

ANALYSIS OF ROAD TRAFFIC ACCIDENTS
IN THE CITY OF MANILA
FOR THE PERIOD 1983 TO 1993

Dante B. BAUTISTA
Graduate Student, NCTS
University of the Philippines

Dr. Minoru YAMADA
Visiting Professor, NCTS
University of the Philippines

Dr. Olegario G. VILLORIA, Jr.
Associate Professor, SURP
University of the Philippines

ABSTRACT

This paper was created to describe the general trends of road traffic accidents in the City of Manila for the period 1983 to 1993. Primary source of data is the 'summary statistics' prepared by the Records and Statistics Section of the Traffic Management Division under the Western Police District Command based in Port Area Manila. Simple statistical measures were used to attain the primary objective, and discussions are presented more by using graphs, charts, and tables. Interestingly, out of several reviews, the authors find that there is an abrupt decrease in the total number of accidents from 1983 to 1989 and it gradually increases from then on. The authors find it irrational to come out with a conclusion to this effect because such move requires more than enough time. Instead, what presented herein are resulting hypotheses, that can serve as a take-off point for future studies.

1.0 INTRODUCTION

The City of Manila has a total area of 38.3 km² which is the seventh largest among the seventeen cities and municipalities of the National Capital Region, the largest is Quezon City at 166.2 km², and smallest is Navotas at 2.6 km². It has a population of 1.59M in May 1, 1990 and this represents a decrease of 1.9% from its previous population of 1.63M in May 1, 1980. In terms of population, Manila ranks second to Quezon City which has a population of 1.67M in May 1, 1990. When it comes to population density, in 1990, the City of Manila registered 41,749 persons per km² which is second to Navotas. Also in 1990, the City has approximately 310,000 households located in 897 barangays.

The City of Manila was chosen as the study area not only because the City has major transport developments over the past decade (e.g., Light Rail Transit Line No.1, traffic signalization projects, etc) but also due to the availability of good traffic accident records and the kind support to this study by the local authorities. Data for this study were obtained from the traffic accident records of the Traffic Management Division of the Western Police District Command.

The objective of this study is to describe the trends in road traffic accidents in the City of Manila over the past decade. As such, only simple statistical measures and graphical methods of summarizing the data were used. The task of identifying the causes of traffic accidents using statistical testing methods is beyond the scope of this paper. However, initial set of hypotheses on the causes of traffic accident trends was formulated.

2.0 ROAD TRAFFIC ACCIDENT DATA AND DEFINITIONS

General peace and order in Manila is handled by the Western Police District Command (WPDC), dubbed as 'Manila's Finest'. The Command has a separate unit that deals with traffic management, the Traffic Management Division located at Atlanta Street, Port Area Manila. On initial visit, one can easily notice why they are tagged as Manila's Finest. The precinct has its separate office for records and statistics. Standard routine is being practiced by competent officials. This is the reason why a research like this is a welcome move to their part so as to improve their equally good management, making gathering of available data an easier task.

The City follows the general guidelines used by the whole of Metro Manila in dealing with road traffic accidents. Authorities use the same Traffic Accident Investigation Report form (TAIR) as a standard record sheet of all accidents related to road traffic. However, as revealed in some interviews, authorities generally use the form only when:

- (a) the accident is quite serious that needs thorough police investigations;
 - (b) those involved in the accident wish to redeem expenses via insurance companies;
 - (c) both parties in the accident cannot come to terms with payment of damages;
- and,
- (d) litigations are imminent due to accidents.

However, they keep a logbook to note day-to-day occurrences regarding road accidents. It should be noted however that not all accidents are being recorded, as some involved choose to settle amicably and decide not to report the accident to police authorities. These unreported cases are normally very minor incidents in terms of accident severity and therefore not considered a major concern in this study.

