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# Study of Traffic Congestion in Gwagwalada Area of FCT Abuja, Nigeria

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***Abstract:*** *Urban areas have been noted to perform numerous functions which attract people to leave in them. These functions generate transportation demand such that the number of automobiles on the roadway exceeds the carrying capacity often resulting to traffic congestion. This has implications on the socioeconomic activities of the urban areas. This paper assesses traffic congestion in Gwagwalada area of FCT, Abuja. As part of the research, 210 questionnaires were administered along selected routes using purposive sampling technique, of which 25 were not properly filled and the analysis was based on 186 questionnaires. Findings revealed that greater proportion of the inhabitants in Gwagwalada area are civil/public servants. The study further confirm that various reasons are responsible for traffic congestions in the area, ranging from poor parking, street trading, and narrow/poor road condition as well as the drivers attitude. The 50% of the reasons is attributed to narrow/poor road condition. It also found out that lateness to work place, loss of business contact and the increased travel time are the major consequences of traffic condition in the area. Finally, it was recommended that there should be road expansion/dualization as well as the need for more road construction to increase interconnection. In addition, government should encourage use of mass transit to reduce the use of personal mobility.*

**Keywords**: Study, Traffic, Congestion, Gwagwalada, Abuja, Nigeria.

## INTRODUCTION

Traffic congestion is a condition on road networks that occurs as road usage increases and is characterized by slower speeds, longer trip times and increased vehicular queuing (Hooks, 1995). The most common example is the physical use of roads by vehicles. When traffic demand is great enough that interaction between vehicles slows the speed of the traffic stream, congestion is incurred (Andrew, 2008). As demand approaches the capacity of a road, extreme traffic congestion sets in. Traffic congestion is a matter of concern due to considerable rise in population of most cities in Nigeria, which has consequently led to high demand for public transportation (Ashara, 2020). The efficacy of transport improvement to meet the ever increasing traffic demand and reduce the volume of traffic cannot be over-emphasized. In fact, Ogunsaya (2001) foresaw the size of urban centres and their functions to expand as the years go by. It has been noted that traffic congestion is at its peak during the early morning rush hour to work and evening return to various destinations.

Urban cities around the world performs certain functions which include the following as they provide opportunities for diverse social and industrial activities, as well as opportunities for education, work and entertainment (Joseph and Anderson, 2012). Terkinbi (1995) observed that these functions they provide attract people to live in them and carry out their activities as seen in the long historical trend towards urbanization. This situation coupled with ever increasing personal mobility where the numbers of vehicles on the roads outgrow the available transportation network is the basis of traffic congestion.

Nigeria over the past few decades, has witnessed tremendous movement of its population from the rural areas to urban centres in pursuit of jobs and better conditions of life (Casmir, 2018). Gwagwalada area as an urban centre performs numerous functions. These include education, commercial being the industrial heartbeat of FCT-Abuja, residential and serving a nodal function linking northern and southern parts of Nigeria. This function has increased the volume of traffic congestion to an alarming level, which consequently leads to delays to workplaces and business transactions. However, considering the nature of traffic congestion within the Gwagwalada area and its attendant consequences on the socioeconomic activities of the area constitutes the problem of interest to this study. Therefore, the aim of this paper is to study traffic congestion in Gwagwalada area of FCT, Abuja. To achieve this aim, the following are the objectives: determine the nature of traffic congestion; identify the major causes of traffic congestion and the problems associated with it.

## STUDY AREA AND METHODS

Gwagwalada town is geographically located approximately between latitude 7°N - 7°45'N and 5°E - 5°30'E. Gwagwalada town is the headquarters of Gwagwalada Area Council which is one of the six area councils that made up the Federal Capital Territory (FCT), Abuja. Gwagwalada area council is bordered to the north by parts of Niger state, southward by Kwali area council, eastward by Abuja municipal and Bwari area councils, and westward by Abaji area council. That is to say Gwagwalada area council is the heartbeat of the Federal Capital Territory (FCT) due to its strategic location. Gwagwalada's strategic location means that you can

access the rest of the major cities of Abuja at an almost equal travelling time. The federal capital territory (FCT) headquarters of over 28 federal agencies are situated in Gwagwalada including the magnificent Sharia court of Appeal. The area has a population of 210,770 at the 2006 population census. This comprises original settlers: Gwari, Koro, Bassan Gede and Hausa Fulani as well as the immigrant population of Nigerians and expatriates.

