semi-random distribution (Buckley, D.J 1962); Erlang distribution (Haight F.A. (1959 - 1961); Oliver. R.M. (1961); Log-Normal distribution (Aichison, J. and Brown J.A.C. (1963): Telle. F..I. (1971); Hyperlang distribution (Dawson, R.F and Chimini, L.A. (1968).

Discussions on the above listed distributions are available in literatures (Owolabi and Adebisi, 1989). Among the investigated distribution proposed, the hyperlang distribution is particularly robust as it is applicable to all ranges of flow.

The results obtained in this study can be found useful in:

- Predicting arrival rates of vehicles at a point
- Timing the traffic signal.
- Testing the randomness of traffic How.
- Justify the need or otherwise for pedestrian crossing aids at study location.

Arrival rates of vehicle can be predicted by using the equation:

Flow rate q (vehicles per second) = 1/h where h is the average headway. The simulated arrival rate on the computer can be used in estimating delays at vehicular and pedestrian ingress points.

The degree of non randomness (K) of traffic How in the constrained headway distribution is obtained by rounding off the value of the coefficient of variation of observed headway to the nearest integers. The knowledge of the randomness of flow is very helpful in establishing traffic control.

Headway data on a particular approach is useful in timing traffic signal at a particular approach when it is found necessary to install a traffic signal at a particular junction of road way.

Headway data is also useful in the justification or otherwise for providing pedestrian crossing aids as a specific location on a roadway after the computation of the number of safe gaps in the traffic stream within an hour during the busy periods. The minimum headway that can be used by a pedestrian to cross the traffic stream on a roadway of width w metres is given by h (min) = w/v where v is the pedestrian walking speed (Hobbs, 1979). For the particular case study for this write up. vv = 90m, walking speed in Ado - Ekiti is 1.4 m/sec.

h(min) = 7.0/1.4 = 5.00 seconds.

Materials and Methods

Field surveys were carried out on the four major roads in Ado-Ekiti. Junctions, minor roads in respect to major ones, markets and other features that could hinder the free flow of traffic were noted during survey. Different locations on each road were considered and evaluated on the ground of obstructions, traffic flow, sight distances and overtaking. After a thorough field survey, four locations were selected for detailed study.

All the chosen locations are about 100.0m from the intersections. All the roads are single lane, two-way roadway with asphalt pavement in good condition with a width of 7.0m

The four major roads are:

1. Irona-Ilawe Road.
2. Okesa - Fajuyi Road.
3. Ijigbo - Old Garage Road.
4. Ajilosun - Ijigbo Road.

Undisturbed headway data were collected between July and August 2004 in clear weather conditions. The headway data used in this investigation were chosen as representative data after various data had been collected during the peak hours of the day.

It was discovered that motorcycles plying the major roads, in the peak hours of the morning (between 8 am and 10 am) more than motorcycles plying in any other periods of the day. There are three main methods of collecting headway data, these are namely; manual method, semi-automatic method and automatic method.

The semi-automatic method make use of tape recorder with cassette and a stop watch while the automatic method make use of pen recorder instrument connected with traffic recorder. The method used in this investigation is the manual method which involves the use of stop watch and two enumerators at the reference point of the selected locations. The first enumerator, is the observer with stop watch who pressed the stop watch at a specific time and the headway of the first vehicle to pass the designated marked point on the road was taken

and said aloud for the second enumerator, the recorder to record immediately. The headway of the subsequent motorcycles that passes the designated point were taken and recorded on well. This process continued for a period of one hour.

The data collected at each location was partitioned to 15 minutes intervals for the purpose of proper monitoring. The headway of each vehicle were gotten from the observed frequency headway by deducting the preceding frequency headway from the one that immediately followed it.

Results

Statistical Analysis of Data

The headway data were fed into computer and by using the SPSS-X sub programming, the following outputs, which were very helpful in the statistical evaluation of the observed headway distributions, were obtained.

- Observed values in ascending order with their corresponding frequencies.
- Cumulative distributions function.
- Statistical deductions (i.e. mean, coefficient of variance (cv), standard deviation).

Table I shows the statistical deductions obtained from the headway data.

