the sex stereotypes that have become part of our daily lives, such as those depicting women as incompetent drivers.

Researchers are examining these unfounded beliefs which have an impact on the behaviours of road users.

## Stereotypes which are constructed from the earliest age...

Scientific studies provide us with a better understanding of the sex stereotypes that are linked to driving and their potential effects on behaviours. This research shows that children are aware of and absorb some stereotypes from the start of secondary school<sup>a</sup>. These stereotypes assume greater importance until the time individuals take the driving test and then decline as drivers become older and gain in experience<sup>b</sup>. Thus, from the age of 11 years, driving is perceived as masculine activity. Males are considered to possess innate driving skills. Their ability to control their vehicle is considered to justify their risky behaviours.

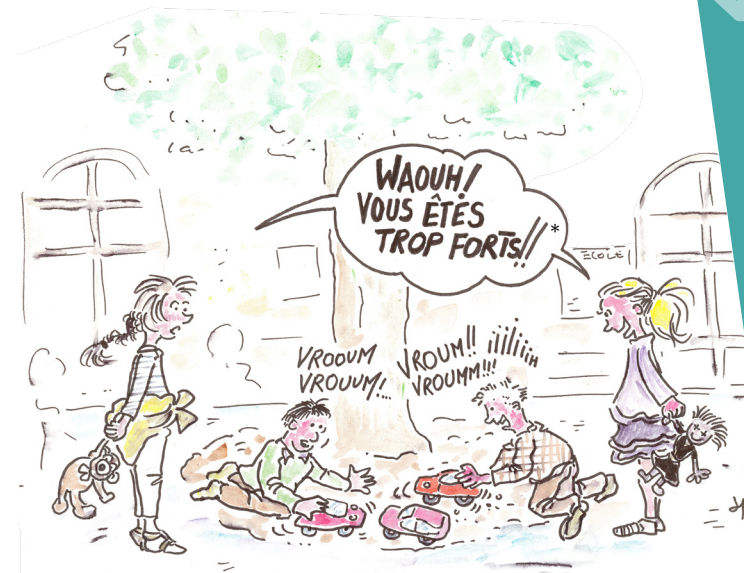
The image of female drivers is constructed in contrast to this. They are perceived as being less naturally gifted drivers than men, which means they have to be more cautious. These types of reasoning provide an explanation for actual road traffic crashes, while at the same time preserving beliefs about men being more competent at the wheel than women are.

## ... and which directly affect our behaviours

More in-depth research has shown how and why beliefs can affect the behaviours of male and female drivers. The more individuals believe in stereotypes of this type the more they reproduce the driving behaviours that are typical of their group<sup>c</sup>.

Thus, researchers have noted that simply explaining the purpose of study, concerning the differences between the sexes in driving, can limit the performance of the female participants. However, in the case when women and men are assessed at the same time by means of a test of knowledge about the Highway Code, it is the men who exhibit the most anxiety. The fear of being compared to the stereotype of the male driver who disregards rules may be at work<sup>d</sup>.

These social beliefs affect the behaviours of men and women at the wheel, but they may also explain why women are less successful than men at passing the practical driving test<sup>e</sup>. Ongoing studies will provide us with a better understanding of this phenomenon and, later on, suggest ways of overcoming it.



\* Whow! you're so smart!

1. TS2: Transport, Health, Safety Department

2. LESCOT: Laboratory Ergonomics and Cognitive Sciences applied to Transport

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# 5 THE ROLE OF GENDER IN RISKY BEHAVIOUR

By **Marie-Axelle Granié**,

Researcher in developmental social psychology,  
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Do you really think that a woman driver is more dangerous? Researchers highlight behaviour differences in road users according to their sex. The scientific issue is now one of knowing if we reproduce social practices that are linked to a group of individuals of the same sex.

## Gender differences in crashes and road traffic violations

At the global level, three times more men than women die in road traffic crashes. This is the greatest difference between the two sexes in mortality rates resulting from non-intentional injuries<sup>a</sup>.

In Europe, men account for 75% of the individuals killed on the roads. In France, this difference is particularly apparent among young drivers: a third of the drivers who were killed in France in 2015 were between 18 and 24 years of age, and 86% of them were male.

In addition, in 2015 82,5% of the individuals presumed of being responsible for a road traffic crash were male, as were 92% of the crash-involved drink-drivers and 91% of the drivers who tested positive for drugs<sup>b</sup>.

## Describing and understanding gender differences in behaviours...

For a number of years work at IFSTTAR has been exploring the role of psychological and social characteristics in the risky behaviour of French road users<sup>3</sup>.

Use of a variety of methodologies (questionnaire-based surveys, observations in real

situations and experiments) has enabled this research to clarify gender differences in individuals' relationship to risk and the rules of the road. In particular, it is revealed the impacts of social expectations on the behaviours of transport users, from a very early age.

