FEDERAL REPUBLIC OF NIGERIA
FEDERALROAD SAFETY CORPS

FLYING VEHICLES ON NIGERIAN ROADS

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A publication of the Policy, research and Statistics Department of the Federal Road Safety Corps, Nigeria

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Published August, 2014

ISBN; 13978/978-482-72-3-2

Federal Road Safety Corps (FRSC)

FOREWORD

Speed has been identified as a major cause of many road traffic crashes in Nigeria. Tackling the issues has always been a major task, since the establishment of the Corps about twenty seven years ago. However, this is the first time that the Corps carried out a major study in this direction to go beyond doubt the reason behind the issue of excess speed among the Nigeria motorists.

The study was prompted by the desire of the Corps to strictly enforce installation of speed limiting devices in vehicles, especially on commercial vehicles. Our continuous analysis of RTC data has revealed that speed has become the most important causative factor of RTC in Nigeria.

This survey, which is being published, is the fifth edition of the FRSC Research Monograph series. This edition provides speed related information on some selected routes in Nigeria; the routes are Obollo-afor- Nineth Mile –Enugu road, Asaba – Benin expressway, Lagos – Ibadan expressway and Abuja –Lokoja highway. These are major corridors in Nigeria identified as recording a lot of crashes.

The reason for this study was to ascertain speed engaged by drivers of different categories of vehicles and evolve evidence based strategies to tackle the problems associated with speed related RTCs .

The material contained in the book will create the required awareness and information for researchers in transport, traffic law enforcement officers and the general public on the level of compliance to speed regulations on Nigerian roads, using the selected routes as mirror of the situation in the country.

I believe the data and information gathered during the assignment will be of immense benefits to the generality of Nigerians and other interested groups in our collective responsibilities to enhance road safety in Nigeria.

Boboye Oyeyemi MFR, mni
Corps Marshal and Chief Executive

A. INTRODUCTION

Speed is defined as the rate of change of distance per unit time (1), or distance covered per unit time. It is a scalar quantity which means it has magnitude but not in any specific direction unlike acceleration, a vector quantity which has both direction and magnitude.

The issue of speed has been identified by WHO as a key risk factor in road traffic crashes, influencing both the risk of a crash as well as the severity of the injuries that result from crashes. In fact, WHO and the Global Road Safety Partnership[(2)], recommended that speed limiter be introduced in every country as part of the global strategy to cut down road fatalities. Developed countries such as Canada, United States and Britain have since adopted the compulsory use of speed limiter/governor as a means of eliminating speed related road traffic crashes on their roads.

Excessive speed is defined as exceeding the posted limit or driving too fast under stipulated or normal conditions. Speeding is deemed to have occurred when an individual is travelling above the accepted legal speed limit on any road" [(3)]. Excessive speeding is therefore defined as exceeding the legal and permissible speed limit while inappropriate speed is defined as driving at a speed unsuitable for the prevailing road and traffic conditions. Excess and inappropriate speeds are responsible for a high proportion of the mortality and morbidity that result from road crashes. In some low and middle income countries, speed is estimated to be the main contributory factor to about fifty percent of all crashes. Excessive speed decreases drivers' response time in an event, and may increase the risk of a crash. It equally reduces the ability to manoeuvre safely on the road, and extends the distance necessary to stop a vehicle. This is because, the higher the speed of a vehicle, the longer the time a driver has to stop and avoid a crash.

1. *Galileo Galilei, 1564-1642:*
2. *1; WHO and Global Safety Partnership (2008) –Speed Management: A Road Safety Manual for Decision Makers and Practitioners….*
3. *2. Akande A (2010) Excessive Speed as a Vital Human Factor in Road Traffic Accident.*

The speed of vehicles in relations to certain parameters such as the condition of the road, whether dry or wet, the weight of your vehicle, and the effect of

gradient of the road are related to stopping distances of vehicles. The higher the speed, the heavier the distances of vehicles, the higher the gradient and the wetness of the road surface, the higher the stopping distances and the risk of getting involved in road traffic crashes.

A research conducted by a French Institute APTH (Association pour la Prévention des risques liés aux Transports d'Hydrocarbures) reveal that stopping distance of a vehicle moving at 35 km/ph is 9.7 m and when this speed is doubled, the usual assumption is that the stopping distance is also doubled to 19.4 m. But, in reality the stopping distance is quadrupled at a magnitude of 36.8 m. Wet road surface also present a different scenario on stopping distance as the same vehicle moving at 70 km/ph on dry road has a stopping distance of 36.8 m compared to 71.9 m on wet surface, almost double the distance of dry road. Weight has effect on stopping distance of vehicle. Two vehicles of 1.5 tonnes and 38 tonnes moving at 70 km/ph have a stopping distance of 45.8 m and 71. 9 m respectively, which means the lighter vehicle, of course, has shorter stopping distance. The stopping distance of a vehicle moving at 30 km/ph on 0% gradient is 33m which increased to 56 m on a gradient of 9 % [(4)]. It is evident from the above analysis that bringing a vehicle to stop safely has relationship with the speed of vehicles.

It is worrisome looking at the FRSC RTC data of the year 2012 in Nigeria that shows a total of 14,783 road traffic crashes involving 22,071 vehicles in Nigeria in 2012 that killed 6,573 people and injured 40,683 of which speed violation accounted for the highest causative factor of 35 per cent, followed by loss of control and dangerous driving at 17% each. The other stated leading factors are also speed related.

Also in 2013, analysis of the probable causative factor of Road Traffic Crashes recorded by FRSC revealed that speed violation (SPV) accounted for 32.0% of the total causes. **See Table 1** and **Figure 1**

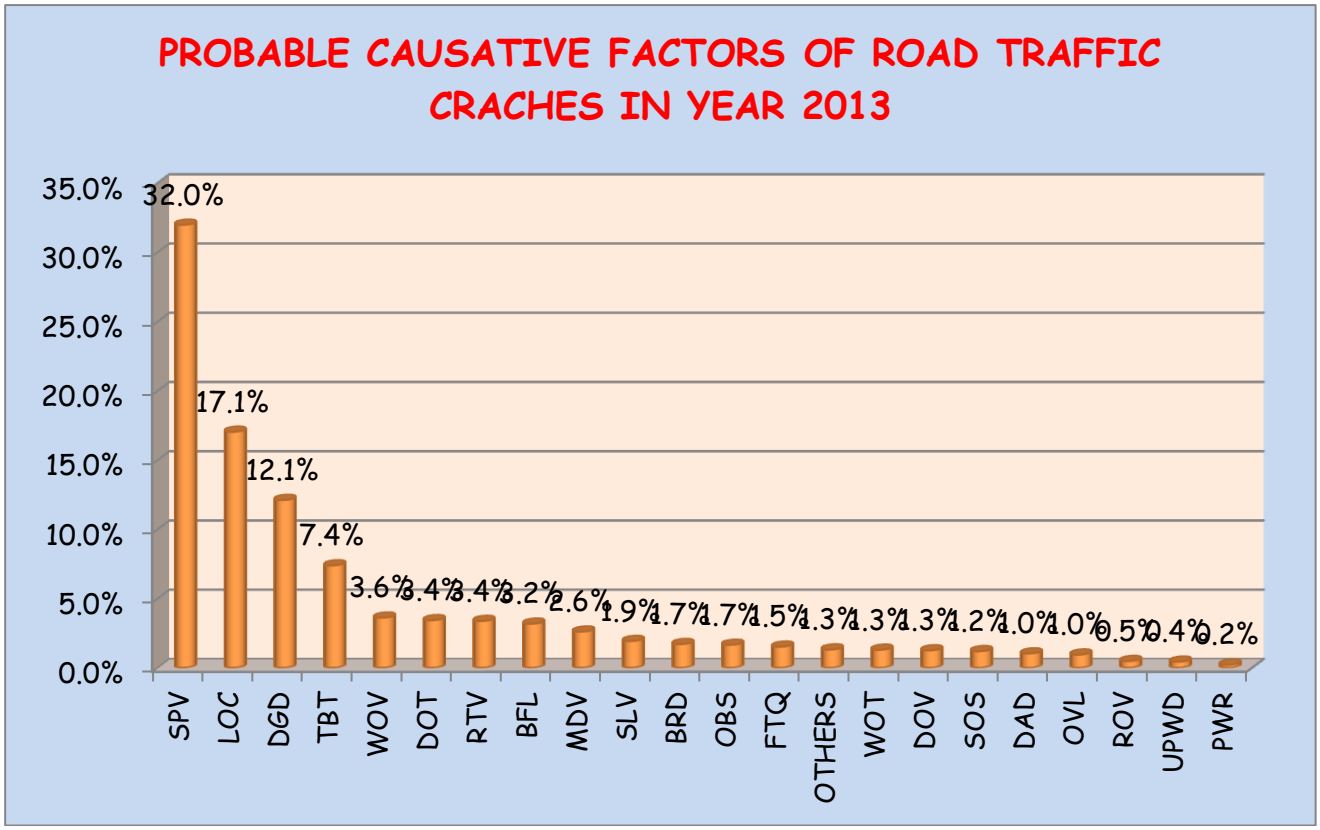
Table 1 PROBABLE CAUSATIVE FACTOR OF RTF IN NIGERIA IN 2013

PROBABLE CAUSATIVE FACTOR		TOTAL	PERCENTAGE
Speed Violation	SPV	5495	32.0%
Loss of Control	LOC	2928	17.1%
Dangerous Driving	DGD	2082	12.1%
Tire burst	TBT	1271	7.4%
Wrongful Overtaking	WOV	623	3.6%
Dangerous Overtaking	DOT	591	3.4%
Routes Violation	RTV	582	3.4%
Brake Failure	BFL	548	3.2%
Mechanically Deficient Vehicle	MDV	450	2.6%
Sign Light Violation	SLV	333	1.9%
Bad Road	BRD	295	1.7%
Obstruction	OBS	286	1.7%
Fatigue	FTQ	263	1.5%
OTHERS	OTH	228	1.3%
Wrongful Overtaking	WOT	225	1.3%
Dangerous Overtaking	DOV	217	1.3%
Sleeping on Steering	SOS	207	1.2%
Driving under the influence of Alcohol	DAD	179	1.0%
Overloading Violation	OVL	165	1.0%
Route Violation	ROV	85	0.5%
Use of Phone While Driving	UPWD	77	0.4%
Poor Weather	PWR	40	0.2%
TOTAL		**17170 ***	**100.0%**

SOURCE: FRSC (Annual Report 2013)

** Please note that some crashes were as a result of multiple factors*

Figure 1



SOURCE: FRSC (Annual Report 2013)

Federal Road Safety Corps in Nigeria has been making concerted efforts toward reduction of excessive speed on the roads. To mitigate the growing trend of speed consequences which has dominated our country's RTC data, FRSC Nigeria initiated the use of speed governors/limiters by all commercial vehicles. As an evident based organisation, the survey on the speed of vehicles on the road becomes imperatives, hence this research.

B. AIM AND OBJECTIVES

i. AIM

The aim of the research is to conduct a survey of the average speed of various categories of vehicles on some Nigerian roads for informed intervention on reducing speed induced crashes on Nigeria roads.

ii OBJECTIVES

The objectives are:

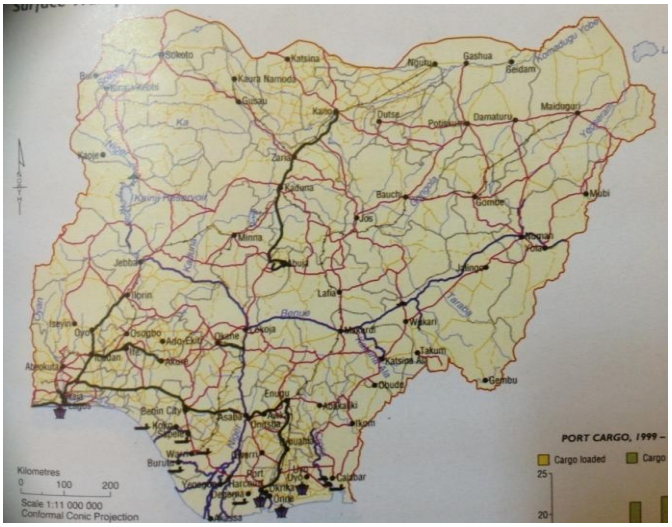
- To ascertain the speeds of vehicles on certain Nigerian roads at different times of the day.
- To ascertain the level of compliance by the drivers to legal speed limits.
- To evolve strategies that will force down speed and consequently reduce speed induced crashes on the roads.

C. THE STUDY AREAS

The survey was conducted on five (5) major routes namely:

- Lagos-Ibadan Expressway,
- Abuja-Lokoja Expressway,
- 9th Mile-Obollo Afor Highway,
- Benin-Asaba-Onitsha Expressway and
- Akwanga-Lafia Highway.

NIGERIAN MAP SHOWING THE ROADS



- FIGURE 1

i. LAGOS – IBADAN EXPRESSWAY

The Lagos – Ibadan expressway unarguably is one of the busiest roads in Nigeria. The 127.6 km road was the first intercity dual carriageway in Nigeria. The road was commissioned in August 1978. Presently, the road has undergone series of remedial works and rehabilitation but lacked major maintenance since the construction about thirty four years ago. However, the highway is undergoing a total reconstruction costing the Federal Government of Nigeria a whopping sum of 167 billion naira (about $1 billion US Dollars).

The road currently is sub- divided into two sections. The first section is an Expressway from old toll gate of Oregun Motorway/Ikosi, Ketu in Lagos State to Shagamu interchange in Ogun State. The length of this section is 43.6 km. The second section is also an Expressway from Shagamu end in Ogun State to Ojo in Oyo State. The total length of this portion is 84 km.

The Lagos Ibadan expressway is one of the most important access road in Nigeria linking the economic nerve centre of Nigeria to various other States of the Federation. From the Lagos- Shagamu exit, it links the southeast, South-south and middle belt of Nigeria. On the other hand, from the Ibadan axis it links the

Northern parts of Nigeria through Oyo State to Kwara, Niger, Kaduna, Kano etc. The road played a significant role in the economic development of Nigeria for movement of goods from the coastal city of Lagos to the hinterland States.

ii ABUJA – LOKOJA EXPRESSWAY

The Abuja – Lokoja expressway is a 200 km road which is important to the socio economic development of the country. The road which before the commencement of the on-going dualisation work was a single lane before it was awarded by the Federal Government of Nigeria in 2006. The road is characterized by high traffic density, gridlocks and excessive speed by the commuters usually leading to reported cases of road traffic crashes.

The road links the northern and the southern-eastern and western region of Nigeria through the confluence of the Kogi state to Edo, Benue, Ondo, Osun, Enugu and Lagos to the South and also links the Northern states of Niger, Kaduna, Kano and Katsina to the North west and the North central state of Nigeria.

The initial construction of the road was completed during the administration of General Murtala Mohammed, which has undergone remedial and partial construction. The road crosses on the river Benue at Lokoja, in Kogi State on a stretch of length of about 500 meters known as the Murtala Mohammed Bridge. The road witness high traffic volume of various categories of vehicles such as articulated vehicles and other commuters.

Presently, the road is under construction of major rehabilitation with the transformation of the road from the initial single lane to a dual carriageway, which is billed for completion before the end of year 2014.

iii. 9TH MILE -OBOLLO-AFOR HIGHWAY

The 9th Mile-Obollo-Afor Highway links the Eastern region of the country to the North central region. The route by extension criss-crosses through major towns like Enugu, Nsukka, Otukpa, Oturkpo and Makurdi, Benue state on one hand and Enugu, Nsukka, Ejule, Ayingba and Lokoja, Kogi state on the other hand.

The 98 km road is important to the country because of its contribution to the economy by serving as a link for businessmen and women to transport their goods from the East to the North central and vice-versa. Furthermore, during the

yuletide season, this road suffers from heavy gridlock because of the dire need of commuters to transport themselves or their goods.

iv. BENIN ASABA –ONITSHA

The Benin-Asaba-Onitsha expressway is one of the oldest and busiest highways which links the Eastern parts of Nigeria with the South- East, South- South, South-West and the North central geographical zones of Nigeria. The highway is the predominant routes for all businesses between the East and other parts of Nigeria.

The road which was constructed during the mid western region in the early period of 1970's transverses many busy junctions especially at Onicha –Ugbo, Issele Uku Issele Azagba and Ibusa junction at Asaba. Pedestrians experience a lot of inherent dangers and difficulties crossing from one side of the road to the other due to heavy traffic on this expressway, high traffic volume and excessive speed of commuters, as there are no crossing facilities such as the overhead bridges or subways. The volume of traffic on these points is so heavy that fatal RTC involving commuters trying to cross the road have been recorded in recent times.

v. AKWANGA – LAFIA

The Akwanga – Lafia expressway is a 60 km section of the 210 km extended Keffi-Akwanga-Lafia-Makurdi road. The route is located within the North Central states of Nasarawa and Benue and it links the North Central region to the South East through Enugu state. The route tranverses several Local Government Areas within these three (3) states as well as some important towns and settlements which are mainly agricultural/ rural areas. The Akwanga –Lafia road, before the present re-construction efforts by the Federal Government was generally in bad shape with frequent pavement distress, potholes, cracks, ruts, edge failure and erosion.
Also, the traditional highway furniture such as Road Markings and other signs for proper direction of traffic are not common on the route. While the few ones provided along the roads are either in poor condition or inscriptions had faded off.

The existing carriageway of the route is 7.30m wide and the width of existing shoulders varied from 1.20m to 1.5m (of the required width of 2.75m).
The RTCs record on this route for January 2013, revealed that a total of 8 crashes occurred, involving 39 persons, with 16 persons injured and 2 killed. Different reasons had been adduced for these crashes, but one critical point of reference on this route is a point located between Akwanga and Nassarawa Eggon, popularly referred to as " *Many have Gone*". This black spot which is dreaded by drivers is a sharp bend, sided by deep ditches to the left and right. The road surface is undulating, hence, any little mistake or loss of concentration on the steering can lead the vehicle veering off the road into the ditch.

D. METHODOLOGY

Radar guns were deployed to measure the speed of vehicles on both directions of traffic in all the selected routes. Bicycles, motorcycles, and tricycles were excluded from the speed surveys as they were not expected to be on dual carriageways and also on fast moving traffic highways. During the study, the speed of every tenth vehicle was captured. In the end, data from all the routes were collated, processed and analysed using statistical software applications like SPSS and Microsoft excel. Simple descriptive statistics which includes the use of graphs and charts were also employed in the analysis.

E. CHALLENGES

- There were cases where some vehicles were speeding above 160km/hr making it difficult to read the number plates of such vehicles.
- There were also the issues of number plates of vehicles being worn out and could not be read.
- The survey was also limited due to the fact that the exercise took place only during the day between 0700 – 1800 hours, as it was the handheld radars that were deployed and security challenges in the night could not permit a 24 hour survey.
- Above challenges notwithstanding, the surveys were successfully carried out to meet the major aims and objectives of the study.

F. ANALYSIS

A total of 7,339 vehicles were captured during the exercise, with 1,025 vehicles on Lagos -Ibadan being the least. Akwanga- Lafia had the highest number of vehicular speed captured with 1,867 vehicles, followed by 9th Mile- Obollo- Afor with 1,763 vehicles and Benin-Asaba road 1,581 vehicles. 1,103 vehicles had their speed recorded on Abuja-Lokoja road (See Table 2 & Figure 3).

On all the routes, cars dominated with 61% of the total vehicles recorded, followed by buses with 27%. Trailers and Trucks accounted for 5% while articulated vehicles comprising of tankers (1%) and trailer (4%) also had low records. Luxury buses accounted for only 1% of all the vehicles captured (See Table 2, Figures 3&4).

E. ANALYSIS

Table 2 ANALYSIS ON ALL ROUTES

TOTAL VEHICULAR MOVEMENTS CAPTURED ON ALL ROUTES

TOTAL VEHICULAR MOVEMENTS									
ROUTES	PRIV BUSES	COMM BUSES	PRI CARS	COMM CARS	LUXURY BUSES	TANKERS	TRAILERS	TRUCKS	TOTAL
Lagos-Ibadan	35	194	484	102	5	39	38	128	1,025
Abuja-Lokoja	284	205	562	127	1	17	77	35	1,103
9th Mile-Obollo-Afor	723	600	622	177	3	4	126	108	1,763
Benin-Asaba Onitsha	476	380	770	148	49	25	49	64	1,581
Akwanga-Lafia	276	189	1,139	373	0	8	23	48	1,867
TOTAL	1,988	1,568	3,577	927	58	93	313	383	7,339
PERCENTAGE	27.1	21.4	48.7	12.6	0.8	1.3	4.3	5.2	

FIG. 3

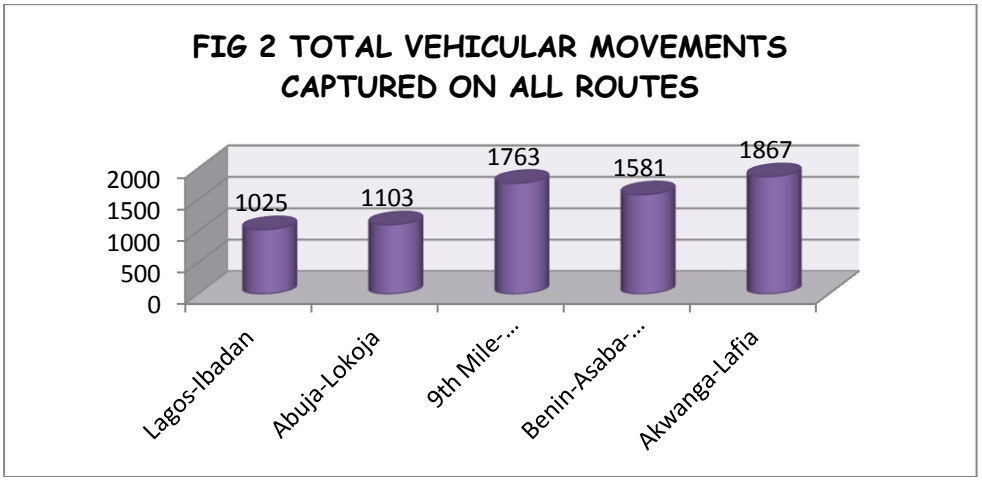
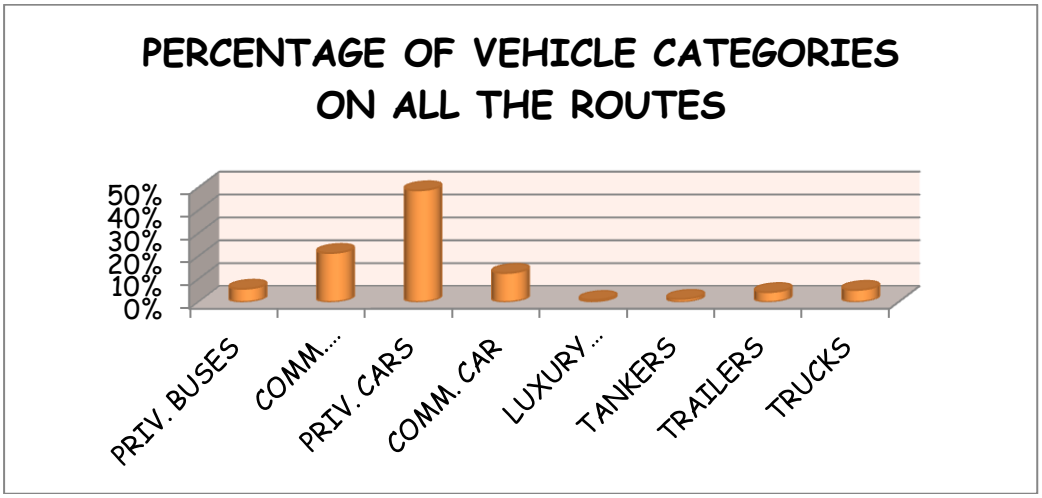


FIGURE 4



This is also in line with the general traffic movement on the road as a road traffic count survey carried out earlier between the hours of 0700-1800 hours on the road reflected the following as reflected on table 3. Total traffic volume recorded during the count was 61,060.

TABLE 3 TRAFFIC VOLUME OF CATEGORIES OF VEHICLES IN EACH ROUTE

ROUTE	BICYCLE	% OF VEH. CATEGORY	M/CYCLE	% OF VEH. CATEGORY	TRICYCLE	% OF VEH. CATEGORY	PRI. CAR	% OF VEH. CATEGORY	TAXI	% OF VEH. CATEGORY	P/ UP	% OF VEH. CATEGORY
LAGOS-IBADAN	16	0.06	308	1.12	4	0.01	9027	32.96	881	3.22	1,580	5.77
9TH MILE - OBOLLO AFOR	3	0.09	256	8.17	8	0.25	826	26.36	100	3.19	251	8.00
ABUJA-LOKOJA	9	0.12	806	11.54	69	0.99	1848	26.45	1,115	15.96	445	6.37
BENIN-ASABA	0	0.00	95	1.52	43	0.69	1333	21.37	813	13.03	297	4.76
AKWANGA - LAFIA	254	1	3,689	21		0	3,468	20	1,765	10	2551	15
TOTAL	**281**		**5,154**		**124**		**16,502**		**4,674**		**5,124**	

Bicycle and motorcycles are not expected on expressways, but because of the location of the settlements along the routes with no strict enforcement of the restrictions, motorways and bicycles do use the expressways.

