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# **Access to the car in the cities of Sub-Saharan Africa: practices and users in Dakar**

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## **Abstract**

### **Access to the car in the cities of Sub-Saharan Africa: practices and users in Dakar**

Sub-Saharan Africa, which was home to 13% of the world's population in 2015, accounted for only 2% of the car fleet at that date and private motorized transport is still at a very low level in many cities. Even though in recent years there has been genuine growth in the number of cars in African countries, mainly in the capitals and other large cities, the current size of fleets suggests that motor vehicle ownership and car use are still an unattainable dream for the majority of people. What is the situation in reality?

This paper examines the place of the car through a study of its uses and its users in Dakar (Senegal): who owns one, who can use one, for what purposes and for what mobility practices, and how is the situation changing? We apply categorisation that distinguishes between three types of users, depending on whether or not their household owns a car and, if so, on their ability to access it at all times. Secondary analyses of two household mobility surveys carried out in Dakar in 2000 and 2015 and semi-directive interviews with residents of the city conducted in 2015 show that the concentration of car ownership has increased over the past fifteen years. The wealthiest households own proportionally more vehicles and the department of Dakar increased its share of vehicles compared to the other departments of metropolitan Dakar. The profiles of car users and their car use reveal that despite its scarcity and high cost of use, the car has spread beyond the select circle of city dwellers who have access to one at all times. But the three types of users are in situations of inequality with regard to the car. A comparison between 2000 and 2015 suggests future developments, driven by generational effects and spatial dynamics.

Keywords: Car, Driver, Passenger, Ownership rate, Typology of users, Daily mobility, Socio-spatial inequalities, Dakar, Sub-Saharan Africa

## Résumé

### **Accéder à l'automobile dans les villes d'Afrique subsaharienne : usages et usagers dakarois**

L'Afrique subsaharienne, qui compte pour 13 % de la population mondiale en 2015, ne représente à cette date que 2 % du parc automobile et l'importance des modes motorisés individuels reste très faible dans nombre de villes. Ces dernières années, la croissance des parcs des pays africains est cependant bien réelle, avec une concentration dans les capitales et grandes villes. Mais leur taille actuelle suggère que la motorisation et l'usage de la voiture représentent aujourd'hui un rêve inaccessible pour le plus grand nombre. Qu'en est-il vraiment ?

Nous analysons ici la place de la voiture à travers ses usagers et ses usages à Dakar (Sénégal) : qui la possède, qui peut en disposer, pour quels usages et pour quelles pratiques de mobilité, avec quelles évolutions ? Nous mobilisons une catégorisation qui distingue trois types d'utilisateurs, selon que leur ménage possède ou non une voiture et, dans l'affirmative, selon leur capacité à y accéder en permanence. Des analyses secondaires de deux enquêtes ménages-mobilité réalisées à Dakar en 2000 et 2015 et d'entretiens semi-directifs auprès des citoyens menés en 2015 montrent que la concentration de l'équipement en voiture s'est renforcée en quinze ans, les plus riches possédant proportionnellement plus de véhicules, le poids de Dakar s'étant accentué par rapport à celui des autres départements de la métropole. Les profils des usagers et leurs usages révèlent qu'en dépit de sa rareté et des coûts d'utilisation élevés, la voiture est diffusée au-delà du cercle restreint des citoyens pouvant en disposer en permanence. Mais les trois types d'utilisateurs se retrouvent dans des situations inégales vis-à-vis de l'automobile. La mise en regard de 2000 et 2015 suggère des évolutions à venir, portées par des effets de génération et par les dynamiques spatiales.

Mots-clés : Voiture, Conducteur, Passager, Taux d'équipement, Typologie d'usagers, Mobilité quotidienne, Inégalités socio-spatiales, Dakar, Afrique subsaharienne.

Translated by Kevin Riley

## **Introduction**

Is it appropriate to talk about automobility in African cities? Sub-Saharan Africa, which was home to 13% of the world's population in 2015, accounted for only 2% of the world's car fleet at that time, and more than one third of these vehicles were in South Africa (authors' calculations based on Freyssenet, 2016). Personal motorised transport remains at a very low level in many cities (Diaz Olvera, Plat, Pochet, 2013). Clearly, in Sub-Saharan Africa, the car does not have the same importance for mobility as in the countries of the North. However, the image of rapidly growing cities which are highly congested and polluted by traffic, where the car dominates the road space, is also associated with this part of Africa (Lall, Henderson, Venables, 2017). Despite the mode's environmental shortcomings, the growth of the car fleet in African countries has been very real in recent years: 50% between 2006 and 2015, compared with 40% worldwide (calculations based on Freyssenet, 2016), with a high concentration in the capitals and major cities. Sub-Saharan Africa is part of a broader, global, movement towards greater car ownership, even if this model, which gives the car a central role in daily mobility, seems to be called into question to an extent in the major metropolises of the North.

The expansion of African car fleets is part of the globalisation of trade that has taken place in recent decades. With the exception of South Africa, the countries of Sub-Saharan Africa have no automobile industry and are entirely dependent on intercontinental imports for their vehicle supply. The rise in imports of vehicles, mostly second-hand and often very old (Kablan, 2010), has been noted since the end of the 1980s (Beuving, 2006; Rosenfeld, 2018) and is closely linked to the liberalisation of trade (Godard, Bamas, 2002). It is particularly marked because it satisfies a multitude of interests. In the countries of the North, the procedures put in place in the European Union, Japan and the United States with the aim of reducing automobile-related air pollution have helped to increase the number of decommissioned vehicles. Fewer economic benefits can be derived by recycling or bringing these vehicles up to standard than by exporting them to third party countries, mainly in Africa (Black, McLennan, 2015). In the countries of the South, the vehicle trade is also driven by numerous interests. On the supply side, a variety of players make a living by importing vehicles through integrated second-hand car import chains (Rosenfeld, 2018): large-scale importers, dominated by Lebanese dealers in West Africa (Beuving, 2013) and Pakistani dealers in Southern Africa (Brooks, 2012), or more local players, forwarding agents, resellers, intermediaries and distributors. On the vehicle demand side, there is a strong desire for vehicle ownership, especially among the wealthier classes in the major cities. The price of new vehicles is prohibitive for all but the wealthiest households, increasing

the attractiveness of the second-hand market, in particular older, more affordable, vehicles. Despite the problems caused by the growth of the vehicle fleet and its considerable age<sup>1</sup>, it is to a degree in the interests of African states, if not to facilitate, then at least not to hinder, the satisfaction of this social demand. Also, the increasing number of cars may seem attractive for the authorities because of the tax revenues generated from the purchase and use of vehicles.

Although vehicle fleets are growing, their limited size suggests that car ownership and use is an unattainable dream for most people. Yet the material and symbolic importance of the car in African societies far outweighs what its relative scarcity would suggest (Gewald, Luning, van Walraven, 2009). By conducting secondary analyses of two household mobility surveys carried out in Dakar in 2000 (Syscom, 2001) and 2015 (Sitrass-Curem, 2016), accompanied by a series of semi-directive interviews in the latter case, this paper will examine the position of the car and investigate the contemporary dynamics that affect it in African metropolises. To do this, it focuses on the users and uses of the car, attempting to reveal the "social rationales"<sup>2</sup> at work (Demoli, Lannoy, 2019, p. 6). Who owns them, who can use them, for what uses and for what mobility practices, what changes have taken place? For this analysis, we have used a categorisation developed by Diaz Olvera, Plat and Pochet (2008) for three cities in Sub-Saharan Africa, which differentiates between three types of user, those who own and control the use of a car, those who have access to one through family ties and those who have access through other means.

