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Road Traffic Accident Variations in Lagos State, Nigeria: A Synopsis of Variance Spectra (Pp. 197-218)

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Abstract

The major objective of this research is to examine the variation patterns of road traffic accident in Lagos State. The study used mostly secondary data; accident records and vehicular situation were obtained from the Nigeria police force and Federal Road Safety Commission. The data were obtained for a period of thirty two (32) years from 1970-2001. The analysis of the number and type of vehicles involved in road traffic accidents revealed that private cars, buses and taxis were more prone to accidents in Lagos State. The 16 harmonics for the selected L.G.A's considered contribute above 90% of the total variance in the time series. This means that more than 90% of road traffic accident in Lagos State could be attributed to recklessness on the part of drivers, ignorance of high way codes, over speeding etc. Also, the dominant cycles of road traffic accidents observed in the study area have periodicities of 32.00 and 16.00 years with the most dominant being 32years. This means that the dominant and strongest road traffic accident pattern of Lagos State repeats itself every 32years. Based on the findings, recommendations were proffered.

Keywords: Accident; traffic; variations; variance spectra; Lagos State

Introduction

Road Traffic Accidents are a major cause of morbidity and mortality worldwide, but especially in low-and middle-income countries. The World Health Organization estimates that more than 3000 people are killed every

day in road traffic accidents globally, with at least 30,000 others injured or disabled. This adds up to over 1 million people killed and between 20-50 million injured or crippled in road traffic crashes each year (Krug et al, 2000). The rising trend in morbidity and mortality rates due to road traffic accidents in low-and middle-income countries has moved some to declare road traffic accidents an 'epidemic' Nantulya and Reich, 2002; Roberts et al, 2002; Atubi and Onokala, 2009).

The global costs of road injuries are enormous, one report estimates the global costs of road crashes is about \$518 billion annually in US dollars, and ranges in percentage of GNP from 0.3% in Vietnam to almost 5% of GNP in the USA, Malawi and Kwa Zulu Natal, south Africa (Jacobs et al, 2000). The true costs to society are probably much greater, since these estimates are based on direct costs only.

As in other developing countries, road traffic accidents in Nigeria are one of the most serious problems in need of pragmatic solutions. Yet this problem has been difficult to address probably because of the country's level of development. Nigeria is said to have the highest road traffic accident rates in Africa (Akpoghomeh, 1998; Obinna, 2007; p. 35: Atubi and Onokala, 2009). According to one study, the proportion of deaths from road traffic accidents in Nigeria increased from 38.2 percent to 60.2 percent in ten years from 1991-2001 (Obinna, 2007).

Thus, Nigeria's annual 8,000 to 10,000 traffic accident deaths between 1980 and 2003 were a major personal and traffic safety problems as well as a terrible waste of human resources for the country. In terms of the personal safety problem, Nigeria and indeed Lagos State is a high risk region with an average of 32 traffic deaths per 1,000 people (Filani et al, 2007)> This is very high compared with the United State's 1.6 traffic deaths per 1,000 population and with the United Kingdom's 1.4 deaths per 1,000 people (Trinca et al, 1988). In terms of traffic safety, there are on average 23 accidents per 1,000 vehicles in Nigeria (i.e. 230 per 10,000 vehicles) far in excess of the accident rate in the USA (2.7 accident per 10,000 vehicles) and the UK (3.2 accidents per 10,000 vehicles).

According to data from the Nigerian Federal Road Safety Commission, the country has the highest rate of death from motor accidents in Africa; leading 43 other nations in the number of deaths per 10,000 vehicle crashes (FRSC, 2006; Obinna, 2007, p. 35). Nigeria is followed by Ethiopia, Malawi and

Ghana with 219,183 and 178 deaths per 10,000 vehicles, respectively (Daramola, 2004).

At the first African Road Safety Congress in Nairobi in 1989, Nigeria was also ranked ahead of other African countries in the mortality rate of its highways with “the chances of a vehicle killing some one in Nigeria ... (being) 47 times higher than in Britain” (Onakomaiya, 1990). Similarly, Kenya has one of the highest road fatality rates in relation to vehicle ownership in the world with an average of 7 deaths from the 35 daily road crashes or nearly 3,000 deaths from nearly 13,000 annual road crashes (Finch et al, 1994). This translates to approximately 68 deaths per 10,000 registered vehicles, a rate that is 30-40 times greater than that in many highly motorized countries of the world (Noguchi, 1990). Yet, the Nigerian accident and fatality rate is the highest in Africa.

It is also evident that Nigeria is worse than most other countries in terms of traffic accidents, in spite of her relatively good road network. As a 2004 World Bank report asserts “from the view – point of road development, Nigeria would no longer be regarded as a developing country” (World Bank, 2004, p. 27). But unlike in most countries where improved road development and vehicle ownership (as barometers of economic advancement) is accompanied by better traffic management, higher road safety awareness, and a relative decrease in the number of motor accidents, the opposite is true of Nigeria.