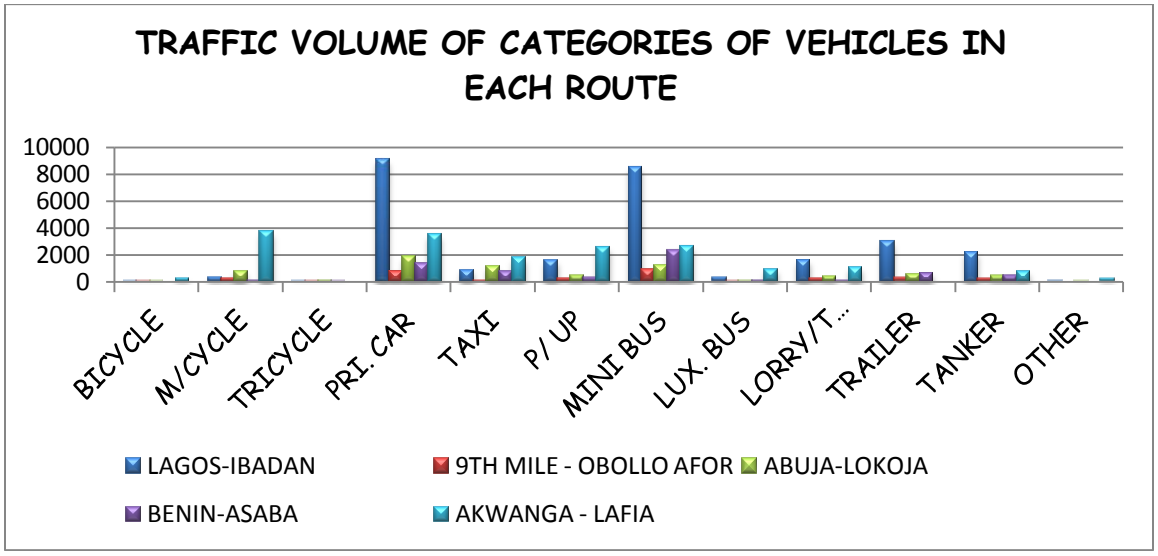
TABLE 3 CONTINUED

ROUTE	MINI BUS	% OF VEH. CATEGORY	LUX. BUS	% OF VEH. CATEGORY	LORRY/TRUCK	% OF VEH. CATEGORY	TRAILER	% OF VEH. CATEGORY	TANKER	% OF VEH. CATEGORY	OTHER	% OF VEH. CATEGORY	TOTAL
LAGOS-IBADAN	8492	31.01	280	1.02	1599	5.84	2977	10.87	2173	7.93	49	0.18	**27386**
9TH MILE - OBOLLO AFOR	909	29.02	32	1.02	256	8.18	267	8.53	225	7.19	0	0.00	**3132**
ABUJA-LOKOJA	1215	17.39	58	0.83	399	5.70	605	8.66	411	5.88	7	0.10	**6987**
BENIN-ASABA	2328	37.30	95	1.52	105	1.68	686	11.00	445	7.13	0	0.00	**6240**
AKWANGA - LAFIA	2662	15	906	5	1061	6		0	765	4	194	1	**17315**
TOTAL	15606		1371		3420		4536		4019		250		61060

Source: FRSC

FIG. 4b

TRAFFIC VOLUME OF CATEGORIES OF VEHICLES IN EACH ROUTES



AVERAGE SPEED ON ALL ROUTE SAMPLED

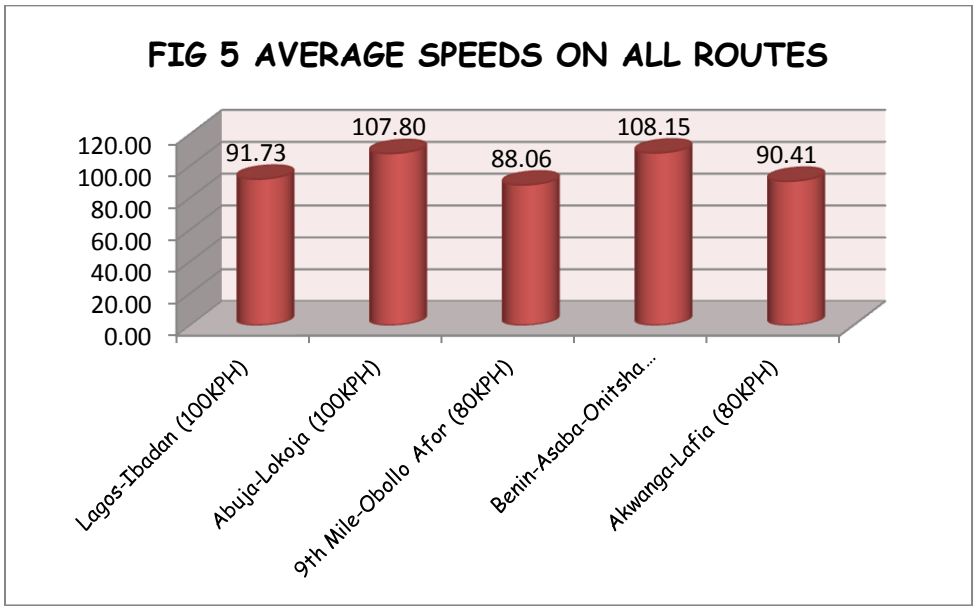
The speed recorded for each vehicle was aggregated to arrive at the total speed for the road and average speeds per vehicle on all the roads were computed (see Table 4 and Figure 5).

A total of 707, 955 Km/ph for 7339 vehicles were recorded, with an average speed of 96.46 km/h. The highest of 108.5 km/ph (Kilometre per hour) was recorded on Benin–Asaba- Onitsha road, followed by Lokoja – Abuja road with 107.8 km/h. Lagos- Ibadan and Akwanga -Lafia recorded 91.73 km/h and 90.41

kmph respectively. It is noteworthy that Lokoja -Abuja road is still a single carriageway road in some parts as the other carriageway is under construction while 9th Mile-Obollo- Afor and Akwanga- Lafia are also single carriageways with the prescribed speed limit being 80 km/ph; hence the average speed were higher than the national legal speed limits on the roads. Lagos-Ibadan and Benin-Asaba - Onitsha routes are dual carriageway, but the roads, especially Lagos- Ibadan are not in ideal good conditions, so the speed recorded on the average, though slightly lower than the national legal speed limit of 100 kmph are still high and dangerous under the prevailing conditions.

TABLE 4
AVERAGE SPEED ON ALL ROUTES

ROUTES	NO OF VEHICLES	PERCEN TAGE	TOTAL SPEEDS	AVERAGE SPEED/ VEHICLE
LAGOS- IBADAN	1,025	14%	94,024	91.73
ABUJA-LOKOJA	1,103	15%	118,907	107.80
9TH MILE-OBOLLO AFOR	1,763	24%	155,247	88.06
BENIN ASABA ONITSHA	1,581	22%	170,986	108.15
AKWANGA LAFIA	1,867	25%	168,791	90.41
TOTAL	7,339	100%	707,955	96.46



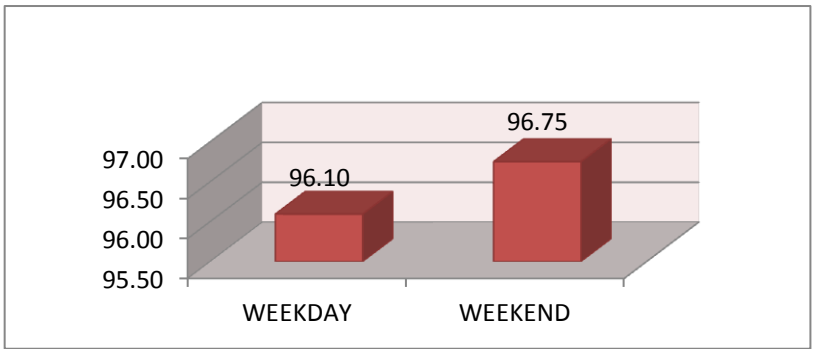
AVERAGE SPEED ON WEEKDAYS AND WEEKENDS

Four days of the week, Thursday, Friday, Saturday and Sunday were considered in the research to capture the situation during the weekdays and weekends. It was however revealed that there was no major difference in speed of the vehicles during the period as 96.10 km/ph average speed was recorded for weekdays, while 96.75 km/ph was captured for the weekends (see table 5 and figure 6)

TABLE 6
AVERAGE SPEED ON WEEKDAY AND WEEKEND ON ALL ROUTES

PERIOD	NO OF VEHICLES	PERCENTAGE	TOTAL SPEED (Km/hr)	AVERAGE SPEED (Km/hr)
WEEKDAY	3,222	44%	309,620	96.10
WEEKEND	4,117	56%	398,335	96.75
TOTAL	7,339	100%	707,955	96.46

FIG. 6
AVERAGE SPEED ON WEEKDAY AND WEEKENDS IN ALL ROUTES



TIME OF THE DAY SPEED

The survey was between 0700hours and 1900 hours. The speed were relatively high in the morning hours as 99.47 km/h on the average was recorded for the period 0700-0900 hours, while 18% of the vehicles captured were on the road. 97.04 kmph was recorded for 0901 -1100 hours. Though, the percentage of vehicles captured rose to 21%. There was a drop of speed to 95.09 kmph and the vehicular traffic to 15 % between the hours of 1101hrs -1300hrs. Vehicle volume increased to 20% between 1301 hours and 1500 hours and the speed also went up to 97.43 km/h, the next highest in terms of speed after 0700hrs and 0900 hours. Traffic

volume was still high between 1501 hours and 1700 hours with 18% and the speed also high at 95.42 km/h. After 1700 hours, traffic volume drastically dropped to 8% but with little decline in speed from 95.42km/h to 90.79 km/h (see table 6 and figure 7)

TABLE 6:
AVERAGE SPEED ON TIME BASIS ON ALL ROUTES

TIME	NO OF VEHICLES	PERCENTAGE	TOTAL SPEED (Km/hr)	AVERAGE SPEED (Km/hr)
0700HRS-0900HRS	1,326	18%	131,903	99.47
0901HRS-1100HRS	1,528	21%	148,280	97.04
1101HRS-1300HRS	1,106	15%	105,171	95.09
1301HRS-1500HRS	1,457	20%	141,958	97.43
1501HRS-1700HRS	1,329	18%	126,807	95.42
1700HRS- 1900 HRS	593	8%	53,836	90.79
TOTAL	7,339	100%	707,955	96.46

FIGURE 7
AVERAGE SPEED ON TIME BASIS ON ALL ROUTES

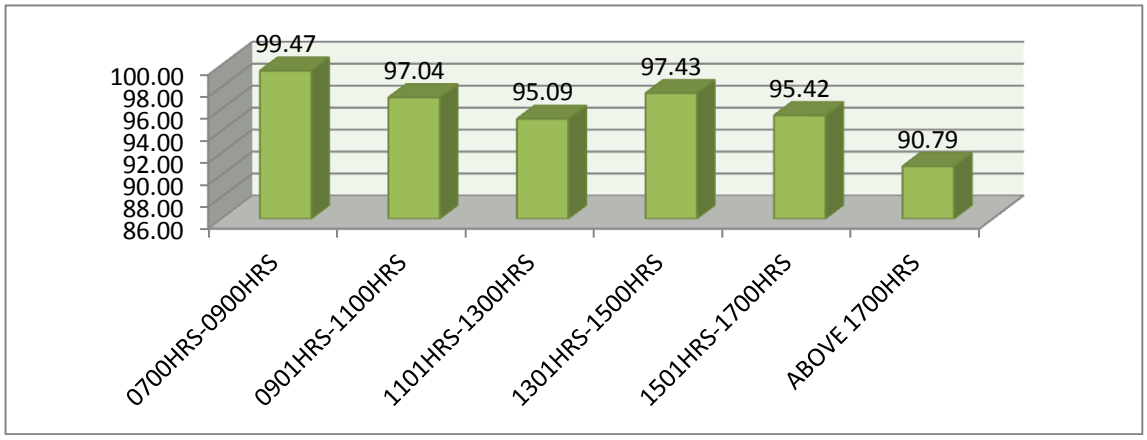


TABLE 7

CATEGORIES OF SPEED OF VEHICLES ON ALL ROUTES

	LESS THAN 60		61-70		71-80		81-90		91-100		101-110		111-120		ABOVE 120	TOTAL		
TIME	NO OF VEH	%	NO OF VEH	%	NO OF VEH	%	NO OF VEH	%	NO OF VEH	%	NO OF VEH	%	NO OF VEH	%	NO OF VEH	%	NO OF VEH	%
0700HRS-0900HRS	45	3.4%	57	4.3%	129	9.7%	173	13.0%	258	19.5%	261	19.7%	261	19.7%	142	10.7%	1,326	100%
0901HRS-1100HRS	57	3.7%	92	6.0%	147	9.6%	230	15.1%	285	18.7%	364	23.8%	219	14.3%	134	8.8%	1,528	100%
1101HRS-1300HRS	52	4.7%	73	6.6%	124	11.2%	185	16.7%	200	18.1%	219	19.8%	177	16.0%	76	6.9%	1,106	100%
1301HRS-1500HRS	61	4.2%	83	5.7%	138	9.5%	219	15.0%	276	18.9%	307	21.1%	223	15.3%	150	10.3%	1,457	100%
1501HRS-1700HRS	61	4.6%	98	7.4%	157	11.8%	230	17.3%	237	17.8%	220	16.6%	205	15.4%	121	9.1%	1,329	100%
1700HRS-1900HRS	22	3.7%	59	9.9%	90	15.2%	130	21.9%	127	21.4%	87	14.7%	49	8.3%	29	4.9%	593	100%
	298		462		785		1167		1383		1458		1134		652	8.88%	7,339	

Table 7 provides further insights into the speed of vehicles at different times of the day. On the whole, a total of 652 vehicles, representing 8.88% were driven above 120 kmph. 142 vehicles out of the total of 1,326 vehicles representing 10.7% were captured above 120 km/h between 0700 hours -0900 hours. 134 vehicles out of 1,528 i.e. 8.8% between 0901 and 1100hours, 76 out of 1,106 which is 6.9% during the 1101-1300 hours and 150 out of 1,457 (10.3%) between 1,301 and 1,500 hours; 121 (9.1%) out of 1,329 for 1501 and 1700 hours and 29 (4.9%) out of 593 after 1700 hours (see table 7 &8)

More vehicles were driven between 111 and 120 kmph brackets. 261 (19.7%) out of 1,326 for 0901-1100 hours belt. 177 (16.0%) out of 1106 for the period between 1,101 and 1300 hours, 223 of the captured vehicles 1,457 which is 15.3 % for the period between 1301 and 1500 hours. 15.4% (205) of the total vehicles of 1,329 captured during the 1501 -1700 hours were at speed between 111 and 120 km/ph. 49 vehicles that is 8.3% of 593 vehicles also captured between 111 and 120km/ph.
The survey revealed that a total of 3,244 vehicles, which is 44.2 % of total 7,339 vehicles were driven above the national speed limit of 100 km/ph.
664 out of 1,326, which is 50% of the vehicles were driven above the national speed limit between 0700 and 0900 hours, while 46.92% were above the speed limit between 0901 and 1100 hours.
472 of 1,106 vehicles, that is, 42.68% were above the national speed limit between 1100 and 1300 hours.
680 out of the 1,457 which is 46.67% of the vehicles that were considered between 1301 and 1500 hours were above the national speed limit, while 546 of 1,329 vehicles, which is 41.08% for a period between 1501 and 1700hrs were above 100km/ph. 165 of 593 vehicles captured after 1700hrs which is 27.82% were above the national speed limit (See Fig 8, 9 and 10).

FIG 8

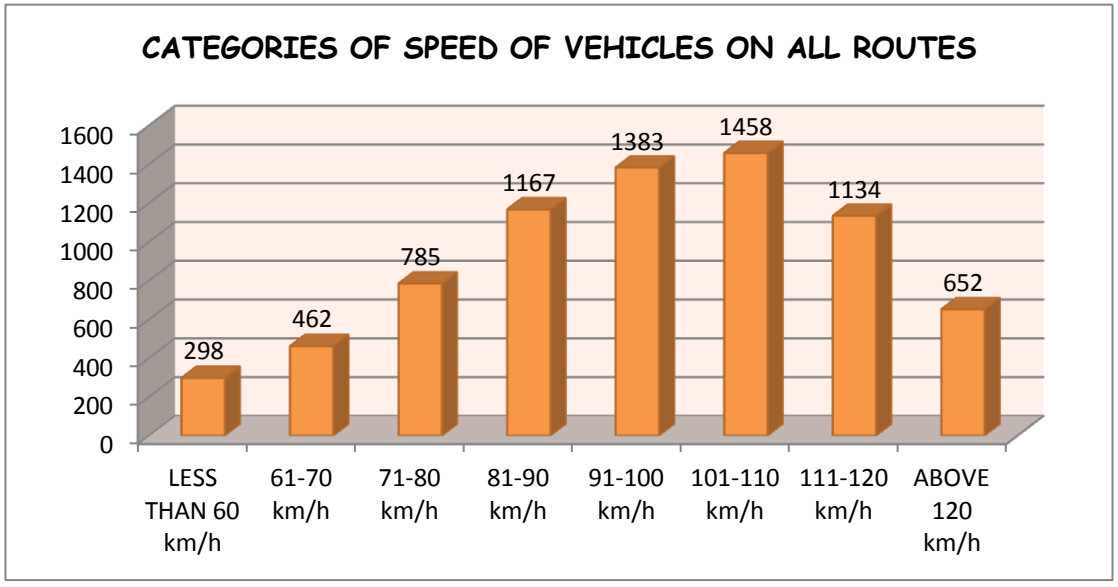


TABLE. 7b
VEHICLES DRIVEN BELOW AND ABOVE THE 100 KMPH

ALL VEHICLES ABOVE 100 KMPH	ALL VEHICLES BELOW 100 KMPH
3,244	4,095

FIG 9

VEHICLES DRIVEN BELOW AND ABOVE THE 100 KMPH

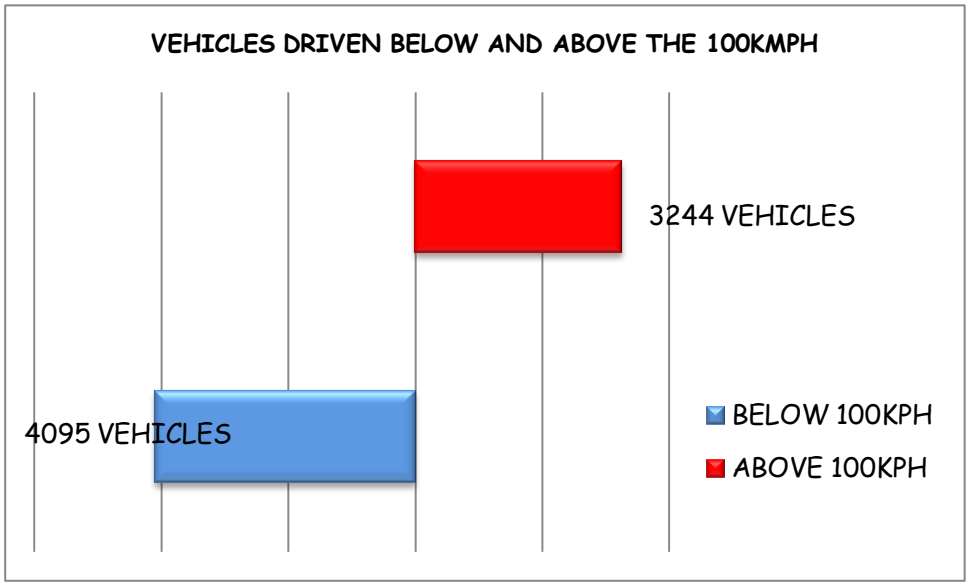
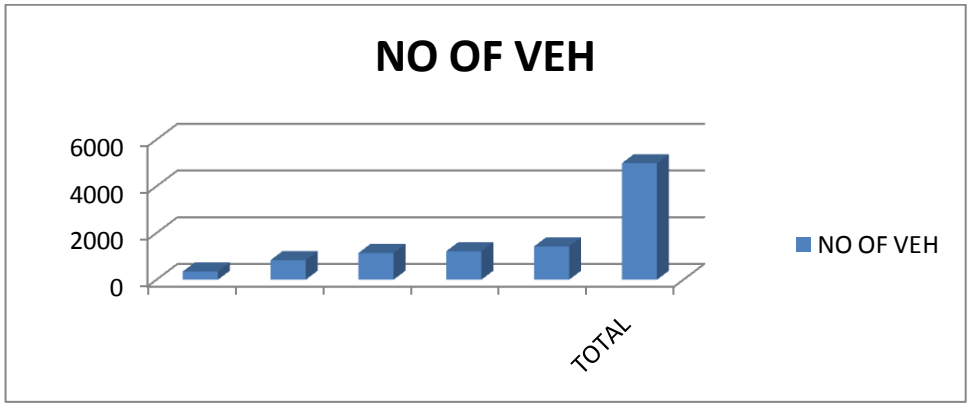


FIG. 10

PERCENTAGE OF VEHICLES THAT VIOLATED THEIR SPEED LIMITS



VIOLATION OF SPEED LIMITS

Based on the speed limits of each route, a total number of 4991 vehicles, which is 68%, violated the speed limits. The breakdown is as shown in Table 8a

TABLE 8a VIOLATION ON SPEED LIMITS

ROUTE	SPEED LIMIT (Km/hr)	TOTAL VEHICLES	VEHICLE ABOVE SPEED LIMITS (Km/hr)	% VEHICLES ABOVE SPEED LIMIT (Km/hr)
LAGOS – IBADAN	100	1025	354	34.54%
ABUJA – LOKOJA	100	1103	842	73.34%
9TH MILE – OBOLLO AFOR	80	1763	1146	65%
BENIN-ONITSHA	100	1581	1222	77.35%
AKWANGA- LAFIA	80	1867	1427	76.43%
TOTAL		7339	4991	68%

TABLE. 8b
AVERAGE SPEED ON ALL ROUTES

ROUTES	SPEED LIMIT ON ROUTE (Km/hr)	AVERAGE SPEED/VEHICLE	% SPEED ABOVE LIMIT
LAGOS- IBADAN	100	91.73	-9.73%
ABUJA-LOKOJA	100	107.80	7.80%
9TH MILE-OBOLLO- AFOR	80	88.06	88.06%
BENIN-ASABA- ONITSHA	100	108.15	8.15%
AKWANGA -LAFIA	80	90.41	13.0%
TOTAL			

CATEGORY OF VEHICLES

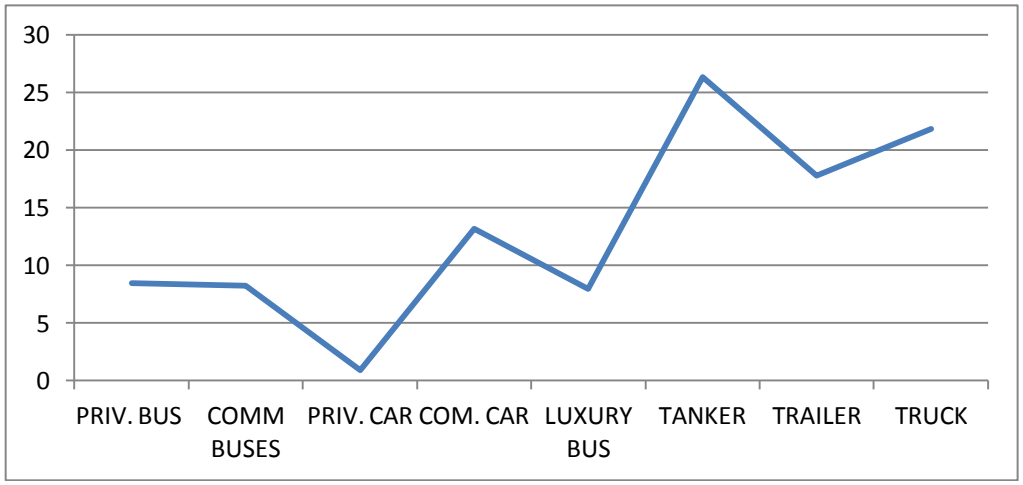
Table 8 is on the average speed based on the categories of vehicles. The average speed of buses was 98.30kph instead of the legal speed limits of 90kph for the expressway and 80kph for single-carriageway. Cars recorded average speed was 100.14 instead of 100kph for the dual carriageway and 80kph for single carriageway. Luxury buses average was 97.97 kmph instead of 90kph and 80kph for expressway and dual carriageway respectively. Tankers had 76.35kph average speed instead of 50 kmph. Trailers (Articulated) had 67.80 kmph instead of 50

kmph and Truck had 71.81kph instead of the prescribed 60 kmph speed limits (See Table 9 and figure 10).

TABLE 9- AVERAGE SPEED ON VEHICLE CATEGORY IN ALL ROUTES

VEHICLE CATEGORY	NO OF VEHICLES	PERCENTAGE	TOTAL SPEED	AVERAGE SPEED (Km/hr)	SPEED LIMIT	% ABOVE LEGAL LIMITS	%
PRIV. BUS	421		41,464	98.48	90	8.48	9.42%
COMM BUSES	1,567		153,947	98.24	90	8.24	9.15
PRIV. CAR	3,577	%	361,061	100.9	100	0.9	0.9%
COM. CAR	927	%	80,502	86.84	100	13.16	13.16%
LUXURY BUS	58	1%	5,682	97.97	90	7.97	8.85
TANKER	93	1%	7,101	76.35	90	26.35	52.7
TRAILER	313	4%	21,222	67.80	50	17.80	35.6
TRUCK	383	5%	27,502	71.81	50	21.81	43.6
TOTAL	7,339	100%			50		

FIGURE 11 AVERAGE SPEED ON VEHICLE CATEGORY IN ALL ROUTES



COMMERCIAL AND PRIVATE VEHICLES

Buses (mini and luxury) Articulated vehicles (Tankers and Trailers), Trucks (light good vehicles) and 21 % of the cars surveyed is considered as commercial vehicles. From the survey findings

F. ANALYSIS ON ROUTE BASIS

Situation on speed of vehicles on each route were also captured and analysed for better understanding. These are discussed below:

(a) LAGOS – IBADAN EXPRESSWAY

The road recorded higher speed on weekend with an average speed of 93.85 kmph as against 89.31 kmph for week days. The average speed for the road is 91.73 kmph. (See Table 9 & Figure 10) Though the maximum speed limit permitted on the road is 100 kmph. The speed is expected to be covered as the road presently is not in good condition and there is a lot of construction on the road.