### **Car ownership: very large disparities between households**

The trends observed in Senegal provide a good example of the dynamics that characterise the spread of the car in Sub-Saharan Africa. Senegalese vehicle imports have been increasing steadily since 2007, especially since 2012, when the Senegalese government passed a decree<sup>3</sup> extending the award of import licences to vehicles of up to eight years old, whereas since 2001, only vehicles five years old or less had been accepted. A direct consequence of this legislative change is that imports have increased more in volume than in value (Figure 1). On average, the vehicles in the Senegalese passenger car fleet are 15 years old, and the fleet is also marked by

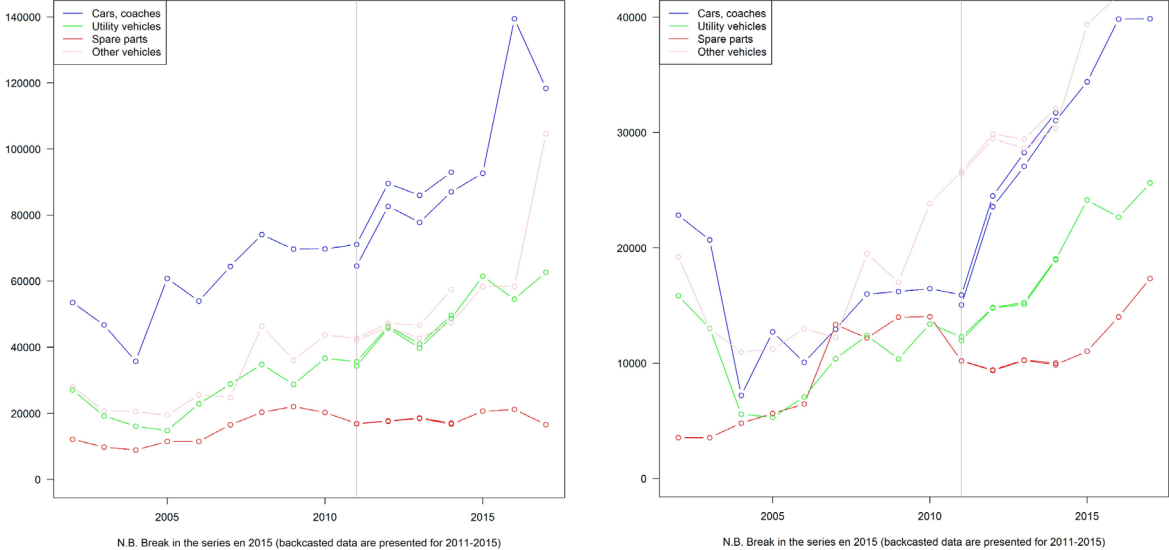
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<sup>1</sup> These include air pollution and its related health problems, CO<sub>2</sub> emissions, heavy congestion in large cities and more road traffic accidents (Lagarde, 2007; Naidja, Ali-Khodja, Khardi, 2018; UNECE-UNEP, 2017; Val *et alii*, 2013).

<sup>2</sup> The quotations from French sources and the extracts from interviews have been translated by the authors.

<sup>3</sup> Decree No. 2012-444 of 12 April 2012 <http://www.jo.gouv.sn/spip.php?article9475>.

its concentration in the capital region of Dakar (ANSD, 2018). However, the estimates, which stand at around 200,000 private cars in the Dakar region in 2015, are approximate and probably too high, in particular because less is known about the vehicles that leave the fleet (at the end of their life) than those that join it.



**Figure 1. Senegal's annual imports of vehicles and vehicle parts from 2002 to 2017**  
**a. in value (millions of CFA Francs)**   **b. in volume (tonnes)**

*Source: ANSD, annual publications (2006 to 2017). Figures processed by the authors.*

In spite of these growing import volumes, vehicle ownership among Senegalese households is still low. According to the 2013 population census, 14.4% of households in the Dakar region owned at least one vehicle, whether a private car or utility vehicle. This vehicle ownership rate was of the same order of magnitude as in other African capitals at around the same time<sup>4</sup>, for example Douala and Yaoundé (12.9% in 2011), Ouagadougou (13.6% in 2014) and Niamey (13.9% in 2012), but lower than that of Maputo and Bamako (22.3% and 23.2% respectively, in 2015).

Data from two travel surveys carried out 15 years apart in the Dakar metropolitan area (Dakar Region) allow us to focus on household cars that are in working order (Box 1). A comparison of the percentage of households owning a car between 2000 and 2015 shows a slight increase, but from very low levels (Table 1). Only one in seven households in Dakar owned one or more cars. This figure bears no resemblance to the levels reached in the metropolises of the North,

<sup>4</sup> Source: DHS (Demographic and Health Surveys), see <https://www.statcompiler.com/fr/>. The scope of DHS data is homogenous between cities, but it slightly differs from that of the Senegalese census which included not only the cars but also the utility vehicles and trucks owned by households.

where the vast majority of households own at least one vehicle. If the number of cars on the road is increasing in the Dakar region, it is due to the increase in the number of households living there, which rose by 70% of the 15-year period. The increase in congestion is thus essentially due to the spatial configuration of the city, the concentration of jobs and activities in the Cape Verde peninsula and the limited capacity of the roads.

**Table 1. Vehicle ownership indicators for the Dakar region in 2000 and 2015**

	2000	2015	Change
Percentage of households owning at least one car	12.8	14.4	+ 1.6%
Number of cars per 1000 households	147	173	+ 18%
Number of cars per 1000 inhabitants	20.1	26.3	+ 31%
Average household size	7.3	6.6	- 11%

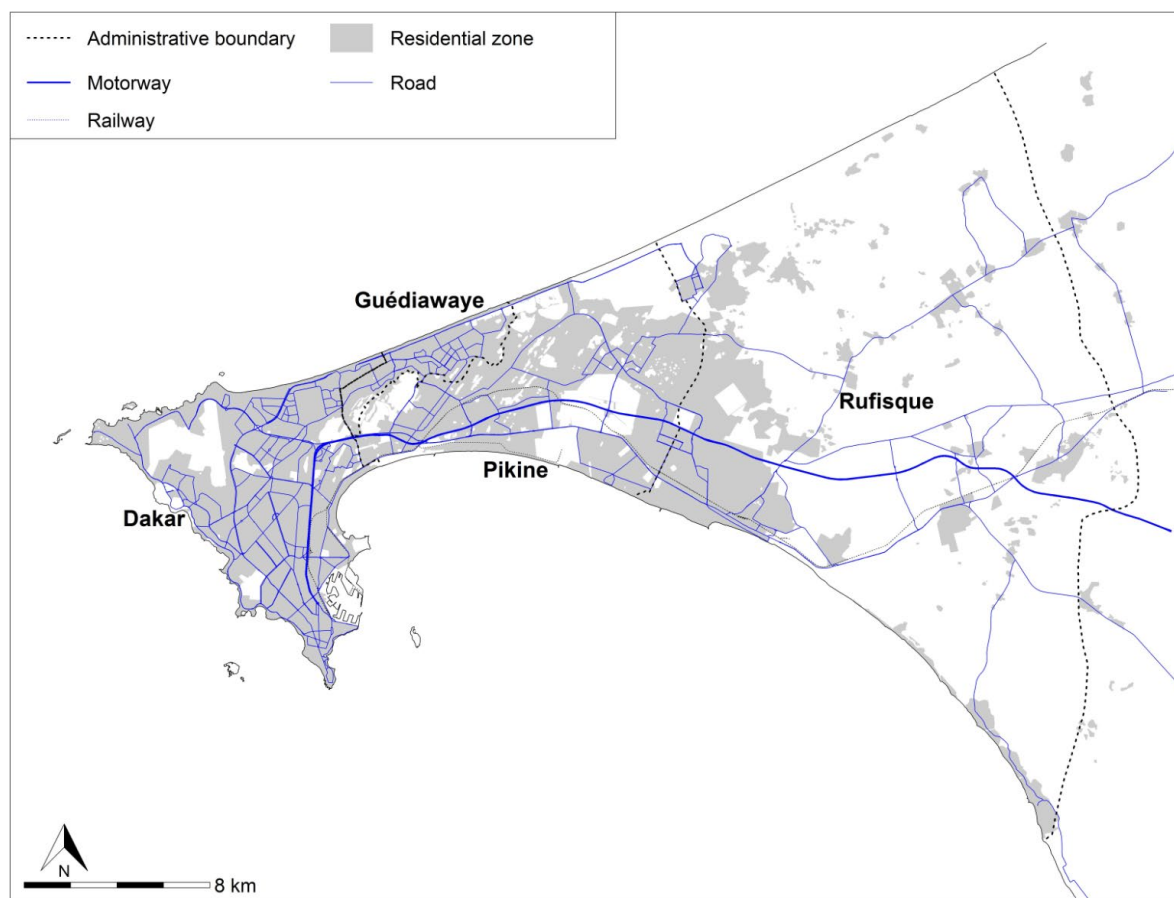
*Source: EMTSU 2000 and EMTASUD 2015 surveys. The figures relate to cars in working order used for private purposes. Data processing by the authors.*