According to the Nigerian Federal Road Safety Corps (2006), between 1970 and 2001, Nigeria recorded a total of 726,383 road traffic accidents resulting in the death of 208,665 persons and 596,425 injuries. In that period, each succeeding year recorded more accidents, deaths and injuries. Also between 1997 and 2002, Lagos State alone recorded a total of 39,141 road accidents resulting in the death of 10,132 persons and 18,972 injuries (Atubi, 2006).

Indeed, the Nigeria accident pattern seems to suggest that the better the road, the higher the accident and fatality rate as well as the severity and non-survival indices because of driver non compliance with speed limits (Onakomaiya, 1988; Gbadamosi, 1994; Filani and Gbadamosi, 2007).

Study Area

Lagos State is a suitable case study because it hosts metropolitan Lagos, Nigeria’s major traffic center, fastest growing city, and most heavily motorized urban area in the country. Consequently, the state has one of the

highest accident and casualty rates in the country. Moreover, the traffic situation in Lagos state is bad because of the absence of effective transport planning, vehicle-misuse, poor management, inadequate street parking, traffic congestion, delays and accidents among other contributory factors.

Lagos State is situated in the south western corner of Nigeria. This elongated state spans the Guinea Atlantic coast for over 180km, from the Republic of Benin on the west to its boundary with Ogun State in the east (figure 1). While Lagos State is the smallest in Nigeria, it has over 5 percent (i.e. 9,013,534) of the country's estimated 140 million people (National Population Census, 2006). Its rate of population growth has been in excess of 9 percent per annum, or 25,000 per month or 833 per day or 34 per hour in the last decade (Lagos Urban Transport Project, 2002).

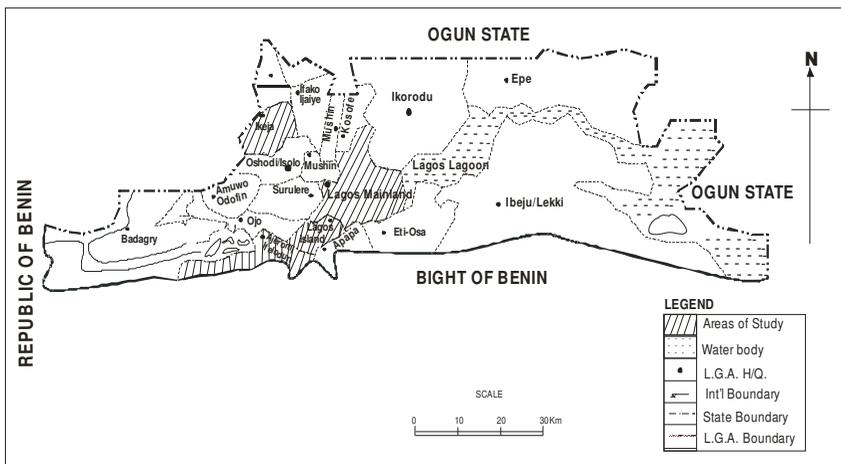


Fig 1: Map of Lagos State showing the 20 L.G.A's

Research Methodology

Data for the study were mainly obtained from police accident records and were complemented with data from research reports and articles, and national statistical abstracts and newspapers. The author reviewed the statistics for the years 1970 to 2001, disaggregated by administrative councils. The records contained information on crash severity (whether fatal, serious or slight),

categories of road users affected, vehicles involved, and causes of crashes (whether human error, vehicle defect, or otherwise), date, and traffic environment as judged by the investigating officers. Also, information on monthly variation of road traffic accidents was collected from Lagos State police command, Ikeja.

The harmonic analysis was used to estimate the contributions of particular bands of frequencies to the overall variance in terms of a fluctuating time series. However, the justification for choosing Ikeja, Lagos Island, Lagos Mainland and Ajeromi/Ifelodun Local Government Areas for this study lies in the fact that they carry more than fifty (50%) percent of the vehicular traffic in Lagos State (Atubi, 2007)

Discussion of Results/Findings

The reported road mishaps in Lagos state from 1970 – 2001 is as shown in Table 1. As revealed in the Table 1, total number of reported road traffic accidents for the period of study was 148, 485. However, the occurrence of road traffic accidents in Lagos state varied both in time as well as in space. For instance, the spatial pattern of the accidents revealed in table 1 shows that Ikeja Local Government Area recorded the highest number of road traffic accident among the twenty (20) Local Governments. The accident figure for this Local Government was 11747 representing 7.91% of the total reported road traffic accident. This is followed by Lagos Island Local Government Area which recorded traffic accident of 11466 representing 7.72% of the total road traffic accidents reported. This is followed by Ajeromi/Ifelodun and Lagos Mainland Local Government Areas with 7.44% and 7.08% respectively.

