

“Understanding the reasons behind massive Car use in Oran city –Algeria”

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Abstract:

This paper reports the results of a questionnaire aimed at examining motives for car use in commuting movements in Oran city.

The key findings indicated that individuals don't use their cars for instrumental motives but because it's practical and provides accessibility more than other transport modes. It also indicated that the main factors that influence car user's mode choice are Habit, Income and cost of traveling. Results showed that people also are willing to shift towards tramway if there was traffic congestion or in case of lack of parking spots in their destinations.

Key words: Car use, mode choice, travel behavior, tramway, Oran

ملخص البحث باللغة العربية:

تقدم هذه الدراسة نتائج استبيان يهدف إلى دراسة أسباب استخدام السيارة الشخصية في مدينة وهران، حيث أظهرت النتائج أن الأفراد لا يستخدمونها لمميزاتها التقنية فحسب بل لأنها نمط تنقل عملية وتوفر لهم إمكانية وصول أكثر من الأنماط الأخرى. كما توصلت الدراسة إلى أن كلا من الدخل، التعود وتكلفة التنقل هي أهم الأسباب التي تدفع المتنقلين لاستخدامها، كما أوضحت الدراسة أن المستخدمين على استعداد للتحويل نحو القطار الحضري إذا كان هناك ازدحام مروري أو في حالة عدم وجود أماكن لوقوف السيارات في وجهاتهم. الكلمات المفتاحية: استعمال السيارة الشخصية، الاختيار النمطي، سلوك التنقل، القطار الحضري، مدينة وهران.

1. Introduction :

Commuting movements are known to be the most important motifs for individuals' everyday life, and in order for them to meet their needs they use different transport modes such as tramways, buses, metro, walking, or their personal cars. Nowadays the massive use of private cars causes a serious problem for the environment (pollution, congestion, road accidents, global warming...etc.). These negative outputs require reduction in the volume of car use based on understanding the behavior of car users towards this mode and trying to change it or at least pushing those users to shift towards more sustainable transport modes.

This requires knowing and studying the main motifs and factors behind massive car use in order for policy makers to be able to promote measures to reduce attractiveness to car use.

2. Problem of the study :

We chose Oran city because it is the second largest metropolitan area in Algeria, which faces an increase in car use like any metropolitan area in the world, and people are using their cars for 49.31% of commuting movements.

This paper presents data from a qualitative study that focuses on this main research question: **What are the main reasons behind car use in Oran city?**

3. Hypothesis: we want to test the following hypothesis

- Economic reasons are the main reasons behind car use in Oran city.
- cost of traveling is the most influencing factor of car user's mode choice.
- car users are willing to shift towards tramway for economic reasons.

4. Methodology :

In order to complete the study, answer our problematic and test the hypothesis, we administered 447 questionnaires (self-administrated survey) between November 2017 and march 2018 in the city of Oran. The total of the retrieved questionnaires that can be analyzed from the study sample were 441. The retrieved questionnaires have been analyzed using SPSS (Statistical Package for the Social Sciences) software, version 20

5. Literature review:

The literature on the factors influencing car use shows different approaches. Some studies and books indicate that increasing population density, improving the standard of living of individuals, the development of the automobile industry and inefficiency of the public transport system, especially in developing countries, are among the main reasons for the development of car use and ownership and at a great pace.¹

However, some other studies, that dealt with the reasons behind people's attachment and use of the personal car, found that this mode is not only used as a result of the above and not only for its technical function, but there are other motives such as the sense of power and excitement and social image. In the United States of America, one of the studies found that habit, poor planning and lack of information about alternatives are one of the most important motives of attachment to the private car. The study also conducted that people do not drive because it's necessary but they choose to do it.²

According to most of the studies on this topic, there are many non-technical reasons that lead people to prefer mobility by personal car, such as freedom social image in addition to a sense of greatness, which are known as symbolic and affective reasons³. One concluded that convenience, speed, comfort and freedom that the personal car provides to users are the most important reasons for car use⁴. The personal car is also a symbol of prosperity and social success in many societies. It is also more comfortable compared to public transport; and provides independence for its users⁵. Another study was conducted to compare the advantages and disadvantages of buses and private car found the following:

Table1: The advantages and disadvantages of buses and private car

<i>Advantages</i>		<i>Disadvantages</i>	
public transport - less stress - no need to drive - less pollution - be able to relax - be able to read	private car -freedom -convenience -comfort, -rapidity -flexibility -safety	public transport -waste of time -too crowded -lack of control -long waiting -time -traffic -lack of flexibility	private car -cost -difficulty of parking -stress -traffic -pollution accidents

Source: Beirao, G. and Cabral, J.A.S. 2007. ‘Understanding attitude towards public transport and private car: A qualitative study’, Transport Policy, vol. 14 no 6, P478

The table above shows that the reasons that lead people to prefer private car to any other mode are more symbolic and psychological than a technical such as comfort, freedom and independence.