**Box 1. The context of Dakar and empirical material**

The Dakar region covers the area of the metropolis of Dakar, which is made up of four departments (the "department" is Senegal's second administrative level): Dakar, Guédiawaye, Pikine and Rufisque (Map 1). At the time of the 2013 general population census, it had 3.1 million inhabitants, more than twice as many as in the previous census (1.3 million in 1988) (ANSD, 2014; Sakho, 2014; Syscom, 2001). The rate of population growth is high (+3% annually), although it has been declining since the 2000s. Population growth is substantial in Pikine, a poor suburb that now has a higher population than Dakar, and in Rufisque, with a more socially mixed population due to the recent residential migration of well-to-do Dakarians seeking more spacious accommodation. The unusual shape of the Cape Verdean peninsula, which is narrower at the entrance to the department of Dakar, channels urbanisation along the East-West axis, and impedes daily flows (Sakho, 2014). The spatial separation between administrative and economic activities which are concentrated in the western tip of the peninsula, and housing which extends eastwards, lengthens travel times and makes journeys more complex, due to road congestion (Lombard, Bruez, Diakho, 2006). More than 80% of motorised travel is on various forms of public transport, but, as in many African cities (Diaz Olvera, Plat, Pochet, 2013), most trips are made on foot (73% in 2000, 68% in 2015) (Sitrass-Curem, 2016).

The analysis of car use was based on two household travel surveys carried out in 2000 and 2015 in the Dakar region, and semi-directive interviews carried out in 2015 with residents of the city (Syscom, 2001; Sitrass-Curem, 2016). The two household surveys, which are representative of the population of Dakar, applied a similar methodology, both were carried out in the households' homes by trained interviewers. Thus, 2,301 households (containing 8,658 individuals aged 14 and over)

were surveyed in 2000 and 3,176 households (containing 13,415 individuals aged 11 and over) in 2015. Because of the small proportion of city residents who used a car on the day before the survey day, the numbers of the various groups of interest were much smaller. However, they were still large enough to serve for analyses, with the smallest group of car users numbering 194 individuals in 2015. A variety of information from the questionnaire was exploited: the characteristics of the previous day's journeys, individual socio-demographic characteristics, whether the respondent held a driving licence or had access to a car belonging to the household (as the driver), an acquaintance (as the driver; as the passenger), or a company, as well as the characteristics of the respondent's household (vehicle ownership and vehicle-related expenditure, income, location). Finally, the interviews also addressed the issues of car ownership, access to a car and, where applicable, car use.



**Map 1. The region of Dakar**

*Source : Open Street Map and GéoSénégal. Map by the authors*

Our assessment of the impact of household living standards on car ownership is based on per capita income, which we preferred to total income as it allows us to eliminate the influence of household size. Car ownership is much higher among the wealthiest households (Table 2). In the 15 years between the two surveys there was no perceptible change in the extent of car



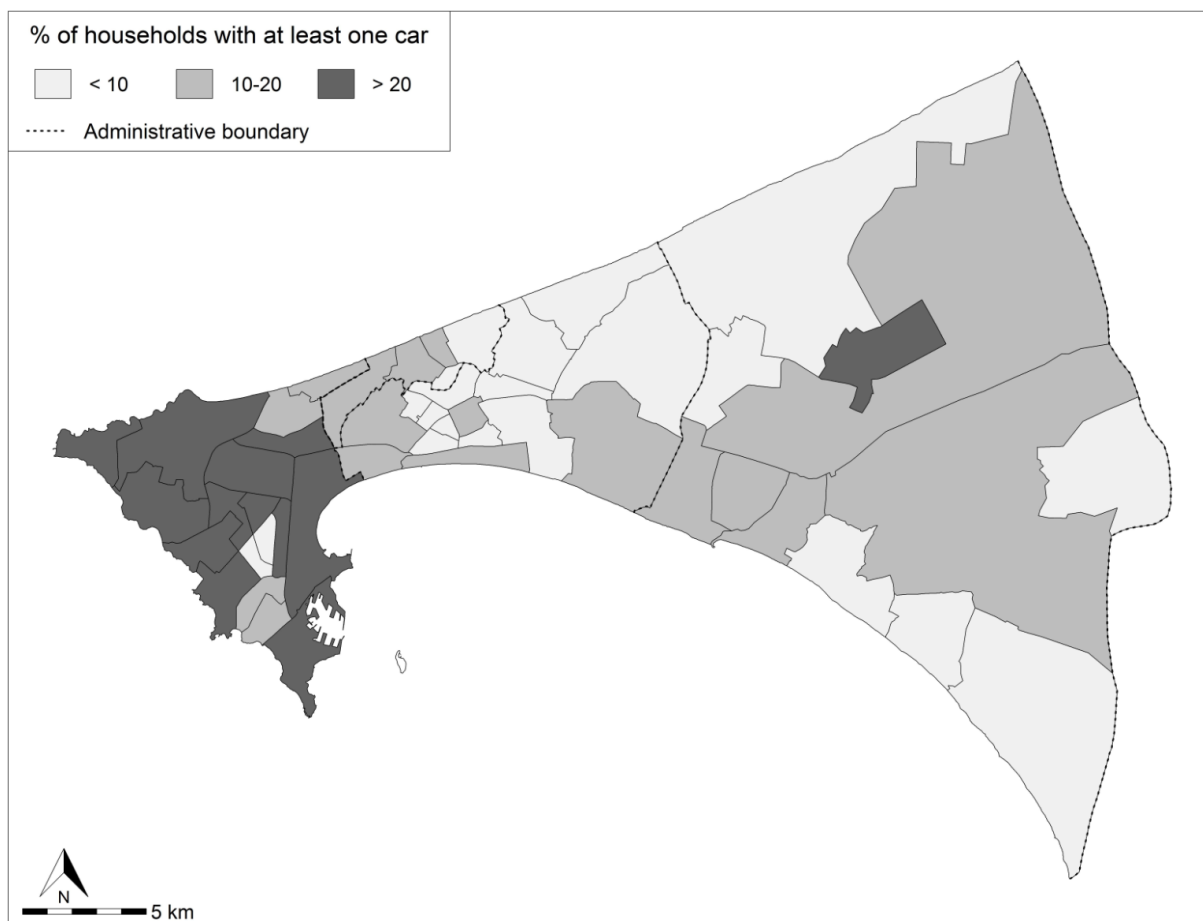
ownership, and social differentiation became even more acute: households in the fifth quintile owned 57% of the vehicle fleet in 2015, compared with 53% in 2000. This economic concentration had a spatial corollary. Households that lived in the most central part of the metropolis - the wealthiest - clearly owned more vehicles: 22.4% of households in Dakar owned a vehicle, compared with 8.8% in Guédiawaye, 6.4% in Pikine and 10.8% in Rufisque (Map 2). In the case of the last of these, which is the most peripheral, there was an increase (+2 points) due to the influx of households that were more affluent than the average, attracted by the possibility of owning their own home and by the accessibility improvements resulting from the construction of the Dakar-Diamniadio toll motorway. This is shown by the following statement from a young unemployed man from Rufisque, who held a master's degree and who compared the situation of his (two-car) household, before and after the motorway: "Just imagine, before, we used to worry about going into Dakar, it wasn't easy [...] But now we can go to Dakar and come back, we feel comfortable, travelling is actually easy". However, the spatial concentration of the fleet increased between the two surveys and 73% of the cars belonged to households living in the department of Dakar in 2015 compared to 64% in 2000.

**Table 2. Percentage of households owning one or more cars, according to the *per capita*\* income quintile of the household in 2000 and 2015**

	Q1	Q2	Q3	Q4	Q5	Total
2000	2.8	2.6	8.8	18.3	31.6	12.8
2015	2.5	7.7	9.1	14.7	37.9	14.4

\* The total income of the individuals in the household, divided by its size; Q1 is the 1<sup>st</sup> per capita income quintile, i.e. the poorest 20% of households.

*Source: EMTSU 2000 and EMTASUD 2015 surveys. Data processing by the authors.*



**Map 2. Percentage of households owning cars\* according to the administrative divisions, in 2015**

\* Vehicles in working order.