In this study, attempt was made to examine the seriousness of motor accidents in the selected local government areas for the period of study. This is discussed under fatal, serious and minor accidents in the four selected Local Government Areas. As shown in Table 2 there are variations in the seriousness of accidents in between the different Local Government Areas. In Lagos Island Local government area, 24.18% of the recorded accidents were fatal, 34.63% were serious, 41.20% were minor. In Ajeromi/Ifelodun Local government area, fatal motor accidents accounted for 23.16%, serious motor accidents 33.16% while minor motor accidents accounted for 43.04%. In Ikeja Local Government Area, 23.53% of the recorded accidents are fatal, 34.70% are serious, 41.80% are minor. In Lagos Mainland Local Government Area, fatal accidents accounted for 15.66%, serious accidents

39.20% while minor accidents 45.14%. An observation from this table shows that the proportion of motor traffic accident in each of the Local Government Areas (L.G.A'S) are on the high side, these suggest the worsening traffic situation in Lagos State.

The analysis of the number and types of vehicles involved in road traffic accident as shown in Table 3 yielded important information. As shown in table 3, Ikeja Local Government Area, a total number of 11747 vehicles were involved in road traffic accident under the period of study. This comprised of 4076 (34.71%) Taxi, 4904 (41.76%) private cars, 2302 (19.60%) Buses and 462 (3.93%) Lorries. This shows that private cars and taxis are the type of vehicles that are more prone to accidents in Ikeja Local Government Area. In Lagos Island Local Government Area, a total of 11466 vehicles were involved in road traffic accident, taxi, private cars and buses are the more prone. They accounted for 32.9%, 38.10% and 19.83% of the vehicles that involved in road traffic accident in the Local Government Area. Also, in Ajeromi/Ifelodun Local Government Area, a total number of 11040 vehicles were involved in road traffic accident under the period of study. This is made up of 3815 (34.56%) Taxi, 4587 (41.55%) private cars, 1718 (15.50%) Buses and 920 (8.33%) Lorries. This shows that private cars and taxi are more prone to road traffic accident. In Lagos Mainland Local Government Area, a total of 10513 vehicles were involved in accident. Taxi, private cars, buses and lorries were involved. They represented 39.20%, 45.14%, 10.43% and 5.41 respectively. This shows that private cars and taxi's are more prone to accidents in Lagos Mainland Local Government Area.

Furthermore, table 4 and figure 2 shows the monthly variation of road traffic accidents in Lagos Island Local Government Area. The month of July recorded the highest number of accidents. This month alone accounted for about 12 percent of all the road traffic accidents recorded in Lagos Island Local Government Area. Next were February, 10%, April, 8% and November, 9%. These four months alone thus accounted for 39 percent of all the accidents in Lagos Island Local Government Area over the thirty two years period. This no doubt suggests that these months are very critical to road safety in the area. The month of January recorded the highest number of accidents for Ajeromi/Ifelodun Local Government Area (see Table 5 and figure 3). This month alone accounted for about 13 percent of all the road traffic accidents recorded in the local government area. Next were July 12%, February, 10% and March, 8%. These four months alone thus account for 43

percent of all accidents in Ajeromi/Ifelodun Local Government Area. Table 6 and figures 4 show the monthly variation of road traffic accidents in Ikeja Local Government Area. The month of July again recorded the highest number of accidents. This month alone account for about 12% of all the road traffic accidents recorded in the area. Next were February, 9%, December, 9% and June, 9%. These four months alone account for 39 percent of all accidents in Ikeja Local Government Area. Table 7 and figures 5 show the monthly variation of road traffic accidents in Lagos Mainland Local Government Area. The month of July recorded the highest number of accidents. This month alone account for 12% of all the road traffic accidents recorded in the area during the period of study. This is followed by December, 9%, February, 9% and April, 9%. These four months alone thus account for 39percent of all accidents in Lagos Mainland Local Government Area.

It is pertinent to note that these months are rainy months. The study area experiences about 9 months of rainfall in a year, starting effectively from March and lasting through November, sometimes with a short relative dryness in August. It has been observed by Shell Petroleum Development Company (SPDC) (1998) that there is some relationship between wet climatic conditions and road traffic accidents. That more road traffic accidents are recorded on the average in a rainy month than in a dry month may not be unexpected for several reasons. For instance, heavy rain affects one's ability to see and be seen properly. Rain and fog also often make lane markings, road edges and traffic signs almost invisible. Very importantly, the oil and grease on the road usually mix with dust and rainwater particularly when there is high rainfall, to form a dangerous slippery condition that may result in hydro planning – a situation whereby the thread of a car's tyres cannot make full contact with the road (Gilcrest, 1987). Under this circumstance, the tyres glide on a layer of water and/or oil. This definitely reduces tyre grip on the road and the driver's ability to control the vehicle. This no doubt, provides a necessary condition for the occurrence of an accident.

In addition to the above, driving under rain could be very hazardous on roads in a developing country like Nigeria because the roads are often times ridden with pot holes. When it rains, accumulated water or puddles usually cover such pot holes and this spells danger for the unsuspecting motorist. Splashing can also contribute hazards to motorist and of course pedestrians.