TABLE 10
AVERAGE SPEED ON WEEKDAY AND WEEKEND ON LAGOS - IBADAN

PERIOD	NO OF VEHICLES	PERCENTAGE	TOTAL SPEED (Km/hr)	AVERAGE SPEED (Km/hr)
WEEKDAY	478	47%	42,690	89.31
WEEKEND	547	53%	51,334	93.85
TOTAL	1,025	100%	94,024	91.73

FIG. 12
AVERAGE SPEED ON WEEKDAY AND WEEKEND

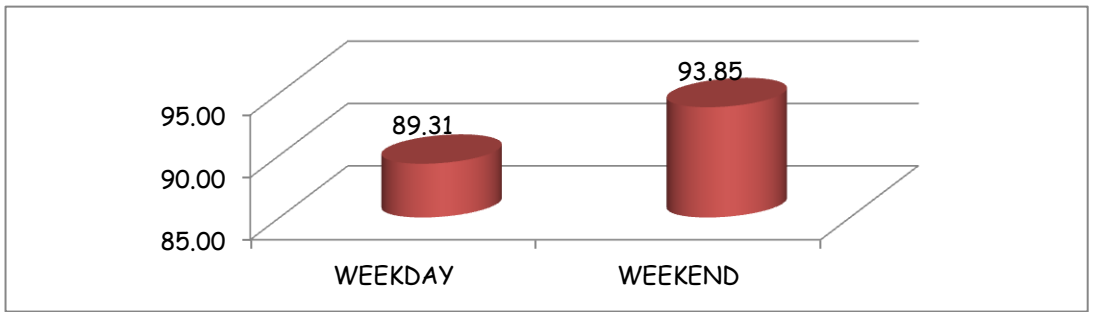
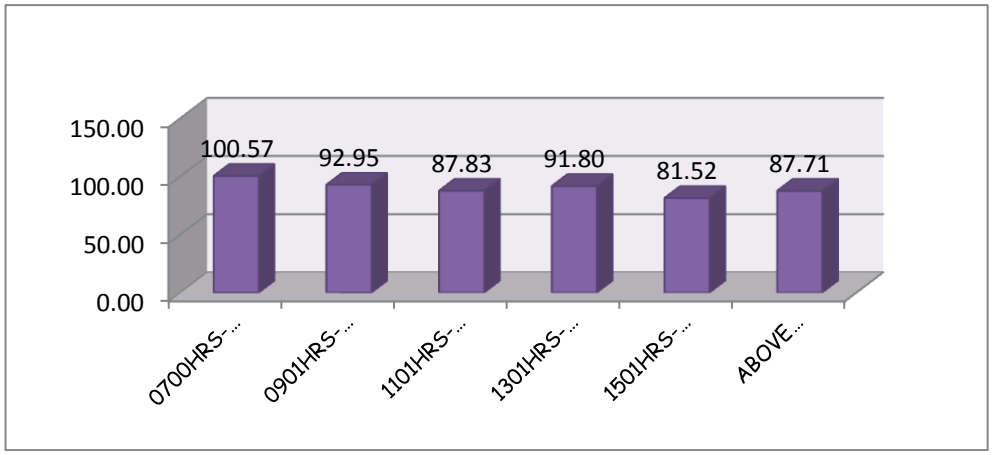


TABLE 11
AVERAGE SPEED ON TIME BASIS

TIME	NO OF VEHICLES	PERCENTAGE	TOTAL SPEED (Km/hr)	AVERAGE SPEED (Km/hr)
0700HRS-0900HRS	192	19%	19,309	100.57
0901HRS-1100HRS	324	32%	30,116	92.95
1101HRS-1300HRS	65	6%	5,709	87.83
1301HRS-1500HRS	196	19%	17,992	91.80
1501HRS-1700HRS	138	13%	11,250	81.52
ABOVE 1700HRS	110	11%	9,648	87.71
TOTAL	1,025	100%	94,024	91.73

FIGURE 13
AVERAGE SPEED ON TIME BASIS ON LAGOS- IBADAN



The highest average speed of 100.57 kmph was recorded between 0700 and 0900 hours. This was followed by 0901-1100 hours with 92.95 kmph which dropped to 87.83 in the following two hours and subsequently rose again to 91.80 kmph

between 1301 hours and 1500 hours. 1501-1700 hours had the lowest figure of 81.52 kmph and this again increased to 87.71 kmph.

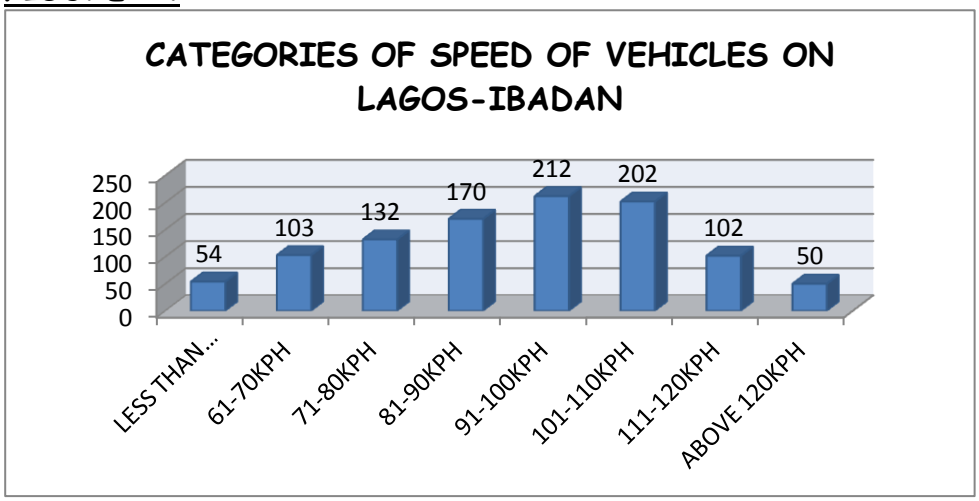
A total of 50 vehicles out of the total of 1,025 vehicles captured on radar on the Lagos – Ibadan expressway, which represent 4.8% were driven above 120 kmph, 102 Vehicles (9.95%) were caught between 111 and 120 kmph, while 202 (19.7%) were on speed varying between 101 and 110 kmph. So, a total of 354 vehicles out of the total of 1,025 vehicles surveyed violated the speed limit of 100 kmph maximum. (See Table 12 and Figure 14)

TABLE 12

CATEGORIES OF SPEED ON TIME BASIS (LAGOS –IBADAN)

	LESS THAN 60KPH		61-70KPH		71-80KPH		81-90KPH		91-100KPH		101-110KPH		111-120KPH		ABOVE 120KPH		TOTAL	
TIME	NO OF VEH	%	NO OF VEH	%	NO OF VEH	%	NO OF VEH	%	NO OF VEH	%	NO OF VEH	%	NO OF VEH	%	NO OF VEH	%	NO OF VEH	%
0700HRS-0900HRS	2	0.01	7	0.036	11	0.057	26	0.135	47	0.245	49	0.255	34	0.177	16	0.083	192	1
0901HRS-1100HRS	17	0.052	35	0.108	35	0.108	47	0.145	62	0.191	71	0.219	33	0.102	24	0.074	324	1
1101HRS-1300HRS	7	0.108	7	0.108	6	0.092	12	0.185	14	0.215	15	0.231	3	0.046	1	0.015	65	1
1301HRS-1500HRS	8	0.041	13	0.066	27	0.138	40	0.204	46	0.235	40	0.204	17	0.087	5	0.026	196	1
1501HRS-1700HRS	16	0.116	28	0.203	31	0.225	22	0.159	18	0.13	12	0.087	8	0.058	3	0.022	138	1
1700HRS-1900HRS	4	0.036	13	0.118	22	0.2	23	0.209	25	0.227	15	0.136	7	0.064	1	0.009	110	1
TOTAL	52	0.363	103	0.639	132	0.815	170	1.037	212	228.76	202	1.915	102		50		1,025	

FIGURE 14



AVERAGE SPEED ON VEHICLE CATEGORY ON LAGOS –IBADAN

There were serious violations of speed limits regulations while considering the average speed of all categories of vehicles. The average captured speed for buses was 95.05 kmph as against the permissible 90Kmph. Cars recorded average speed of 97.60 kmph which is lower than the legal maximum speed limit of 100 km/ph. Luxury buses average speed limit of 102.60 is higher than the legal limit of 90 kph, tankers were also moving faster at 73.03 km/hr than the 60 km/hr limit, while trailers also violated the 60 kph speed limit as they were captured on 70.13 kmph average of 70.60 kph instead of the 60 kph speed restriction imposed on trucks (see table 13 and figure 15 and 16a).

TABLE 13
AVERAGE SPEED ON VEHICLE CATEGORY ON LAGOS IBADAN EXPRESSWAY

VEHICLE CATEGORY	NO OF VEHICLES	PERCENTAGE	TOTAL SPEED	AVERAGE SPEED (Km/hr)	MAX SPEED LIMIT (Km/hr)	% ABOVE LIMIT
BUS (PRIVATE)	35	3.41	3231	92.3	90	2.56%
BUSES (COMMERCIAL)	194	18.92	18,536	95.55	90	6.17%
CAR/ COMMERCIAL	102	9.95	9,576	93.88	90	4.31%

CARS PRIVATE	484	47.21	47,618	98.38	100	-1.62%
LUXURY BUS	5	0.5%	513	102.60	90	14%
TANKER	39	3.8%	2,848	73.03	60	21.72%
TRAILER	38	3.7%	2,665	70.13	60	16.88%
TRUCK	128	12.5%	9,037	70.60	60	17.67%
TOTAL	1,025	100.0%	94,024	696.47	640	81.69

FIG. 15

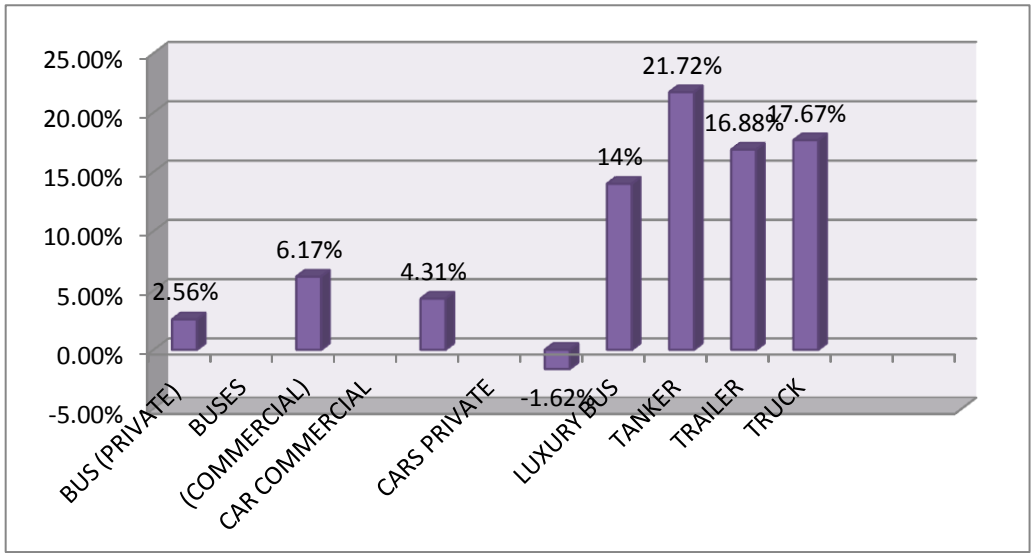


Figure 15: % With Which Speed Limit Exceeded

FIG 16a
AVERAGE SPEED ON VEHICLE CATEGORY

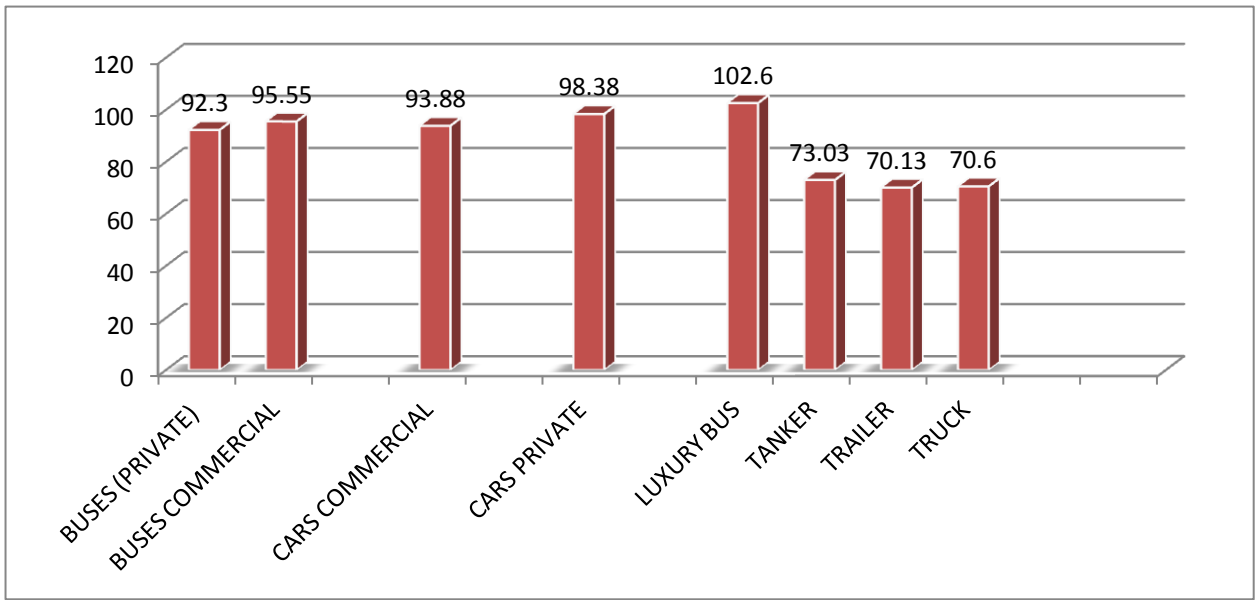


Fig.16b
LAGOS-IBADAN – AVERAGE SPEED IN KPH

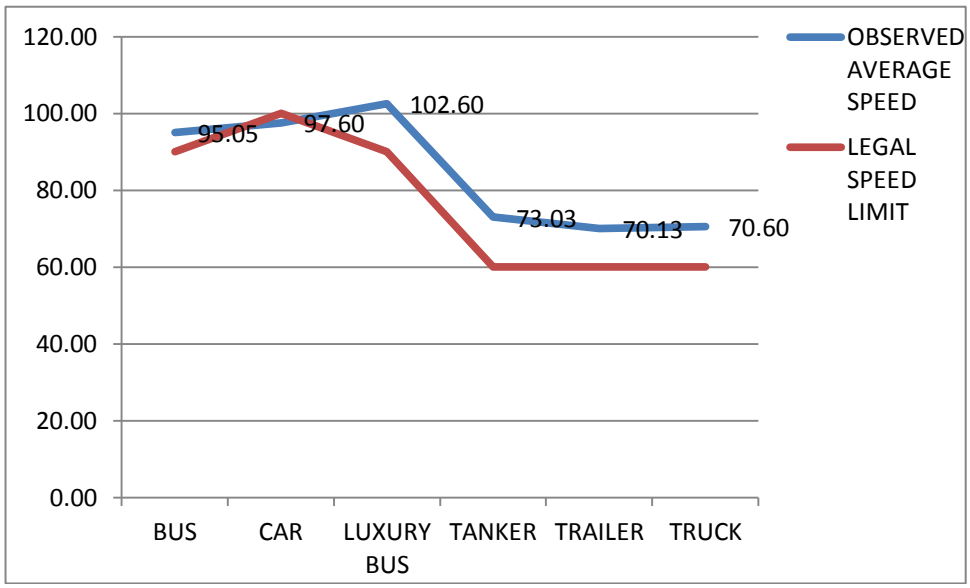


FIG 16C

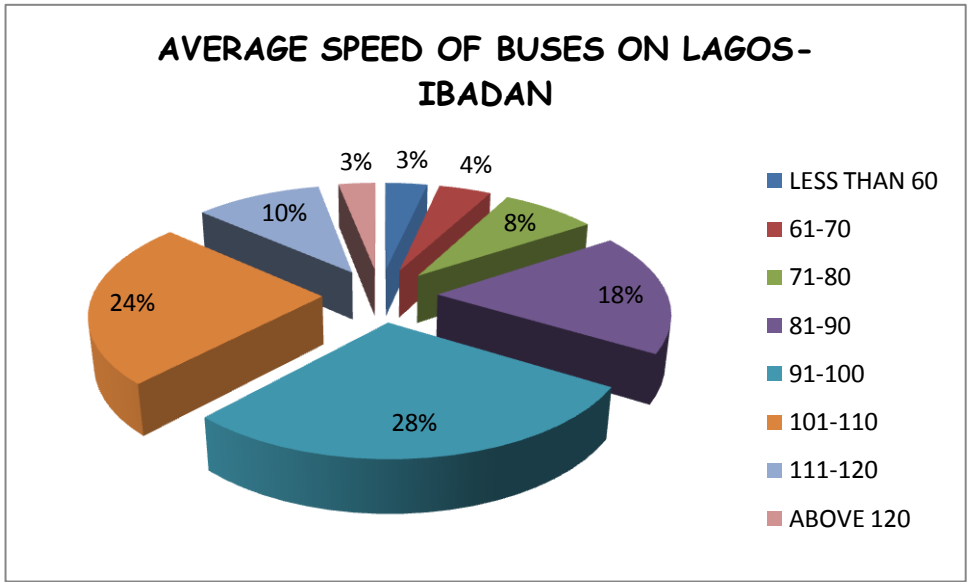


FIG 16D

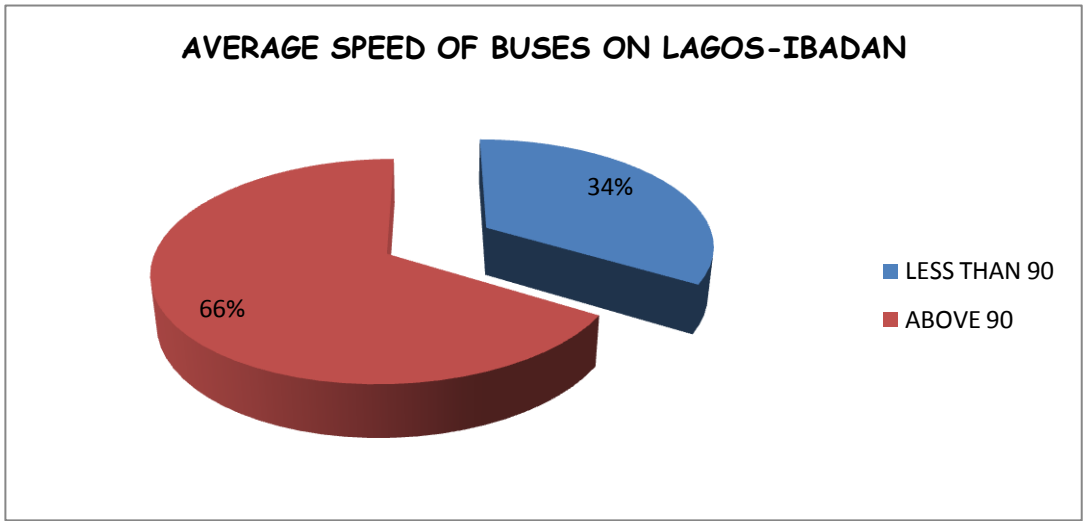


FIG 16C

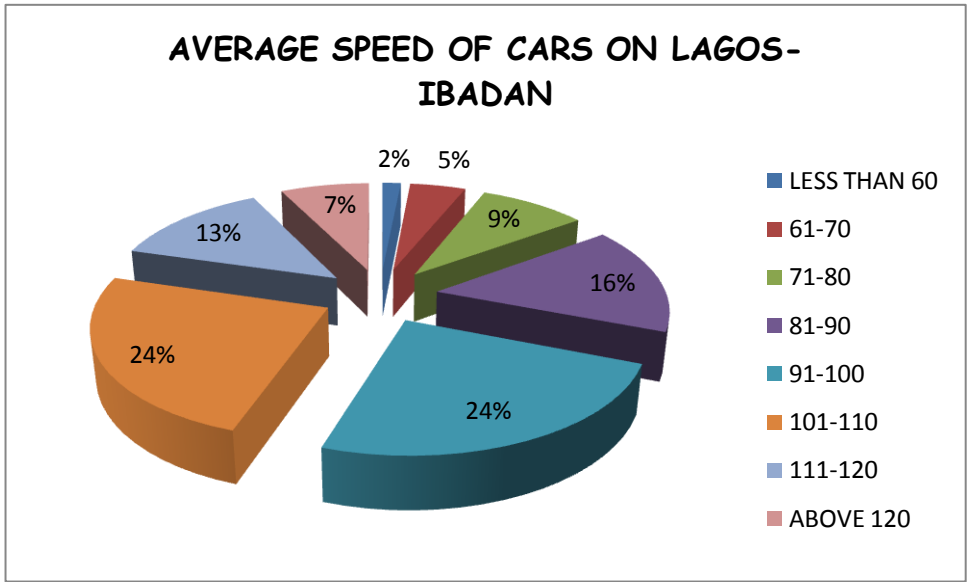


FIG16F

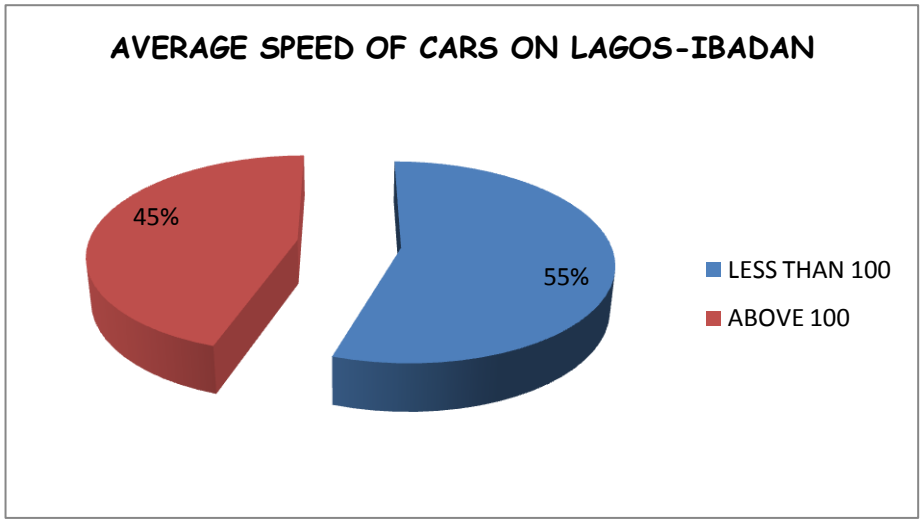


FIG 16 G

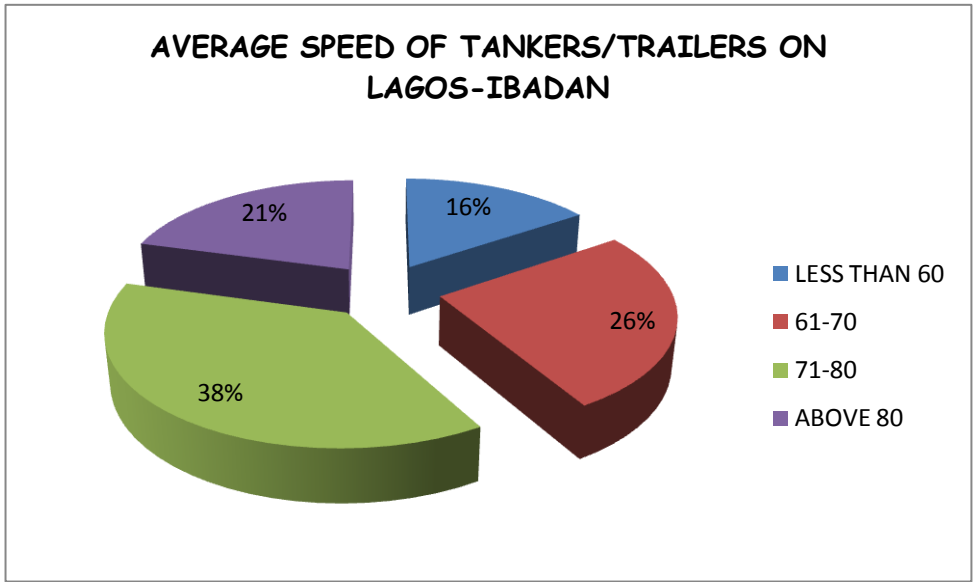
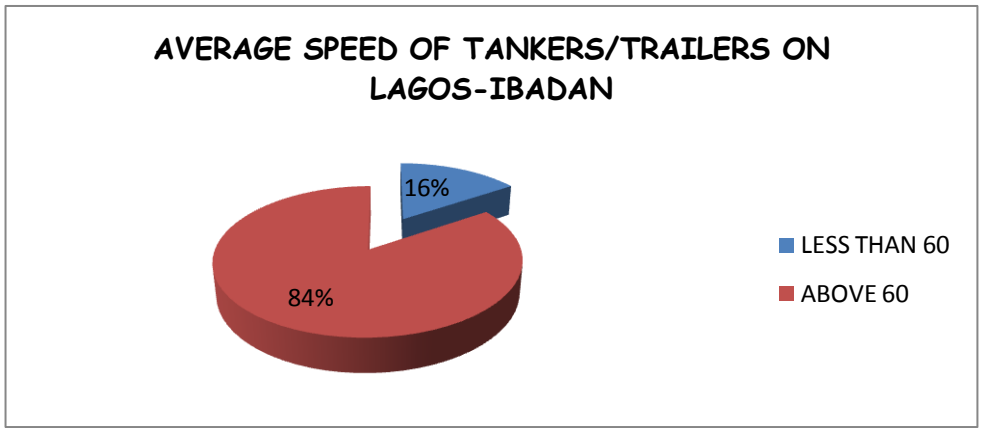


FIG 16H



AVERAGE SPEED ON DIRECTION OF TRAFFIC

Since the road is dual carriageway, the speeds on the two directions of traffic flow were also considered. Speed on Ibadan – Lagos were higher (93.48 km/ph) on the average than the Lagos – Ibadan with 90 km/ph. (See table 14 and figure 17).