*Source: EMTASUD 2015 survey, Open Street Map and GéoSénégal. Data processing and map by the authors.*

The socially discriminatory nature of car ownership is clearly shown by the socio-occupational profile of the household head<sup>5</sup> (Table 3). In 2015, in car-owning households, the head of the household was either in work or retired (with a pension). Among the working population, employees in the public and semi-public sectors were clearly over-represented (30%, i.e. 16 percentage points more than for households with no car), as were the most affluent socio-occupational categories, such as senior managers, engineers or company directors and to some degree middle managers (almost one in two compared with one in eight in households without a car). Conversely, households in which the household head was an employee, a worker or self-

<sup>5</sup> In this paper, we shall apply the same terminology that was used in the 2013 census (ANSD, 2014).

employed (generally in informal activities, small-scale trade, services or crafts) made up the bulk (83%) of the non-car owning households.

Table 3. Socio-occupational characteristics of the household head, in 2015 (%)

	Households with a car	Households without a car
<i>Activity status</i>		
Occupied person	76.7	67.0
Pensioner	15.7	11.7
Other	7.6	18.3
<i>Type of job, for occupied persons</i>		
Salaried worker	64.5	44.6
Non-wage worker	35.5	55.4
<i>Occupational category, for occupied persons</i>		
Self-employed and unskilled workers*	35.3	64.6
Employee, worker	15.2	23.1
Middle manager	10.6	6.6
Senior manager, engineer	26.6	2.6
Employer	12.3	3.1

\* Driver, labourer, apprentice, piece worker, family and domestic helper.

Source: EMTASUD survey 2015. Data processing by the authors.

Despite a slight increase in household vehicle ownership between 2000 and 2015 and a fall in household size, car ownership in households was still rare in 2015 and essentially confined to the higher social categories.

### **A car of one's own: the preserve of a minority of Dakar's residents**

The two surveys measured different aspects of the availability of a car to individuals. In each case, a car was available to only a small proportion of those over 18 years of age (Table 4). Although over the 15 year period the number of people holding a driving licence rose from one in twelve to one in ten, individual driving opportunities did not increase, except for company cars.

Gender inequalities in car access were just as marked in 2015 as in 2000. Both possession of a driving licence and its increase over the period were significantly lower among women. Being able to drive a household car was four times less common among women than among men at

both dates. Women's access to a car was still limited by their lesser access to a car belonging to a company or an acquaintance.

Tableau 4. Possibilities of access to a car, for individuals aged 18 years or older, in 2000 and 2015 (%)

	Women		Men		Overall	
	2000	2015	2000	2015	2000	2015
<i>Household car</i>						
Driving licence holder	3.0	3.9	14.3	18.1	8.3	10.4
Household car available, as the driver	1.8	1.7	6.8	6.7	4.1	3.8
<i>Vehicle belonging to an acquaintance*</i>						
Frequently available, as the driver	0.9	0.4	7.2	5.3	3.9	2.7
Frequently available, as a passenger**	6.6	2.5	11.5	8.0	10.1	5.6
<i>Company car</i>						
Available for personal use***	0.3	0.4	0.8	3.1	0.6	1.9

\* In most cases a car, although more rarely this may include motorcycles.

\*\* Individuals aged 14 years and over.

\*\*\* Occupied individuals.

Source: EMTSU 2000 and EMTASUD 2015 surveys. Data processing by the authors.

The surveys also show inequalities in the rate of car ownership as a result of standards of living. The possibility of having access to a car belonging to the household was significantly higher for households in the 5th quintile in both surveys. The differences between income quintiles were exacerbated by the unequal availability of vehicles among individuals' acquaintances (as a driver and even more so as a passenger) and company cars. Unsurprisingly, the availability of a car was affected by educational attainment and residential location. It was much higher among residents of the city who had undergone tertiary education than among those with just secondary education: 33% of the first group held a driving licence, compared with 12% for the second. The corresponding figures for being able to drive a household vehicle were 15% and 4%. As with the household car ownership rate, the opportunities for access to a car were greater in Dakar than in the other departments, whether measured, for example, in terms of holding a licence (by 10 percentage points) or the availability of a household car as a driver (by 5 percentage points). Here again, the surveys showed that the opportunities for access to a car from outside the household were greater for the categories most likely to be able to drive a household car.

The surveys also showed the importance of the individual's age. The availability of a car was highest among the minority of the city's residents over the age of 55 with a pension, who

enjoyed the advantages of both a high social position and age (32% had a driving licence in 2015, compared to 14% for the working population as a whole). On the other hand, especially among men, both licence holding and the availability of a household car as a driver were less common among 18-32 year olds (5% and 1%, respectively, in 2015) than among the older age groups (15% and 6%, respectively). The disadvantages experienced by young adults can be explained by their difficulties in achieving economic integration, which considerably delay the age when they can set up home in their own (Dimé, 2007). "Forced to stay young" (Antoine, Razafindrakoto, Roubaud, 2001), their position in their parents' household makes them less of a priority when it comes to allocating a car.

The car is a household asset, but it is unique in that it is often used for personal purposes, as in the case of an employed person who drives to work, which limits access for other household members.

### **Using a car: three socially differentiated practices**

The rates of household car ownership and individual availability that we have just examined give only a partial picture of the actual importance of the car in Dakarian society. Firstly, because analysis of travel the day before the survey days shows that the presence of a working car does not imply its systematic use: in 2015, in one in four households with a car, the vehicle was not used the day before the survey day. This may be due to changes in usual travel patterns, because of illness or holidays (for the working population), but also the cost of car use. Cars are expensive to buy, but also expensive to run. In 2015, fuel was the largest item of expenditure, accounting for more than three-quarters of households' car budget, far ahead of maintenance (15%) and motorway tolls (7%), while parking was merely a marginal expense: "The main thing is to pay for fuel, that's what's expensive" (university graduate, currently unemployed)<sup>6</sup>. Some people therefore use the car sparingly so as not to exceed their fuel budget. It can be left parked at the end of the month, as in the examples given in various African contexts by Nallet (2015, 2017), or it can be used only in exceptional circumstances, as explained by this 25-year-old engineer: "Yes, we have two [cars], sometimes when I wake up I don't feel well and I take the car to work, maybe once a week or once a fortnight". But on the other hand, people can be driven by colleagues or friends, or even drive an acquaintance's car

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<sup>6</sup> Forty years on, we can still observe the paradox pointed out by Vidal and Le Pape at the end of the 1970s (1986, p. 189): "For those who are not very well off, the private car may symbolise wealth, but it is nevertheless ruinously expensive".

themselves. A 55-year-old secretary thus remarked: "Sometimes, for example, it rains hard. If your neighbour has a car, when he sees you, he will give you a lift in his car". However, she immediately admitted: "But that's very unusual". In 2015, in 7.5% of households without a car, one person was able to use a car the day before.