Road traffic accidents are not totally inevitable and so will not generate much cause for concern if injuries and/or loss of life are not involved. Consequently, the average monthly variation so far examined may not be enough for a conclusion on the most unsafe months. In other words, the total number of accidents recorded is an indicator of how unsafe a month or place is could be misleading. For instance, a month with few road traffic accident case could have had all the accidents resulting in death (fatal) or serious bodily harm (serious accidents). While a month with large number of road accidents cases may have had almost all of them as minor cases (i.e. neither death nor bodily harm was recorded). It is thus imperative that the causality index will be a better indicator of the level of risk a motorist or passenger is exposed to in a place or time period.

However, an observation from table 4 is that all months of the year recorded at least a 50 percent causality rate. In other words, any accident in any of the months had a 50 percent chance or more resulting in bodily harm/loss of life or lives. These percentages give indications of one's chances of being involved in fatal/serious accidents. Consequently, the chances of being involved in a fatal or serious accident was 68 percent in the month of May, 64 percent in August, 61 percent in April, 60 percent in February, 59 percent in December and January and 58 percent in July, September and November. These are very high chances. Notice that in both cases (total and causality cases) the trend peaked in the month of July (see fig.2). Consequently, the month emerges as the most unsafe.

Furthermore, the technique of Harmonic analysis was applied to the series of road traffic accident totals over the period 1970 – 2001 for the selected Local Government Areas in Lagos State. Since the period under study is 32 years, the maximum number of harmonic $N/2$ is $32/2 = 16$ harmonics. This is because after 16 harmonics, the values wrap round and start repeating itself. These 16 harmonics (table 8) are utilized to give an accurate representation of the observed annual curve, although certain harmonics generally contribute a very high percentage of variation of the actual curve.

For Lagos Island Local Government Area the 1st harmonic contributes the highest percentage variance of 47.73% closely followed by the 2nd harmonic of 27.97% and the 4th harmonic which has 6.11% variance of the total variance observed. The 9th harmonic contributes the lowest percentage variance of 0.01% to the total variance of the time series. The total percentage variance contributed by all 16 harmonics is 97.65%. This means

that 97.65% of road traffic accidents in Lagos Island could be attributed to recklessness on the part of drivers; ignorance of highway codes, driving under the influence of alcohol, wrongful overtaking, over speeding, pot holes etc leaving 3.44% to other factors.

Similarly, the 1st harmonic account for the highest percentage variance of 46.89% for Ajeromi/Ifelodun Local Government Area is closely followed by the 2nd and 4th harmonics with percentage variance of 18.05% and 7.66% respectively. The 16th harmonic contributes the lowest percentage variance (0.14%). The 16 harmonics contribute a total of 96.94% to the temporal pattern of road traffic accident occurrence over that part of Lagos State. For Ikeja Local Government Area, the 1st harmonic contributes the highest percentage (34.86%) of the total variance, closely followed by the 6th and 3rd harmonics which contributes 11.93% and 11.33% of the variance respectively. All 16 harmonics contributes a total of 96.91% of the variance in the temporal occurrence of road traffic accidents over the 32 years. Also, the 1st harmonic account for the highest percentage variance of 43.39% is closely followed by the 2nd and 4^h harmonics with percentage variances of 18.78% and 13.17% respectively for Lagos Mainland Local Government Area. The 16 harmonics contribute a total of 97.06% to the temporal pattern of road traffic accident occurrence in the study area.

Examination of table 9 shows that for the selected Local Government Areas in Lagos state, dominant cycles of road traffic accidents observed have periodicities of 32.00, 16.00 and 8.00 years with the most dominant being 32 years. This means that, the dominant and strongest road traffic accident pattern over Lagos state repeats itself every 32 years. However, there does not seem to be any regularity in the cyclical pattern of road traffic accident over the years. Other cycles identified could be attributed to random change.

On the other hand, the aggregate effect of these number of cycles of differing by wholly determinate periodicities could appear as a random series, randomness being thought of as the result of numerous causes of variable intensity, operating in immeasurable and unknowable interaction.

Policy Implications

Findings from this study suggest that the Federal Road Safety Corps (FRSC) and the police should be very familiar with the temporal and spatial distribution of road traffic accidents within their area of jurisdiction. In other words, they should know when road traffic accidents are most frequent. The

lack of these constitutes a serious problem and impedes rapid improvement of the safety standards. In the light of the above, a proper patrol of the metropolis at the times of very high occurrence will go a long way towards achieving the desired result of reducing the ugly incidence and its fatality in Lagos state in particular and Nigeria in general.

To this end, this study hereby recommends as follows:

On all the roads in Lagos state, road safety efforts should be intensified during the following periods:

- a) Months of June, July, September, October, November and December.
- b) Days of the week – the Weekends: especially, Saturdays and Sunday

These are periods when the highest number of road traffic accident cases including death and/or injuries were recorded. In addition to the above, efforts should be made to provide parking spaces, side walks, road signs at appropriate places, adequate road and pavement markings and over head bridges at strategic points/places in all major roads in Lagos State.