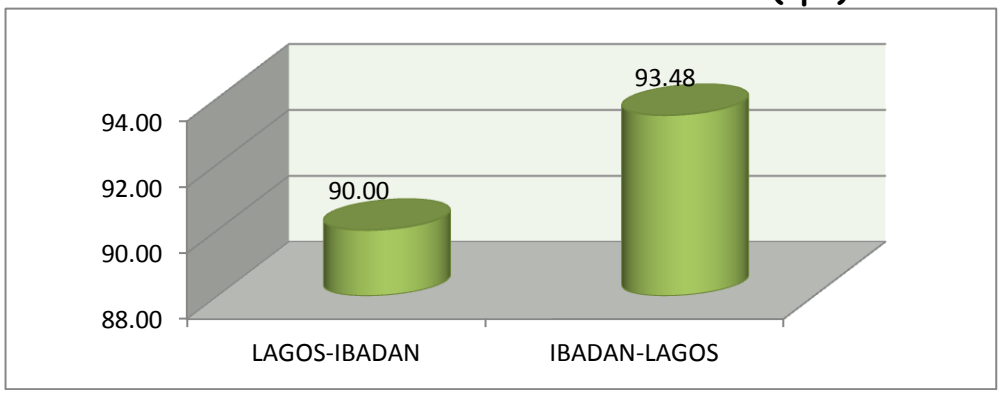
TABLE 14

AVERAGE SPEED ON DIRECTION OF TRAFFIC FLOW

DIRECTION OF FLOW	NO OF VEHICLES	PERCENTAGE	TOTAL SPEED (Km/hr)	AVERAGE SPEED (Km/hr)
LAGOS-IBADAN	515	50.2%	46349	90.00
IBADAN-LAGOS	510	49.8%	47675	93.48
TOTAL	1,025	100%	94024	91.74

FIG. 17

AVERAGE SPEED ON DIRECTIONS OF FLOWN (kph)



b. **ABUJA – LOKOJA ROAD**

AVERAGE SPEED

The average vehicular speed on Abuja-Lokoja road is 107.80 km/ph instead of the maximum 100 km/ph legal speed limit for the dualized portion of the road and 80 km/ph for the single carriageway part. The dualization of the road is still in progress.

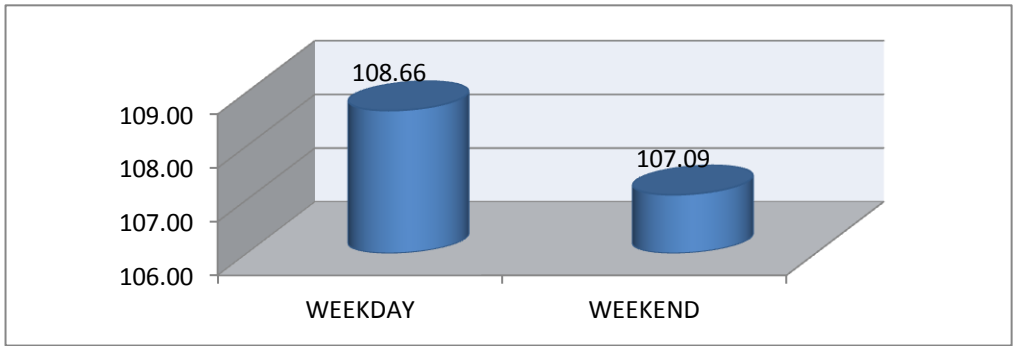
AVERAGE SPEED ON WEEK DAY AND WEEKEND

The average speed on weekday was 108.66 km/ph while it was 107.09 km/h for weekends (see table 15 and figure 18)

TABLE 15- AVERAGE SPEED ON WEEKDAY AND WEEKEND ON ABUJA – LOKOJA ROAD

PERIOD	NO OF VEHICLES	PERCENTAGE	TOTAL SPEED (Km/hr)	AVERAGE SPEED (Km/hr)
WEEKDAY	503	46%	54,654	108.66
WEEKEND	600	54%	64,253	107.09
TOTAL	1,103	100%	118,907	107.88

FIG. 18
AVERAGE SPEED ON WEEKDAY AND WEEKEND



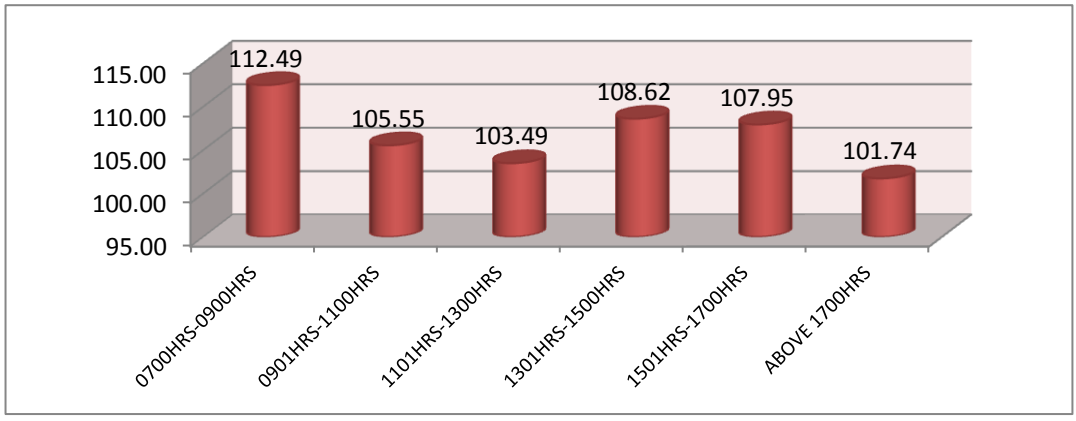
SPEED ON TIME BASIS

The highest average speed of 112.49 km/ph was recorded between the hours of 0700 and 0900 hours, when 22% of the 1,103 vehicles were sampled on the road. 0901 -1100 hours, 1101 – 1300 hours and 1301 -1500 hours recorded 105km/ph, 103,49 km/ph, and 108.62 km/ph respectively. 28 % of the surveyed vehicles were on the road between 1501 and 1700 hours and the speed on the average was 107.95 km/ph which is quite high considering the fact that the maximum legal speed limit is 80 km/ph. The traffic dropped to 3 % of the total vehicles surveyed after 1700 hours and the average speed was 101.74 (See table 16 and figure 19).

TABLE 16- AVERAGE SPEED ON TIME BASIS ON ABUJA – LOKOJA ROAD

TIME	NO OF VEHICLES	PERCENTAGE	TOTAL SPEED (Km/hr)	AVERAGE SPEED (Km/hr)
0700HRS-0900HRS	241	22%	27,110	112.49
0901HRS-1100HRS	202	18%	21,321	105.55
1101HRS-1300HRS	145	13%	15,006	103.49
1301HRS-1500HRS	167	15%	18,139	108.62
1501HRS-1700HRS	310	28%	33,465	107.95
ABOVE 1700HRS	38	3%	3,866	101.74
TOTAL	1,103	100%	118,907	107.80

FIG. 19
AVERAGE SPEED ON TIME BASIS ON ABUJA LOKOJA ROAD



CATEGORY OF SPEED ON TIME BASIS

196 out of the 1,103 vehicles captured which is 17.77 % exceeded 120 km/ph, 32.73% cruised between 111 and 120 km/ph, while 258 vehicles (233.39%) were driven between 101 and 110 km/ph which means 73.95% of vehicles on Lokoja-Abuja road drove above 100 km/h; hence violated the national speed limit regulations. Same speeds were observed to have been maintained on both the single and dual carriageways portion of the road from the field survey.

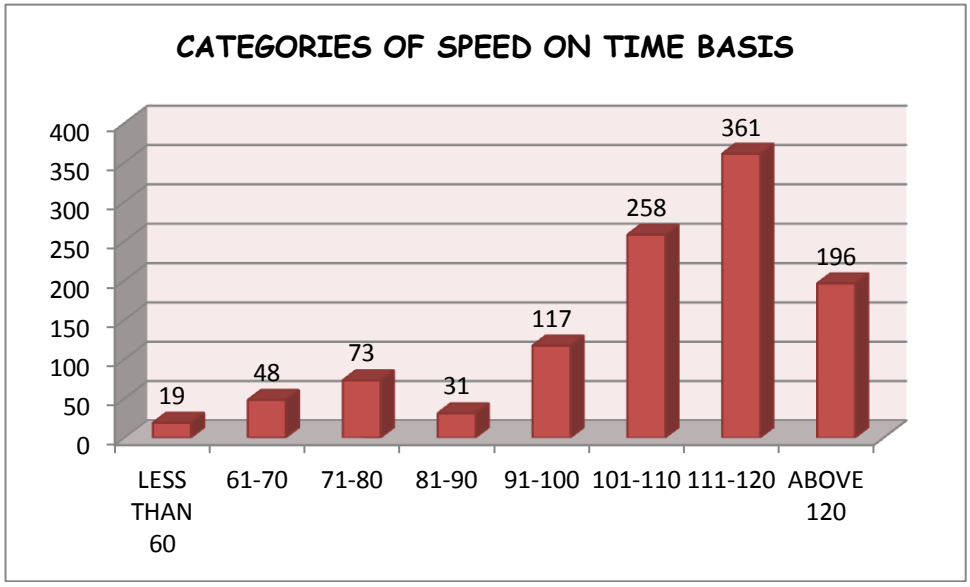
A total of 1,026 vehicles representing 87.99 % actually drove above 80km/ph limit. However, the speed limit of 100 kmph was adopted for the road since the survey was carried out on the dualized portion. (See table 16 and figure 19)

TABLE 17- CATEGORY OF SPEED ON TIME BASIS

TIME	LESS THAN 60		61-70		71-80		81-90		91-100		101-110		111-120		ABOVE 120	TOTAL		
	NO OF VEH	%	NO OF VEH	%	NO OF VEH	%	NO OF VEH	%	NO OF VEH	%	NO OF VEH	%	NO OF VEH	%	NO OF VEH	%	NO OF VEH	%
0700HRS-0900HRS	2	0.8%	4	1.7%	14	5.8%	4	1.7%	16	6.6%	50	20.7%	101	41.9%	50	20.7%	241	100%
0901HRS-1100HRS	5	2.5%	8	4.0%	15	7.4%	5	2.5%	23	11.4%	66	32.7%	49	24.3%	31	15.3%	202	100%
1101HRS-1300HRS	3	2.1%	11	7.6%	14	9.7%	5	3.4%	19	13.1%	31	21.4%	44	30.3%	18	12.4%	145	100%
1301HRS-1500HRS	2	1.2%	6	3.6%	9	5.4%	4	2.4%	17	10.2%	42	25.1%	54	32.3%	33	19.8%	167	100%
1501HRS-1700HRS	5	1.6%	14	4.5%	17	5.5%	12	3.9%	38	12.3%	66	21.3%	102	32.9%	56	18.1%	310	100%
1700HRS-1900HRS	2	5.3%	5	13.2%	4	10.5%	1	2.6%	4	10.5%	3	7.9%	11	28.9%	8	21.1%	38	100%
TOTAL	19		48		73		31		153		285		361		196		1,166	

FIG. 20

CATEGORIES OF SPEED ON TIME BASIS



AVERAGE SPEED ON VEHICLE CATEGORIES

The average speed captured for buses was 112.35 km/ph, far above the 90 km/ph national limit; cars also exceeded their limit on the average as these categories that constituted 62% of the vehicles were driven at an average speed of 112.53 km/ph instead of 100 km/ph.

Articulated vehicles (Tankers and trailers) that have speed limit of 60 km/ph were found to be driven at 70.5 km/ph while trucks with 60 km/ph exceeded the speed limit on the average of 16.97 km/ph as they were captured on the average of 76.97 km/ph. There was massive violation of speed limits regulations on the Abuja – Lokoja road by all categories of vehicles. (See Tables 17 and Figure 20 and 21).

TABLE 18

AVERAGE SPEED ON VEHICLE CATEGORY ABUJA-LOKOJA

VEHICLE CATEGORY	NO OF VEHICLES	PERCENTAGE	TOTAL SPEED	AVERAGE SPEED (Km/hr)	MAX SPEED LIMIT (Km/hr)	% ABOVE SPEED LIMIT
COMM. BUSES	205	18.58	23,009	112.24	90	24.71%
PRI. BUSES	79	7.16	8,879	112.39	90	24.88%
COMM. CARS	127	11.51	14,082	110.88	100	10.88%
PRIV. CARS	562	5,095	63,448	112.90	100	12.90%
LUXURY BUS	1	0%	97	97.00	90	7.78%
TANKER	17	1.54	1,250	73.53	60	22.55%
TRAILER	77	7%	5,430	70.52	60	17.53%
TRUCK	35	3.17%	2,694	76.97	60	28.28%
TOTAL	1,103	100%	118,889	766.43		

FIG. 21B

AVERAGE SPEED ON VEHICLE CATEGORY ABUJA - LOKOJA

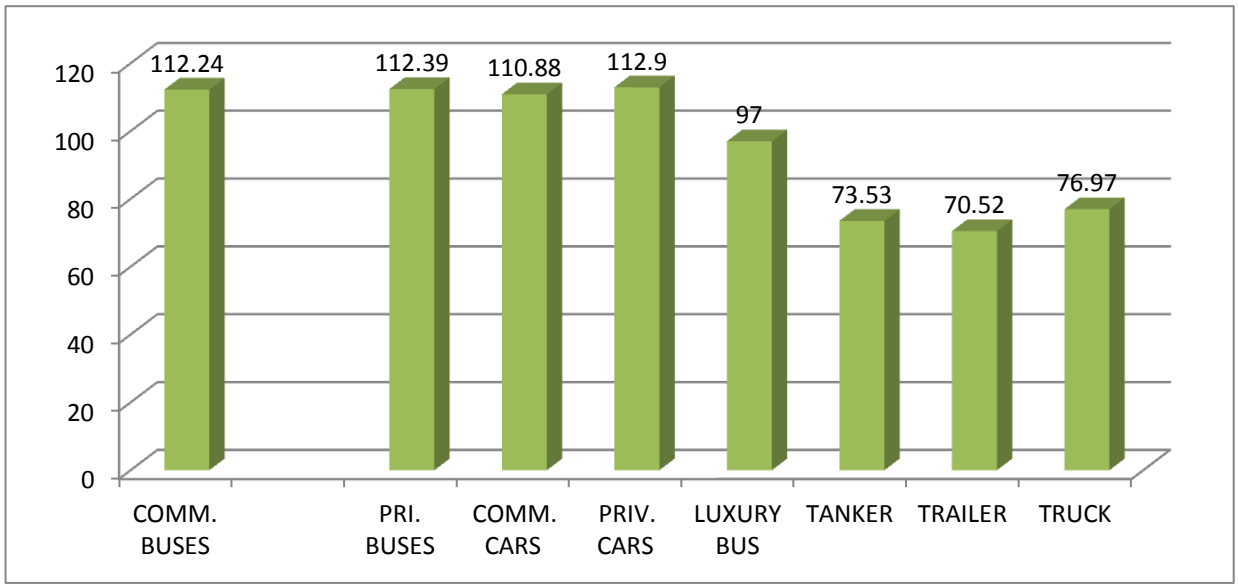


FIG 21B ABUJA-LOKOJA AVERAGE SPEED IN KPH

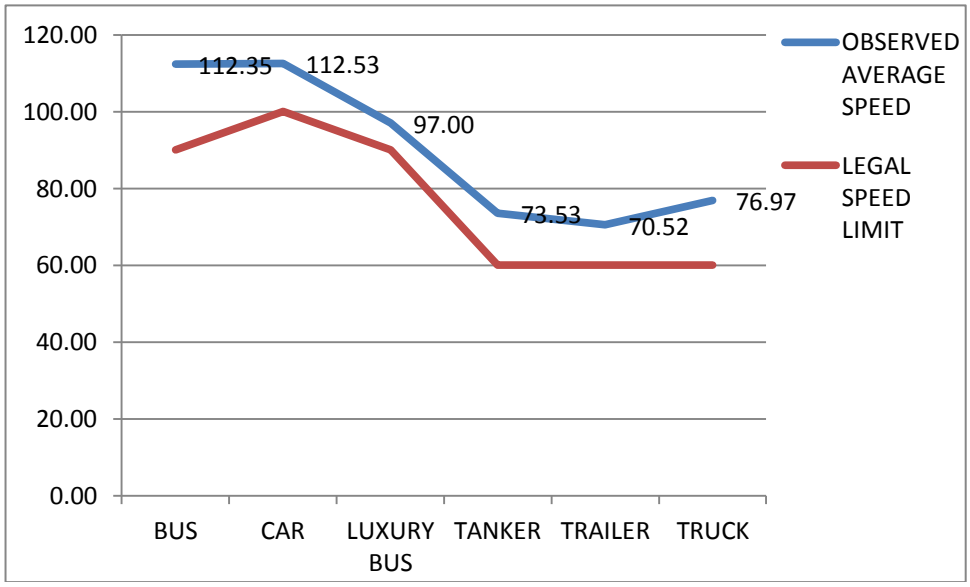


FIG 21C

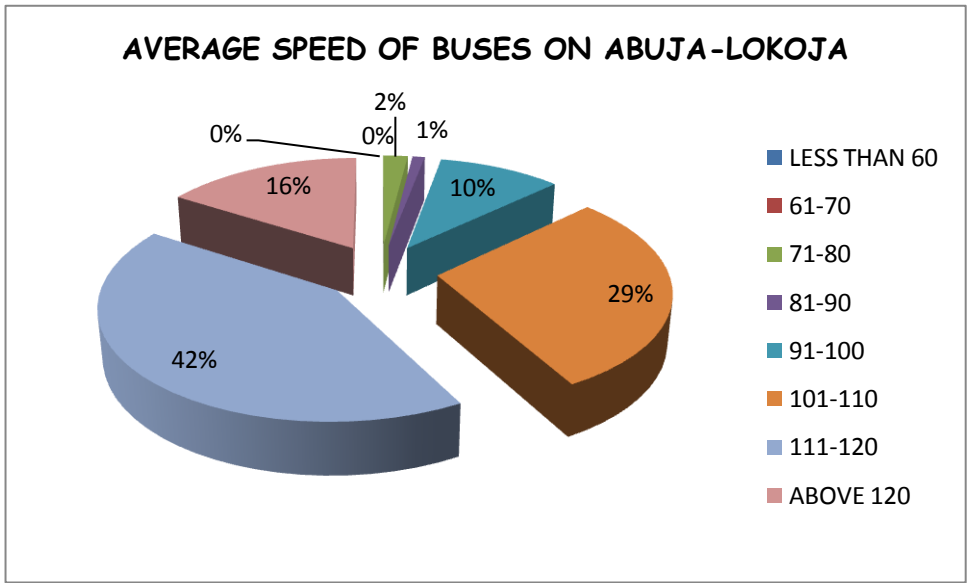


FIG 21D

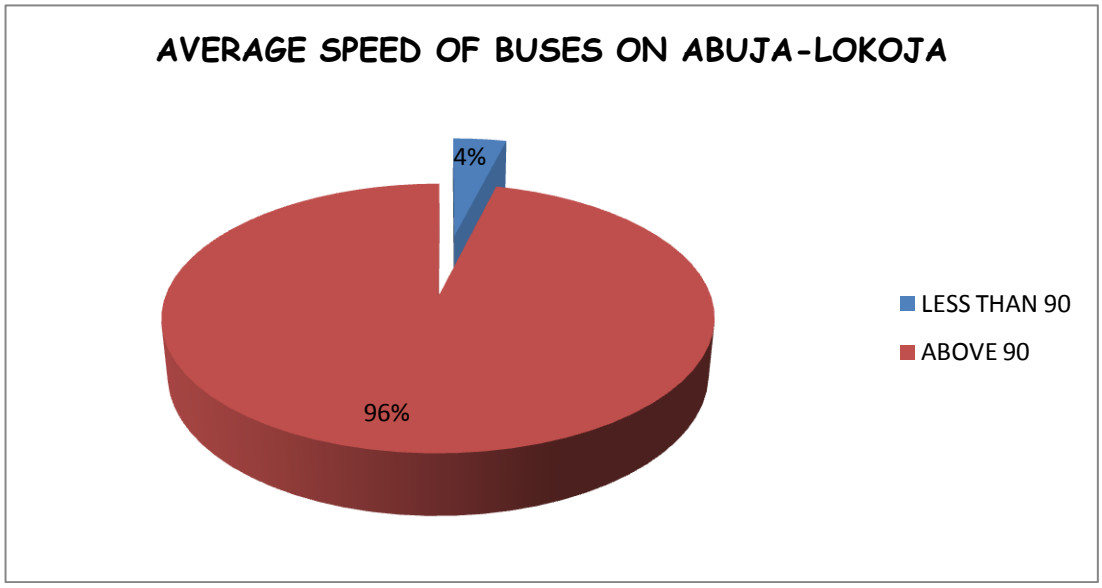


FIG 21E

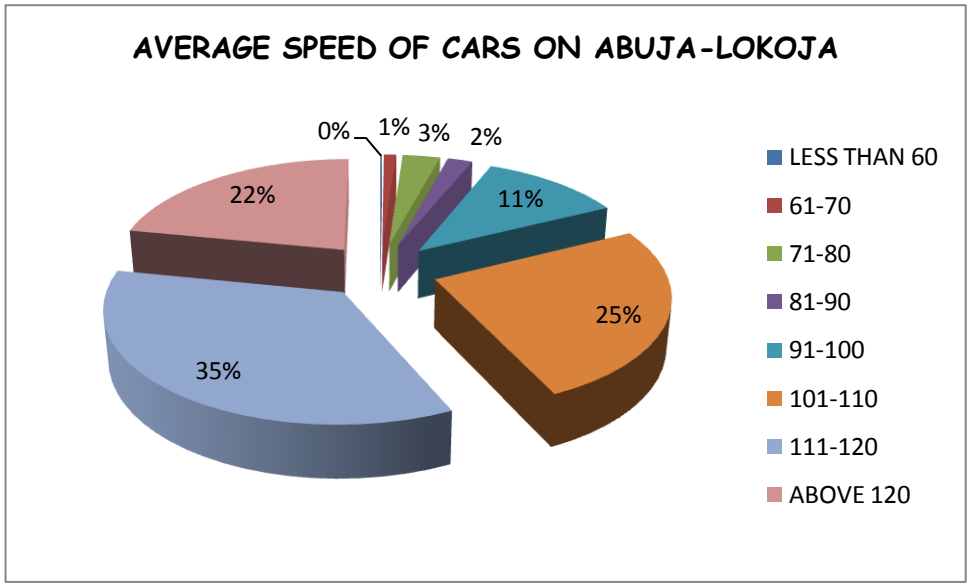


FIG 21F

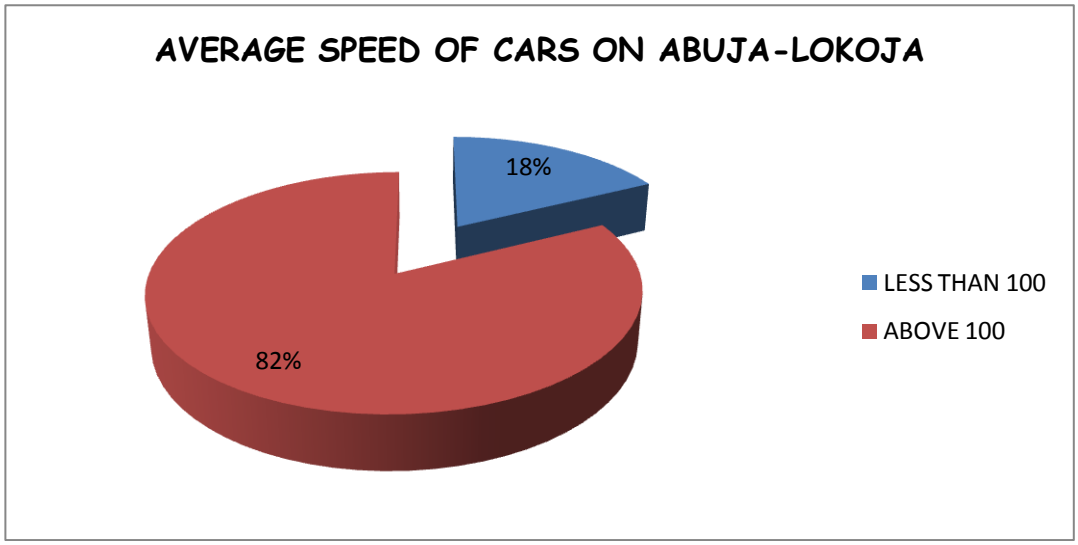

AVERAGE SPEED OF CARS ON ABUJA-LOKOJA
18%
82%
LESS THAN 100
ABOVE 100

FIG G

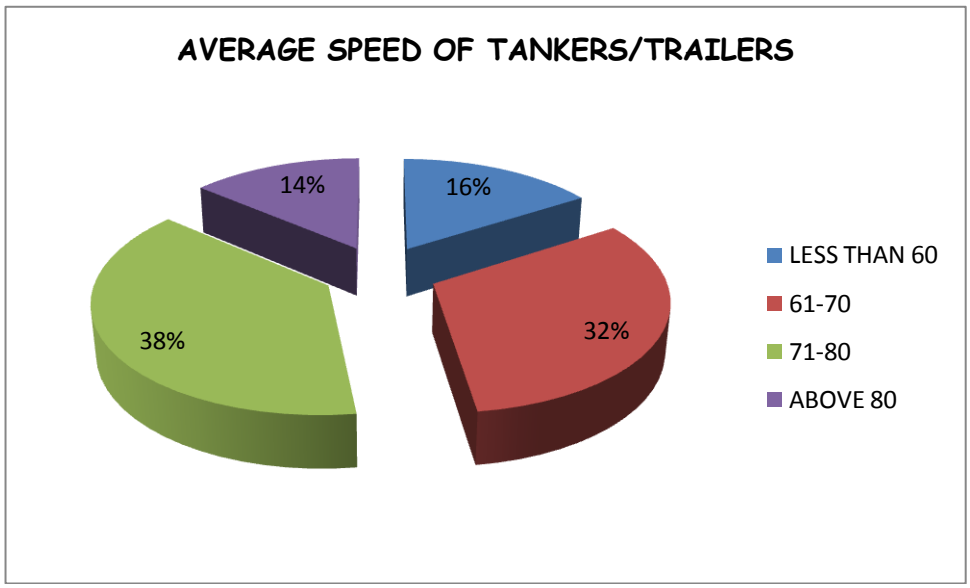
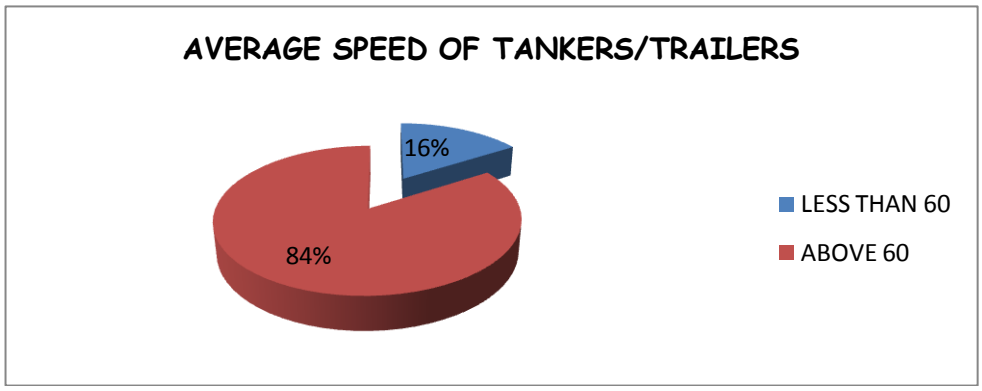

AVERAGE SPEED OF TANKERS/TRAILERS
14%
16%
38%
32%
LESS THAN 60
61-70
71-80
ABOVE 80

FIG 21 H



C. 9TH MILE- OBOLLO-AFOR HIGHWAY

The single carriage way 9th Mile Obollo- Afor route has the maximum speed limit of 80 km/ph. A total of 1,763 vehicles were surveyed and the average speed on the road was 88.06 km/ph.

