

# Traffic Demands and Delays on Lagos - Ikorodu Road in Nigeria

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## ABSTRACT

*This survey assesses the nature of passengers' traffic demands and delays with a view to identifying its effects on the users of Lagos Ikorodu Road. Questionnaire serves as the major instrument of data collection for the study. The sample is 4,050 passengers at four selected bus stops/junctions from 7am-10am on a particular Monday morning. The sample size is 3% in accordance with Kregjen principle of sample size determination. The purposive sampling technique is used for this study. The sampling procedure entails the identification of the study area, bus stops, selection of passengers at the bus stop and the use of structured interview schedule with the passengers at the bus stops. Data were analysed using descriptive statistical tool. The results reveal among many others that there were more people in public transport than private, most passengers' travel purposes were basically for work which was more than others, and most respondents spent more than 1 hour. The study also shows that majority of the passengers' frequency of travel was once/twice per day. The study based on the result of the findings recommends amidst other things that there should be a thorough enforcement of traffic regulations, road rehabilitations in order to reduce the traffic challenges on the road.*

**Keywords:** *Traffic Demands, Traffic Delays, Transportation*

## INTRODUCTION

The expedient need for people to move from one place to another for different purposes brought about mobility. Therefore transportation, which is the movement of people, goods, services among others, from a point of origin to another through a means for a particular purpose, at a particular time; cannot be overemphasised, most especially as it is the nervous system of the city. Filani (2000) observes that Nigeria is presently facing numerous and rapidly increasing socio-economic problems as a result of the high population growth and rapid rate of urbanisation. These challenges have particularly manifested in physical planning at most part of the cities such as Lagos, which is experiencing traffic congestion in connection to areas of intensive land use activities such as Ikorodu Road. Traffic congestion arises from the incompatible organisation of land uses, unsystematic growth, illegal parking on the road and so on. The influence of various activities on land use can be regarded as one of the major causes of traffic problem in urban centres. The urban system has been grossly inadequate to cope with the traffic problem generated due to rapid increase in commercial activities. Effective accessibility results from the provision of efficient and reliable transportation and facilities especially with regards to the development and improvement

of intra-urban road networks. However, minimal efforts and resources have often been expended on the provision of such facilities in the Central Business District (CBD) consequently, the efficient organisation of such activities as the transport component in the townscape has, therefore, been a matter of concern to the physical planner. Transportation, is essentially services which, enables people, firm and various other entities to carry on activities at sites selected for these purposes in separated locations. Just as sanitation systems with their water supply and waste disposal facilities represent another necessary services, thorough fares and transit systems and their terminal facilities exist to make it possible for concentration of people, firms and other human institutions to carry on their activities in different locations in space even as this was also established by Dada (2012). Based on the afore-mentioned, this study sets to assess the pattern of passengers' traffic demands and delays with a view to identifying its effects on the users in Lagos Ikorodu Road.

### **Traffic Demands and Delays on Nigeria's Urban Cities**

Transportation and property are in physical and economic development of towns and cities all over the world. Property and land tend to increase in areas with expanding transportation networks, and increase less rapidly in areas without such improvements. Hougendoorn and Bovy (2001) observe that traffic flow, traffic growth and congestion are some of the main economic and societal problems related to transportation in industrialized countries. These problems manifest in the form of environmental pollution, delay, and accidents, land use severance amongst others (Ogunsanya, 2006). Ayeni (1983) supporting this view observes that these problems are some of the most pressing and perhaps most visible urban problems in Nigeria. Mabogunje (1974) in Ayeni (1983) observes that one of the most serious problems in the cities is 'liveability' which manifests itself in the forms of environmental deteriorations, overloading and congestion.

Adefolalu (1977) observes city severance in Lagos and other cities that traffic congestion is the most serious and intractable. This explains why the transport sector in the city of Lagos is described as 'organized chaos', but, the interest of geographers' in urban transport issues as observed by Ayeni (1983) is to assess the nature, severity and dimensions of overall effect of these problems of transportation on urban residents. In examine the causes of urban traffic congestion Adefolalu (1993) attributes the causes to inadequate road infrastructure to accommodate the increasing number of vehicles and poor driving habits. Roadside and on-road parking, roadside trading and total disregard for traffic regulations by road users are significant human contributions to urban traffic congestion. The study, which is still relevant today, reveals that about 44.4 percent of total parking and undesirable parking, illegal parking accounted for 66.6 percent. Generally, other causes of traffic congestion include bad roads, narrow street corridors and poorly designed road junctions. Transport is believed to be one of the worst defilers of the environment. Its effect on the health of people, community values and environs ecology to say the least are deplorable. Automobiles therefore are considered as the major source of more than 50 percent of pollution in Nigeria environment (Ogunsanya, 1985).