Conclusion

Accident on our roads is the leading cause of deaths in Nigeria and road traffic accidents (RTAs) are a particularly well-documented consequence of motorization. While accidents occur in all modes of transport, including railways, no mode approaches the importance of the motor car in the scale of deaths and injuries caused to vehicles occupants, pedestrians and other unprotected road users. Living safely is a challenge that must be accepted by every one if were to continue to move forward in an ever-changing society.

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Table 1: Reported Road Traffic Accidents in Lagos State from 1970 - 2001

YEAR	LAGOS ISLAND	AJEROMI/ IFELODUN	IKEJA	LAGOS MAINLAND
1970	140	165	175	158
1971	165	161	192	172
1972	130	164	211	215
1973	155	205	320	240
1974	173	220	399	285
1975	210	249	338	284
1976	250	275	350	290
1977	289	310	359	330
1978	330	302	335	283
1979	336	321	368	296
1980	406	327	397	296
1981	429	339	385	298
1982	416	366	371	311
1983	470	356	386	327
1984	489	395	405	333
1985	610	479	430	340
1986	370	386	406	265
1987	370	379	407	280
1988	400	381	407	355
1989	401	390	397	325
1990	414	418	411	355
1991	395	399	396	370
1992	407	386	396	370
1993	396	387	371	400
1994	411	399	385	425
1995	400	417	394	405
1996	399	409	371	385
1997	407	410	390	385
1998	412	412	389	440
1999	412	389	402	415
2000	427	412	399	450
2001	439	432	402	430
TOTAL	11466	11040	11747	10513
%	7.72	7.44	7.91	7.08

Source: Lagos State Police Command, Ikeja, 2004

Table 2: Showing the Reported Number of Fatal Serious and Minor Accidents.

YEAR	LAGOS ISLAND				AJEROMI-IFELODUN				IKEJA				LAGOS MAINLAND			
	F	S	M	T	F	S	M	T	F	S	M	T	F	S	M	T
1970	20	50	70	140	25	60	80	165	30	60	85	175	25	53	80	158
1971	30	52	83	165	23	53	85	161	35	67	90	192	30	60	82	172
1972	25	45	60	130	35	55	79	164	40	75	96	211	40	85	90	215
1973	30	50	75	155	45	67	93	205	70	100	150	320	50	90	100	240
1974	34	59	80	173	50	70	100	220	79	120	200	399	55	100	130	285
1975	40	70	100	210	49	80	120	249	75	105	158	338	45	99	140	284
1976	50	80	120	250	52	90	133	275	79	111	160	350	50	101	139	290
1977	69	90	130	289	60	100	150	310	80	120	159	359	80	120	150	330
1978	80	100	150	330	59	98	145	302	78	103	154	335	53	100	130	283
1979	85	106	145	336	61	100	160	321	85	123	160	368	54	105	137	296
1980	100	146	160	406	70	99	158	327	88	140	169	397	57	99	140	296
1981	99	150	180	429	69	107	163	339	90	150	145	385	56	103	139	298
1982	89	149	178	416	74	120	172	366	89	128	154	371	59	110	142	311
1983	100	170	200	470	75	112	169	356	92	139	155	386	60	119	148	327
1984	120	170	199	489	80	135	180	395	96	148	161	405	62	121	150	333
1985	150	200	260	610	120	159	200	479	102	158	170	430	65	126	149	340
1986	100	120	150	370	109	120	157	386	99	140	167	406	40	105	120	265
1987	99	130	149	378	100	119	160	379	100	142	135	407	35	120	125	280

Road Traffic Accident variations in Lagos State, Nigeria: a Synopsis of Variance Spectra

1988	109	140	151	400	102	120	159	381	102	139	166	407	35	140	1<30	355
1989	110	139	152	401	99	130	161	390	98	140	159	397	40	145	140	325
1990	120	140	154	414	120	133	165	418	110	141	160	411	60	140	155	355
1991	99	138	158	395	100	140	159	399	99	139	158	396	45	160	165	370
1992	105	142	160	407	89	142	155	386	100	140	156	396	35	165	170	370
1993	98	140	158	396	90	140	157	387	89	132	150	371	45	170	185	400
1994	100	150	161	411	95	143	161	399	90	142	153	385	75	170	180	425
1995	89	149	162	400	102	150	165	417	98	141	155	394	65	175	165	385
1996	90	150	159	399	100	149	160	409	89	132	150	371	30	180	175	385
1997	98	149	160	407	98	150	162	410	91	140	159	390	40	165	180	385
1998	102	148	162	412	99	151	162	412	90	139	160	389	85	170	185	440
1999	103	148	161	412	90	140	159	389	102	141	159	402	60	165	190	415
2000	110	152	165	427	101	151	160	412	100	139	160	399	65	185	200	450
2001	120	149	170	439	121	148	163	432	99	142	161	402	70	175	185	430
TOTAL	2773	3971	4722	11466	2557	3731	4752	11040	2764	4076	4904	11744	1646	4121	4746	10,513
%	24.18	34.63	41.2	100	23.16	33.8	43.04	100	23.53	34.70	41.80	100	15.66	39.2	4746	100