2.1 Classifications of Road Traffic Accidents:

The same road accident classification is being used by the WPDC, lifted from the Traffic Accident Investigation Report forms. Accidents are categorized according to type, entities involved, and casualties resulting from such accident. Following are the different classification schemes:

(a) Accidents by type:

<i>Type of Accident</i>	<i>Definition</i>
Fatal	accidents that result to instantaneous death or death within 24 hours
Non-fatal	accidents that result to physical injuries
Damage to Property	no physical harm involved, only property damage

(b) Accidents by entities involved:

<i>Type</i>	<i>Description</i>
VV	vehicle versus another vehicle
FO	vehicle versus fix object
PC	vehicle versus pushcart
RT	vehicle versus railroad train
RO	running off road
VP	vehicle versus pedestrian
B	vehicle versus bicycle
HDV	vehicle versus horse-drawn vehicle
OR	overturning on road
NC	other non-collisions

(c) Accidents by degree of casualties involved

Type	Description
accidents resulting to death	accidents that result to instantaneous death or death within 24 hours
accidents resulting to injuries	accidents that result to physical injuries
Serious Injury	
Less Serious Injury	
Slightly Serious Injury	

With the review of some related materials, there is no definite definition for an accident to be called serious, less serious or slightly serious. Typically it is up to the investigating officer to call whether an injury inflicted in an accident is any of these categories.

3.0 ROAD TRAFFIC ACCIDENT SITUATION

3.1 Total Road Traffic Accidents

A total of 53,461 cases of reported accidents happened in Manila during the 11-year period from 1983 to 1993. An all time high occurred in 1983 at 8,342 cases and all time low in 1989 at 3,461 cases. On the average, there is about 4,860 accidents a year. (*see Table 1.0 for complete statistics*)

An important trend happened from 1983 to 1986 where a major decrease in accidents occurred. From then on, a gradual decrease happened until 1989 and finally a gradual increase up to 1993. There appears to be a need to curtail this increasing trend in traffic accidents in recent years (*see Figure 1.0 for the graph*).

It is also worthwhile to note some major occurrences that happened in the country, Metro Manila in particular, that can somehow explain the trend in road traffic accidents. These include:

- (a) Political unrest in the early 80's, and the assassination of a key political figure, the former Senator Benigno Aquino Jr. in 1983;
- (b) Major decline in the local economy until the 1986 EDSA Revolution;
- (c) Construction of the Light Rail Transit Line No.1 from October 1981 to 1985;
- (d) Installation of the Metro Manila Computerized Traffic Control System. This became operational in 1982 after the completion of Phase 1 project in 118 intersections in the City of Manila.

Of the listed major events, the last two have the most significant effects in road safety. During the construction of the LRT, jeepneys and some public utility busses have to be rerouted to give way to massive excavations and construction works. Since the LRT tracts must be built seven meters above street level, existing pedestrian overpasses have to be demolished posing more danger to street users. After the operation of LRT in 1985, the original jeepney users along Taft Avenue began to have LRT an option which is more quick and safe.

The computerized traffic signal system which was installed in several phases under the Metro Manila Traffic Engineering and Management (MMTEAM) Project of the Department of Public Works and Highways (DPWH) is also expected to have a major impact in reducing road traffic accidents.

3.2 Road Traffic Accidents By Type

Out of the total accidents from 1983 to 1993, 1.2% is fatal, 14.4% is non-fatal, and 84.4% is damage to property (*Figure 2.0*). The very low proportion of fatal accidents reflects the restrictive definition of a fatal accident (i.e., instantaneous death or death within 24 hours). However, only accidents resulting to property damage follow the general trend of total accidents, which is gradually increasing from 1989 onwards. This can be attributed to the general belief that road traffic congestion makes travels more vulnerable to accidents resulting to property damage than to accidents which are fatal and non-fatal. (*refer to Table 3.0 and Figures 3.0 and 4.0*)

3.3 Road Traffic Accidents By Entities Involved

Figure 5.0 shows comparatively the shares of different entities to the total accidents. Motor vehicle versus another motor vehicle is the most common followed by cases involving pedestrians. The complete breakdown of traffic accidents by entities involved is shown as follows:

VV	-vehicle vs another vehicle	88.40%
VP	-vehicle vs pedestrians	7.80%
FO	-vehicle vs fix objects	1.60%
B	-vehicle vs bicycle	0.90%
NC	-non-collisions	0.70%
HDV	-vehicle vs horse-drawn vehicle	0.40%
PC	-vehicle vs pushcart	0.11%
RT	-vehicle vs PNR train	0.09%

It is alarming, based on Table 5.0 and Figure 6.0, that pedestrians involved in accidents increased from 1991 to 1993. This only shows that the more congested roads we have, the more pedestrian accidents occurs. Vehicle to vehicle accidents also increased from 1989 to 1993 as well as total number of accidents. Also, this can be interpreted that there exists relationship between vehicle to vehicle accidents and congestion. To a lesser degree, there are on the average about five(5) pushcarts involved in accidents a year and four (4) vehicles accidentally hit by PNR trains per year. This seems small, but accidents involving PNR trains are almost all the time fatal.