AVERAGE SPEED ON WEEKDAYS AND WEEKENDS

The average speed during the weekdays was 89.68 Km/ph while the weekends speed lowered to 86.89 km/h; both above the legal speed limit of 80 km/ph (See Table 20 and Figure 22).

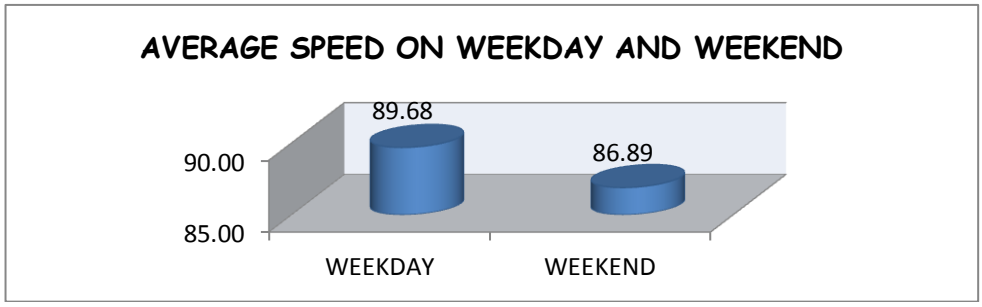
TABLE 20

AVERAGE SPEED ON WEEKDAY AND WEEKEND ON 9TH MILE- OBOLLO AFOR HIGHWAY

PERIOD	NO OF VEHICLES	PERCENTAGE	TOTAL SPEED	AVERAGE SPEED
WEEKDAY	737	42%	66096	89.68
WEEKEND	1026	58%	89151	86.89
TOTAL	1763	100%	155247	88.06

FIG. 22

AVERAGE SPEED ON WEEKDAY AND WEEKEND



AVERAGE SPEED ON TIME BASIS

The average speed on the road between 0700 and 1700 hours ranged between 87.39 km/ph and 89.65 km/ph, which dropped to 81.75 km/ph after 1700 hours. So, on the average vehicles were driven above the permitted maximum speed limit of 80 km/ph. (See Table 21 and Figure 23).

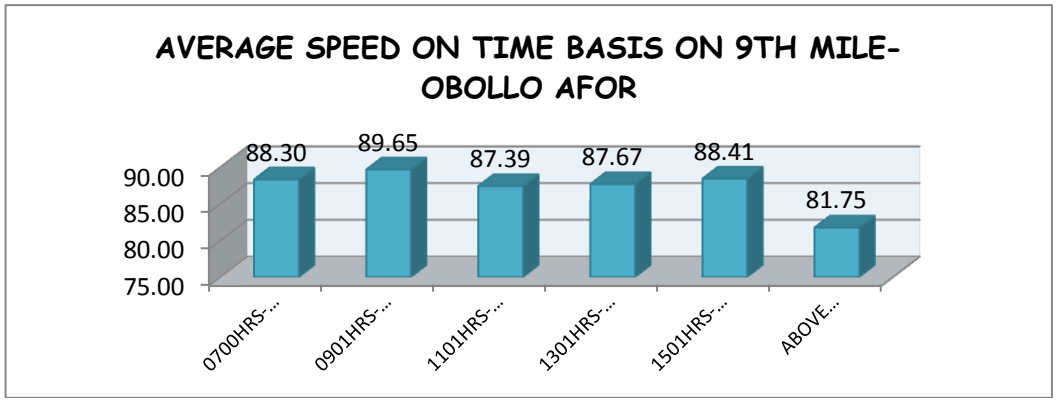
TABLE 21

AVERAGE SPEED ON TIME BASIS ON 9TH MILE – OBOLLO AFOR HIGHWAY

TIME	NO OF VEHICLES	PERCENTAGE	TOTAL SPEED	AVERAGE SPEED
0700HRS-0900HRS	377	21%	33,289	88.30
0901HRS-1100HRS	374	21%	33,528	89.65
1101HRS-1300HRS	387	22%	33,821	87.39
1301HRS-1500HRS	297	17%	26,037	87.67
1501HRS-1700HRS	264	15%	23,340	88.41
ABOVE 1700HRS	64	4%	5,232	81.75
TOTAL	1763	100%	155,247	88.06

FIG. 23

AVERAGE SPEED ON TIME BASIS



CATEGORY OF SPEED ON TIME BASIS

60 vehicles, out of 1,763 surveyed vehicles (3.41%) were driven at an average speed of above 120 km/ph, while 115 (6.52%) were driven between 111 km/ph and 120 km/ph on the 9th Mile –Obollo Afor route. 242 vehicles (13.78%) were captured at an average speed ranging between 101 and 110 .2 km/ph. It was also revealed that 381 vehicles representing 21.61% had an average speed in the bracket of 91-100 km/ph. It was also discovered that a total of 1,146 vehicles which is 65 % of

the surveyed vehicles violated the speed limit of 80 km/ph on the route (See Table 22 and Figure 24)

TABLE 22- CATEGORY OF SPEED ON TIME BASIS VEHICLES ON 9TH MILE-OBOLLO AFOR IN KPH

TIME	LESS THAN 60		61-70		71-80		81-90		91-100		101-110		111-120		ABOVE 120		TOTAL	
	NO OF VEH	%	NO OF VEH	%	NO OF VEH	%	NO OF VEH	%	NO OF VEH	%	NO OF VEH	%	NO OF VEH	%	NO OF VEH	%	NO OF VEH	%
0700HRS-0900HRS	28	7.4 %	29	7.7 %	58	15.4 %	85	22.5 %	89	23.6 %	55	14.6 %	22	5.8 %	11	2.9 %	377	100 %
0901HRS-1100HRS	26	7.0 %	26	7.0 %	50	13.4 %	94	25.1 %	81	21.7 %	57	15.2 %	22	5.9 %	18	4.8 %	374	100 %
1101HRS-1300HRS	32	8.3 %	32	8.3 %	58	15.0 %	97	25.1 %	84	21.7 %	46	11.9 %	28	7.2 %	10	2.6 %	387	100 %
1301HRS-1500HRS	31	10.4 %	26	8.8 %	47	15.8 %	47	15.8 %	71	23.9 %	43	14.5 %	26	8.8 %	6	2.0 %	297	100 %
1501HRS-1700HRS	20	7.6 %	24	9.1 %	38	14.4 %	70	26.5 %	46	17.4 %	38	14.4 %	15	5.7 %	13	4.9 %	264	100 %
1700HRS-1900HRS	6	9.4 %	9	14.1 %	17	26.6 %	14	21.9 %	10	15.6 %	4	6.3 %	2	3.1 %	2	3.1 %	64	100 %

FIG. 24

CATEGORIES OF SPEED OF SPEED ON TIME BASIS ON 9TH MILE-OBOLLO AFOR

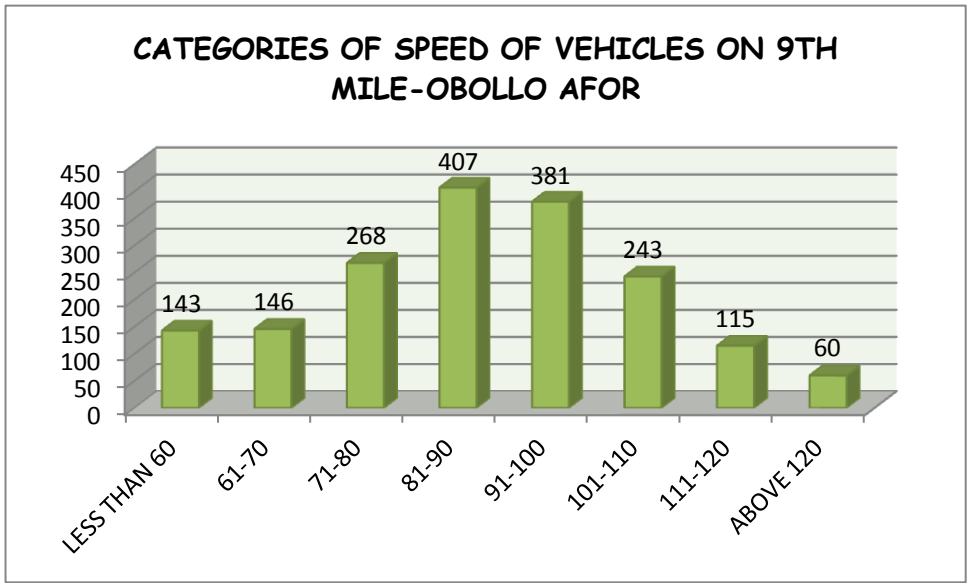


TABLE 23

AVERAGE SPEED ON VEHICLE CATEGORY

VEHICLE CATEGORY	NO OF VEHICLES	PERCENTAGE	TOTAL SPEED (Km/hr)	AVERAGE SPEED (Km/hr)	MAX SPEED LIMIT	
COMM. BUSES	600	34.03	53533	89.22	80	
PRIV. BUSES	123	6.97	11289	91.8	80	
COMM. CARS	177	10.03	15782	89.1	80	
PRIV. CARS	622	35.28	58549	94.1	80	
LUXURY BUS	3	0.002%	234	78.00	80	
TANKER	4	0.22%	321	80.25	50	
TRAILER	126	7.14%	8055	63.93	50	
TRUCK	108	6.12%	7484	69.30	50	
TOTAL	1763	100%	155,247	85.33	68.75	

FIG. 25

AVERAGE SPEED ON VEHICLE CATEGORY

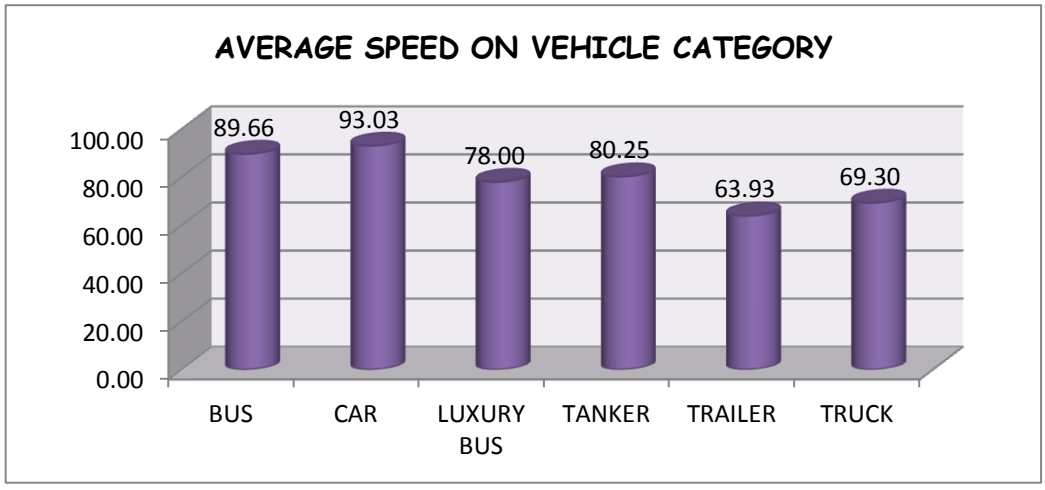


FIGURE 26A

9TH MILE-OBOLLO AFOR -AVERAGE SPEED IN KPH

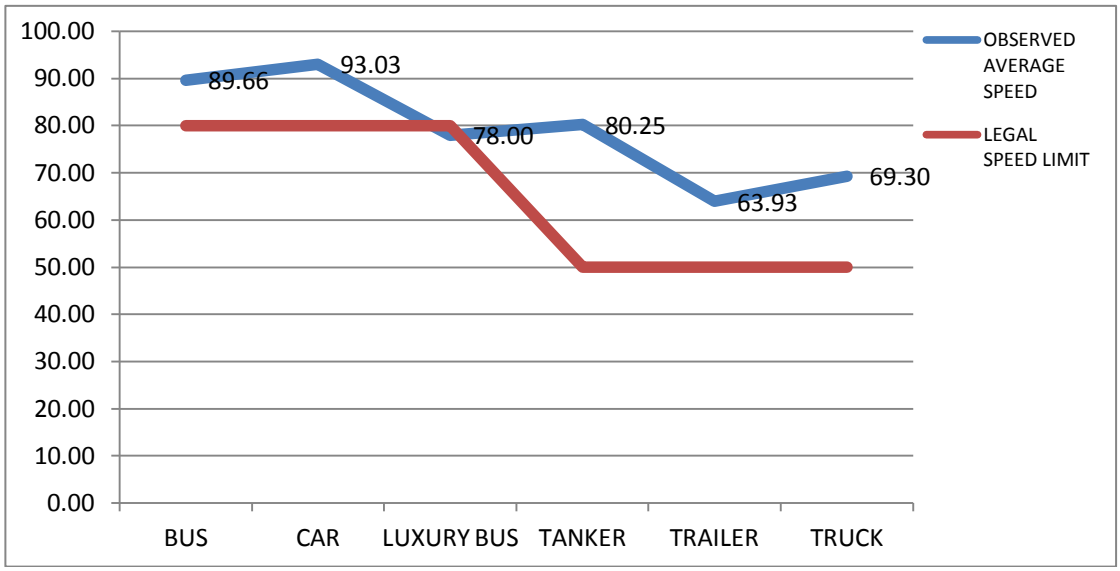


FIG 26 B

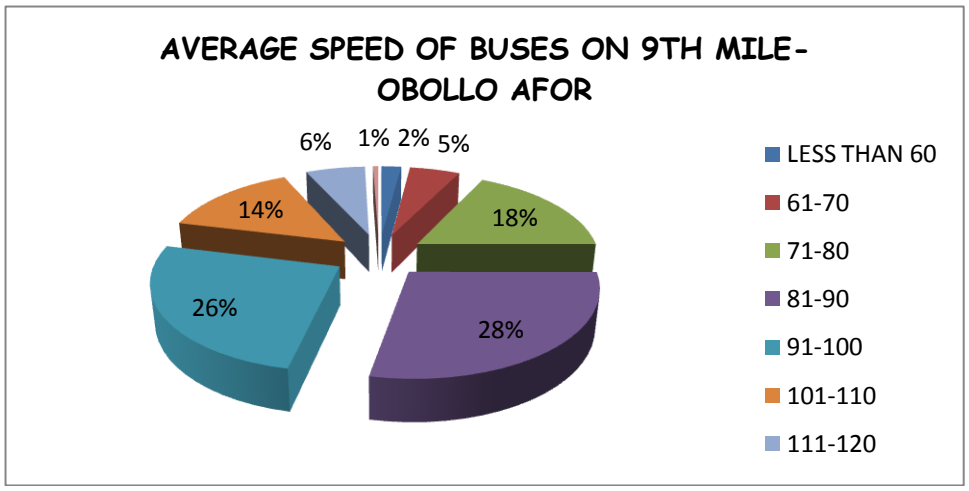


FIG 26C

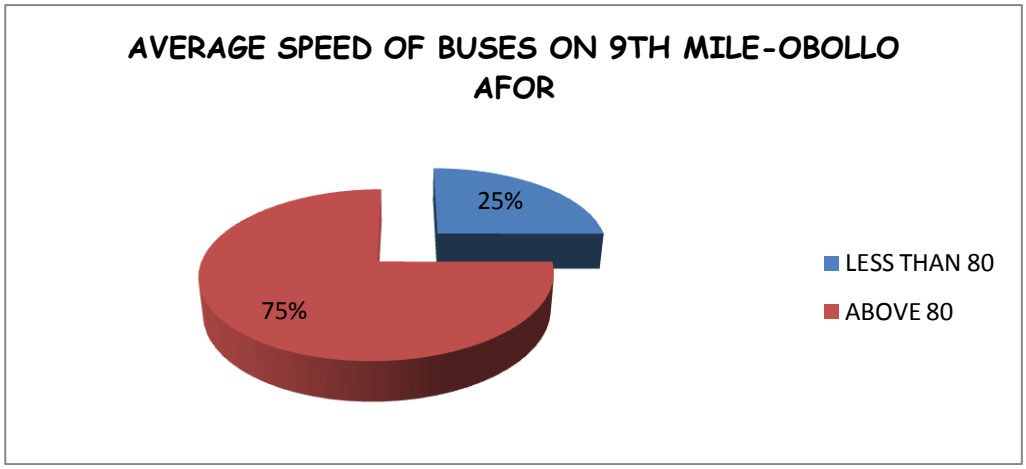


FIG 26D

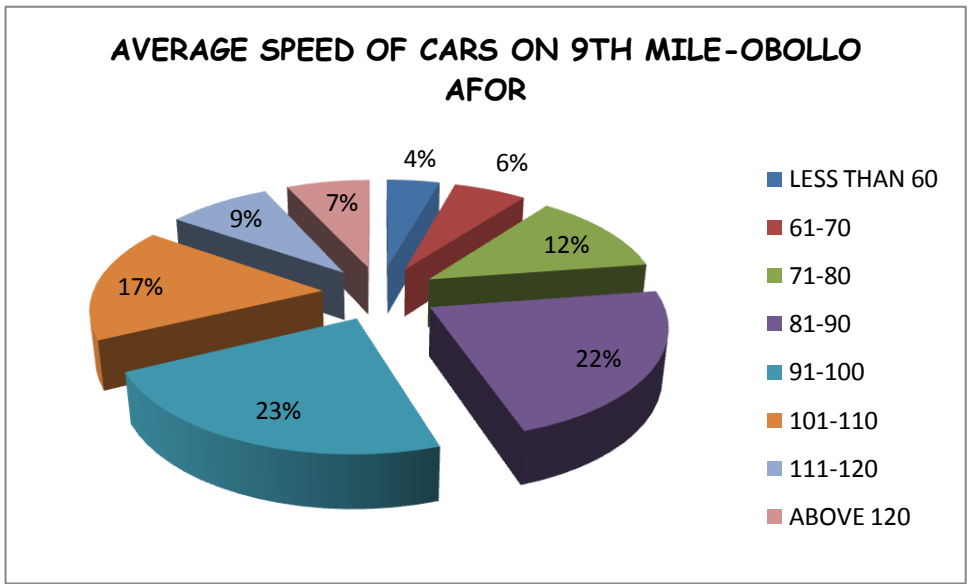


FIG 26E

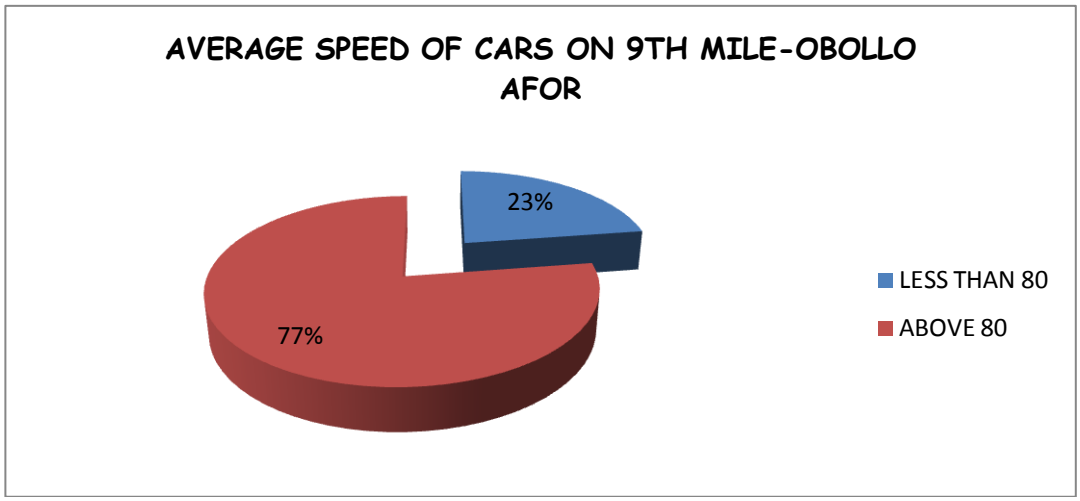


FIG 26F

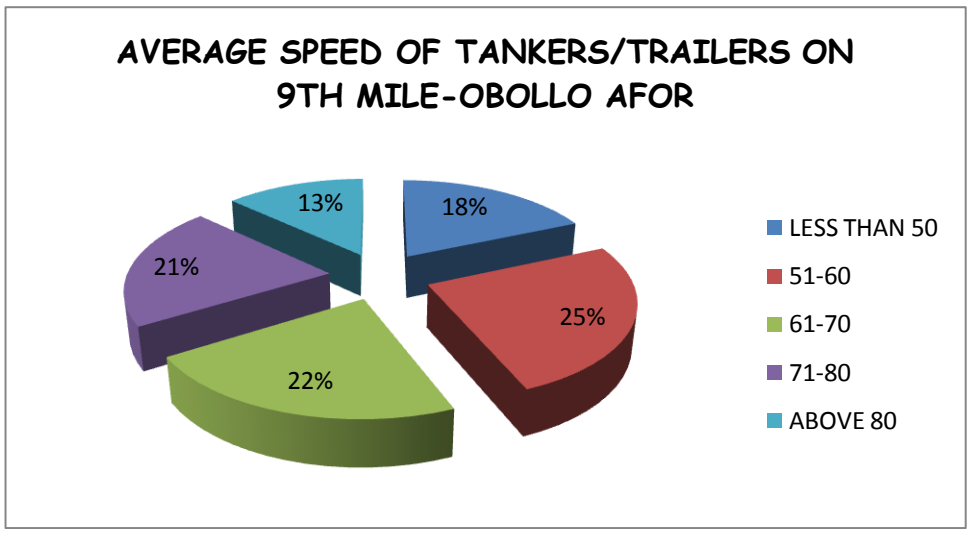
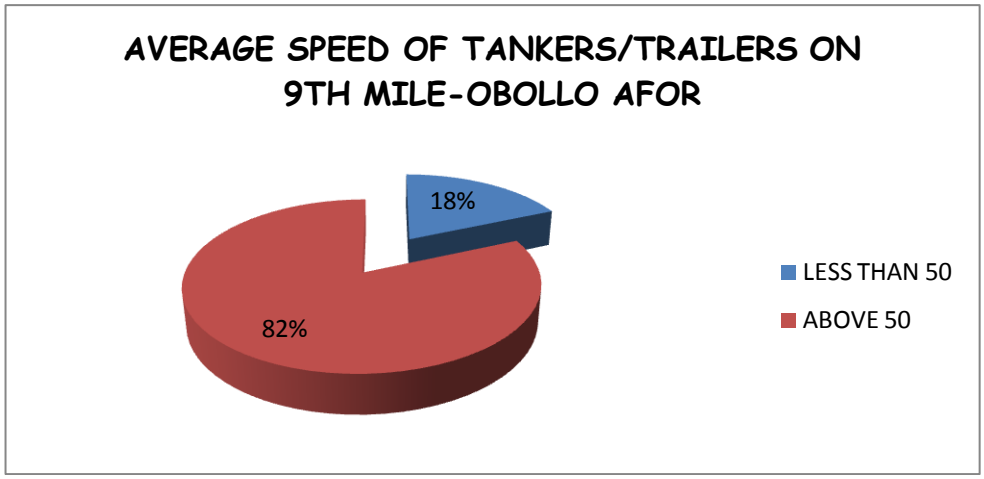


FIG 26G



AVERAGE SPEED ON VEHICLE CATEGORY

Table 22 reveals that virtually all the vehicle categories were driven on the average above the regulated speed on the 9th Mile- Obollo Afor road. Buses average speed was 89.66 km/ph as against the 80 km/ph legalised limit, cars average speed was 93.03 km/ph contrary to the 80 km/ph limit for the road. Tankers and trailers in the articulated categories were driven at average speed of 80.25 km/ph and 63. 93 km/ph respectively, instead of the permitted 50 km/ph. Trucks also moved at 69.30 km/ph instead of 50 km/ph. However, the speed of luxury buses on the average was pegged at 78.00 km/ph, 2 km/ph short of the maximum speed limit (See Table 23 and Figure 25).