In a study conducted by Hagman on car users assessing advantages and disadvantages of private car, he concluded that freedom, flexibility and reduced time spent on mobility are among the most important reasons or motivations that lead people to prefer the personal car to other modes. While the cost related to car ownership or to using it is the most important disadvantage of the personal car according to them.⁶It is also an image of social success and wealth and freedom, and some consider public transport as a reserved mode for the poor and for the elderly, meaning that it is directed at a certain social class of people who have no alternative.⁷

In another study conducted in Spain on 284 people in order to find out what are the real reasons behind private car preference, the survey's axes were divided into three sections. The first section deals with symbolic factors such as freedom, pleasure and social image, while the second section relates to technical reasons such as security, speed and reliability. The last section included various emotional reasons such as loving to drive and attachment to a personal car. This study found that the

technical reasons distinguish each vehicle from another, but if it comes to the use and preference of personal car, it is the symbolic reasons that push people to use it.⁸

A study of 57 Swedish families found that people with a personal car believed that driving improved their quality of life and were more likely to own it, and concluded that they simply bought and drove it because they wanted it rather than to meet their needs.⁹

Another Danish study found that 1803 Danish personal car users do not prefer public transport. For them, the personal car is superior not only because of its technical advantages, but because it represents cultural and psychological values for them, it is also a symbol of freedom and independence.¹⁰

Another study concluded that mobility by personal car is linked to symbolic reasons such as social image. It also found that young people and men are more likely to prefer moving by personal car because of its symbolic reasons.¹¹

Through all the studies we have discussed above, we can say that the use and preference of a personal car is not affected by technical factors such as speed, convenience, time and cost. Nevertheless, it is more influenced by social factors such as image and social status and the sense of power, and symbolic factors such as freedom, attachment to the personal car and independence.

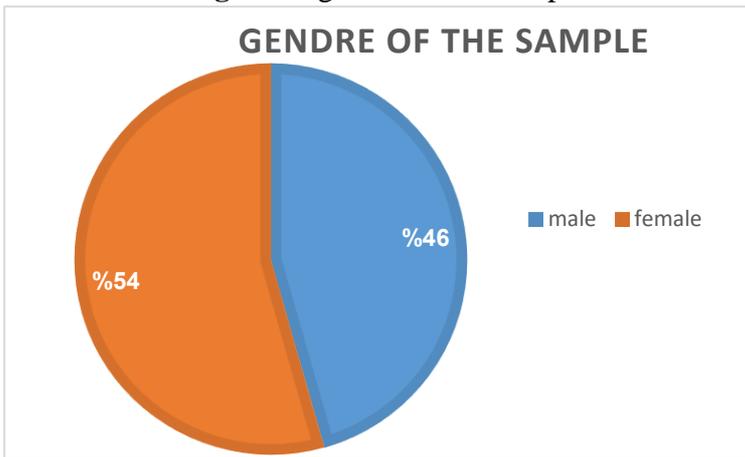
6. Empirical study

To explore this question, we conducted a survey that covered:

- **Commuting movements and mode use**
- **Most used modes in commuting movements**
- **Car use average**
- **Car use motifs**
- **Factors affecting car use**
- **Modal shift**