3.4 Road Traffic Accidents By Casualties Involved

Only 5.6% of all those persons involved in vehicular accidents died instantaneously or within 24 hours. Majority is categorized only as injuries (*Table 6.0, Figures 7 and 8*).

Generally, for combined numbers of killed and injured persons related to road traffic accidents, there is a decrease in number from 1983 to 1991, by almost 75%. But what is so interesting here and perhaps a point for further investigation is the fact that from 1991, we have an increasing number of persons involved in such accidents which is contrary to our previous idea on the relationship between traffic congestion and accident occurrence.

During the years 1991 to 1993, there was an increase in the numbers of road traffic casualties. Moreover, from 1992 to 1993, killed persons increased by almost half. The ratio of accident to fatalities indicate a rate of one killed person per fatal accident in 1992 and two persons killed per fatal accident in 1993 which is alarming.

Furthermore, looking at severity of injuries, Figure 12.0 reveals that 5.3% of those persons injured were in serious condition and 7.1% less serious. The rest are categorized as slightly serious (*Figures 11.0 and 12.0*)

3.5 Status of Cases Filed Before the Police Department

Cases referred in here are those hit-and-run cases filed before the police department. With more cases filed than cases being solved, almost one-half of the cases is still pending until 1993. The records cannot reveal whether cases in 1983 were all solved, for data is lacking in this year, but what the records show us is that there is a need to improve the efficiency of handling cases. Otherwise, WPDC can expect a higher unsolved cases in the future.

The percentage of cumulative hit and run cases solved over the cumulative total of cases filed before the police department are as follows:

1983	(not applicable)
1984	73.83%
1985	74.84%
1986	69.16%
1987	51.07%
1988	46.80%
1989	34.07%
1990	29.77%
1991	27.67%
1992	29.26%
1993	37.00%

4.0 MONTHLY FIGURES

Following is the summary of road traffic accidents in the City of Manila from 1983 to 1993 by month:

January	4890 accidents
February	4602
March	5137
April	4142
May	4286
June	4093
July	4502
August	4396
September	4409
October	4434
November	4407
December	4163

5.0 DAILY FIGURES

Following is the summary of road traffic accidents in the City of Manila from 1983 to 1993 by day:

Sunday	5521 accidents
Monday	8410
Tuesday	8071
Wednesday	7842
Thursday	8718
Friday	8627
Saturday	7018

6.0 SUMMARY OF FINDINGS

The major findings of this study may be summarized as follows:

- (a) There is a major decrease in the total number of road traffic accidents from 1983 to 1986;
- (b) the very low proportion of fatal accidents reflects the very restrictive definition of 'fatal accidents';
- (c) there is a lack of attention given to disability of persons involved in road accidents;
- (d) vehicle to vehicle road accidents is the most common followed by accidents involving pedestrians;
- (e) pedestrians involved in accidents significantly increases from 1991;
- (f) in terms of severity of road traffic accidents, most of them are categorized as slightly serious; and,
- (g) more and more hit-and-run cases filed before the police department remain unsolved.

Some of the hypotheses that can be drawn are as follows:

- (a) Signalization of the main streets of Manila contributed to a decrease of accidents rapidly until 1986.
- (b) the years 1983 up to 1986 EDSA Revolution are years of political unrest resulting to decrease in national growth. During these years, all aspects of activities seems to decrease that results to lesser mobility; and thus lesser accident. We can state that road traffic accident is relative to the pace of people's activities.
- (c) The common belief that the more congested the road is, the less road traffic accident casualties will occur is a myth.

These hypotheses should be integrated in future studies.