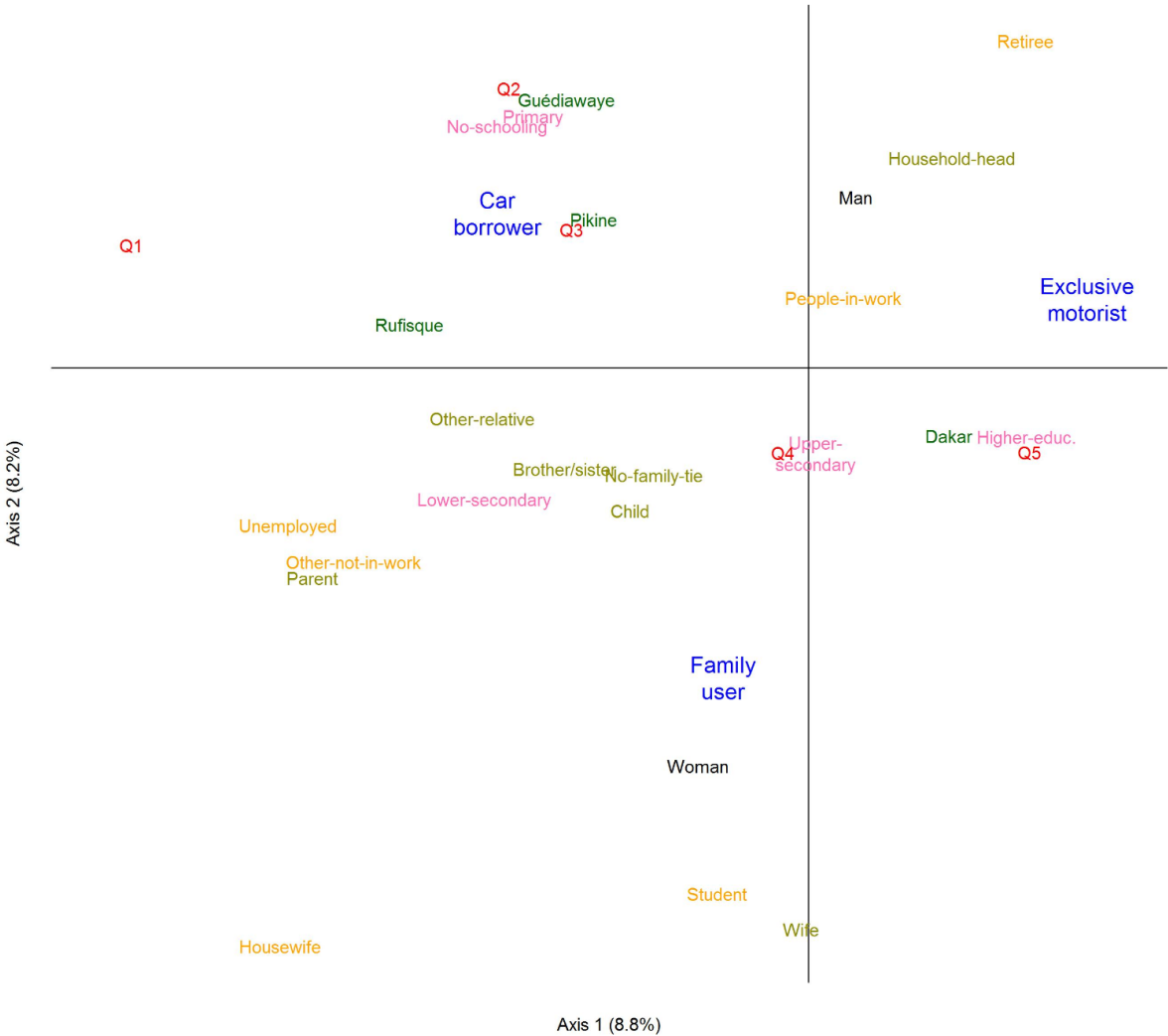
In order to gain a better understanding of the characteristics and practices of car users, we have identified three groups of city dwellers who used a car on the day before the survey day as a driver or passenger (Diaz Olvera, Plat, Pochet, 2008). These are: exclusive motorists, whose household owns a car and to whom it is permanently available; family users, whose household has a car but who cannot use it at will; and car borrowers, whose household does not own a car but who are able to use one, as either a driver or a passenger, by other means.

In 2015, as was also the case in 2000, using a car was rare in Dakar and confined to slightly more than one in twenty of the city's residents (aged 14 and over). Among users, the highest number were exclusive motorists (43% in 2015, 45% in 2000), followed by car borrowers (32% and 35%, respectively) and family users (25% and 20%), showing that the car has spread beyond the very small group of individuals who have one permanently at their disposal. These three groups display differentiated socio-spatial profiles, as we have shown by multiple correspondence analysis in which they are crossed with various socio-economic and residential location indicators (Figure 2).

### *Exclusive motorists*

Exclusive motorists form a very homogenous group. They are mostly people who have had higher education (75%) and are currently working (86%), three-quarters of them in salaried employment. They are generally heads of well-to-do households (63% of them in the last quintile) and live in Dakar (71%). Women, a minority (22%), can only achieve the status of an exclusive motorist in multi-motorised households or when they themselves head a household. Among the working population, two groups are over-represented. These are senior managers and engineers in the formal economy, and employers in the informal economy. Access to a car is facilitated by the fact that one in five workers in this group have their own company car. For slightly less advantaged social categories, the role of the employer is crucial when it comes to the ability to use the vehicle, by taking on all or part of the fuel costs, as in the case of this accountant: "I'm lucky I can be given petrol, [my employer, a business school] usually gives me money for fuel, it's the school that supports me, otherwise I could have found things

difficult." In the fifteen year period, the relative size and composition of the group changed little. The general rise in the level of education in Dakar is reflected in the increase in the proportion of individuals with tertiary education qualifications and, in line with this, of the children of the head of household. At the other end of the age pyramid, the ageing of the Dakar population (ANSD, 2014) leads to a greater presence of retirees. However, in 2015 exclusive motorists in Dakar were essentially wealthy, economically active, household heads.



**Figure 2. First plane of the multiple correspondence analysis for three categories of car users and a variety of characteristics at the personal\* and household level\*\*, in 2015**

\* Gender, Position in household, Educational attainment, Activity status

\*\* Purchasing power, Department of residence

Source: EMTASUD 2015 survey. Data processing by the authors.

Exclusive motorists travel predominately by car, which they use for three-quarters of their journeys, almost exclusively as the driver. Walking accounts for the rest of their travel, often

for very short trips (a total of about ten minutes a day). Mobility, which rose slightly over the 15 years between the surveys, reached high levels in 2015, both in terms of number of trips (4.1 per day) and time budget (one hour and 40 minutes). It consists essentially of work-related trips, i.e. home-to-work trips (one trip in three) and secondary trips<sup>7</sup> near the workplace (one trip in four). The predominance of the occupational sphere is even greater for car journeys, especially as a driver, with passenger status being more for social purposes (almost a quarter of passenger trips).

The mobility of exclusive motorists is mainly restricted to their department of residence, with lower levels of use in the other departments of the Dakar region than among the other two categories. This distinctive spatial pattern is due to the predominance of Dakar department residents in the group, with the concentration of amenities in this department limiting the need to leave it. The rate of secondary trips is high and identical for all modes of transport together and for trips made solely by car. The car thus appears to be the all-purpose mode of daily mobility for exclusive motorists. They leave their car behind only for short pedestrian trips or for collective activities of great social importance, such as attending ceremonies to which they also travel by car, but as a passenger. Public transport, with its perceived poor quality of service, does not appear to be a viable alternative, for example for the accountant, whose employer, as we have seen above, helped with his petrol costs: "Now I have lost the habit of using public transport where I need to have change in order to pay, I waste time getting to places, so if I have 2,000 Francs I would rather make a sacrifice and spend the money on petrol. It wasn't like that before, but now I only use my own [vehicle] [...] I used to get up earlier, I took all the difficulties into account, so I got up at 6 in the morning, now I wait until 7". The car is therefore considered indispensable by exclusive motorists, even if the rationale for purchasing a second car is sometimes more symbolic than practical, as in the case of this young economically active man whose household, which lived in the centre of the Dakar department, nevertheless already owned a car: "We are even thinking of getting another car because sometimes there are journeys for which you need your own, such as emergencies. For example, if someone is ill at 2 or 3 in the morning, you can't go to the terminus for a bus, if you don't have the money for a taxi or your own car, things will be very difficult: it has become a necessity".

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<sup>7</sup> By convention, the term "secondary trip" is used when neither the origin nor the destination of a trip is the individual's home, for example the trip between the individual's place of work and the place where he or she has lunch when this is elsewhere.



### *Family users*

The group of family users has the lowest proportion of men, but they are still in the majority (56%). There are few household heads and this group consists mainly of their wife or wives, and to a lesser degree, their children. Other household members are rare. Economically active people predominate, but there are fewer senior managers and engineers, and more people in intermediate jobs. The availability of a company vehicle is lower in this category (8% of those who are in work). Moreover, one in four family users is still at school or a student. The households are well-off and tend to live in the department of Dakar, but these characteristics are less marked than among exclusive motorists<sup>8</sup>. Their greater difficulty in accessing the household car is partially offset by the fact that they can rely on friends, neighbours or family, either to let them drive a car frequently (8% of individuals) or give them lifts (18%). Compared to the situation in 2000, in 2015 the group comprised a higher proportion of people in work and fewer students, more heads of household and fewer children. Households are still large in Dakar, and owning a car is no guarantee of easy access to one for each of its members. Indeed, in the fifteen years between the surveys, use even seems to have become more restricted to individuals who are economically useful (i.e. in work) or socially prominent (household heads).