AVERAGE SPEED ON TRAFFIC FLOW DIRECTION

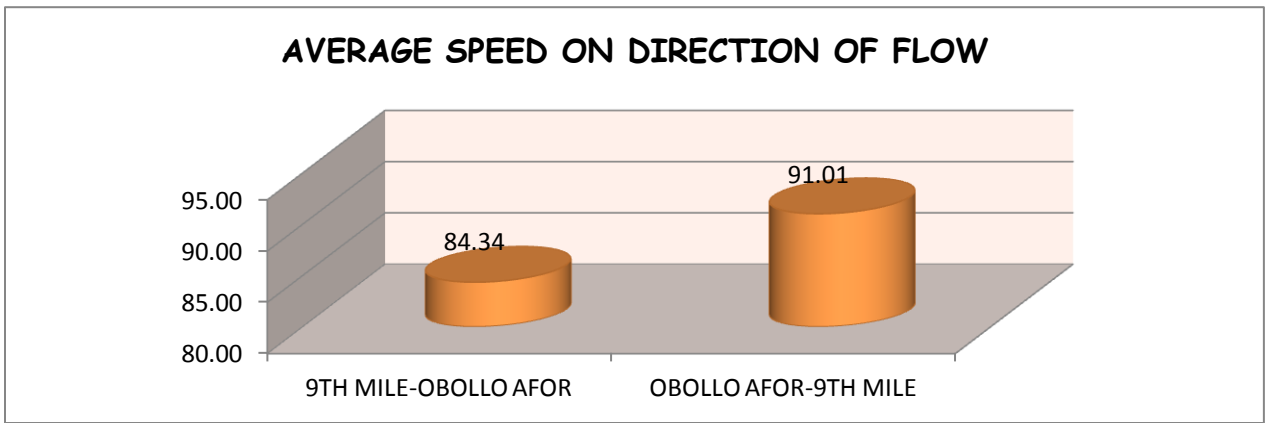
The average speed on 9th Mile-Obollo-Afor direction was 84.35 km/ph as against 91.01 km/ph on Obollo –Afor – 9th Mile. (See table 23 and figure 26)

TABLE 24
AVERAGE SPEED ON DIRECTION OF TRAFFIC FLOW

DIRECTION OF FLOW	NO OF VEHICLES	PERCENTAGE	TOTAL SPEED (Km/hr)	AVERAGE SPEED (Km/hr)
9TH MILE-OBOLLO AFOR	781	44%	65,871	84.35
OBOLLO AFOR-9TH MILE	982	56%	89,376	91.01
TOTAL	1,763	100%	155,247	88.06

FIG. 27

AVERAGE SPEED ON DIRECTION OF FLOW IN KPH



d. ROUTE 4 BENIN – ASABA - ONITSHA

The average speed on Benin-Asaba-Onitsha expressway was 108.15 km/ph as against the legal speed limit of 100 km/ph (See Table 25).

TABLE 25

AVERAGE SPEED ON WEEKDAY AND WEEKEND

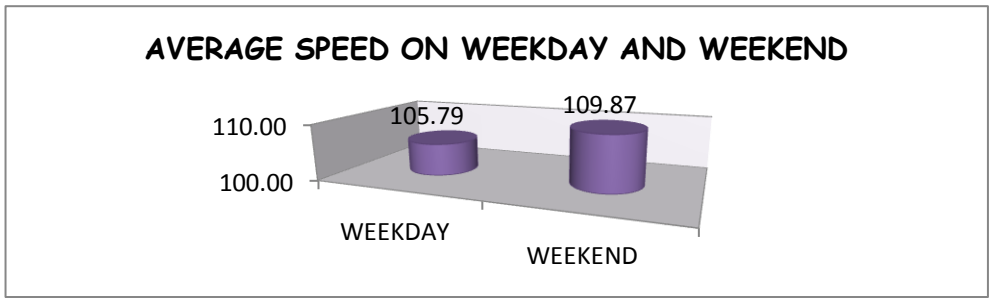
PERIOD	NO OF VEHICLES	PERCENTAGE	TOTAL SPEED (Km/hr)	AVERAGE SPEED (Km/hr)
WEEKDAY	666	42%	70,457	105.79
WEEKEND	915	58%	100,529	109.87
TOTAL/AVERAGE	1,581	100%	170,986	108.15

WEEKDAYS AND WEEKENDS SPEED

Vehicles moved faster on weekends at 109.87 km/ph when compared to the average speed of 105.79 km/ph on weekends (See Table 25 and Figure 29)

FIG. 27

AVERAGE SPEED ON WEEKDAY AND WEEKEND



AVERAGE SPEED ON TIME BASIS

On the average, there were violations of speed limit regulations throughout the period from 0700 hours-1700 hours. However, the speed dropped on the average to 99.86 km/ph after 1700 hours (See Table 25 and Figure 28)

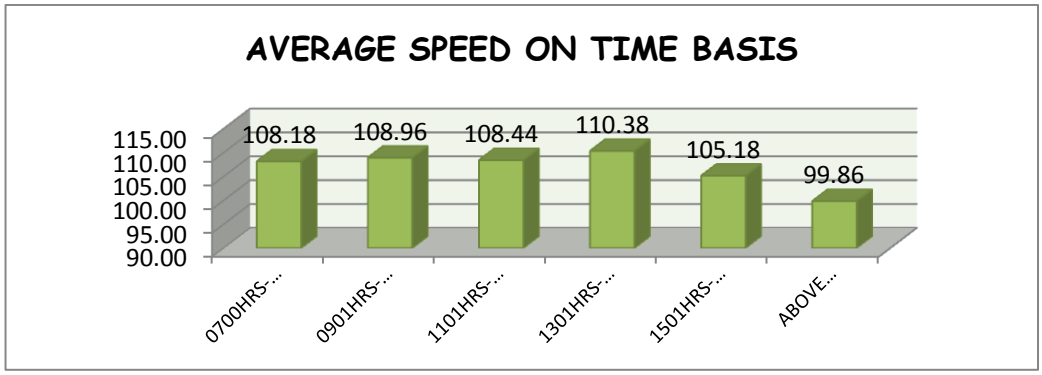
TABLE 25

AVERAGE SPEED ON TIME BASIS

TIME	NO OF VEHICLES	PERCENTAGE	TOTAL SPEED (Km/hr)	AVERAGE SPEED (Km/hr)
0700HRS-0900HRS	325	21%	35159	108.18
0901HRS-1100HRS	353	22%	38463	108.96
1101HRS-1300HRS	298	19%	32314	108.44
1301HRS-1500HRS	340	22%	37529	110.38
1501HRS-1700HRS	199	13%	20930	105.18
ABOVE 1700HRS	66	4%	6591	99.86
TOTAL/ AVERAGE	1581	100%	170986	108.15

FIG. 29

AVERAGE SPEED ON TIME BASIS KPH



CATERGORY OF SPEED ON THE TIME BASIS

29 out of the total of 1, 581 vehicles captured in the exercise which is 1.83 % were driven above 120 km/ph. 123 vehicles, which is 7.78% of these vehicles were driven between 111 – 120 km/ph, while 323 vehicles (20.43%) had their speed picked between 101 and 110 km/ph.

AVERAGE SPEED ON VEHICLE CATEGORY

All the category of vehicles on Asaba –Onitsha road were driven above the legal speed limits. The variations in the violation covered could be seen on table 27, the average speed for buses was 109.65 km/ph instead of 90 km/ph, which is 21.83% above the legal limit. Private cars have average speed of112.64 km/ph instead of 100 km/ph (12.64%) above the permitted speed limit while the commercial cars instead of 90 km/ph on the average.

TABLE 27
CATEGORIES OF SPEED OF VEHICLES ON BENIN-ASABA-ONITSHA

	LESS THAN 60		61-70		71-80		81-90		91-100		101-110		111-120		ABOVE 120		TOTAL	
TIME	NO OF VEH	%	NO OF VEH	%	NO OF VEH	%	NO OF VEH	%	NO OF VEH	%	NO OF VEH	%	NO OF VEH	%	NO OF VEH	%	NO OF VEH	%
0700HRS-0900HRS	2	0.6%	8	2.5%	12	3.7%	19	5.8%	51	15.7%	84	25.8%	86	26.5%	63	19.4%	325	100%
0901HRS-1100HRS	0	0.0%	6	1.7%	6	1.7%	14	4.0%	51	14.4%	118	33.4%	101	28.6%	57	16.1%	353	100%
1101HRS-1300HRS	0	0.0%	1	0.3%	9	3.0%	23	7.7%	32	10.7%	97	32.6%	89	29.9%	47	15.8%	298	100%
1301HRS-1500HRS	6	1.8%	13	3.8%	10	2.9%	15	4.4%	33	9.7%	73	21.5%	93	27.4%	97	28.5%	340	100%
1501HRS-1700HRS	7	3.5%	9	4.5%	15	7.5%	13	6.5%	18	9.0%	45	22.6%	52	26.1%	40	20.1%	199	100%
1700HRS-1900HRS	3	4.5%	10	15.2%	2	3.0%	6	9.1%	5	7.6%	15	22.7%	12	18.2%	13	19.7%	66	100%

FIG 30
CATEGORIES OF SPEED OF VEHICLES ON BENIN-ASABA-ONITSHA

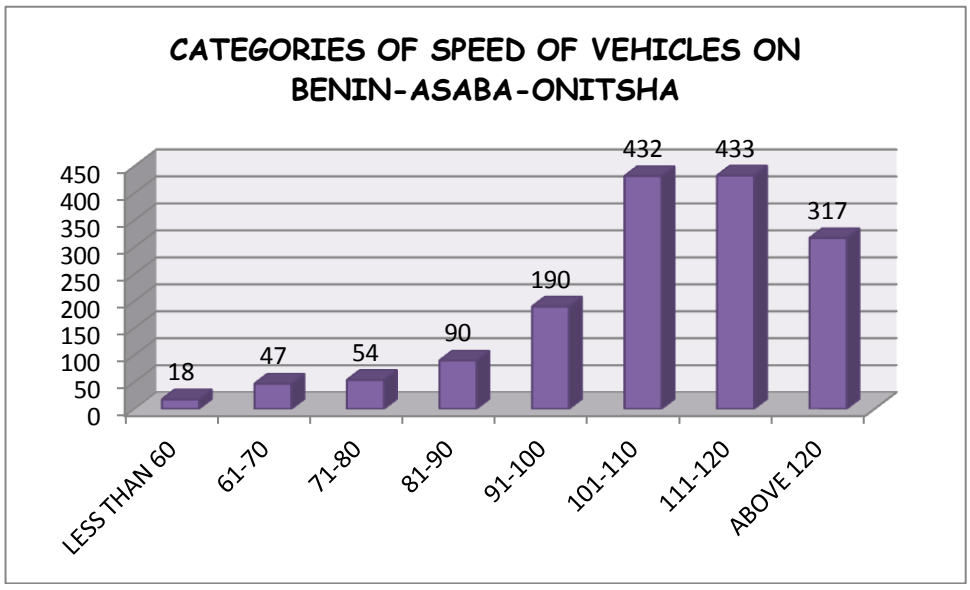


TABLE 28

AVERAGE SPEED ON VEHICLE CATEGORY KPH

VEHICLE CATEGORY	NO OF VEHICLES	PERCENTAGE	TOTAL SPEED (Km/hr)	AVERAGE SPEED (Km/hr)	MAX SPEED LIMIT (Km/hr)	% DIFFERENCE IN SPEED
COMM. BUSES	380	24.03%	41952	110.4	90	22.7%
PRIV. BUSES	96	6.07%	10241	106.7	90	18.6%
COMM. CARS	148	9.36%	16399	110.9	100	10.9%
PRIV. CARS	770	48.7%	87002	112.9	100	12.9%
LUXURY BUS	49	3.09%	4838	98.73	90	9.7%
TANKER	25	1.58%	2139	85.56	60	42.6%
TRAILER	49	3.09%	3554	72.53	60	20.9%
TRUCK	64	4.04%	4861	75.95	60	26.6%
TOTAL	1581	100%	170986	773.67	650	164.9%

FIG. 31a AVERAGE SPEED OF BUSES

BENIN-ASABA-ONITSHA KPH

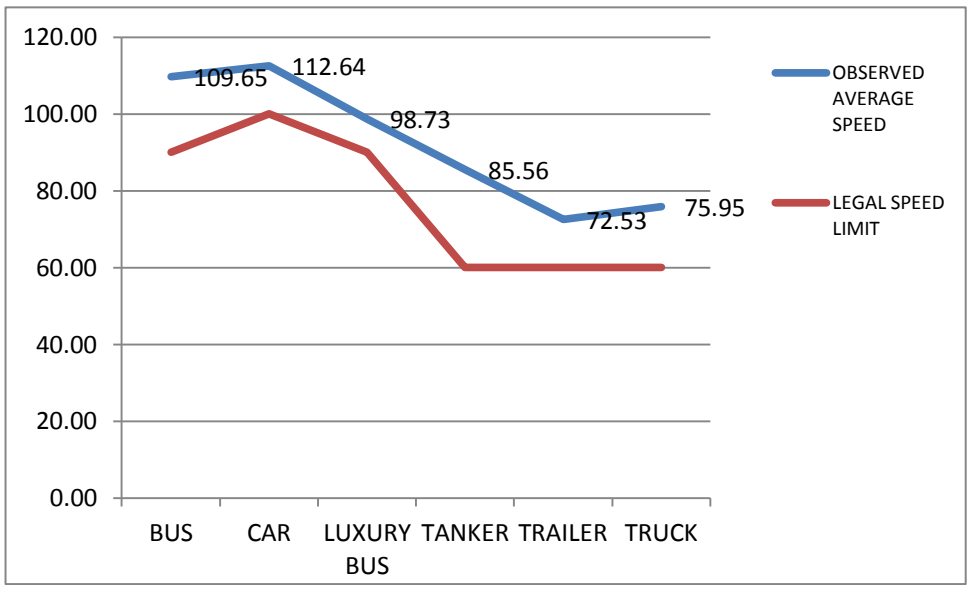


FIG 31b

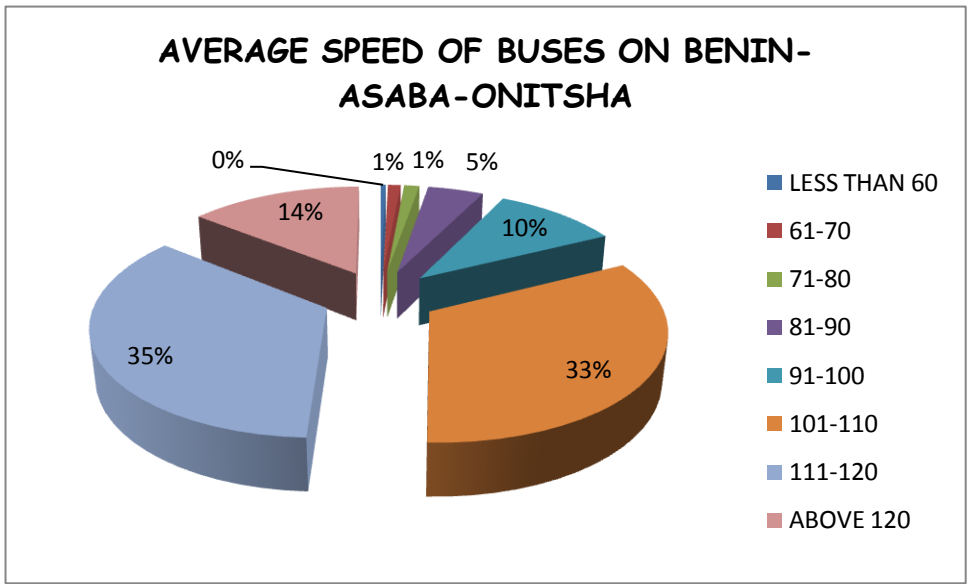


FIG 31C

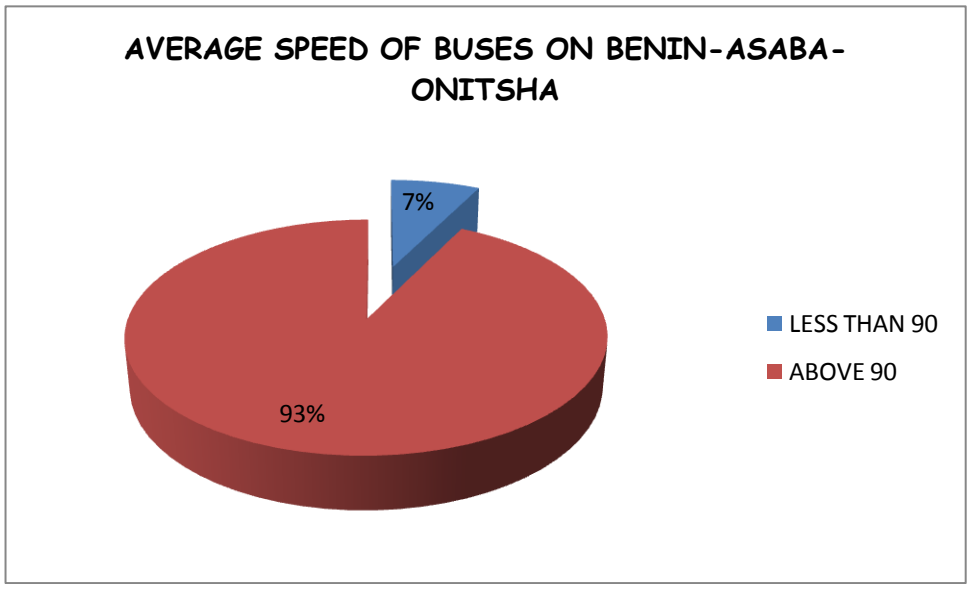


FIG 31 d

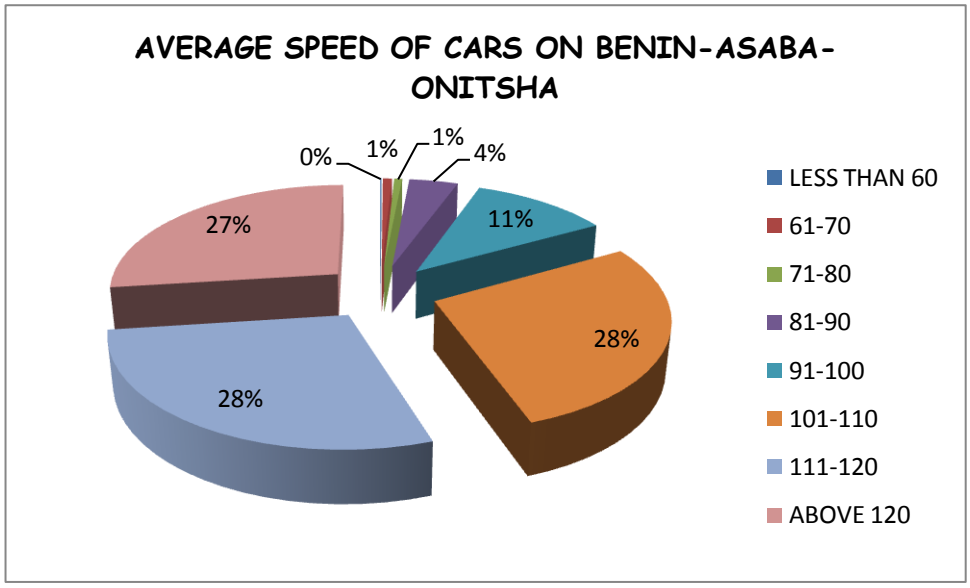


FIG 31E

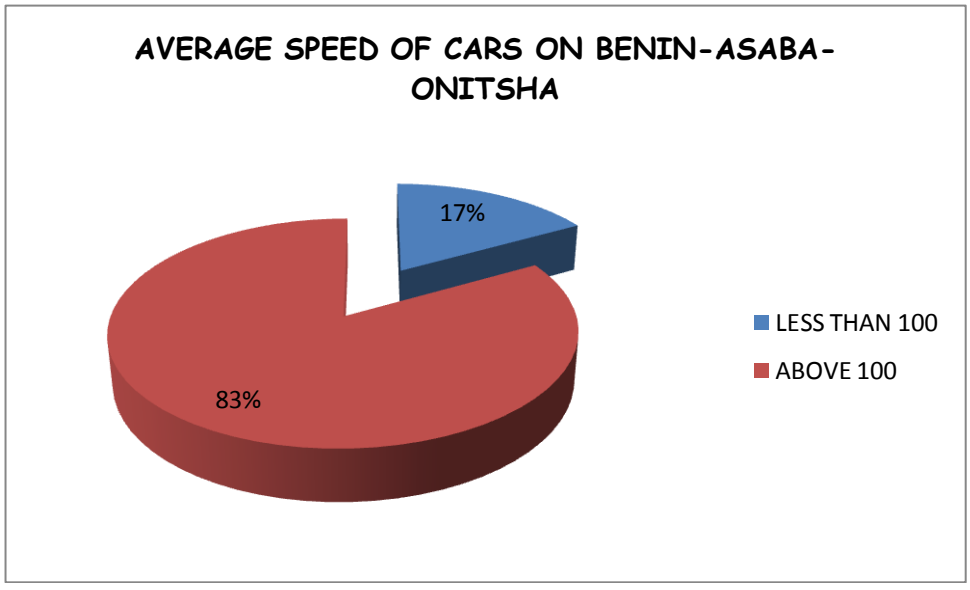


FIG 31f

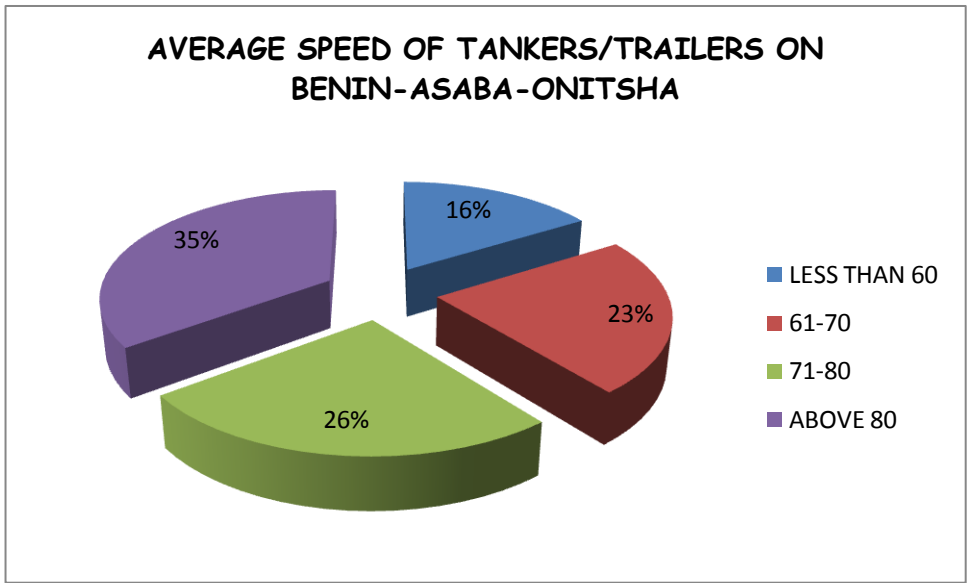
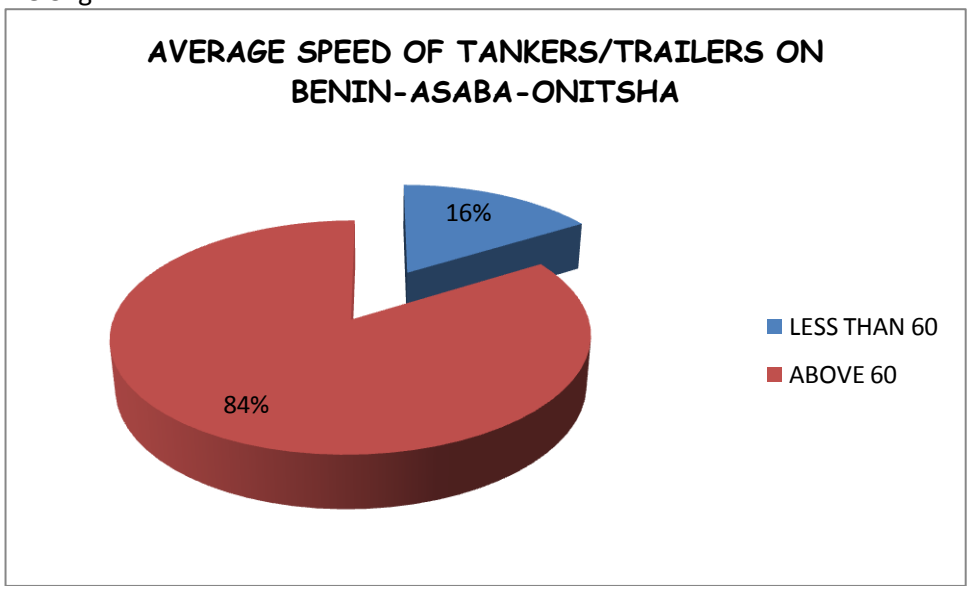


FIG 31g



Luxury buses average speed of 98.73kph, which is 8.73kph (9.7%) above the legal 90kph .Tanker, Trailer and Truck which have 60kph as the maximum limit were driven at 85.56kph, 72.53kph and 75.95kph respectively, clearly above the legal speed limits. The percentage variations between the legal and observed speed limits are as follows.