ACKNOWLEDGMENT

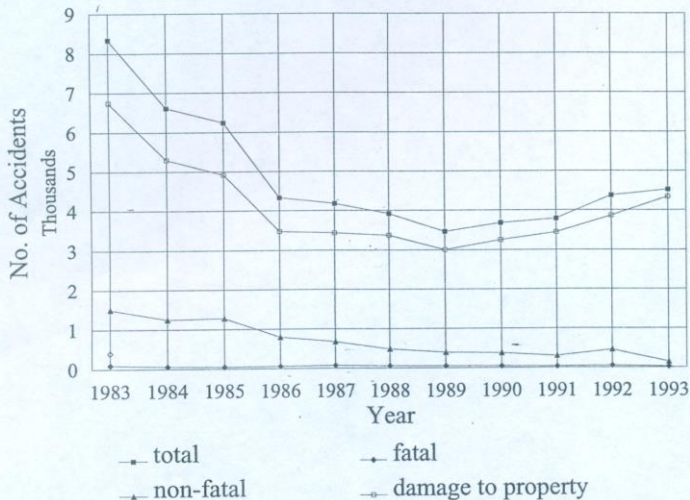
The authors wishes to extend their warm 'thanks' to the personnel of the Records and Statistics Division of the Western Police District Command-Traffic Management Division, from where all the data used for this cause came from. The same goes to the rest of the members of RWG#6 for their support for this research.

TABLE 1.0

SUMMARY OF ROAD TRAFFIC ACCIDENTS IN THE CITY OF MANILA

Year	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
total # of acc	8342	6612	6244	4333	4181	3919	3461	3684	3788	4376	4521
TYPE											
fatal	96	67	51	62	73	60	56	48	37	52	30
non-fatal	1502	1249	1275	795	676	489	402	383	308	464	150
d to prop	6744	5296	4918	3476	3432	3370	3003	3253	3443	3860	4341
CASUALTIES											
fatalities	104	69	51	62	78	61	58	50	39	53	71
injuries	2164	1853	1824	1150	1038	703	636	605	499	574	591
total persons	2268	1922	1875	1212	1116	764	694	655	538	627	662
INJURIES											
serious inj	na	na	100	78	57	24	14	23	41	41	23
less s inj	na	na	214	169	45	13	3	34	14	14	44
slight s inj	na	na	1510	903	936	666	619	548	444	614	355
ENTITIES											
V-V	7253	5732	5285	3701	3619	3495	3114	3367	3528	4055	3844
V-P	775	640	658	449	382	252	191	184	159	235	229
V-HDV	24	23	24	15	16	14	12	22	10	11	32
V-RT	9	2	7	4	2	5	3	3	1	7	1
V-B	99	56	49	53	43	32	25	32	21	25	43
V-PC	9	8	10	3	1	9	4	2	3	2	6
V-FO	118	110	130	74	88	69	73	64	49	33	53
O on Road		1	4		2			1	1	2	3
Run off Rd			1						0		
Non-Coll'n	49	40	70	34	22	41	30	9	16	4	3
Misc	6		6		6	2	9		2	2	1

na- not available

CITY OF MANILA ROAD TRAFFIC ACCIDENTS
1983 - 1993

source: WPD-TMD Records Section

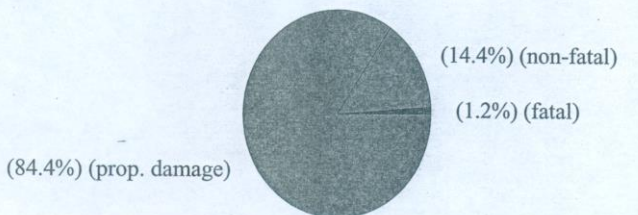
Figure 1.0

TABLE 2.0
SUMMARY STATISTICS OF THE DIFFERENT TYPES
OF ROAD TRAFFIC ACCIDENTS IN CITY OF MANILA

Year	Ave. Daily Accident (total)	Ave. Daily Accident (fatal)	Ave. Daily Accident (non-fatal)	Ave. Daily Accident (prop. damage)
83	22.85	0.26	4.12	18.48
84	18.07	0.18	3.41	14.47
85	17.11	0.14	3.49	13.47
86	11.87	0.17	2.18	9.52
87	11.45	0.20	1.85	9.40
88	10.71	0.16	1.34	9.21
89	9.48	0.15	1.10	8.23
90	10.09	0.13	1.05	8.91
91	10.38	0.10	0.84	9.43
92	11.96	0.14	1.27	10.55
93	12.39	0.08	0.41	11.89
total	146.36	1.73	21.06	123.57
%	100.00	1.18	14.39	84.43