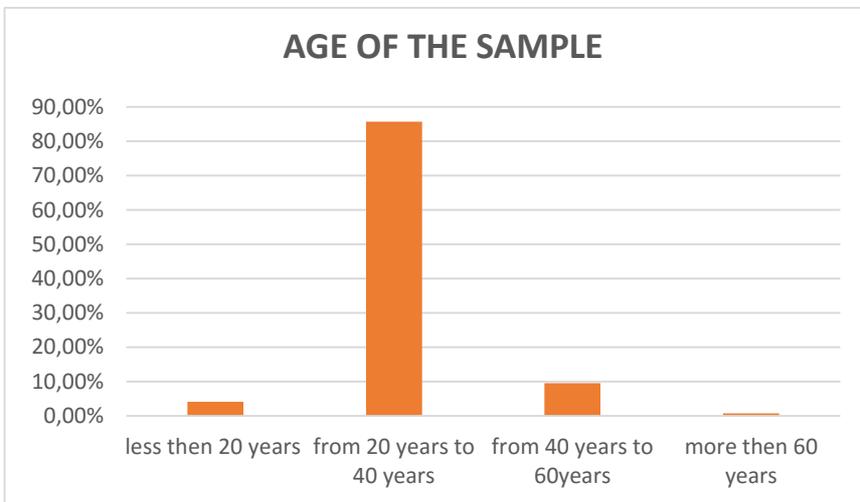
Sociodemographic characteristics:

Figure 1: gender of the sample



Source: SPSS

Figure 2: Age of the sample.

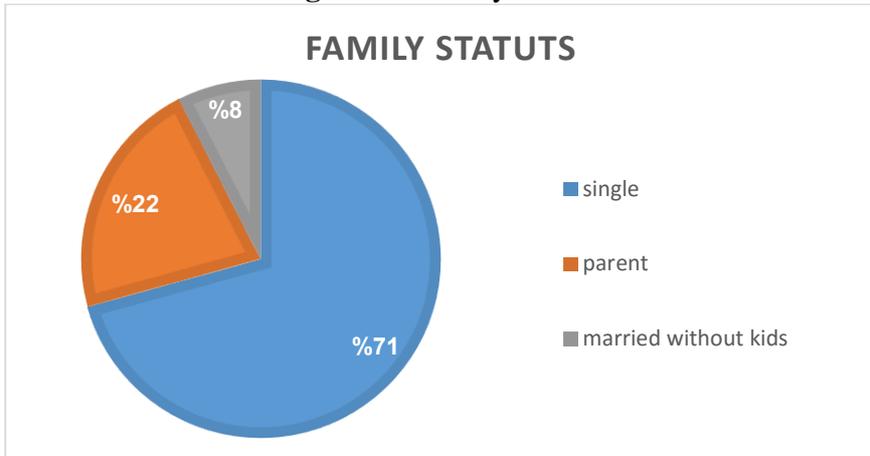


Source: SPSS

The number of females was slightly more than males. They represented 54.4% of the sample. (See Figure 1) The majority of our respondents were from 20 to 40 years old (85.7%), less than 18 years old (4.1%), 9.5% of them were between 40 years and 60 years and 0.7% were older than 60 years old. . (See Figure 2)

Most of the respondents were single (70.7%), 21.8% of them were married with kids and 7.5% were married without kids (see Figure 3).

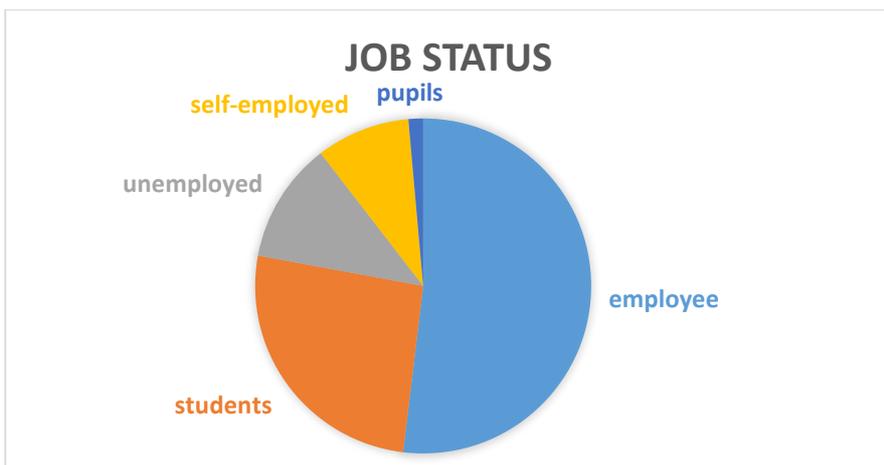
Figure 3 : Family statuts.