The rationalisation of household car use probably explains the magnitude of the changes in the mobility of family users. This increased sharply in the fifteen years between the surveys, both in terms of the number of journeys (by 13%) and in terms of the time budget, which exceeded one hour and forty-five minutes in 2015. The share of public transport fell from one trip in four to one in seven, to the benefit of the car which was used for 60% of trips in 2015. Increased car use in 2015 was due to easier access to driving (30% of journeys in 2015 compared to 19% in 2000). At both dates, travel to work and school were among the main trip purposes, with most car use by passengers being between their home and place of work or school. This group's rate of secondary trips was the lowest of the three categories of users. Trips outside the department of residence were slightly more frequent than for exclusive motorists, especially in the case of car trips, to the detriment mainly of trips within the neighbourhood. This is the result of the smaller proportion of Dakar residents in this group, access to a car being a means, for non-Dakarians, of travelling to this department.

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<sup>8</sup> Two-car ownership is less common in these families. Women consequently have greater difficulty in becoming exclusive motorists and their access to a car, when it exists, is as a family user, which explains their slightly larger presence in this group.

Car use is less widespread than among exclusive motorists due to the greater difficulty of gaining access to a car and the greater constraints in terms of use, as in the case of this woman, a 26-year-old sales agent living in Rufisque, who is in competition with other members of the household: "Yes, my father has his car, which allows us to move around since he doesn't travel much. He travels more locally, unless he has appointments at the hospital in Thiaroye, and also because of his age he tries not to drive too much. So if someone needs the car, they take it". In other households, the downside of using the vehicle for one's own needs may be to be "at the service" of those who cannot drive the car themselves: "When I am not doing anything, I am the house chauffeur" (young engineer in employment).

These situations seem to indicate a weakening of the rigid separation between the exclusive motorist and the family user. The father is still, officially, the person who controls use of the vehicle, but as he gets older and less inclined – or obliged – to travel, he is aware of the increasing demands from his children who have grown up, started work and are looking for a vehicle that facilitates their mobility. The status of the car thus seems to be changing, as shown by another statement from a 39-year-old tourist guide who also lives in Rufisque: "It's a family car because it belongs to my father, but I can use it during the day and at night for my trips". These remarks reflect a generational effect, which has appeared since 2000 due to the ageing of the Senegalese population and which weakens the role of the elders. But the fact that these two statements were made by individuals from Rufisque also suggests the impact of changing spatial behaviour. The relocation of middle- and higher-income households to Rufisque, which means they find themselves at some distance from the opportunities for activities and consumption which are still concentrated in the department of Dakar, is increasing the need for motorised travel, especially for young professionals, and is also leading to the generalisation of access to the car within households that own it, by adapting its use to the family's needs.

### *Car borrowers*

Car borrowers form a group that is very different from the previous two groups and whose profile changed little during the fifteen years between the surveys. Although this group contains as many males and people who are in work as the exclusive motorists, they are less likely to be wage-earners (three in five of those in work) and their occupations are of lower social standing: one in four is self-employed, and three in ten are skilled employees or middle managers. The transport professions are over-represented: 15% of car borrowers are drivers, some of the others are mechanics, such as this self-employed person who stated "Yes, I am a mechanic and

sometimes I use the cars I repair to get around". One in ten of those in work has a company car. The group is more heterogeneous in terms of its other characteristics. This is the case for individual characteristics such as educational attainment, with the over-representation of individuals who did not remain in education beyond primary school, who are as numerous as those who went to university, or position in the household, with very few spouses and a relative over-representation of dependents, brothers or more exceptionally sisters, living with the head of the household. This is also the case for household characteristics: although the presence of Dakar residents is high, it is lower than among the other categories, and this also applies to well-off households. However, the poorest constitute a minority. Episodic use of a car is therefore facilitated by the ability to be part of friendship or neighbourhood networks, which is more crucial than for the other two groups.

On average, the car borrowers are highly mobile (4.1 trips per day), with a particularly high travel time budget of almost two hours. Half their trips are by car, very slightly more often as a driver than as a passenger. The use of walking and public transport is therefore higher than among the other two groups. A higher proportion of this group's travel is for business purposes, accounting for two in three trips for all modes combined and three-quarters of all car trips. This imbalance is less due to the greater frequency of home-to-work trips than to the greater proportion of secondary journeys between two workplaces, for all modes combined, but especially for car trips, as in the case of this young executive who was looking for work at the time of the interview: "Sometimes, we were given vehicles in order to get to meetings". One in four car trips are secondary business trips and irrespective of the trip purpose, 40% of car trips are secondary trips. For car borrowers, access to a car seems to provide an opportunity to perform additional activities. However, the downside of this is that the time they spend on daily mobility is significantly higher than for the other groups.

### **The car: an appropriate(d) mode?**

In the Dakar region, as in other settings, whether a household owns a car is closely linked to its standard of living (Dargay, Gately, Sommer, 2007). However, in Dakar, and more broadly in Sub-Saharan Africa where car ownership rates are very low, car ownership is strongly associated with the highest incomes (Valenzuela-Levi, 2018). Despite this marked concentration, less than two in five households in the wealthiest quintile have a car, and the increase in the car ownership rate between 2000 and 2015 provides no indication that cars are becoming more widespread. In line with the general trend towards increasing inequality

(Lombard, Ninot, 2012), concentration, on the contrary, increased in the fifteen years between the surveys, both economically, with the richest households owning a higher proportion of the vehicles, and spatially, with car ownership becoming more concentrated in Dakar compared with the other departments. Making the transition from car ownership by the household to permanent personal availability is only possible for a small proportion of city dwellers who are predominately wealthy, university graduates, males, elderly, in work and household heads.

If we look at who actually uses a car, whether as the driver or a passenger, the picture that emerges is more complex, centred around three groups. Exclusive motorists make the largest proportion of car journeys but they nevertheless account for a minority of users, and car use spreads outside this small circle. Some of the city's residents have occasional access to cars, be it the household car (family users), the cars of neighbours or friends, or a company car, used for work or even occasionally diverted from its business function (car borrowers). However, the members of these two groups are more often passengers than drivers and are in a subordinate position with regard to access to the vehicle: with respect to the exclusive motorist who agrees to share his or her car for certain journeys, or with respect to the employer when accessing the vehicle for work-related purposes. The car is an all-purpose mode, but only for the exclusive motorists, and it can only occasionally be accessed by the other two groups, and sometimes to do so they need to grasp whatever opportunities arise. The diversity of user profiles reflects the spread of car use beyond the circle of Dakar residents who can drive one permanently, but this spread is nevertheless limited to one in twenty Dakar residents. The relative sizes and the characteristics of these three groups, as well as their travel practices, changed little between 2000 and 2015. They are very similar to the groups that were identified in three other West African capitals, namely Bamako, Niamey and Ouagadougou, at the end of the 1990s (Diaz Olvera, Plat, Pochet, 2008). They also closely resemble cases that have been observed more recently in Ouagadougou where, despite the widespread use of motorised two-wheelers, car-sharing seems to be just as common, with passengers accounting for almost a third of all car trips (Boyer, Delaunay, 2017).

In order to gain a full picture of the social dynamics at work, analysis of access to the car and the nature of car use needs to be accompanied by an analysis of the representations of the car, the way these are constructed and vary, in particular according to whether or not an individual is able to use one, and when they can, the type of use involved. The data collected in the Dakar region do not permit such analyses, but research carried out on a number of cities in Sub-Saharan Africa shows that, despite – or because of – its limited availability, the car embodies

an ideal of mobility. This is reflected in the qualities that the vast majority of city-dwellers ascribe to it, whether in terms of its functionality (speed, comfort, safety) or its ability to meet individual mobility needs in all circumstances (temporal availability, ability to provide access to the whole city) (Diaz Olvera, Plat, Pochet, 2002). Because the car is such a powerful symbol for the vast majority of city dwellers, it thus appears to be central to lifestyles, and even more so to imaginaries, in Africa (Green-Simms, 2017). This position has existed for a long time, as evidenced, for example, by Alber (2002) on Dahomey at the very beginning of the twentieth century or Gewald (2002) on Namibia in around 1930. The ability of the automobile to provide "seclusion and status, as opposed to congregation and anonymity" (Gewald, 2002, pp. 16-17) makes it one of the major symbols of social success, which lasted throughout the twentieth century, without being called into question after the nations in question gained their independence<sup>9</sup>. During the 1980s, the car (*la voiture*) thus represented one of the three, sometimes four depending on the city, "Vs that stand for victory", alongside the villa (*la villa*), the orchard (*le verger*) or the bank transfer (*le virement*) (Banégas, Warnier, 2001; Sinou, 1987; Yaméogo, 1987). Even today, in these cities where poverty is still rife, car ownership and use are still among the most tangible external markers of material success, status and social prestige (Chalfin, 2008; Green-Simms, 2009; Jacquemot, 2012; Jeske, 2016; Lanne, 2018; Ngom, 2011), which in Dakar denote a "young man from a good family" (Biaya, 2001, p. 81).