Table 3: Types of Vehicles Involved in Road Traffic Accidents in Lagos State from 1970 - 2001

YEAR	LAGOS ISLAND					AJEROMI-IFELODUN					IKEJA					LAGOS MAINLAND				
	TAXI	P.CAR	BUS	LORRY	TOTAL	TAXI	P.CAR	BUS	LORRY	TOTAL	TAXI	P.CAR	BUS	LORRY	TOTAL	TAXI	P.CAR	BUS	LORRY	TOTAL
1970	60	50	20	10	140	70	70	20	5	165	60	85	20	10	175	53	80	20	5	158
1971	50	80	20	15	165	85	53	13	10	161	67	90	30	5	192	60	82	20	10	172
1972	40	50	20	20	130	55	79	20	10	164	75	96	35	5	211	85	90	20	20	215
1973	30	75	30	20	155	67	93	30	15	205	100	150	50	20	320	90	100	30	20	240
1974	80	59	20	14	173	70	100	30	20	220	120	200	59	20	399	100	130	35	20	285
1975	70	90	40	10	210	120	80	29	20	249	105	158	50	25	336	99	140	30	15	284
1976	70	100	60	20	250	90	130	25	30	275	111	160	50	29	350	101	139	30	20	290
1977	80	120	69	20	289	100	150	40	20	310	120	159	60	20	359	120	150	60	20	330
1978	80	150	60	40	330	59	145	70	28	302	103	154	50	26	335	100	130	33	20	283
1979	145	106	60	25	336	100	160	31	30	321	123	160	60	25	368	105	137	34	20	296
1980	140	146	100	26	406	99	158	40	30	327	140	169	78	10	397	99	140	40	17	296
1981	99	180	80	70	426	163	107	39	30	339	150	145	70	20	385	103	139	40	16	298
1982	149	178	70	19	416	120	172	50	24	366	128	154	80	9	371	110	142	40	19	311
1983	120	170	100	80	470	112	169	40	35	356	139	155	80	12	386	119	148	40	20	327
1984	170	120	100	99	489	130	180	50	35	395	148	161	80	16	405	121	150	40	22	333

Road Traffic Accident variations in Lagos State, Nigeria: a Synopsis of Variance Spectra

1985	180	260	100	70	610	159	200	70	50	479	158	170	90	12	430	126	149	40	25	340
1986	150	120	60	40	370	120	157	90	19	386	140	167	90	9	406	105	120	30	10	265
1987	90	130	149	9	378	119	160	70	30	379	142	165	80	20	407	120	125	20	15	280
1988	140	150	80	30	400	120	159	90	12	381	139	166	90	12	407	140	180	20	15	355
1989	139	110	100	52	401	130	160	70	30	390	140	159	80	18	397	145	140	30	10	325
1990	140	154	70	50	414	133	160	60	65	418	141	160	90	20	411	140	155	40	20	355
1991	137	158	40	60	395	140	159	60	40	399	139	158	80	19	396	160	165	35	10	370
1992	142	160	50	55	407	142	155	70	19	386	140	156	90	10	396	165	170	20	15	370
1993	140	158	90	8	396	140	150	70	27	387	132	150	80	9	371	170	185	30	15	400
1994	161	150	60	40	411	143	161	70	25	399	142	153	80	10	385	170	180	50	25	425
1995	70	162	149	19	400	150	165	80	22	417	141	155	90	8	394	175	165	40	25	405
1996	150	159	70	10	399	140	160	90	19	409	132	150	80	9	371	180	175	20	10	385
1997	149	160	88	10	407	150	160	60	40	410	140	159	80	11	390	165	180	30	10	385
1998	148	162	80	22	412	150	162	50	50	412	139	160	80	10	389	170	185	50	35	440
1999	148	161	79	23	412	140	150	70	29	389	141	159	90	12	302	165	190	40	20	415
2000	152	165	80	30	427	151	160	61	40	412	139	160	90	10	399	185	200	40	25	450
2001	149	170	80	40	439	148	163	60	61	432	142	161	90	9	402	175	185	50	20	430
TOTAL	3768	4363	2274	1056	11466	3815	4587	1718	920	11040	4076	4904	2302	462	11744	4121	5746	1097	569	10513
%	32.9	38.1	19.83	9.21	100	34.56	41.6	15.6	8.33	100	41.8	41.8	19.6	3.93	100	39.2	45.1	10.4	5.41	100

Table 4: Monthly Variation in the Road Traffic Accidents in Lagos Island Local Government Area; From 1970 To 2001

S/NO	MONTH	MINOR CASES	SERIOUS CASES	FATAL CASES	TOTAL	% CASUALTY
1	January	364	296	235	895	59
2	February	477	444	276	1197	60
3	March	411	306	187	904	55
4	April	377	347	244	968	61
5	May	267	324	239	830	68
6	June	396	295	214	905	56
7	July	582	533	275	1390	58
8	August	257	280	182	719	64
9	September	327	222	223	772	58
10	October	410	318	222	950	57
11	November	406	312	256	974	58
12	December	399	304	259	962	59
	Total	4673	3981	2812	11466	
	Percentage	40.8%	34.7%	24.5%	100%	
	Average	389	332	234	955	

(Source: Computed from police records, 2004)

Note: A CASUALTY road accident is one in which death or injuries were recorded (Transport Canada, 1990).