Source: SPSS

For the respondent's job status, the results showed that 51.7% were employees, 25.9% were university students, 11.6% were jobless or unemployed while 9% of them were self-employed and the rest were pupils (figure4).

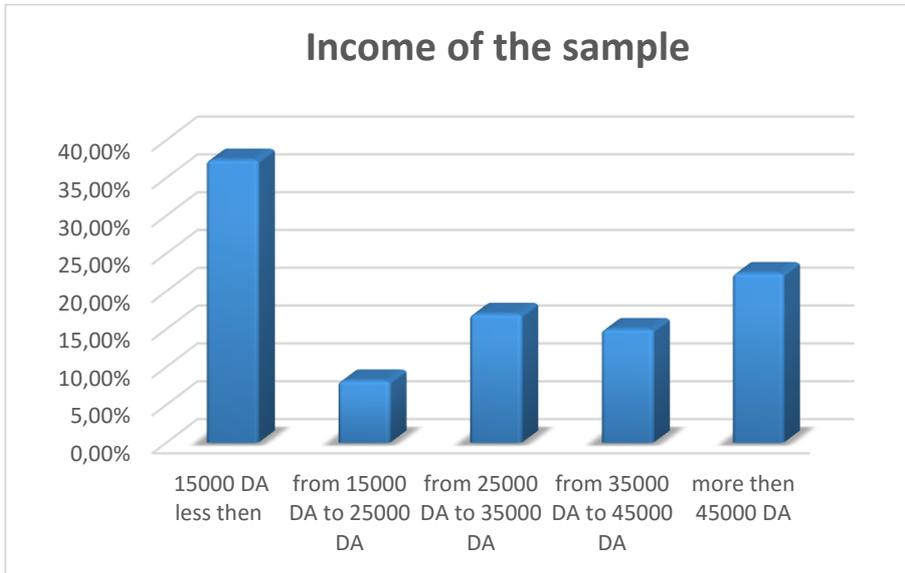
Figure 4 : Job status



Source: SPSS

When it comes to the respondents’ income it was noticed that 37.4% gained less than 15000DA, 22.4% more than 45000DA, 17% gained from 25000DA to 35000DA, 15% from 35000DA to 45000DA and 8.2% gained from 15000DA to 25000DA. figure5

Figure 5: Income of the sample



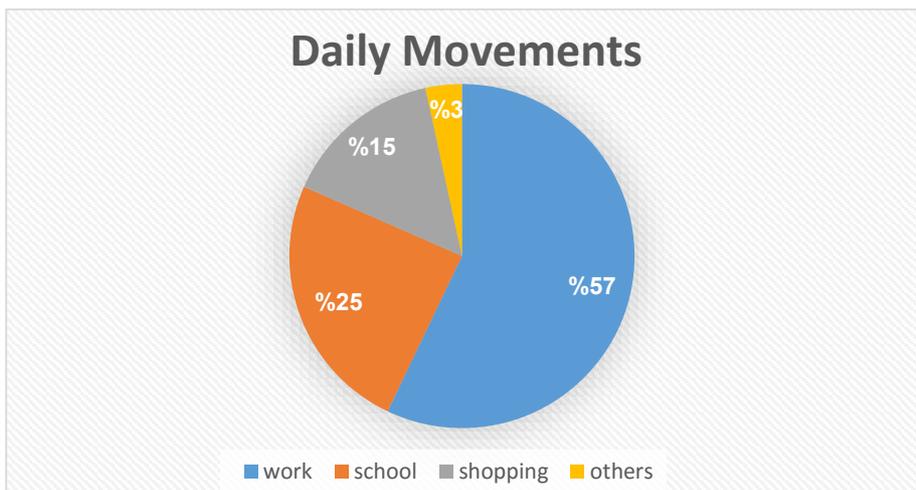
Source: SPSS

Daily movements and mode use

The questionnaire also focused on why people travel everyday (daily movements), it was found that 57.1% of their movements were for work, 24% move to study, 15% for shopping and the rest were for different reasons like visiting family, see a friend, etc.(figure6).

For car ownership, 33% of the respondents do own a car and 77% of them have driving license.