Table I: Statistical Deductions of Headway Data

Routes	Period	Traffic Volume Vph	Mean (x)	Standard Deviation (o)	Coefficient of Valuation (cv)	(K)
Irona - llaw'e Road	1st 15 min	1028	3.43	3.30	0.96	1
		1064^	3021	3.16	0.98	1
	3K| "	1228	4.04	3.65	0.90	
	4lh -	1004	4.93	4:84	0.98	1
Okesa - Fajuyi Road	1sl 15min	532	5.88	6.97	1.19	1
	2nd "	528	5.66	6.83	1.21	1
	3rd "	580	5.94	7.30	1.23	I
	4,h "	800	5.58	5.79	1.04	1
Ijigbo - Old Garage Road	1st 15min	928	5.58	5.91	1.01	1
	2nd"	684	5.23	6.15	1.18	
	3rd "	688	5.40	5.54	1.02	1
	4th "	696	5.19	5.95	1.15	1
Ajilosun - Ijigbo	Is' I5min	412	8.71	10.31	1.18	1
	2nd "	584	4.69	10.99	1.13	1
	3rd "	260	1 1.69	4.77	1.26	1
	4th "	392	8.85	10.92	1.23	1

Discussion of Results

The traffic volume of motorcycles along. Irona - llawe road is the heaviest while the average headway is the lowest, as low as 3.21 seconds. The main reason for this is due to the fact that no taxi cab patronize this route, the main means of transportation is the motorcycle.

The traffic volume of motorcycles along Ajilosun - Ijigbo road is the lowest while the average headway is the highest, as high as I 1.69 seconds.

From the Table I, it could be seen that the mean headway decreased as flow increased. The coefficient of variation (cv) decreases with increase in flow and the value of K remain constant at I. showing that the flow of automobile traffic is random in Ado-Ekiti.

Pedestrian bridge is needed at Irona -llawe road, since the minimum headway required for pedestrian crossing is 5 seconds and the mean headway all fall below 5 seconds. The provision of pedestrian bridge will reduce to a barest minimum the knocking down of pedestrians on the road.

The observed cumulative headway distributions are plotted on both log-normal and actual arithmetic scales. The distributions are shown in Figs 5-8 and Figs 13-16. Visual inspection on Figures 13-16 show that the curves tend to shift inward to the probability axis as flow increases. While for Figures 5-8, the lines show that all traffic streams including those at

low Hows consist of both free and constrained motorcycles. The percentage of constrained motorcycles was found to increase with traffic flow.

Conclusion

From the findings of this study, it could be seen that:

i. Traffic volume of motorcycles is heaviest along lrona - Ilawe road and the average headway is the lowest.
ii. The coefficient of variation (cv) decreases with flow.
iii. The motorcycles traffic in Ado-Ekiti is of random flow.
iv. Pedestrian bridge is needed along lrona - Ilawe road.
v. The observed cumulative headway distribution curves tend to shift inwards to the probability axis as flow increases when plotted on arithmetic scale.
vi. The observed cumulative headway distribution lines show that all traffic streams including those at low flows consist of both free and constrained motorcycles when plotted on lognormal scale.

Recommendations

(i) . Further study should be undertaken on testing the headway distribution data with the various proposed mathematical models.

(ii) .The research should be extended to headway data distribution automobile vehicles motorcycles.

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Observed Cummulative headway distribution curves using normal scale