In a similar way, Ameyan (2002) reveals that transport contributes more than 60 percent of the emissions with the exception of sulphur dioxide and particulate matter. Another unavoidable consequence of transport that results into day long traffic congestion in the urban environment is road traffic accidents. According to Aderamo (2002), urban environment is most prone to motor traffic accidents because 75 percent of traffic accidents take place in built up areas of the cities. Odedokun (1991) looking beyond traffic build up as a result of urban traffic accidents, states that loss of widows, orphans among others are equally germane.

Consequently, varied suggestions have been made by various scholars on how to reduce the effects of traffic congestions. Some of these suggestions include expansion of the road network (Okpala, 1981; Ogunsanya, 1985; 1989;), improved traffic management and staggering of working hours (Adedimila, 1981) improvement in public mass transportation. Contrary to the suggestion on the expansion of urban road networks, experience obtained in the US, UK, Japan and China have demonstrated that the solution to urban traffic congestion is not in the widening of existing road network or construction of more roads. Rather than solve the problems, expansion of roads network or construction of more roads only offer temporary relief to motorists but in the long run induces more traffic. Since road expansion is not a 'wonder drug to cure traffic jams', Adedimila (1981) observes that practising effective traffic management techniques can reduce the delay per capita on urban roads.

Challenges in Nigeria's economy, which was part of the global depression of the 1980's affected all sectors in which transport system was one of them. Majority of Nigerians living in cities felt this impact more than those in the rural areas. Transport development is a growth generating infrastructure in relation to the process of socio-economic development; it facilitates the development of growth poles and centers and should be a fore-runner in the developmental process of any nation (Oyesiku, 2002). It should provide a social base for the take off of any economic development process. It should increase liveability, serviceable connectivity, interaction and transformation and should ensure changes as have been initially identified by Mabogunje (1986) and cited in Badejo (2006). The consequences emanating from public transportation system are encased in economic, social and environmental impact. Transportation is the movement of goods and services from place to place, and an essential ingredient for socio-economic development that plays fundamental role in spatial transformation, access to development. It serves great antiquity for any economy. Badejo (2002) and Oyesiku (2002) at different times define transport as one of the elemental factors for any land use development pattern, it forms intrinsic part of settlement development needed to open up regions and provide access to natural resources.

In Nigeria, particularly, in the urban areas, cars are one of the dominant modes of transportation, urban circulation is one of the most obvious problems and parking seems to be an overlooked element of transportation development. Venues of activities such as offices, markets, shops, recreation centres, churches and similar places often generate enormous parking demands, and the difficulty of parking vehicles at desired destinations particularly when located within the central areas of the city constitutes a major problem,

becoming cumbersome and phenomenal in the face of increasing number of private car ownership. Several studies have shown that improvements in living standards as a result of wage increases contribute almost as much as the growth of cities to contemporary urban traffic conditions in Nigeria.

**Travel Time Variability:** Travel time variability has several distinct components, including differences in travel time from day to day, over the course of the day and even from vehicle to vehicle (Noland and Polak, 2002). It is important to recognize that this definition is independent of congestion effects. A congested system according to Noland and Polak, (2002) may exhibit very stable day to day travel times that travellers anticipate in advance. Variability introduces uncertainty for travellers such that they do not know exactly when they will arrive at a destination. Therefore, it is generally recognized that for road travel, incident (or non-recurrent delay) is the major source of travel time variability which occur as a result of a reduction in effective road capacity while it is unknown how the probability of an incident (including the likely severity and duration of the incident) is affected by recurrent congestion, reduced capacity during peak travel time will result in greater travel delay and potentially, can result in greater variability peak time. Travel time variability (or the uncertainty in trip journey times) is clearly an added cost to a traveller making a given journey. Gaver (1968) in simplistic terms, travel delay can be interpreted as simply the added time from extra delay. In reality, the behavioural reaction to uncertain travel times is significantly more complex. The earliest theoretical contribution travel time variability was that of Knight (2001). His contribution was to embody the concept of travel time variability within a model of utility maximization with the result that travellers select as lack time travel time variability.