Observations of pedestrian behaviours have shown that, among both children and adults, females display attitudes more compliant with the rules than those of males and take the behaviours of other pedestrians more into account. However, while boys and men comply less with the rules of the road, they explore and attempt to control the physical environment to a greater extent<sup>c, d</sup>.

## ... then explaining them

Additional psychosocial surveys have been conducted in order to study the psychological factors that are responsible for these differences between the two sexes. The findings show that, to a large extent, the differences depend on the extent to which individuals comply with the social expectations linked to the sexual group to which they belong, i.e. their gender<sup>e</sup>.

Thus, the risky behaviours reported by boys and men are more the outcome of the desire to

comply with masculine social roles than of their biological sex. These findings are apparent among preschool children<sup>f</sup>, adolescents<sup>g, h</sup> and among adults, whether they are pedestrians, car drivers or motorcyclists<sup>i, j</sup>.

Furthermore, this research has shown that the more women comply with the social expectations associated with femininity, the less attractive they find risky behaviours on the road. Their greater concern for the well-being of others thus inhibits road traffic violations.

“ Thus, sex differences in road traffic crash involvement are less the outcome of biological sex than the display, among both men and women, of the behaviours which our society expects of them. Deconstructing these social expectations is therefore an important issue for road safety education. ”

1. TS2: Transport, Health, Safety Department

2. LESCOT: Laboratory Ergonomics and Cognitive Sciences applied to Transport

3. A number of research activities were conducted, in particular projects financed by the state transport research programme PREDIT (GENRES, 2005-2008), the French Road Safety Foundation (SICAP, 2007-2010 and PAAM, 2012-2015 projects) and PhDs at Aix-Marseille University (two of which were jointly funded by IFSTTAR and the Provence-Alpes-Côte d'Azur Region).



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\* I've bought a great sports car  
We're working well together as a couple  
I've had a cushion to protect pedestrians fixed to the front



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# 6 FEMALE POWERED TWO-WHEELER DRIVERS

By **Cécile Coquelet**,  
Researcher in Sociology,  
TS2<sup>1</sup> Department, LMA<sup>2</sup> Laboratory

Even today, it is still unusual to see females driving powered two-wheelers (PTWs) on French roads. However, their numbers are increasing, allowing scientists to reveal the importance of gender in risky driving behaviours.

## “Female motorcyclists” – a little-known category of road users

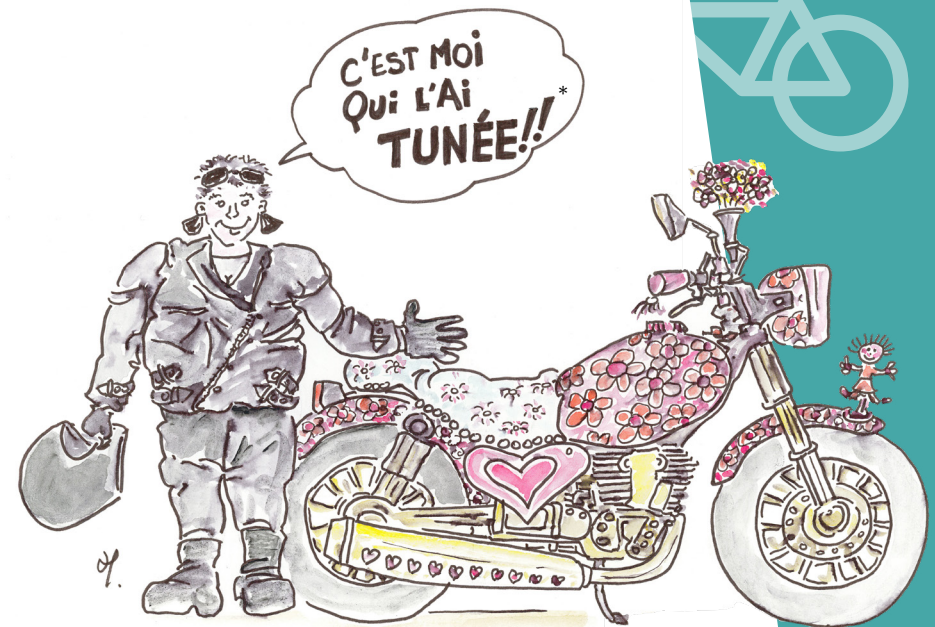
Currently, research that deals with PTW drivers<sup>3</sup> takes no, or very little, account of gender differences. Only one study<sup>a</sup>, whose findings were published in 2009 and reported in the specialised press, has shown that more and more women are driving PTW, notably large motorcycles (women accounted for 5% of the riders of motorcycles with an engine capacity of over 125cm<sup>3</sup> in 2002 and 10% in 2012<sup>b</sup>). Modern society is gradually coming to accept and recognise female motorcyclists in the very masculine world of motorcycling. At present, few scientific publications and little information for the general public exist on this topic. To fill this gap, IFSTTAR is carrying out work to highlight the differences between male and female PTW drivers with regard to accident risk and behaviour on the road.