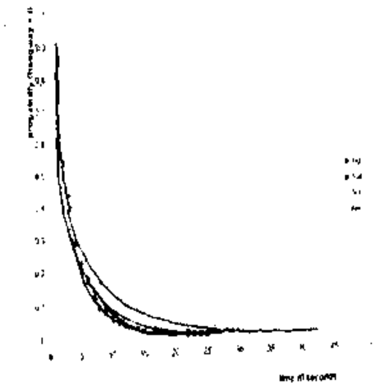

Fig 13 observed cummulative headway distribution of Iroso Ilese Road

Fig 14 Observed cummulative headway distribution of Fajuyi - Olona Road

Observed Cummulative headway distribution curves using normal scale

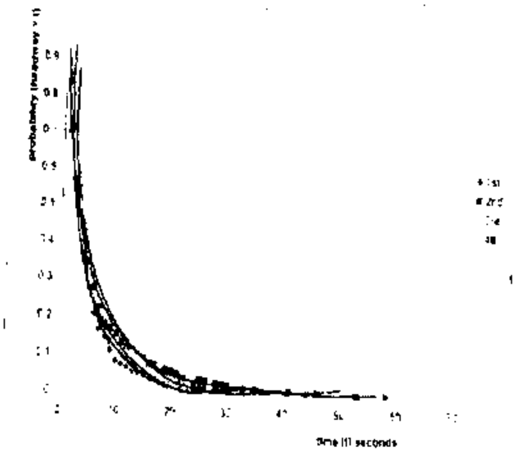

Fig 15 observed cummulative headway distribution of bigbo - Old garage Road

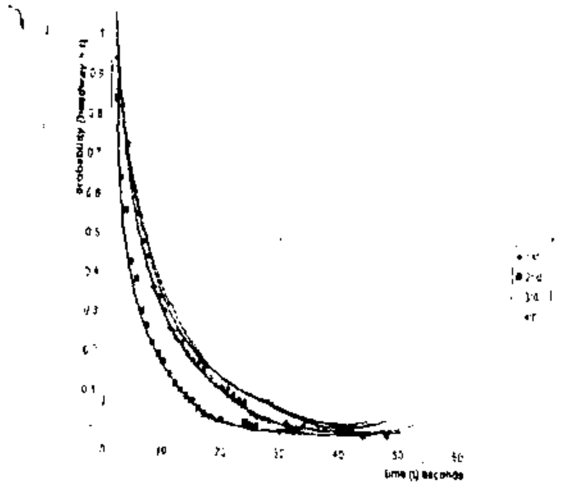

Fig 16: observed cummulative headway distribution of Ajilosun - Ijigbo Road

Observed Cummulative headway distribution curves using log scale

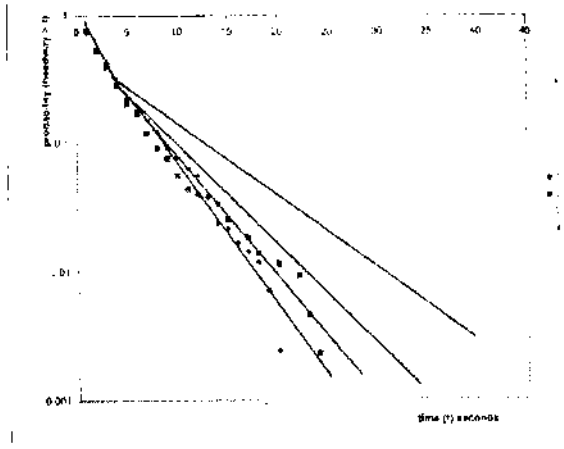

Fig5 observed cummulative headway distribution of Irona Ikeja Road

Observed Cummulative headway distribution curves using log scale

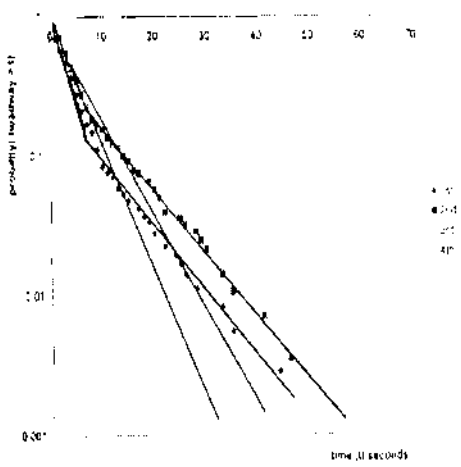

Fig 7: observed cummulative headway distribution of Ijegbe -Old garage Road

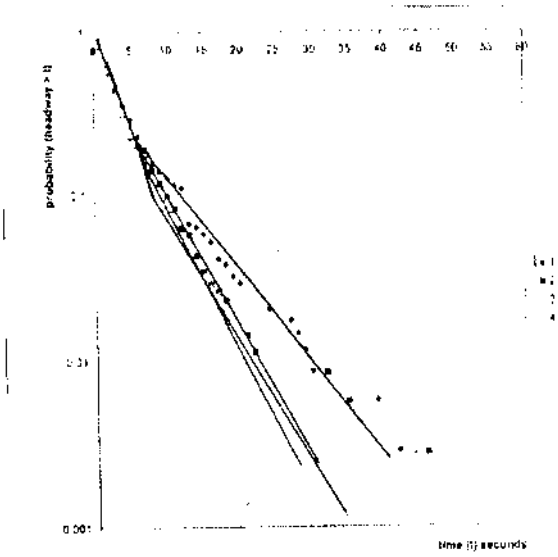

Fig 6 Observed cummulative headway distribution of Fajuyi - Dike46

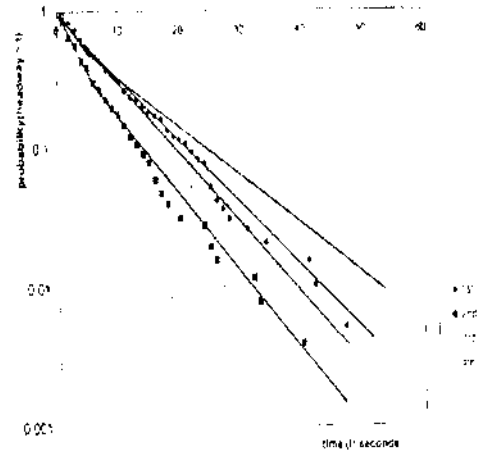

Fig 8 observed cummulative headway distribution of Ajeseun -Ijigbe Road