Reconnaissance survey enabled the determination of sample size and selects the sampling technique employed for the distribution of questionnaires. Based on this, a sample of 0.1% of the total population of the study area was taken, given a total of 210 respondents. The questionnaires were administered along the selected routes namely: Express Way (Trunk A), Park road (Trunk B) and Kasuwan Dare road (Trunk C). Purposive sampling technique was employed for the administration of questionnaires which only targeted those respondents who were in a vehicle and are willing to be part of the survey; such that 111 questionnaires were administered along Express way (Abuja – Lokoja Road), 50 along Park road and the remaining 50 along Kasuwan Dare road. Out of the 210 questionnaires administered along the routes, 25 set were not properly completed and returned while a total of 186 were duly completed and retrieved from the respondents. Hence, the analysis was based on 186 respondents. Other relevant information was obtained from published and unpublished sources. They include relevant text books, internet materials and journals. Descriptive statistical method such as tables and percentages were used for the presentation of results.

## RESULTS AND DISCUSSIONS

This section presents and analysis the data collected. The analysis was based on 186 copies questionnaires that were dully completed and retrieved from the respondents in the study area.

### Socioeconomic Characteristics of Respondents in Gwagwalada, Abuja

Table 1 displays the socioeconomic characteristics of the respondents in the study area. One of the key components of the socioeconomic characteristics that influence traffic congestion is age. The age distribution of respondents reveals that majority of the road user are within the age bracket (20-39) which account for 58%, this is followed by age bracket (40-59) with 29%, while age bracket (> 60) was the least with 4% (table 1). This is to say

**Table 1: Socioeconomic Characteristics of Respondents in Gwagwalada, Abuja**

| Variables | Frequency | Percentage (%) |
|---|---|---|
| **Age** | | |
| < 20 | 16 | 9 |
| 20 – 39 | 104 | 58 |
| 40 – 59 | 54 | 29 |
| > 60 | 8 | 4 |
| **Total** | **186** | **100** |
| **Occupation** | | |
| Civil/Public servant | 100 | 54 |
| Business | 36 | 20 |
| Artisan | 18 | 9 |
| Farming | 6 | 3 |
| Student | 26 | 14 |
| **Total** | **186** | **100** |

**Source:** Field survey, 2012

that the age bracket (20-59) combined constitute 87% of the respondents. This figure is not surprising considering the fact that this age category is recognised globally as the productive age of the population. This finding agrees with the work of Casmir (2018) that

did a similar study across Nigeria and identified that the number of respondents whose age lie between 20-30 years was 22 percent, those who lie between 31-40 years was 34.1 percent and those at 41years and above was 43.9 percent.

Furthermore, occupation which has to do with the kind of activity which one engages in especially as a means of livelihood is also another socioeconomic component that has control over traffic congestion (Adekunle and Tolu, 2011). The level of development of an area determines the occupation of the people. From table 1, it shows that 54% of the respondents are civil/public servants, 20% are into businesses, while 14% are students with 3% being farmers. Based on this, it can be concluded that greater proportion of inhabitants are civil/public servants which account for more than half of the respondents. The reason may not be unconnected to the role of Gwagwalada as the heartbeat of the Federal Capital Territory (FCT); in addition to it being the headquarters of over 28 federal agencies. These roles are more than enough to generate high volume of traffic that often lead to traffic jam in the area. Similarly, education is an indicator of socioeconomic development of an area. It involves an act of imparting or acquiring general knowledge, developing the power of reasoning, judgment and level of intellectual maturity. By education, it shows that 75% of the respondents have higher education while 23% have secondary and primary education with only 2% of the respondents not having formal education. Therefore, it can be concluded that larger proportion of the inhabitant in Gwagwalada area are educated which is typical of an urban setting. This could further explain why there is presence of traffic congestion because of the desire to own a car.