Figure 6: Daily Movements of the sample



Source: SPSS

7. Results of the study:

Analysis of the survey and results:

In order to understand the main reasons behind car use in Oran city, the questionnaire focused on:

-The most used mode in daily movements

The results showed that 38.8% of the respondents used private car for their daily movements, 31.3% used the bus, 15% prefer to walk, 8.2% used taxi, 5.4% used tramway and the rest move daily buy informal taxi. (table1)

Table 1: used mode in daily movements

Used mode in daily movements	Percentage
Bus	31.3%
Private Car	38.8%
Taxi	8.2%
Unformal Taxi	1.4%
Tramway	5.4%
Walking	15%

Source: SPSS

These findings can be explained by: most high-income parents own a personal car and prefer to enroll their children in schools close to their work places, or to relatives' home. Where the car is the most flexible mode for them

Car use average. Respondents were asked how often do they use their cars daily, 56.5% use it always, 39.1% often and 4.31% use their cars some times. When we cross car use average with job status and mobility motifs, it was found that 39% of employees use always their private car to reach their jobs

Car use Motifs. 40% of the respondents indicated that they use their private cars massively because it is a practical transport mode, 31.1% of them use it because it makes everything more accessible, 17.8% use it for economic reasons, 6.7% use it due to the absence of tramway in their neighborhood and the rest use car for other reasons (see table 2)

When we cross this with job status, it was found that 24% of car users who use it because of its practicality were employees and 20% of these employees use it because it makes everything accessible to them.

Table 2: Car Use motifs

Car use Motifs	Percentage
Practical	40%
Economic	17.8%
accessibility	31.1%
No Tramway in the neighborhood	6.7%
Others	4.4%

Source: SPSS

Factors affecting car user's choice

The study also focused on the main factors that affect car users’ mode choice, the results were as follows:

- 50% of them indicated that distance and travel time have no importance to them when choosing their mode;
- 41.9% indicated that travel cost is very important to them;

- 42.3% indicated that weather has an important effect on their mode choice;
- 57% indicated that the information is not important when choosing a transport mode;
- 46% indicated that security is quite important in choosing their daily transport mode;
- 66% indicated that comfort is not important to them;
- 42% indicated that social image is not important to them;
- 44% consider Habit as an important factor in choosing their transport mode
- 33% indicated that their income has great influence on their choices, when 96% of car users’ income is more than 45000DA.

According to the above results, our sample consider cost, habit and income as the most influencing factors in car users’ mode choice, and we could explain the influence of income and travel cost by the change in fuel prices in the last few years.

Mode shift the study examined the possibility for car users to switch into public transport- **tramway**- they were giving a list of 14 reasons that may encourage them to do the shift (see table 3)

Table 3: Modal shift Motifs

Modal shift motifs	percentage
Traffic Congestion	22.45%
Lack of parking spots	19.05%
Technical car problems	12.24%
Visiting family	10.20%
Tramway speed in traffic	8.16%
Head down town	6.12%
Gain time	4.08%
Having tramway line in the neighborhood	4.08%
Suspension of driving license	2.72%
Punctuality of tramway	2.72%
Practical and comfort	2.04%
Nothing	2.04%
Economic	2.04%
Security	2.04%

Source: SPSS

According to the table, congestion may make 22% of car users to switch to tramway, 12% may switch when there is no parking in their destination, 12% may shift if they have problems with their cars or give it to a family member. 8.16% will switch to tramway because it's a faster mode in traffic and only 6% may use it to head down town.

8. Discussions and Conclusion:

From the above we may conclude that commuting movements (home-work) represent 57% of total respondent's movements and the most used modes for the studied sample is tramway and private car. The study also examined motives for car use and it concluded that people use it mostly because it is practical and provides accessibility, and 76% use it to reach their jobs.

The study also concluded that consider cost, habit and income as the most influencing factors in car users' mode choice and car users indicated that congestion and traffic are the main reasons that may push them to switch to tramway.

This qualitative study has highlighted some key factors influencing car choice and the factors behind massive car use in Oran city.

The results from this study indicated that private car is the most used mode for commuting movements in the city, people do not drive because they have to or because it's necessary to do so but they use it because it's practical, flexible and makes everything accessible.

The study also concluded that car users are willing to switch from their current mode to tramway because of traffic congestion and lack of parking in some areas. The results also indicated that cost of travel, Habit and income are the most influencing factors on car users' mode choice.

Throughout the out coming results, this study could help policy makers and travel demand management to focus on what make people prefer private car over other transport modes and encourage modal shift towards tramway especially after the change in fuel prices in the last few years.

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