- Buses 21.83 %
- Private Cars 2.64%
- Luxury Buses 9.7 %
- Tankers 42.6%
- Trailers 20.9 %
- Trucks 26.6 %

(See Table 28, Figures 32 and 33a)

TABLE 28
AVERAGE SPEED ON VEHICLE CATEGORY

VEHICLE CATEGORY	NO OF VEHICLES	PERCENTAGE	TOTAL SPEED (Km/hr)	AVERAGE SPEED (Km/hr)	MAX SPEED LIMIT (Km/hr)	% DIFFERENCE IN SPEED
COMM. BUSES	380	24.03%	41952	110.4	90	22.7%
PRIV. BUSES	96	6.07%	10241	106.7	90	18.6%
COMM. CARS	148	9.36%	16399	110.9	100	10.9%
PRIV. CARS	770	48.7%	87002	112.9	100	12.9%
LUXURY BUS	49	3.09%	4838	98.73	90	9.7%
TANKER	25	1.58%	2139	85.56	60	42.6%
TRAILER	49	3.09%	3554	72.53	60	20.9%
TRUCK	64	4.04%	4861	75.95	60	26.6%
TOTAL	1581	100%	170986	773.67	650	164.9%

FIG. 32

AVERAGE SPEED ON VEHICLE CATEGORY (KPH)

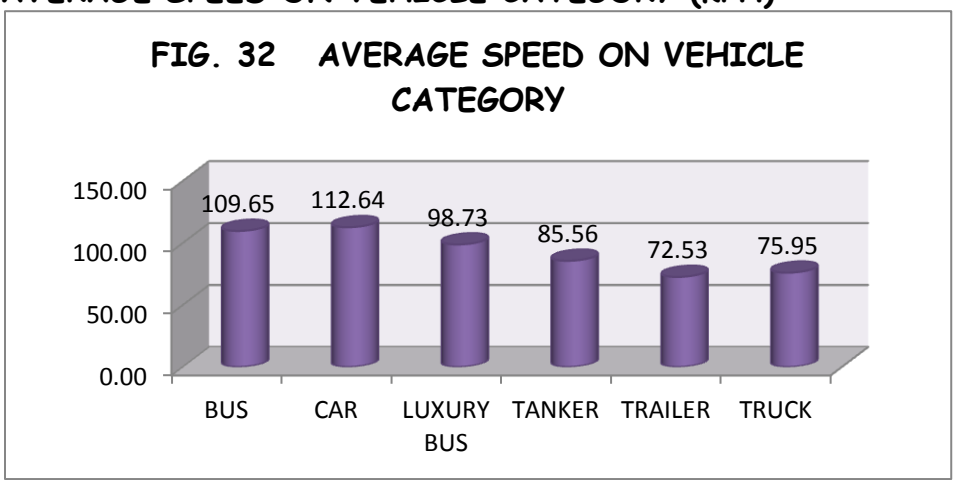


FIG. 33a

AVERAGE SPEED OF BUSES

BENIN-ASABA-ONITSHA

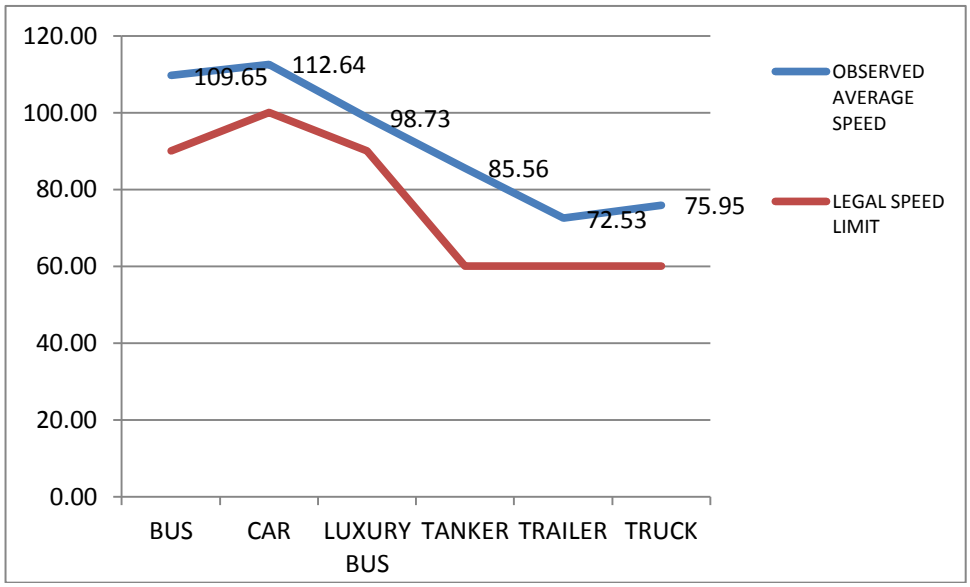


FIG 33b

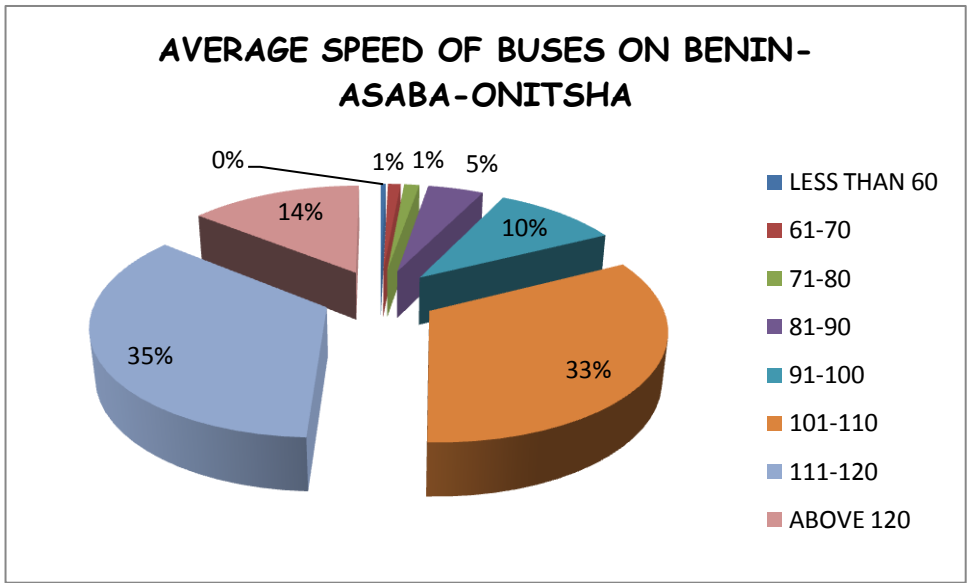


FIG 33c

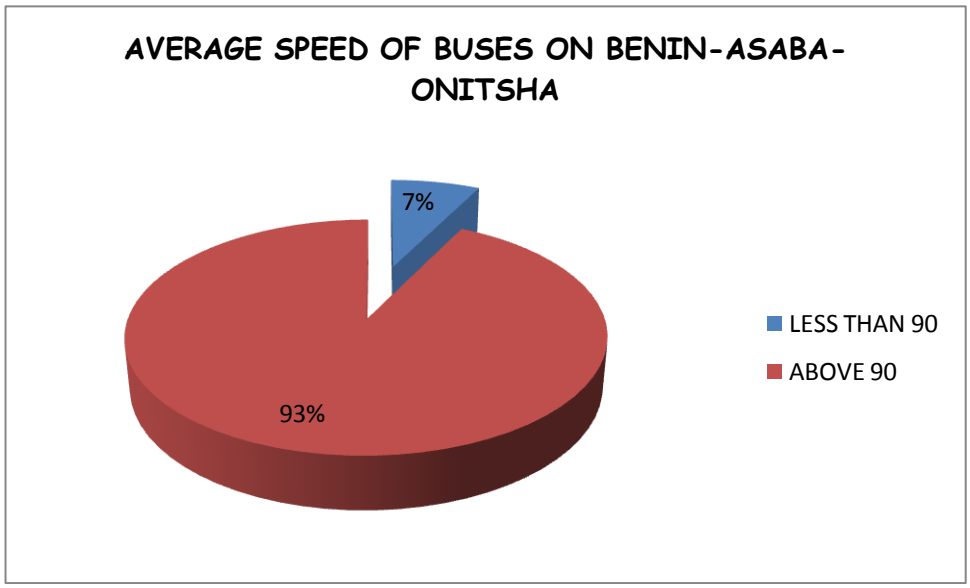


FIG 33D

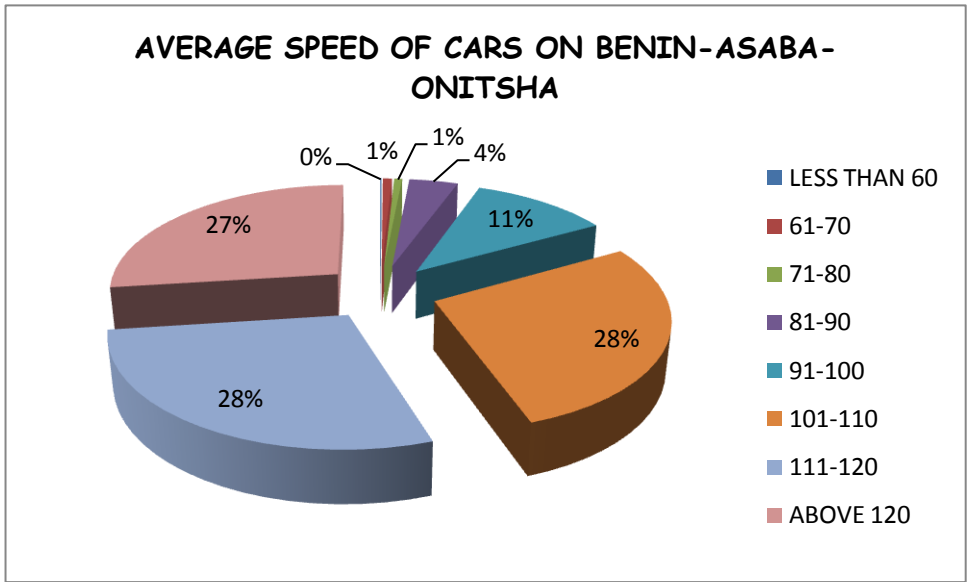


FIG 33E

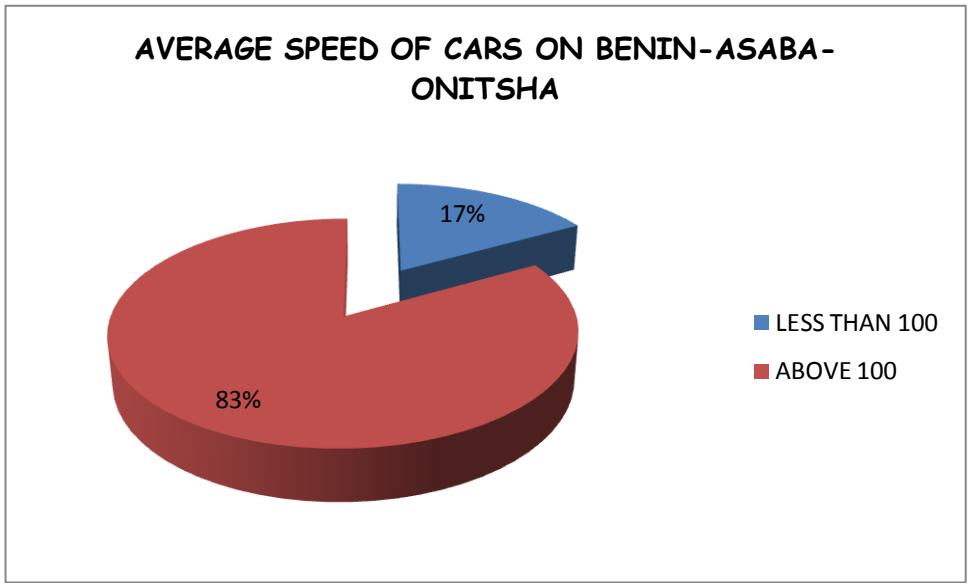


FIG 33 f

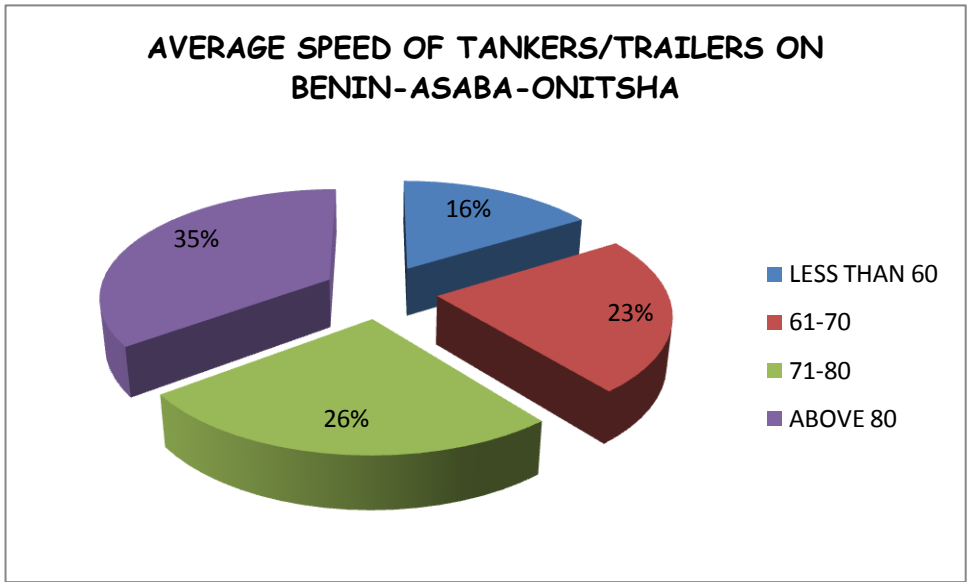
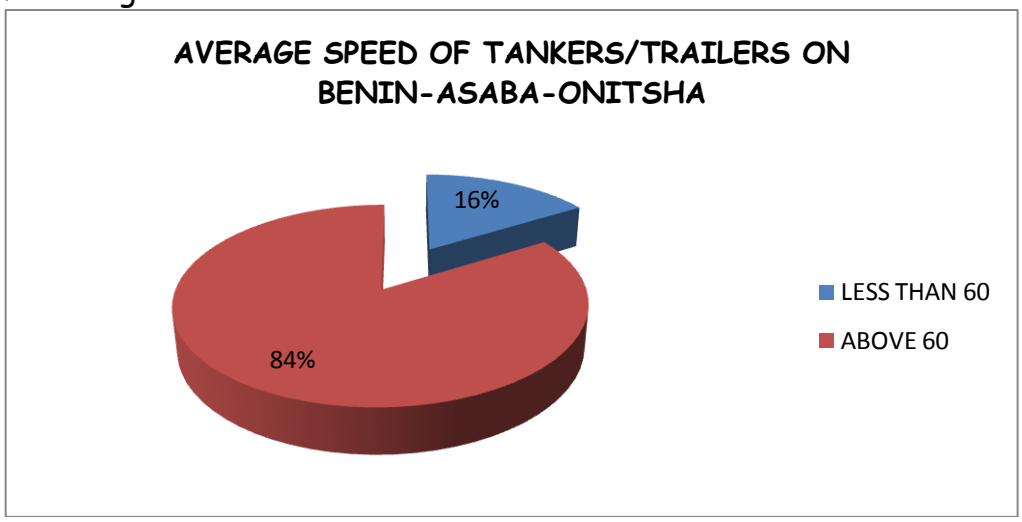


FIG 33g



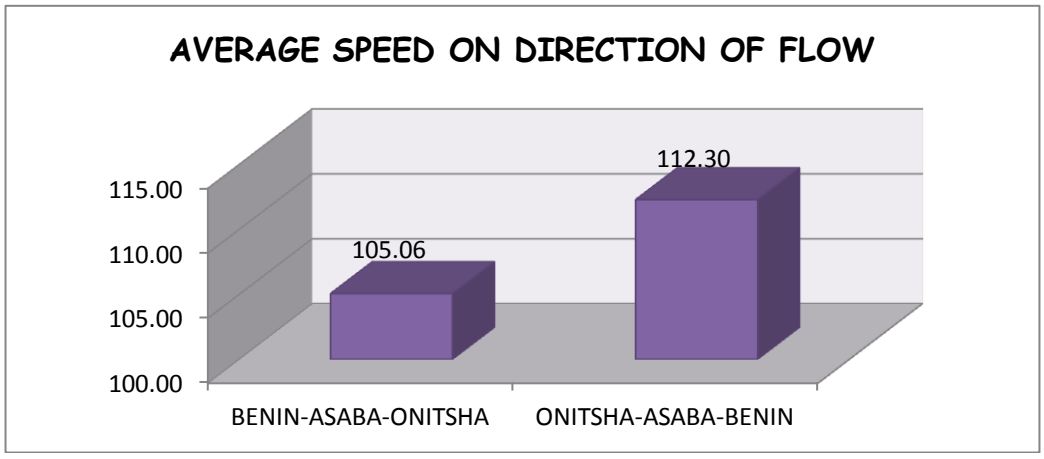
SPEED ON FLOW DIRECTIONS.

Vehicles moving from Onitsha towards Asaba - Benin had an average of 112.30km/ph while Benin towards Onitsha had a lower average speed of 105.06km/ph. (See Table 29 and figures 34).

TABLE 35
AVERAGE SPEED ON DIRECTION OF TRAFFIC FLOW

DIRECTION OF FLOW	NO OF VEHICLES	PERCENTAGE	TOTAL SPEED (Km/hr)	AVERAGE SPEED (Km/hr)
BENIN-ASABA-ONITSHA	906	57%	95186	105.06
ONITSHA-ASABA-BENIN	675	43%	75800	112.30
TOTAL	1581	100%	170986	108.15

FIG. 34
AVERAGE SPEED ON DIRECTION OF FLOW KPH



e. **ROUTE 5 (AKWANGA – LAFIA HIGHWAY)**

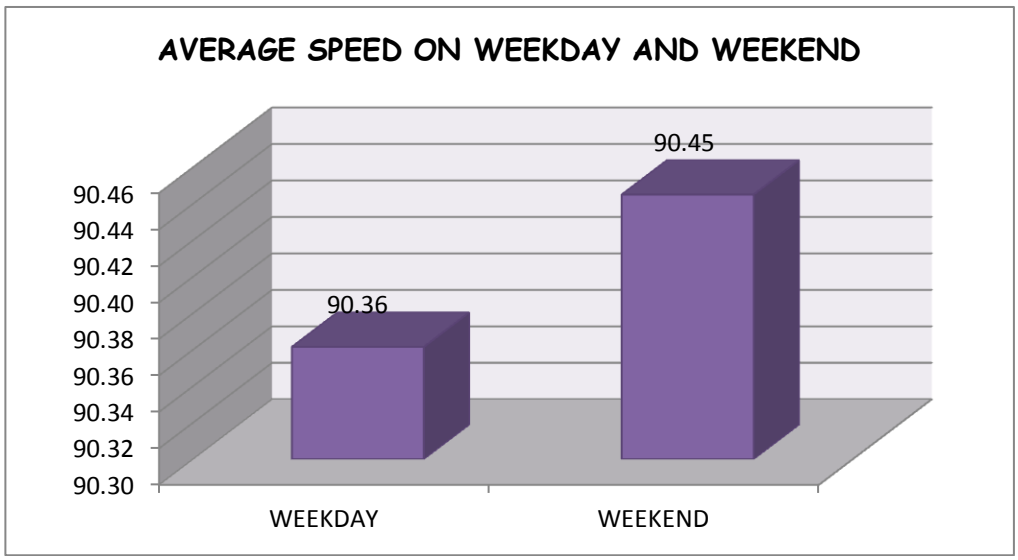
The average speed on the Akwanga – Lafia highway, which is a Single Carriageway with legal speed limit of 80km/ph, was 90.41km/ph. Also no significant difference between the weekend and weekdays average speed for vehicles plying the road. (See Table 30 and Figure 35).

TABLE 30
AVERAGE SPEED ON WEEKDAY AND WEEKEND

PERIOD	NO OF VEHICLES	PERCENTAGE	TOTAL SPEED (Km/hr)	AVERAGE SPEED (Km/hr)
WEEKDAY	838	45%	75,723	90.36
WEEKEND	1029	55%	93,068	90.45
TOTAL	1,867	100%	168,791	90.41

FIG. 35

AVERAGE SPEED ON WEEKDAY AND WEEKEND KPH



AVERAGE SPEEED ON TIME BASIS

The highest average speed of 92.47km/ph was recorded between 1301 - 1500 hours while the periods 1501- 1700 hours recorded 90.48km/h, above 1700 recorded 90.47km/h and 0901-1100hours had about 90.37km/hp as the average speeds while 0700 – 0900hours recorded 89.19km/ph and the lowest of 86.83km/ph, was recorded between 1101– 1300 hours. (See Table 31 and Figure 36)

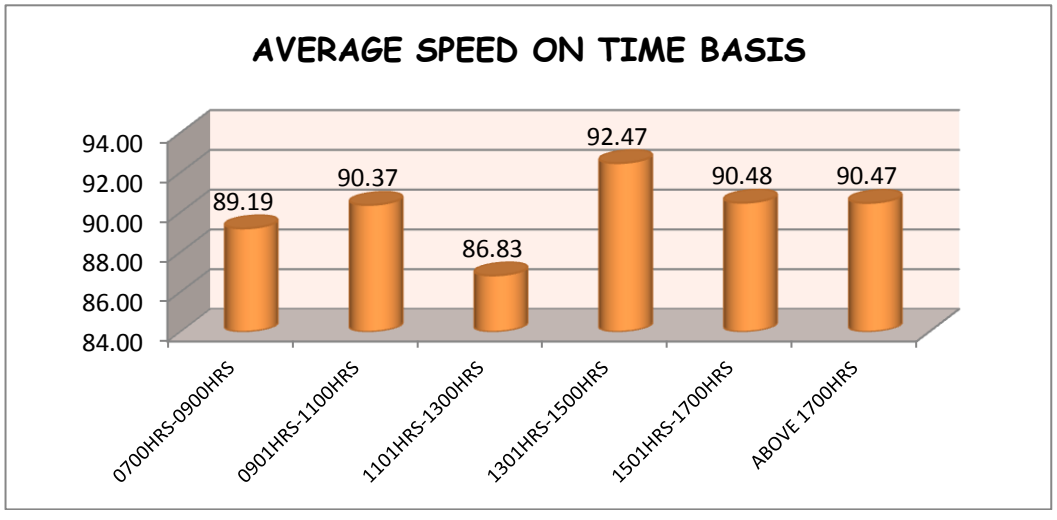
TABLE 31

AVERAGE SPEED ON TIME BASIS

TIME	NO OF VEHICLES	PERCENTAGE	TOTAL SPEED (Km/hr)	AVERAGE SPEED (Km/hr)	% VARIATION BETWEEN OBSERVED & ILLEGAL SPEED LIMIT (Km/hr)
0700HRS-0900HRS	191	10%	17036	89.19	11.45%
0901HRS-1100HRS	275	15%	24,852	90.37	12.96%
1101HRS-1300HRS	211	11%	18,321	86.83	8.53%
1301HRS-1500HRS	457	24%	42,261	92.47	3.08%
1501HRS-1700HRS	418	22%	37,822	90.48	13.1%
ABOVE 1700HRS	315	17%	28,499	90.47	13.08%
TOTAL	1,867	100%	168,791	90.41	

FIG. 36

AVERAGE SPEED ON WEEKDAY AND WEEKEND



CATEGORY OF SPEED ON TIME BASIS

29 of the 1,867 vehicles whose speed were tracked which is 1.55% were driven above 120km/ph on the road meant for 80km/ph maximum. The highest of 9 vehicles being during the 1301hrs – 1500hrs and 1501 – 1700hrs periods. 6.59% of the total vehicle that is 123 vehicles had speeds between 111 and 120km/ph. 323vehicles, which is 17.30% of the total vehicles, had speeds ranging between 101km/ph and 110km/ph with the highest of 109 vehicles driven at these speed recorded between 1301 and 1500hours.

25.87% of total vehicles on the Akwanga – Lafia road were driven between 91km/h and 100km/h with the bulk of the vehicles in the 1301 – 1500hours and 1501 – 1700hours bracket with 109 and 117 vehicles respectively.