## METHOD

This survey adopted a set of questionnaire as an instrument for data collection. The sample was drawn from the average number of 4,050 passengers at four selected bus stops/ junctions from 7am-10am on a particular Monday morning. The bus stops (Owode, Ogolonto, Agric and Ikorodu) were selected based on the high level of traffic occurrence at the junctions. The sample size for this study is taken as 3% of the sample frame which is 120 and this represents the total number of passengers that were interviewed with the structured questionnaire. This percentage was taken in accordance with the “Kregjen principle of sample size determination” and the general understanding of the “larger the sample frame, the smaller the sample size. The sampling technique used for this study is the purposive sampling method because of the lack of pre-determined population and passengers flows inconsistencies. The sampling procedure entails the identification of the study area, bus stops, selection of passengers at the bus stops and conducting structured interview with the passengers at the bus stops. This was achieved through the passenger’s availability for the interview until the sample size of 3% was achieved. Data were analysed using frequency tables and pictures.

## RESULTS AND DISCUSSION

### Attributes of travel demands of the Passengers

**Mode of Transport:** Table 1 shows that the mode of transport of respondents were private 10.0% and public 90.0%. The study revealed that there were more people in public transport than private.

**Purpose of Travel:** Table 2 shows that the travel purposes of respondents entails business 14.2%, work 75.8%, social 2.5% and others 7.5%. This suggests that most passengers' travel purposes were basically for work which is more than others.

**Average time spent in the Traffic Delay:** The time spent in traffic delay by respondents were below 30 minutes 16.7%, 30-60 minutes 34.2%, 61-90 minutes 45% and 92-120 minutes 4.2%. Based on this, most respondents spent more than 1 hour (table 3).

**Travel Cost:** Table 4 shows that the amount paid for travels by respondents includes <N100, 27.5%, N100 - N200, 40.8%, N201 - N300, 25.0% and N301-N400, 6.7%. The study shows that majority of the passengers spent between N100 - N200.

**The Frequency of Travel:** As shown on table 5, the frequency of travel of the respondents were once/ twice per day 87.5%, once/week 4.2%, every other week 5.8% and monthly 2.5%. The study shows that the frequency of travel once/twice per day was more than others.

**Occurrence of Traffic Delay:** Table 6 reveals that the occurrence of traffic delay of the respondents entails regular 82.5%, occasional 14.2% and uncertain 3.3%. This implies that the majority are regular.

**Rate of Traffic Congestion:** As shown on table 7, the rate of traffic on the corridor was grouped as High 38.3, Fair 11.7% and poor 49.2%. The study reveals that the number of passengers who rated the traffic as poor was more 49.2%.

**The Opinion about Traffic Control:** This study reveals on table 8 that the opinion about the traffic control entails Effective 10.8, Less effective 37.5, Very effective 44.2 and ineffective 44.2%. The study shows that the number of persons who lay more emphasis on ineffective were more than other options.

**Causes of the Delay:** Table 9 reveals that the causes of the delay were improper parking 47.5% , poor road condition 25.8%, Break down vehicle 7.5%, Accident 2.5%, road junction 2.5, on street parking 8%, pedestrian crossing 8%, police checkpoint 9.2%, Traffic warden 2.5% and union fee collection 8%. The study showed that majority of respondents emphasised on improper parking.

### Effect of the Delay on the Road Users

**Time Wastage:** As shown on table 10, respondents rated time wastage higher than other variables as 90.8% agreed, while 8.3% were uncertain, and 0.8% disagreed.

**Lateness to Work:** Similar to the findings of time wastage, the lateness to work was rated higher by the respondents. Uncertain and disagree had equal proportion of 2.5%.

**Additional Transport Fee:** The study shows on table 12 that additional transport fee of respondents was rated as agree 90.8%, uncertain 4.2% and disagree is 1.7%. The study reveals that the total number of people who agreed with the condition were more than others.

**Failure of Appointment:** As shown on table 13, passengers who agreed that failure of appointment was one of the effects of traffic delay were 94.2%, while uncertain and disagree were 1.7% respectively. The study shows that passengers who agreed with the effect were more than others.