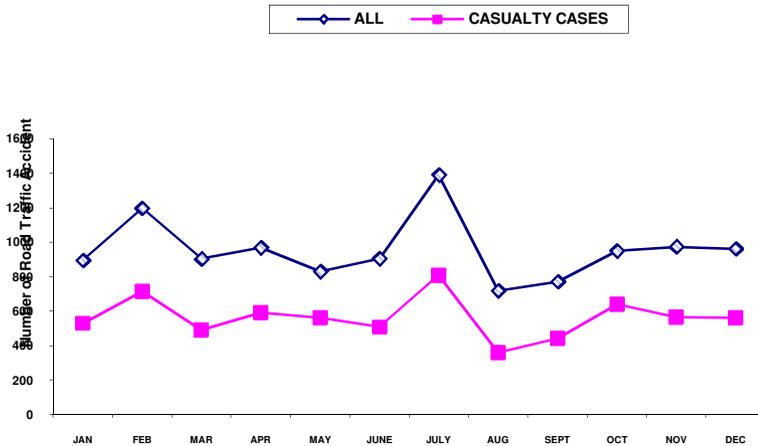


Fig. 2: Monthly Trend of Road Traffic Accident In Lagos Island Local Government Area (1970-2001)

Table 5: Monthly Variation in Road Traffic Accidents in Ajeromi/Ifelodun Local Government Area (1970-2001)

S/NO	MONTH	MINOR CASES	SERIOUS CASES	FATAL CASES	TOTAL	% CASUALTY
1	January	963	294	213	1470	34
2	February	445	383	231	1059	58
3	March	443	286	188	917	52
4	April	375	221	213	809	54
5	May	379	228	194	801	53
6	June	393	283	189	865	55
7	July	591	475	278	1344	56
8	August	245	200	181	626	61
9	September	236	223	207	666	65
10	October	314	278	201	793	60
11	November	294	292	228	814	64
12	December	421	210	245	876	52
	Total	5099	3373	2568	11040	
	Percentage	46.2%	30.6%	23.3%	100%	
	Average	425	281	214	920	

(Source: Computed from police records, 2004)

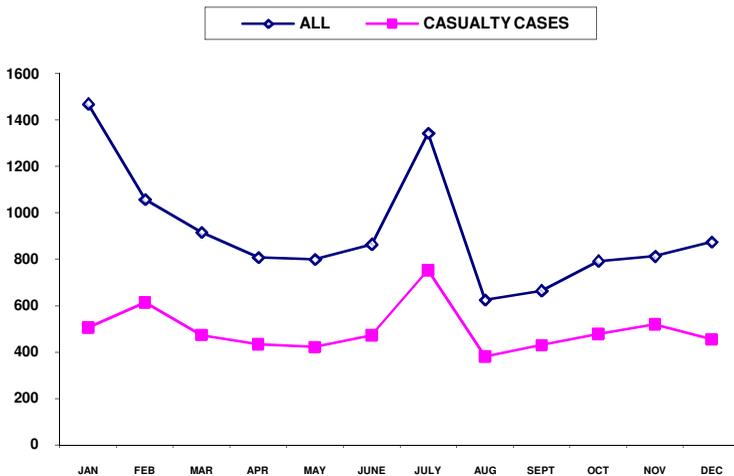


Fig. 3: Monthly Trend of Road Traffic Accident in Ajeromi/Ifelodun Local Government Area (1970 – 2001)

Table 6: Monthly Variation in Road Traffic Accidents in Ikeja Local Government Area (1970-2001)

S/NO	MONTH	MINOR CASES	SERIOUS CASES	FATAL CASES	TOTAL	% CASUALTY
1	January	407	291	326	934	56
2	February	440	384	263	1087	60
3	March	401	322	202	925	57
4	April	353	353	222	928	62
5	May	366	340	210	916	60
6	June	502	332	195	1029	51
7	July	552	560	303	1415	61
8	August	312	294	209	815	62
9	September	361	252	216	829	56
10	October	399	202	232	833	52
11	November	431	311	234	976	56
12	December	441	347	269	1057	58
	Total	4965	3988	279	11744	
	Percentage	42.3%	34.0%	23.7%	100%	
	Average	414	332	233		

(Source: Computed from police records, 2004)