Exclusive motorists speak about the importance of the strong link between cars and success. The members of this group, at least the wealthiest of them, are representative of local elites whose travel practices readily involve different spatial scales, from travel between neighbourhoods and various places in the city to intercontinental trips (Lesourd, 2012), and who frequent the world-space while at the same time being anchored in their city of origin. One example is those residents of Kampala who have become part of the global economy and whose "success is displayed in their travel and through the preferred instrument for it - the car" (Calas, 1998, pp. 389-390). The numerical importance of the other two user groups does not in any way cast doubt on the strong link between car and success. Their ability to control access to and use of the car bears no comparison with that of exclusive motorists. According to Certeau (1990), for the latter, who control use of the vehicle, using the car appears to be the tool of autonomous strategies of access to urban resources, whereas for the others - family users and,

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<sup>9</sup> The only counter-example is doubtless Burkina Faso in the mid-1980s. When he was Head of State, Thomas Sankara sold the official vehicles (made by Mercedes and Chevrolet) used by senior ministerial officials and personally drove a Renault 5 (Wilkins, 1989).

a fortiori, car borrowers - it is the product of uncertain and opportunistic tactics which demonstrate their dependence on the vehicle owner.

While the general urban population seems to have appropriated the positive image of the car, appropriation of its use is limited to a small part of the population, and the social and modal hierarchies coincide (Diaz Olvera, Plat, Pochet, 2002). However, the comparison between 2000 and 2015 suggests that the forms of access to and use of the car may be changing. The first indicator of this is the movement of well-off, even middle-class, households, from Dakar to Rufisque, which has been made possible by the car and the construction of a motorway. The car is thus likely to become even more indispensable for these households, bringing the situation in Sub-Saharan African cities closer to that which has prevailed in the cities of the North for a number of decades. The second indicator is a generational effect, which can be observed both in the increased proportion of family users and in the increased prevalence of the sharing of the household's vehicle or vehicles between its members. This can be seen as a reflection of much broader societal changes and, in particular, the narrowing of the scope of solidarity to the conjugal unit and the close family, or even selected affinity groups from which some sort of return can be expected relatively soon (Calvès, Marcoux, 2007; Dimé, 2007; Marie, 1997). Individuals then become more able to put forward their own projects and become part of an "empowerment dynamic" without being individualistic (Marie, 2007; Quénot-Suarez, 2012). More than ever, the car remains the preferred way to meet one's daily mobility needs, relying on "one's own means" (Quénot-Suarez, 2012, p. 32).

## **Conclusion**

While the issues of access to and use of the car continue to receive much scholarly attention in the urban contexts of the countries of the North, this is not the case in societies where the car is a rare asset, as in Sub-Saharan Africa. Car ownership rates that are of the order of one to two households in ten cannot fail to give rise to practices that are significantly different from those observed in urban areas where car ownership rates are five or six times higher. This is all the more true since the larger size of African households automatically reduces the chances of individual access to a car. Analysis of the case of the Dakar metropolitan area shows that car use there exhibits marked features which changed only slightly between 2000 and 2015. Beyond these differences, there are also similarities in car use between the North and the South which merit further study. At the end of the day, surely sharing a car with people who do not own one has parallels with the car-sharing practices that are developing timidly in the cities of the North.

Will these car-sharing practices continue if the rate of car ownership rises dramatically in some large African cities?

Scientific knowledge of automobility and its consequences in the cities of the North on one hand and the need to meet the travel needs of the urban populations of Sub-Saharan Africa on the other provide support for the implementation of a framework for the development of car ownership and automobile use in these cities in question. To this end, better knowledge of car users and car use in different cities in Sub-Saharan Africa and, also in other regions of the South, appears necessary and would enhance the comparative analysis of contemporary forms of automobility.

## **Bibliography**

- Alber E., 2002, Motorization and colonial rule: two scandals in Dahomey, 1916, *Journal of African Cultural Studies*, Vol. 15, N°1, p. 79-92.
- ANSD (Agence Nationale de la Statistique et de la Démographie), 2014, *Recensement Général de Population et de l'Habitat, l'Agriculture et l'Élevage*, Rapport Définitif RGPHE 2013, Dakar.
- ANSD, 2018, *Situation économique et sociale du Sénégal*, Édition 2015.
- ANSD, publication annuelle, *Note d'analyse du commerce extérieur*, Éditions 2006 à 2017.
- Antoine P., Razafindrakoto M., Roubaud P., 2001, Contraints de rester jeunes ? Évolution de l'insertion dans trois capitales africaines : Dakar, Yaoundé, Antananarivo, *Autrepart*, N°18, p. 17-36.
- Banégas R., Warnier J.-P., 2001, Nouvelles figures de la réussite et du pouvoir, *Afrique Contemporaine*, N°82, p. 5-23.
- Beuving J., 2006, Nigerien second-hand car traders in Cotonou: a sociocultural analysis of economic decision-making, *African Affairs*, Vol. 105, p. 353-373.
- Beuving J., 2013, Playing information games: *démarcheurs* in the second-hand car markets of Cotonou, Bénin, *Social Anthropology*, Vol. 21, p. 2-22.
- Biaya T. K., 2001, Les plaisirs de la ville : masculinité, sexualité et féminité à Dakar (1997-2000), *African Studies Review*, Vol. 44, N°2, p. 71-85.
- Black A., McLennan T., 2015, The last frontier: prospects and policies for the automotive industry in Africa, *TIPS Annual Forum*, Johannesburg, July.
- Boyer F., Delaunay D., 2017, *Se déplacer dans Ouagadougou au quotidien, moyens, contraintes et pratiques de la mobilité*, Paris : IEDES – Université Paris 1 Panthéon-Sorbonne, coll. Monographies Sud-Nord, N°6.
- Brooks A., 2012, Networks of power and corruption: the trade of Japanese used cars to Mozambique, *The Geographical Journal*, Vol. 178, p. 80-92.