**Waking up too early:** Table 14 shows that waking up early by respondents were rated as agree 91.7%, uncertain 7.5% and disagree 0.8%. This implies that the number of people who agreed with the effect were more.

**Loss of Job:** According to the findings of table 15, the variables with regard to loss of job were 97.5%, uncertain 0.8% and disagree 1.7%. This reveals that a greater number of people agreed that traffic delay causes loss of job.

**Anger:** Table 16 reveals that anger is one of the effects of delay on respondents which was rated as agree 94.2%, uncertain 4.2 and those that disagree is 1.7%. The study shows that majority of the respondents agreed with this effect.

**Discomfort:** As shown on table 17, discomfort of the respondents was rated as agree 97.5%, uncertain 0.8% and disagree 0.8%. The study shows that the number of people that agreed with this effect were more than others.

**Tiredness:** As shown on table 18, tiredness of respondents was rated as agreed 98.3%, and uncertain 1.7%. This reveals that the total number of people that agree with this effect were more.

**Pollution:** Table 19 reveals the effect of pollution on respondents which was rated as agree 98.3% and uncertain 1.7%. This shows that most respondents agreed on the effects.

**Financial Increment:** The study shows on table 20 that the financial increment of respondents were rated as agree 98.3% and uncertain 0.8%. The study revealed that majority agreed with the effect.

**Table 1:** Mode of Transport

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Private	12	10.0	10.0	10.0
	Public	108	90.0	90.0	100.0
	Total	120	100.0	100.0	

**Source:** Field survey, 2013

**Table 2:** Purposes of Travel

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Business	17	14.2	14.2	14.2
	work	91	75.8	75.8	90.0
	social	3	2.5	2.5	92.5
	others	9	7.5	7.5	100.0
	Total	120	100.0	100.0	

**Source:** Field survey, 2013

**Table 3: Average Time Spent in the Traffic Delay**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	below 30minute	20	16.7	16.7	16.7
	30-60 minute	41	34.2	34.2	50.8
	61-90 minute	54	45.0	45.0	95.8
	92-120 minute	5	4.2	4.2	100.0
	Total	120	100.0	100.0	

*Source:* Field survey, 2013**Table 4: Amount Paid for the Travel**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<100	33	27.5	27.5	27.5
	#100-#200	49	40.8	40.8	68.3
	#201-#300	30	25.0	25.0	93.3
	#301-#400	8	6.7	6.7	100.0
	Total	120	100.0	100.0	

*Source:* Field survey, 2013**Table 5: Frequency of Travel**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Once/twice per day	105	87.5	87.5	87.5
	Once/week	5	4.2	4.2	91.7
	Every other week	7	5.8	5.8	97.5
	Monthly	3	2.5	2.5	100.0
	Total	120	100.0	100.0	

*Source:* Field survey, 2013**Table 6: Occurrence of Traffic Delay**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Regular	99	82.5	82.5	82.5
	Occasional	17	14.2	14.2	96.7
	Uncertain	4	3.3	3.3	100.0
	Total	120	100.0	100.0	

*Source:* Field survey, 2013**Table 7: Rate of Traffic Congestion**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	High	46	38.3	38.3	38.3
	Fair	14	11.7	11.7	50.0
	Poor	59	49.2	49.2	99.2
	Uncertain	4	1	.8	100.0
	Total	120	100.0	100.0	

*Source:* Field survey, 2013**Table 8: Opinion about Traffic Control**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Effective	13	10.8	10.8	10.8
	Less effective	45	37.5	37.5	48.3
	very effective	8	6.7	6.7	55.0
	Ineffective	53	44.2	44.2	99.2

*Source:* Field survey, 2013**Table 9: Causes of the Delay**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Improper parking	57	47.5	47.5	47.5
	Poor road condition	31	25.8	25.8	73.3
	Breakdown vehicle	9	7.5	7.5	80.8
	Accident	3	2.5	2.5	83.3
	Road junction	3	2.5	2.5	85.8
	On street parking	1	.8	.8	86.7
	Pedestrian crossing	1	.8	.8	87.5
	Police checkpoint	11	9.2	9.2	96.7
	Traffic warden	3	2.5	2.5	99.2
	Union fee collection	1	.8	.8	100.0
	Total	120	100.0	100.0	