## Some differences between female and male powered two-wheeler drivers

The French National Traffic Accident Register (BAAC<sup>4</sup>) shows that women are considerably less frequently involved than men in personal injury PTW crashes, and that this difference is even more marked in the case of fatal crashes<sup>c</sup>.

More precisely, an examination of the risky behaviours of the drivers of heavy motorcycles<sup>d</sup> shows that men commit more road traffic violations and take more deliberate risks than women. Nevertheless, females who ride mopeds ( $\geq 50$  cm<sup>3</sup>) are increasingly exhibiting risky and illegal behaviours, unlike female motorcyclists. In the light of these observations, an additional study has shown that gender (masculine/feminine) has a greater impact on risky behaviours than sex (male/female)<sup>e</sup>. Indeed, the results show that individuals with high masculinity and low femininity report that they commit more violations. In contrast, individuals with high femininity and low masculinity report that they make more driving errors<sup>5</sup>.

**The issue of gender thus provides new opportunities for studying the risky behaviours of PTW drivers.**



\* I tuned it myself!

1. TS2: Transport, Health, Safety Department
2. LMA: Laboratory of Accident Mechanism Analysis
3. PTW: Powered two-wheelers
4. The Bulletins d'Analyse des Accidents de la Circulation are forms that are filled in by the Police and Gendarmerie following a personal injury crash which they attended. Together they form a database.
5. Sex refers to the biological and physiological factors which differentiate males and females (anatomy, reproductive system and secondary sexual characteristics), while gender is a social construction which refers to social roles based on the beliefs and stereotypes associated with each sex (masculine and/or feminine roles).

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# 7 ADAPTING ONE'S DRIVING HABITS TO ACCOMMODATE AGE-RELATED CHANGES

By **Sylviane Lafont**,  
Researcher in epidemiology,  
TS2<sup>1</sup> Department, **UMRESTTE**<sup>2</sup> Laboratory

As they age, individuals experience a reduction in their physical, sensory and cognitive capacities. In some cases this reduction is slight, but in others they are more marked. This can impair individuals' driving capacities. In response to this reduction, most older drivers modify their driving habits. Recently, IFSTTAR has studied how this process, known as the "self-regulation of driving", differs between men and women.

## Identifying the factors that impact self-regulation of driving

As they age, older drivers implement driving self-regulation strategies. Examples of these include reducing the mileage they drive, avoiding what they deem to be difficult driving situations, even to the point of giving up driving completely.

Laetitia Marie Dit Asse, a doctoral student at IFSTTAR, has studied the sensory, physical and cognitive deficits which prompt older male and female drivers to modify their driving habits, and those which have not been observed to lead to any change in driving activity<sup>a</sup>.



\* But where are they?  
We said 10 o'clock in front  
of the night club!  
Send Ethel or Diedre a #bus  
timetable or a #Hubert!!

This research was also very much concerned with the question of driving cessation among male and female drivers presenting with early stage dementia. The research was conducted on a group of almost 10,000 older persons who were monitored in the framework of a very large research project that **INSERM** has been conducting since 2000.

## Women stop driving earlier

The research has found that when they feel their capacities are diminishing, women reduce their driving distances more, and do so earlier, than men. Men usually wait until they are confronted by a disease before they reduce their journeys<sup>b</sup>.

In the case of dementia, the vast majority of drivers, both male and female, who develop the syndrome stop driving earlier. However, women give up driving on average 4 years before diagnosis, compared with 2½ years for men. At the time of diagnosis, 45% of men and 74% of women have already stopped driving. Three years after diagnosis the probability of having ceased to drive is the same for both men and women<sup>c</sup>.

Thus, men and women do not approach the self-regulation of driving in the same way, either in the context of normal or pathological ageing. In contrast to men, women stop driving before the impairments affect their driving capacities or their day-to-day activities. Other factors remain to be investigated, for example personality, gender stereotypes, life or health events, the role of helpers and the perception of age-related deficits. Taking into account these specificities is essential in the advice that should be given in order to help older drivers stop driving.

1. **TS2**: Transport, Health, Safety Department

2. **UMRESTTE**: Epidemiological Research and Surveillance Unit in Transport, Occupation and Environment

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“ Thus, men and women do not approach the self-regulation of driving in the same way, either in the context of normal or pathological ageing. ”



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