- Calas B., 1998, *Kampala. La ville et la violence*, Paris : Karthala – IFRA, coll. Hommes et sociétés.
- Calvès A. E., Marcoux R., 2007, Présentation : les processus d'individualisation « à l'africaine », *Sociologie et sociétés*, Vol. 39, N°2, p. 5-18.
- Certeau (de) M., 1990, *L'invention du quotidien, tome 1 : Arts de faire*, Paris : Gallimard, coll. « Folio essais » (1<sup>ère</sup> éd. 1980, UGE).
- Chalfin B., 2008, Cars, the customs service, and sumptuary rule in neoliberal Ghana, *Comparative Studies in Society and History*, Vol. 50, p. 424-453.
- Dargay J., Gatley D., Sommer M., 2007, Vehicle ownership and income growth, worldwide: 1960-2030, *The Energy Journal*, Vol. 28, N°4, p. 143-170.
- Demoli Y., Lannoy P., 2019, *Sociologie de l'automobile*, Paris : La Découverte, coll. Repères.
- Diaz Olvera L., Plat D., Pochet P., 2002, Hiérarchie sociale, hiérarchie modale dans trois capitales africaines, in : Bussière Y., Madre J.-L., (sous la direction de), *Démographie et transport : Villes du Nord et villes du Sud*, Paris : L'Harmattan, p. 289-315.
- Diaz Olvera L., Plat D., Pochet P., 2008. Logiques d'usage et formes d'appropriation de la voiture en Afrique subsaharienne, in : Clochard F., Rocci A., Vincent S. (sous la direction de), *Automobilités, altermobilités, quels changements ?*, Paris : L'Harmattan, p. 199-211.
- Diaz Olvera L., Plat D., Pochet P., 2013, The puzzle of mobility and access to the city in Sub-Saharan Africa, *Journal of Transport Geography*, Vol. 32, p. 56-64.
- Dimé M. N., 2007, Remise en cause, reconfiguration ou recomposition ? Des solidarités familiales à l'épreuve de la précarité à Dakar, *Sociologie et sociétés*, Vol. 39, N°2, p. 151-171.
- Freyssenet M., 2016, *Parc automobile mondial, par continent et par pays, 1898-2015. Document d'enquête : 15 tableaux et 14 graphiques*, Édition numérique (consulté le 2 avril 2019). Disponible à l'adresse : <http://freyssenet.com/>
- Gewald J.-B., 2002, Missionaries, Hereros, and motorcars: mobility and the impact of motor vehicles in Namibia before 1940, *The International Journal of African Historical Studies*, Vol. 35, N°2-3, p. 257-285.
- Gewald J.-B., Luning S., van Walraven K., 2009, Motor vehicles and people in Africa: An introduction, in : Gewald J.-B., Luning S., van Walraven K. (eds), *The Speed of Change. Motor Vehicles and People in Africa, 1890-2000*, Leiden-Boston: Brill Academic Publishers, p. 1-18.
- Godard X., Bamas S., 2002, O comme Occasion ou les importations de véhicules, in : Godard X. (sous la direction de), *Les transports et la ville en Afrique au sud du Sahara*, Paris : Karthala – Inrets, p. 229-238.
- Green-Simms L., 2009, *Postcolonial Automobility: West Africa and the Road to Globalization*, PhD dissertation, University of Minnesota.
- Green-Simms L., 2017, *Postcolonial Automobility. Car Culture in West Africa*, Minneapolis : University of Minnesota Press.
- Jacquemot P., 2012, Les classes moyennes changent-elles la donne en Afrique ? Réalités, enjeux et perspectives, *Afrique Contemporaine*, Vol. 244, p. 17-31.



- Jeske C., 2016, Are cars the new cows? Changing wealth goods and moral economies in South Africa, *American Anthropologist*, Vol. 118, p. 483-494.
- Kablan N. H. J., 2010, L'invasion des véhicules d'occasion en transit par le port d'Abidjan : le dynamisme ambivalent d'une activité en plein essor, *Les Cahiers d'Outre-Mer*, Vol. 63, p. 365-390.
- Lagarde E., 2007, Road traffic injury is an escalating burden in Africa and deserves proportionate research effort, *PLoS Med*, Vol. 4, N°6, e170. DOI: [10.1371/journal.pmed.0040170](https://doi.org/10.1371/journal.pmed.0040170)
- Lall S. V., Henderson J. V., Venables A. J., 2017, *Africa's Cities: Opening Doors to the World*, Washington, DC: The World Bank.
- Lanne J.-B., 2018, *Des vies en veille : géographies abandonnées des acteurs quotidiens de la sécurité à Nairobi*, Thèse de Doctorat en Géographie, Université Montaigne – Bordeaux III.
- Lesourd M., 2012, Mondialisation et nouvelle mobilité des élites africaines, *EchoGéo* N°20. [En ligne] (consulté le 16 octobre 2019) Disponible à l'adresse : <http://journals.openedition.org/echogeo/13118>
- Lombard J., Bruez F, Diakho A., 2006, Les transports sénégalais à l'aune du système-monde, in : Lombard J., Mesclier E., Velut S. (sous la direction de), *La mondialisation côté Sud. Acteurs et territoires*, Paris : IRD Éditions – ENS, p. 183-202.
- Lombard J., Ninot O., 2012, Des mobilités aux transports. Regards croisés en Afrique de l'Ouest, *EchoGéo* N°20. [En ligne] (consulté le 16 octobre 2019) Disponible à l'adresse : <http://journals.openedition.org/echogeo/13127>
- Marie A. (éd.), 1997, *L'Afrique des individus*, Paris : Karthala, coll. Hommes et Sociétés.
- Marie A., 2007, Communauté, individualisme, communautarisme : hypothèses anthropologiques sur quelques paradoxes africains, *Sociologie et sociétés*, Vol. 39, N°2, p. 173-198.
- Naidja L., Ali-Khodja H., Khardi S., 2018, Sources and levels of particulate matter in North African and Sub-Saharan cities: a literature review, *Environmental Science and Pollution Research*, Vol. 25, N°13, p. 12303-12328.
- Nallet C., 2015, Identifier les classes moyennes africaines : diversité, spécificités et pratiques de consommation sous contrainte, *Notes de l'IFRI*, décembre.
- Nallet C., 2017, Des classes moyennes en forma(lisa)tion. Le cas des salariés des télécommunications à Kinshasa, *Études de l'IFRI*, avril.
- Ngom N., 2011, *La problématique de la mobilité urbaine : L'accessibilité du centre-ville dakarois par le système de transport collectifs routier*, Thèse de Doctorat de 3<sup>e</sup> cycle en Géographie, Université Cheikh Anta Diop de Dakar.
- Quénot-Suarez H., 2012, Consommer dans un environnement incertain. Le paradoxe des classes moyennes africaines, *Notes de l'IFRI*, mars.
- Rosenfeld M., 2018, *Car connection. La filière euro-africaine des véhicules d'occasion*, Paris : Karthala.
- Sakho P., 2014, *La production de la ville au Sénégal : entre mobilités urbaines, migrations internes et internationales. Volume 1. Rapport de synthèse*, Thèse de doctorat d'État sur

travaux, Université Cheikh Anta Diop de Dakar, Faculté des Lettres et Sciences Humaines, Département de Géographie.

- Sinou A., 1987, Habiter à Bamako et à Saint-Louis du Sénégal, in : Le Bris E., Marie A., Osmont A., Sinou A., *Famille et résidence dans les villes africaines. Dakar, Bamako, Saint-Louis, Lomé*, Paris : L'Harmattan, p. 71-114.
- Sitrass-Curem, 2016, *Enquête sur la mobilité, le transport et l'accès aux services urbains dans l'agglomération de Dakar*, Rapport d'Analyse final, pour le compte du CETUD.
- Syscom, 2001. *Enquête sur la mobilité, le transport et les services urbains à Dakar (EMTSU) 2000*. Rapport d'analyse pour le CETUD, Dakar : Syscom.
- UNECE-UNEP, 2017, *Used Vehicles: A Global overview*, Background paper. [En ligne] (consulté le 2 avril 2019) Disponible à l'adresse : [https://www.unece.org/fileadmin/DAM/trans/doc/2017/itc/UNEP-ITC\\_Background\\_Paper-Used\\_Vehicle\\_Global\\_Overview.pdf](https://www.unece.org/fileadmin/DAM/trans/doc/2017/itc/UNEP-ITC_Background_Paper-Used_Vehicle_Global_Overview.pdf).
- Val S., Liousse C., Galy-Lacaux C., Cachier H., Marchand N., Badel A., Baeza-Squiban A., 2013, Physico-chemical characterization of African urban aerosols (Bamako in Mali and Dakar in Senegal) and their toxic effects in human bronchial epithelial cells: description of a worrying situation, *Particle and Fibre Toxicology*, Vol. 10, N°1. DOI: [10.1186/1743-8977-10-10](https://doi.org/10.1186/1743-8977-10-10)
- Valenzuela-Levi N., 2018, Why do more unequal countries spend more on private vehicles? Evidence and implications for the future of cities, *Sustainable Cities and Society*, Vol. 43, p. 384-394.
- Vidal C., Le Pape M., 1986, Espaces abidjanais : sociographies de la mobilité, *L'Espace géographique*, N°3, p. 187-194.
- Wilkins M., 1989, The death of Thomas Sankara and the rectification of the people's revolution in Burkina Faso, *African Affairs*, Vol. 88, N°352, p. 375-388.
- Yameogo P., 1987, *Habitat traditionnel, habitat moderne : la case et la villa au Burkina Faso*, Thèse de Doctorat de 3<sup>e</sup> cycle en Sociologie, Université de Nice.