**Nature of Traffic Congestion in Gwagwalada, Abuja**

Table 2 shows the nature of traffic congestion in Gwagwalada area of FCT, Abuja. Availability of transportation infrastructure is a prerequisite for smooth flow of traffic. Temporal variation of traffic congestion in Gwagwalada as revealed by respondents indicated that traffic congestion is experience in the morning which accounts for 15%, afternoon 8%, while 17% pointed out in the evening, 14% indicated morning and afternoon

**Table 2: Nature of Traffic Congestion in Gwagwalada, Abuja**

| Nature of Traffic | Frequency | | Percentage (%) | |
|---|---|---|---|---|
| **Periods** | | | | |
| Morning | 28 | | 15 | |
| Afternoon | | 14 | | 8 |
| Evening | 32 | | 17 | |
| Morning/Afternoon | | 26 | | 14 |
| Morning/Evening | 86 | | 46 | |
| **Total** | | **186** | | **100** |
| | | | | |
| **Days** | | | | |
| Monday | 48 | | 25 | |
| Friday | | 20 | | 11 |
| Sunday | 12 | | 7 | |
| Working days | | 24 | | 13 |
| Friday/Sunday | | 36 | | 19 |
| Market days | | 26 | | 14 |
| Festival | 20 | | 11 | |
| **Total** | | **186** | | **100** |

| | | |
|---|---|---|
| **Roads** | | |
| Abuja-Lokoja road | 60 | 33 |
| Park road | 72 | 38 |
| Kasuwan Dare road | 30 | 16 |
| Others | 24 | 13 |
| **Total** | **186** | **100** |

**Source:** Field survey, 2012

with 46% being the largest indicated morning and evening. Thus, it can be concluded that traffic congestion is mostly experience during the early morning rush hour to work and evening return to different destination. This finding is in agreement with Irunokhai, (2020) and further being buttress by Ogunsaya (2001) who noted that traffic congestion is at its peak during the early morning rush hour to work and evening return to various destinations.

Moreover, daily variation of traffic congestion is a function of economic activity of an area. Areas predominantly civil/public servants witness severe congestion during the working days as against weekend days (Magaji, 2016; Alphonsus and Grace, 2020; Iliyasu et al., 2021). Table 2 further shows that 25% of the respondents confirm that traffic congestion is highest on Monday, 11% indicated Fridays, while 7% observed on Sundays with 13% indicated Mondays and Fridays. In addition, 19% responded Fridays and Sundays, 14% on market days with 11% during festivities. However, it can be deduce that traffic congestion is highest on Mondays which is usually the first working day of the week characterized by zeal to be at work place by civil/public servants. These findings are being corroborated with the work of Ajayi and Olawole (2018). This is followed by market days which are at five days interval. This may not be unconnected with large number of people from nearby suburbs who engages in business transactions during the market days. Also, traffic congestion is also reported to be high during festivities such as "Christmas" and "New Year" especially along the ever busy Abuja – Lokoja road which link northern and southern parts of Nigeria.

Correspondingly, the volume of traffic a particular road received depends on the degree of its usage or function. Table 2 shows that 38% of the respondents indicated that Park road has the most severe traffic congestion, 28% indicated express way (Abuja – Lokoja road), 16% pointed out Kasuwan Dare road, and 5% indicated that traffic congestion is severe along all the roads. However, it can be concluded that Park road is dominated by motorcycle especially students and traders, while Abuja – Lokoja road is dominated by cars and buses especially travelers and civil/public servants. Although, the degree of severity has reduced due to the ongoing dualization along the road.

**Causes of Traffic Congestion and its Consequences in Gwagwalada, Abuja**

Table 3 shows that there are various causes of traffic congestion in Gwagwalada. 11% of the respondents attributed it to poor parking, 14% attributed it to street trading, 29% characterized with narrow roads, 32% attributed it to bad road and 14% linked it to drivers' attitude. Therefore, it can be concluded that major causes of traffic congestion in Gwagwalada is as a result of bad and narrow roads in the area. This corroborate Ashara et