*Source:* Field survey, 2013

**Table 10:** Time wastage

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	109	90.8	90.8	90.8
	Uncertain	10	8.3	8.3	99.2
	Disagree	1	.8	.8	100.0
	Total	120	100.0	100.0	

*Source:* Field survey, 2013**Table 11:** Lateness to Work

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	114	95.0	95.0	95.0
	Uncertain	3	2.5	2.5	97.5
	Disagree	3	2.5	2.5	100.0
	Total	120	100.0	100.0	

*Source:* Field survey, 2013**Table 12:** Additional Transport Fee

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	109	90.8	90.8	90.8
	Uncertain	5	4.2	4.2	95.0
	Disagree	4	3.3	3.3	98.3
	Total	120	100.0	100.0	

*Source:* Field survey, 2013**Table 13:** Failure of Appointment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	113	94.2	94.2	94.2
	Uncertain	2	1.7	1.7	95.8
	Disagree	3	2.5	2.5	98.3
	Total	120	100.0	100.0	100.0

*Source:* Field survey, 2013**Table 14:** Waking Up Too Early

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	110	91.7	91.7	91.7
	Uncertain	9	7.5	7.5	99.2
	Disagree	1	.8	.8	100.0
	Total	120	100.0	100.0	

*Source:* Field survey, 2013**Table 15:** Loss of Job

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	117	97.5	97.5	97.5
	Uncertain	1	.8	.8	98.3
	Disagree	2	1.7	1.7	100.0
	Total	120	100.0	100.0	

*Source:* Field survey, 2013**Table 16:** Anger

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	113	94.2	94.2	94.2
	Uncertain	4	4.2		98.3
	Disagree	2	1.7	100.0	
	Total	120	100.0	100.0	

*Source:* Field survey, 2013**Table 17:** Discomfort

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	117	97.5	98.3	98.3
	Uncertain	1	.8	.8	99.2
	Disagree	1	.8	.8	100.0
	Total	119		99.2	100.0

*Source:* Field survey, 2013



**Table 18:** Tiredness

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	118	98.3	98.3	98.3
	Uncertain	2	1.7	1.7	100.0
	Total	120	100.0	100.0	

*Source:* Field survey, 2013

**Table 19:** Pollution

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	agree	118	98.3	98.3	98.3
	uncertain	2	1.7	1.7	100.0
	Total	120	100.0	100.0	

*Source:* Field survey, 2013

**Table 20:** Financial Increment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	agree	118	98.3	98.3	98.3
	uncertain	1	.8	.8	99.2
	disagree	1	.8	.8	100.0
	Total	120	100.0	100.0	

*Source:* Field survey, 2013

## CONCLUSION AND RECOMMENDATIONS

This study has assessed the nature of passengers' traffic demands and delays on Lagos Ikorodu Road. The study found that there were more people in public transport than private, most passengers' travel purposes were basically for work, most respondents spent more than 1 hour on traffic. The study also shows that majority of the passengers spent between ₦100 - ₦200 as the study also revealed the frequency of travel as once/twice per day. The study further reveals that the proportion of passengers who rated the traffic as poor were higher. Most passengers were of the view that improper parking was a major cause of traffic congestion on the road among others. It has been discovered that the strategic way of solving the traffic problem in the study area depends on the road users and technocrats. Therefore the following are suggested in order to solve the traffic challenges in the study area.

***Provision of Road Infrastructure and Parking Spaces:*** There should be provision for street light, good drainage, traffic light, road signals among others as these facilities will definitely curb the traffic congestion in the study area. It should be mandatory for all stakeholders along Ikorodu road to provide parking spaces for their patrons in order to avoid on-street parking, which contributes to traffic delays on this corridor.

***Effective and Efficient Traffic Warder and Electronic Signals:*** There is need to focus on the level of efficiency and effectiveness of the traffic warden and signals. According to the road users, it was revealed that the traffic warden needs more training in order to enhance their job in order to curb the traffic challenges on this corridor.

***Alternative Means of Transportation:*** There should be provision for alternative means of transportation such as water mode in order to reduce the level of congestion on road transport.

***Enforcement and Discipline:*** There is a need for enforcement of disciplines on the traffic officers and the road users by a task force committee from the state government level.

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