Driven between 81km/ph and 90km/ph were 469 vehicles representing 25 % of the vehicles. This implies that 1427 vehicles which is 76.43 % of total vehicles were driven above the legal speed limits of 80kph for the road. (See Table 32 and Figure 37)

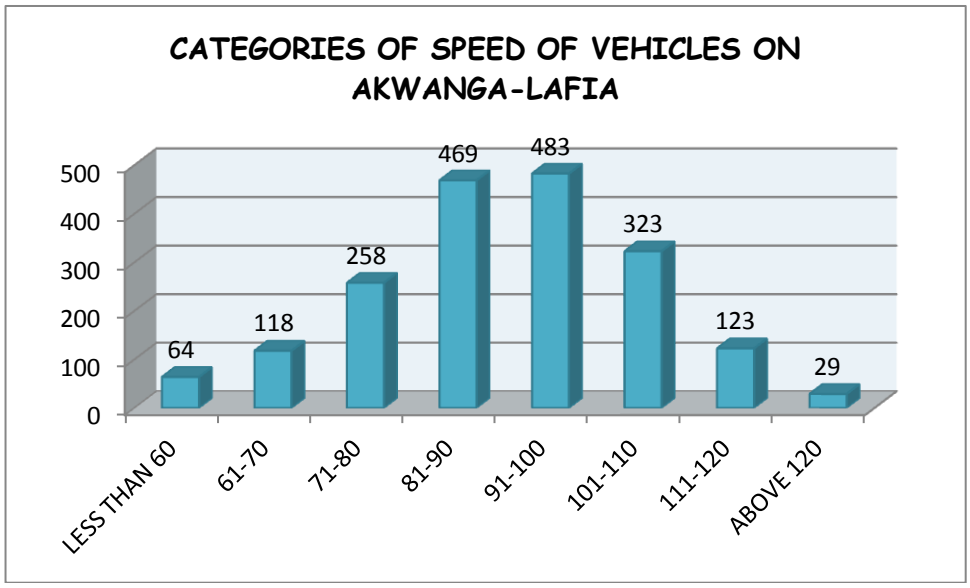
TABLE 31

CATEGORY OF SPEED ON TIME BASIS CATEGORIES OF SPEED OF VEHICLES ON AKWANGA-LAFIA

	LESS THAN 60		61-70		71-80		81-90		91-100		101-110		111-120	ABOVE 120		TOTAL		
TIME	NO OF VEH	%	NO OF VEH	%	NO OF VEH	%	NO OF VEH	%	NO OF VEH	%	NO OF VEH	%	NO OF VEH	%	NO OF VEH	%	NO OF VEH	%
0700HRS-0900HRS	11	5.8%	9	4.7%	34	17.8%	39	20.4%	55	28.8%	23	12.0%	18	9.4%	2	1.0%	191	100%
0901HRS-1100HRS	9	3.3%	17	6.2%	41	14.9%	70	25.5%	68	24.7%	52	18.9%	14	5.1%	4	1.5%	275	100%
1101HRS-1300HRS	10	4.7%	22	10.4%	37	17.5%	48	22.7%	51	24.2%	30	14.2%	13	6.2%	0	0.0%	211	100%
1301HRS-1500HRS	14	3.1%	25	5.5%	45	9.8%	113	24.7%	109	23.9%	109	23.9%	33	7.2%	9	2.0%	457	100%
1501HRS-1700HRS	13	3.1%	23	5.5%	56	13.4%	113	27.0%	117	28.0%	59	14.1%	28	6.7%	9	2.2%	418	100%
1700HRS-1900HRS	7	2.2%	22	7.0%	45	14.3%	86	27.3%	83	26.3%	50	15.9%	17	5.4%	5	1.6%	315	100%

FIG. 34

CATEGORIES OF SPEED OF VEHICLES ON AKWANGA-LAFIA



AVERAGE SPEEED ON VEHICLE CATEGORIES

The Average Speed for all the categories of vehicles considered were higher than the legal speed limits. Buses were driven at an average speed of 89.58Km/ph as against the legal maximum speed limit of 80km/ph. private cars and commercial taxis also had respectively, the average speed of 91.69km/ph and 91.52km/ph, 14.61% above the maximum speed limit (See Table 32 and figure 35) of 80Km/ph prescribed for the road Articulated vehicles (Tankers and Trailers) and Truck (light good Vehicles) which have 50kph speed limits were driven at 67.85km/ph for tankers, (35.7%) higher than the speed limit), 66.00kph for Trailers (32%) higher than speed limits and 71.38kph (42.76%) higher than the legal speed limit (See Table 33,figure 33 and 34).

TABLE 33 AVERAGE SPEED ON VEHICLE CATEGORIES

VEHICLE CATEGORY	NO OF VEHICLES	PERCENTAGE	TOTAL SPEED (Km/hr)	AVERAGE SPEED (Km/hr)	MAX SPEED LIMIT Km/hr)	AMT ABOVE LEGAL	% ABOVE LEGAL
COMM BUSES	189	10.12	16899	89.41	80	9.41	11.76
PRIV. BUSES	87	4.65	7824	89.93	80	9.93	12.41
COMM. CARS	373	19.97	34137	91.52	80	11.52	14.4
PRIVATE CARS	1139	61.00	104,444	91.69	80	11.69	14.61
TANKER	8	0.4	543	67.88	50	17.88	35.76
TRAILER	23	1.23	1,518	66.00	50	11	22
TRUCK	48	2.6%	3,426	71.38	50	21.38	42.76
TOTAL	1867	100%	168,791	567.81	390	92.81	

FIG. 38
AVERAGE SPEED ON VEHICLE CATEGORY

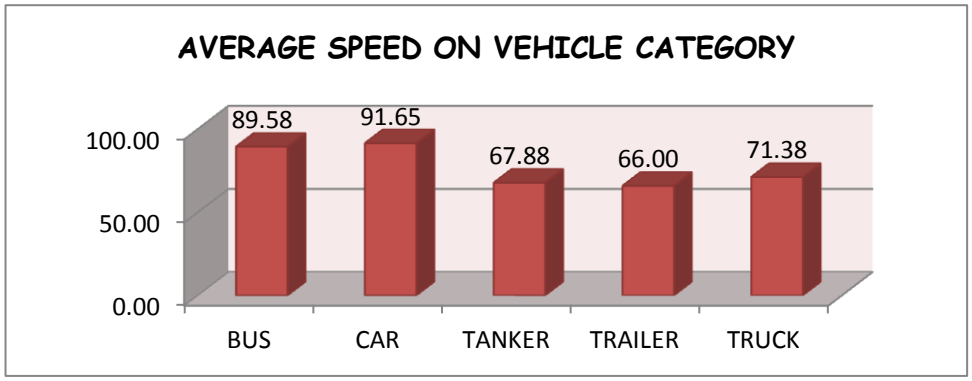


FIG. 39

AKWANGA-LAFIA ROUTE

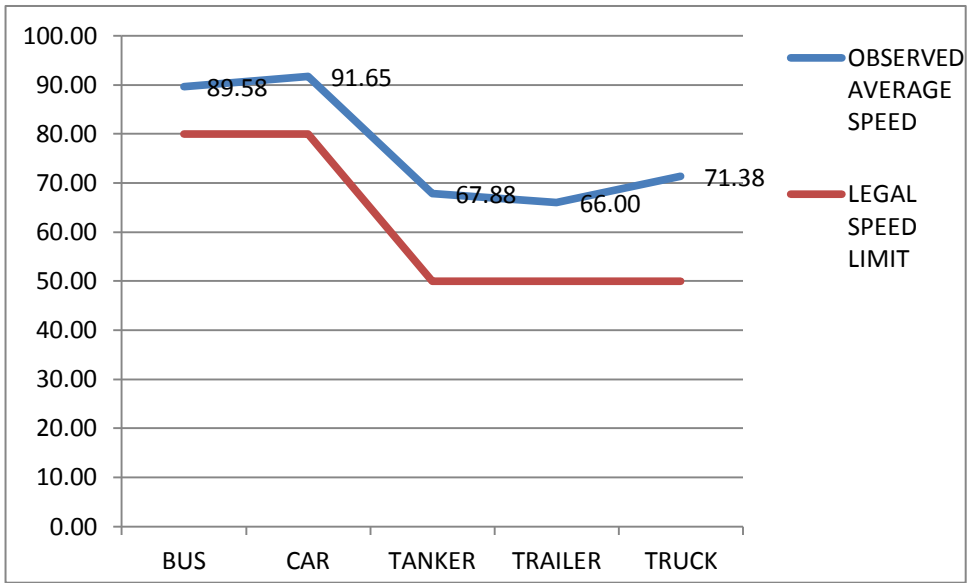


FIG 39 A

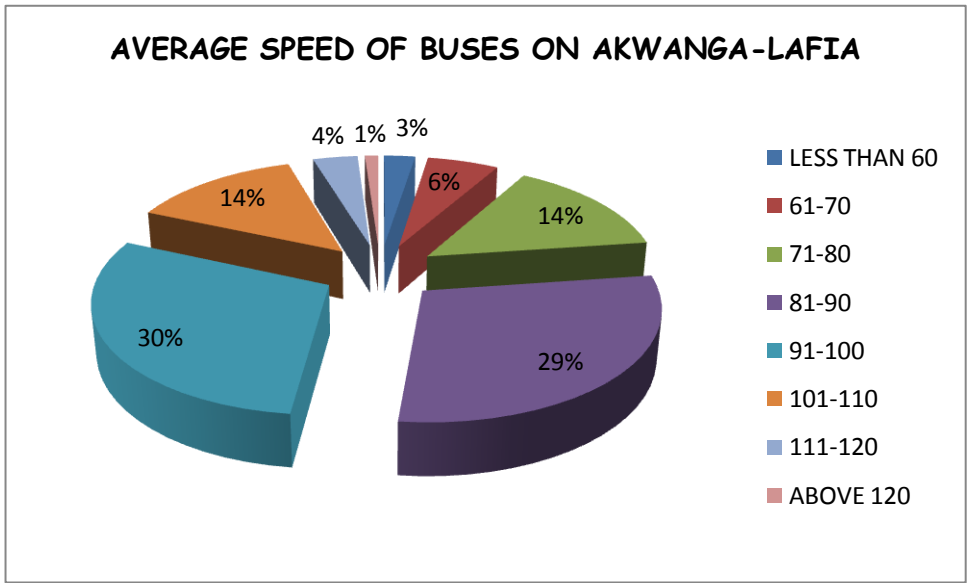


FIG 39B

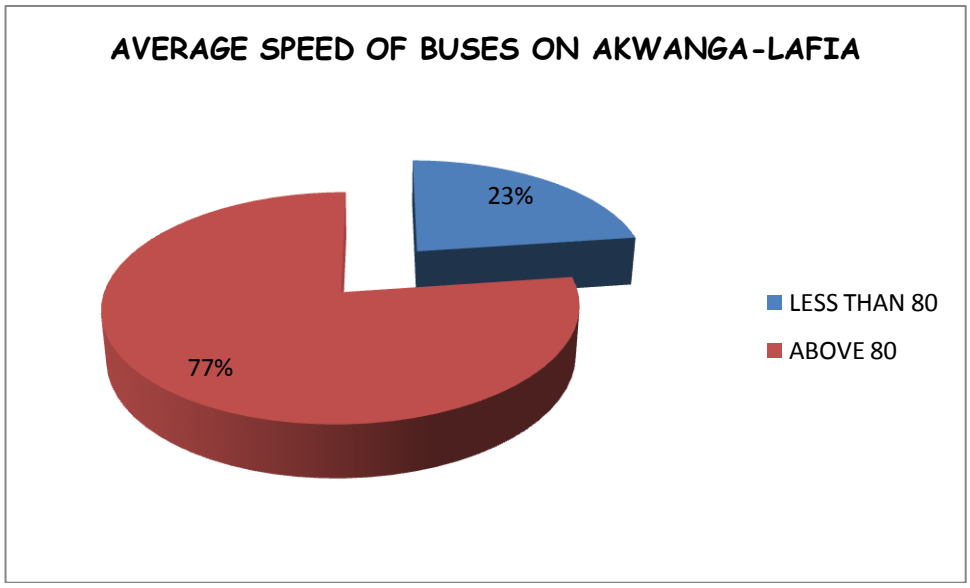


FIG 39C

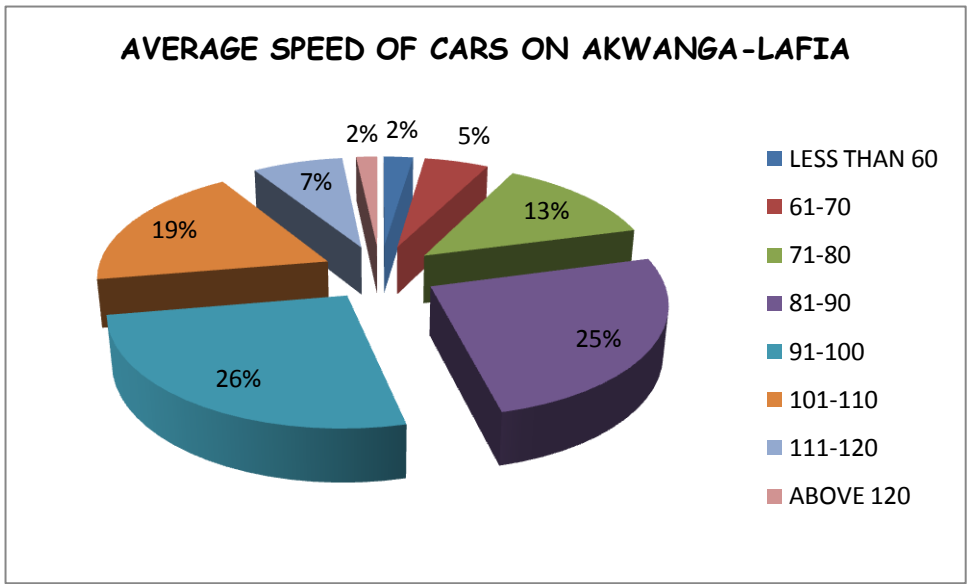


FIG 39D

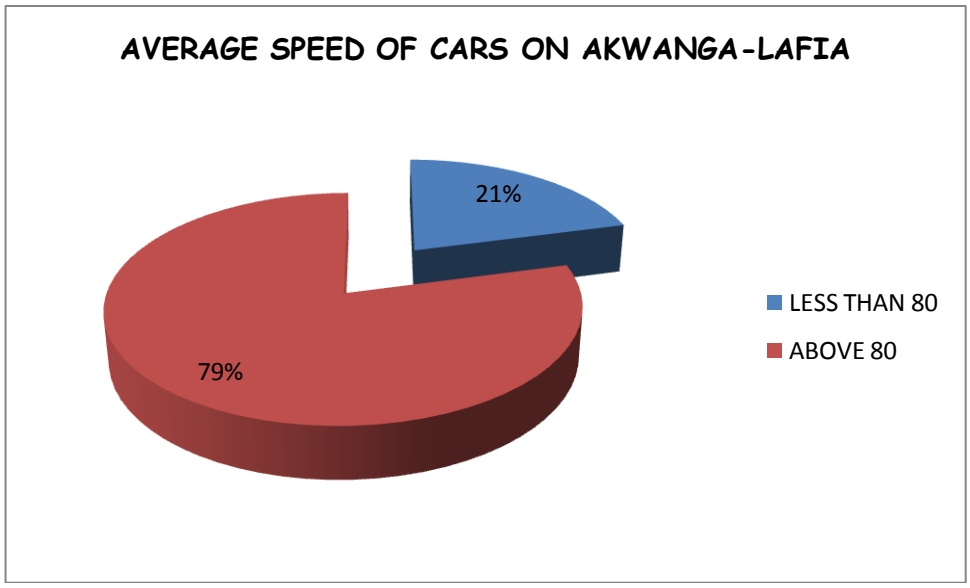


FIG 39E

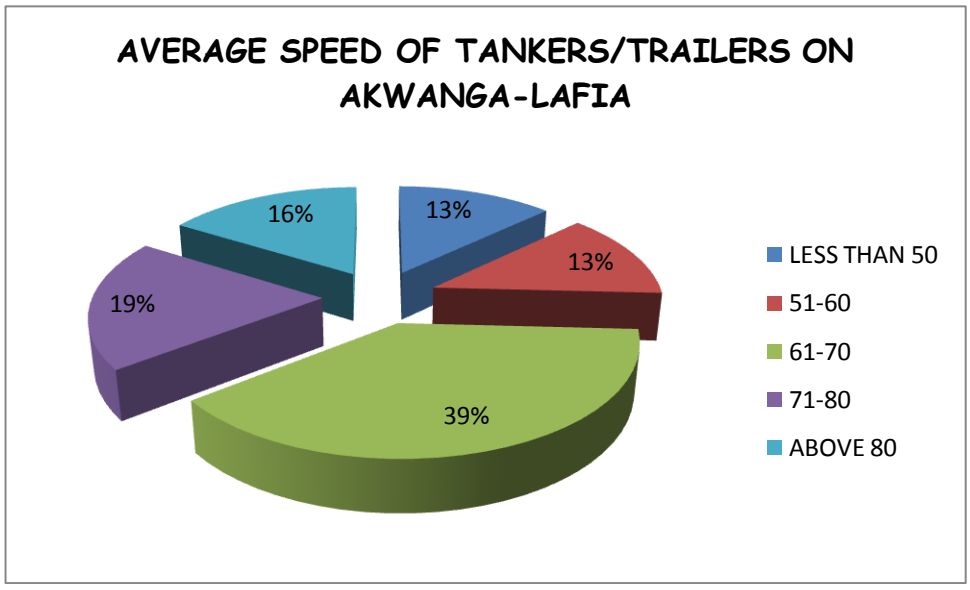
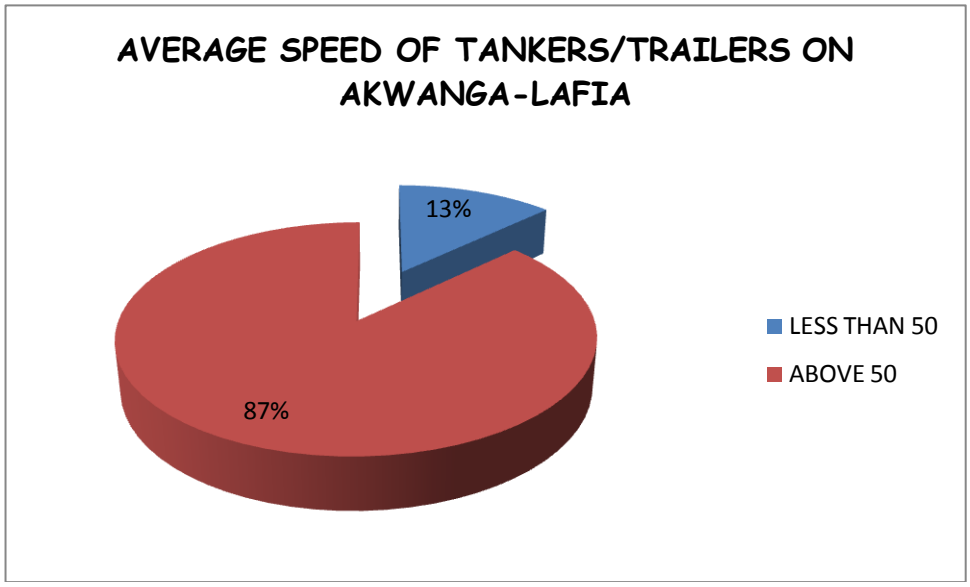


FIG 39F



AVERAGE SPEED ON DIRECTION OF TRAFFIC FLOW

The speed on the Lafia – Akwanga road at 91.52kph was higher than that of Akwanga – Lafia at 85.39kph; however, the average speed on both directions violated the speed limit regulations. (See Table 33 and Figure 40).

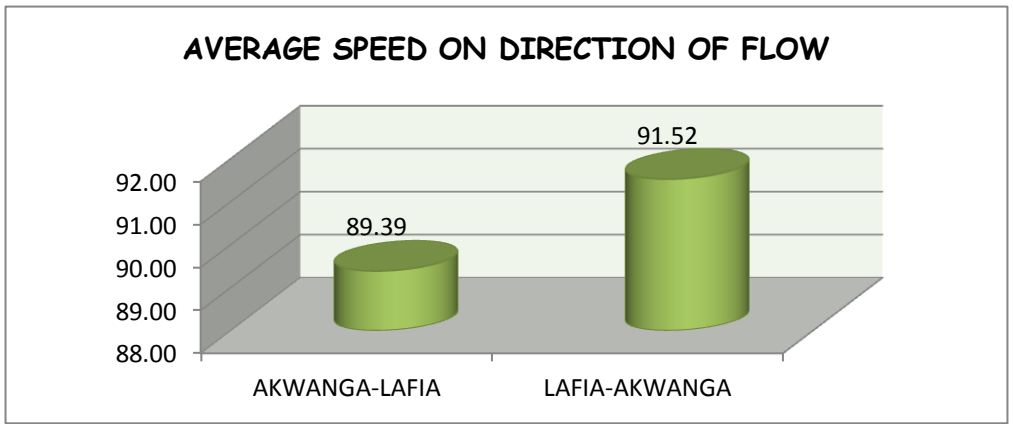
TABLE 33

AVERAGE SPEED ON DIRECTION OF TRAFFIC FLOW

DIRECTION OF FLOW	NO OF VEHICLES	PERCENTAGE	TOTAL SPEED (Km/hr)	AVERAGE SPEED (Km/hr)
AKWANGA-LAFIA	975	52%	87151	89.39
LAFIA-AKWANGA	892	48%	81640	91.52
TOTAL	1867	100%	168791	90.45

FIG. 35

AVERAGE SPEED ON DIRECTION OF FLOW



SPEED COMPARISONS BETWEEN SINGLE AND DUAL CARRIAGEWAYS

The average speed limits on the two single carriageways considered were 88.0 km/h and 90.41 kmph for the 9th mile – Obollo-Afor and Akwanga-Lafia respectively, while the average speeds for the dual carriageways were 91. 73 kmph, 108.5 km/ph and 107. 80 kmph for the Lagos-Ibadan, Benin –Asaba- Onitsha and Lokoja-Abuja respectively. It shows that the speed on the dual carriageways were higher, except where the road conditions are bad as it was on Lagos-Ibadan expressway. Motorists tend to increase speed when the road is good and on dual carriageways when they are not likely to meet oncoming vehicles.

SUMMARY OF FINDINGS

The following findings were made

A total of seven thousand three hundred and thirty nine (7339) vehicles were captured in the exercise. The followings were observed:

(a) Based on the speed limits of each route, a total number of 4,991 vehicles which represent 68 % of the total commuters violated the legal speed limits on all the routes observed.

(b) The overall average speed recorded in all the routes was 96.46 km/h.

(c) The average speed recorded for private cars and commercial cars was 94.1km/h and 89.1km/h respectively as against 80km/h while the average speed recorded for private buses and commercial buses were 91.8km/h and 89.22km/h as against the approved legal speed of 80km/hr.

(d) It was discovered that Benin – Asaba –Onitsha recorded the highest average speed of 108.15 Km/h

(e) Followed by Abuja – Lokoja Highway with 107.80 km/h (It should also be noted that Abuja-Lokoja road is still under construction and not yet an expressway).

(f) 9th Mile-Obollo –Afor Highway recorded the least speed with the average speed of 88 km/h

(g) On route 1 (Lagos- Ibadan expressway 66% of buses, 45% of cars and 84% of tankers/ trailers were above the approved legal speed limits.

(h) On Route 2 (Abuja- Lokoja carriageway), 96 % of Buses, 82% of cars and 84 % of tankers/trailers were above the approved legal speed limits.

(i) On route 3 (9Th Mile – Obollo -Afor Highway 75% of buses, 77 % of cars and 82% of tanker/trailers were above the approved legal speed limit.

(j) On route 4 (Benin –Asaba- Onitsha expressway) 93% of Buses, 83% of cars and 84 % of tankers /trailers were above the approved legal speed limit.

(k) On route 5 (Akwanga- Lafia Highway), 77% of buses, 79 % of cars and 87% of tankers/trailers were above the approved legal speed limits.

RECOMMENDATIONS

Consequently upon the above findings which revealed gross violation of legal speed limit of commuters on the selected routes in Nigeria, the under mentioned recommendations were proffered to check the excesses of motorists. They are:

(a) That there should be aggressive campaign against excessive speed for all motorists, showing RTC pictures and films to motorists.

(b) More stringent measures be adopted to control the issuance of driving licenses to motorists.

(c) Refresher courses be introduced to motorists to check their patience level on the road.

(d) Patrolmen and Commands along these corridors should be equipped with radar gun/equipment to capture erring motorists with the anticipation of communicating and warning them through their mobile line and subsequently

publishing of names and numbers of reprobate offenders in national newspapers.

(e) The Corps in collaboration with the Federal Ministry of Works to install speed calming devices on routes notorious for speed violations.

(f) Television jingles, radio announcement be introduced at intervals to sensitize motorists and pedestrians on dangers inherent in excess speeding.

(g) The Corps to adopt the use of advance technology to check excess speed by including road camera to record and prosecute offenders above legal speed limits.

(h) Subsequent works should be carried out on other geographical zones to ascertain the compliance level of motorists in the North-East, North-West and North-Central of Nigeria that were not captured in the exercise.

(i) Further research may be necessary to advance reason(s) why people speed above the prescribed limits.

(j) There may be need for campaign on the relationship between speed, injuries and death on Nigerian roads.

(k) The government should tackle security issues on the roads as a lot of drivers do increase their speeds to wade off attacks

(l) Government should continue to make efforts to improve the road conditions. It should however enlighten the drivers not to increase their vehicular speed just because the roads are good.

(m) FRSC should strictly enforce the installation of speed limiters in vehicles, especially on commercial vehicles.

F. CONCLUSION

Giving the above assumptions, the study opened up seamless opportunity to determine the level of speed of various categories of vehicles on Nigeria roads. This is to determine the average speed of Commercial, Private and Heavy Duty Vehicles in Nigeria. However, this will guide the public presentations of the Management and also in the direction of deployment of new policy of the Corps in the use of speed limiting devices. It is worthy of note that, since the first launch of the speed limiting devices, this is the first survey to guide the Corps in further deployment of regulation on speed limiting devices.

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Abuja, Nigeria
June, 2014