**Table 3: Causes and Consequences of Traffic Congestion in Gwagwalada, Abuja**

| Variables | Frequency | Percentage (%) |
|---|---|---|
| **Causes** | | |
| Poor parking | 20 | 11 |
| Street trading | 26 | 14 |
| Narrow road | 54 | 29 |
| Deplorable road | 60 | 32 |
| Driver attitude | 26 | 14 |
| **Total** | **186** | **100** |

| | | | | |
|---|---|---|---|---|
| **Consequences** | | | | |
| Lateness to workplace | | 72 | | 38 |
| Loss of business contact | 38 | | 20 | |
| Lateness to school | | 26 | | 13 |
| Increased travel time | | 50 | | 29 |
| **Total** | | **186** | | **100** |

**Source:** Field survey, 2012

al. (2020). According to Kerner (2009), congestion is the result of seven root causes, often resulting from one or the interaction of several of the seven sources on the road system. It was categorized under the following heading as: traffic-influencing events, traffic demand and physical capacity of the road. The nation's local, regional and national transportation systems play a vital role in creating access to goods and services which sustain and grow the nation's economy (Ogunbodede, 2003). Furthermore, 38% of the respondents indicated lateness to workplace as the consequences of traffic congestion in Gwagwalada area, with 29% identified increased travel time while 20% revealed loss of business contact. This is because the area houses most of the civil servants of the federal capital territory and before they get to work places, takes longer time than necessary. The area also serves a nodal function linking north and southern part of the country which make travelers spent several hours in traffic congestion before reaching their various destinations. In addition, similar condition has been reported by Abdul et al. (2020) that revealed traffic congestion causes serious consequences in the entire FCT, Abuja by increasing travel time, arrival unreliability particularly, during peak hours, fuel consumption, pollution emissions and driver stress, and reduce life satisfaction.

**Measures of Combating Traffic Congestion in Gwagwalada, Abuja**

Table 4 shows the measures advanced by the respondents such that 53% suggested construction of more roads, expansion and dualization of existing roads. However, 28% proposed the rehabilitation of roads such as pot holes and other traffic infrastructures, while 5% advised the need to construct bye-pass to decongest the township roads. The use of fines was hinted by 14% of the respondents to discourage indiscriminate parking. Consequently, it can be deduced that if the aforementioned measures are implemented, it will go a long way in

**Table 4: Measures of Combating Traffic Congestion in Gwagwalada, Abuja**

| Measures | Frequency | | Percentage (%) | |
|---|---|---|---|---|
| More roads/dualization | 108 | | 58 | |
| Road rehabilitation | | 46 | | 24 |
| Construction of bye-pass | 8 | | 5 | |
| Traffic infrastructure/fines | 24 | | 13 | |
| **Total** | | **186** | | **100** |

**Source:** Field survey, 2012

easing the traffic flow in Gwagwalada area of Abuja. Similar measures have also been demonstrated by Popoola et al. (2013) through the provision for adequate parking space, construction of proper drainage, enlarging the width of the road; rehabilitate all roads needing attention, public enlightenment and traffic education, Nwaigwe et al. (2019) on the other side recommend integration of an enduring urban traffic planning and management strategies, such as effective mass transit, strict land-use adherence, effective traffic control and enforcement and integration of traffic management institutions, the mechanism at discouraging excessive car usage. According to Hermann (2006) rush hour traffic congestion is inevitable because of the benefit of having a relatively standard work day. It was advocated that greater use of road pricing to reduce congestion and in turn use the revenues generated into public transportation projects.

## CONCLUSION AND RECOMMENDATIONS

This paper on the assessment of traffic congestion in Gwagwalada: it nature, causes consequences and modalities of improving traffic flow is necessary considering it attendant consequences on the socioeconomic activities of the area. The analysis revealed that traffic congestion in the area varies from time to time and days which are highest during the early morning rush hours to work and evening return to destinations. Lateness to work place and increased travel time were identified as the major consequences. Adequate transportation networks and infrastructures are prerequisite for social, political and economic development of an area. Hence, the need to improve on existing transport facilities to meet the growing demand and reduce traffic congestion. However, it

is recommended among others that government should embark on urban renewal toward the implementation of master plan to avoid commercial, residential and other land use encroachment on the roads. This is in addition to the application of geographic information system (GIS) through introduction of traffic information system (TIS) in the management of traffic. The linkage of TIS to radio stations would afford road users the opportunity to identify routes that are congested and use less congested routes.

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