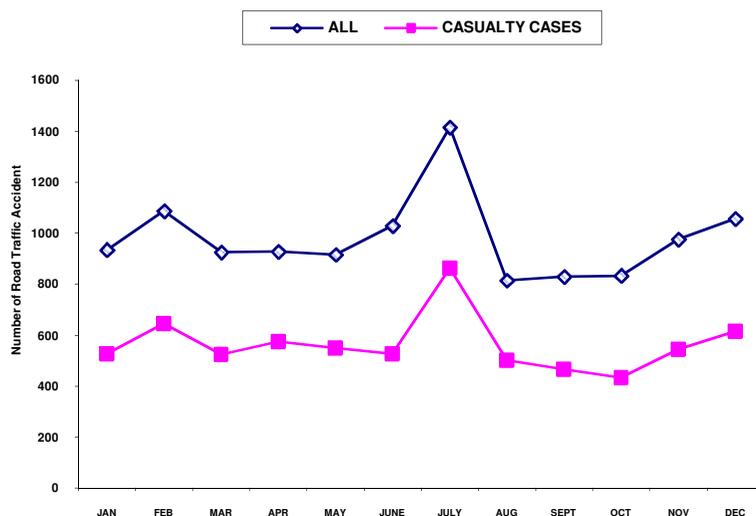


Fig. 4: Monthly Trend of Road Traffic Accident in Ikeja Local Government Area (1970 – 2001)

Table 7: Monthly Variation in Road Traffic Accidents in Lagos Mainland Local Government Area (1970-2001)

S/NO	MONTH	MINOR CASES	SERIOUS CASES	FATAL CASES	TOTAL	% CASUALTY
1	January	383	317	134	834	54
2	February	463	334	149	946	51
3	March	399	357	126	882	55
4	April	415	359	128	902	54
5	May	390	347	126	863	55
6	June	411	346	127	884	54
7	July	609	476	194	1279	52
8	August	337	283	104	674	50
9	September	287	299	140	726	60
10	October	306	316	135	757	60
11	November	349	328	135	812	57
12	December	420	380	154	954	56
	Total	4769	4092	1652	10513	
	Percentage	45.0%	40.0%	15.0%	100%	
	Average	397	341	138		

(Source: Computed from police records, 2004)

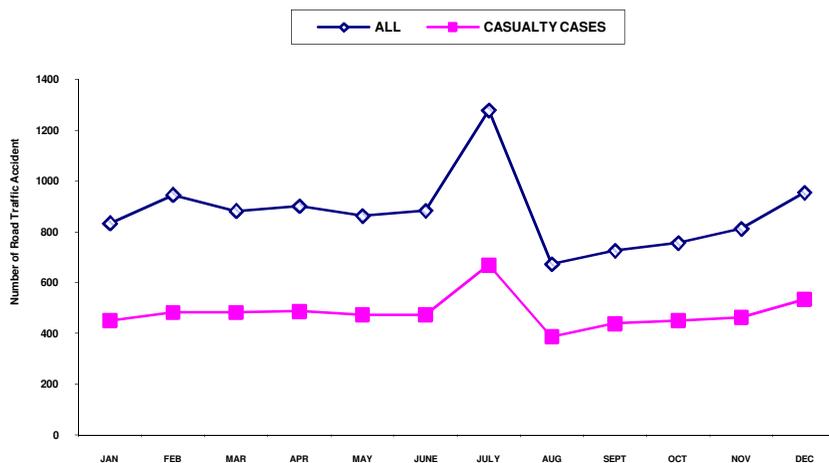


Fig. 5: Monthly Trend of Road Traffic Accidents in Lagos Mainland Local Government Area (1970 – 2001)

Table 8: Variance Spectra of Lagos State Road Traffic Accidents for Selected Local Government Areas

HAR MON ICS	LAGOS ISLAND		AJEROMI/ IFELODUN		IKEJA		LAGOS MAINLAND	
	%V	AMP	%V	AMP	%V	AMP	%V	AMP
1	47.73	110.15	46.89	77.83	34.86	43.15	43.39	62.18
2	27.97	84.32	18.05	48.29	7.49	20	18.78	40.9
3	1.63	20.33	5.49	26.63	11.33	24.59	4.99	21.09
4	6.11	39.42	7.66	31.46	10.14	23.27	3.17	24.25
5	0.13	5.69	1.88	15.6	9.43	22.44	4.17	19.27
6	3.3	28.97	5.83	27.43	11.93	25.24	3.89	18.62
7	0.19	7.03	0.41	7.27	2.11	10.61	0.61	7.35
8	2.89	27.11	3.51	21.31	2.74	12.11	1.74	18.4
9	0.01	1.73	1.31	12.99	4.32	15.19	2.1	18.6
10	1.69	20.73	133	13.13	0.76	6.36	0.99	7.38
11	0.15	6.19	1.31	13	0.3	4	0.11	3.17
12	1.38	18.72	0.2	5.07	0.17	3.04	1.98	11.43
13	0.24	7.75	1.67	14.67	0.33	4.18	0.09	2.87
14	2.63	25.86	0.3	6.24	0.86	6.77	0.97	6.5
15	0.05	3.42	0.96	11.16	0.09	2.15	0.71	7.78
16	1.55	19.88	0.14	14.25	0.05	1.63	0.37	5.75

%V = Percentage variance

Amp = Amplitude