ROAD TRAFFIC ACCIDENTS

City of Manila, 1983-1993



ave. daily fatal accident
 ave. daily non-fatal accident
 ave. daily damage to property

Source: WPD-TMD Records and Statistics Division
FIGURE 2.0

TABLE 3.0

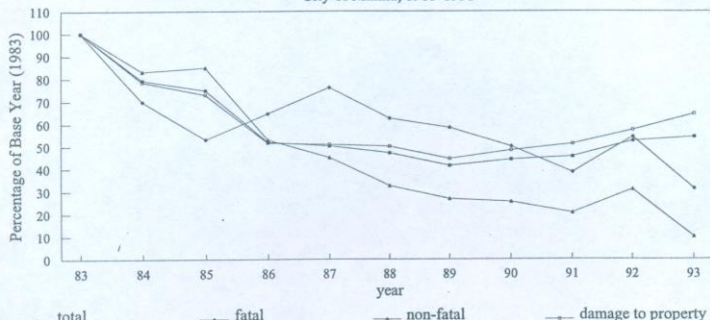
CHANGES IN DIFFERENT TYPES OF ROAD TRAFFIC ACCIDENTS IN THE CITY OF MANILA

Year	Total No. of Accidents	Index	Change Ratio %	Total No. of Fatal Accidents	Index	Change Ratio %	Total No. of Non-fatal Accidents	Index	Change Ratio %	Damage to Property	Index	Change Ratio %
83	8342	100.0	0.0	96	100.0	0.0	1502	100.0	0.0	6744	100.0	0.0
84	6912	79.3	-20.7	87	89.6	-30.2	1249	83.2	-16.8	5296	78.5	-21.5
85	6244	74.9	-5.8	51	53.1	-23.9	1275	84.9	2.1	4918	72.9	-7.1
86	4333	51.9	-30.6	62	64.6	21.8	795	52.9	-37.8	3478	51.5	-29.3
87	4181	50.1	-3.5	73	76.0	17.7	876	45.0	-15.0	3432	50.9	-1.3
88	3919	47.0	-4.3	60	62.5	-17.8	489	32.6	-27.7	3370	50.0	-1.8
89	3461	41.5	-11.7	56	58.3	-6.7	402	26.8	-17.8	3003	44.5	-10.9
90	3684	44.2	6.4	48	50.0	-14.3	363	25.5	-4.7	3253	48.2	8.3
91	3798	45.4	2.8	37	38.5	-22.5	308	20.5	-19.6	3443	51.1	5.8
92	4376	52.5	15.5	92	94.2	40.5	464	30.9	50.6	3860	57.2	12.1
93	4521	54.2	3.3	30	31.3	-42.3	150	10.0	-87.7	4341	64.4	12.5

*Change Ratio, % (compared with the previous year)

TRENDS IN ROAD TRAFFIC ACCIDENTS BY TYPE

City of Manila, 1983-1993

Source: WPD-TMD Records and Statistics Section
FIGURE 3.0

ANNUAL CHANGE IN TRAFFIC ACCIDENTS BY TYPE

City of Manila, 1983-1993

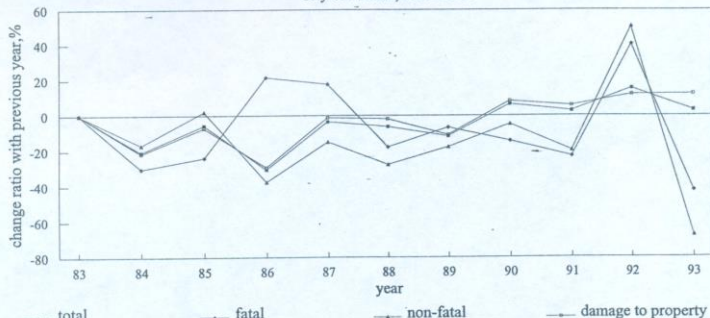
Source: WPD-TMD Records and Statistics Section
FIGURE 4.0

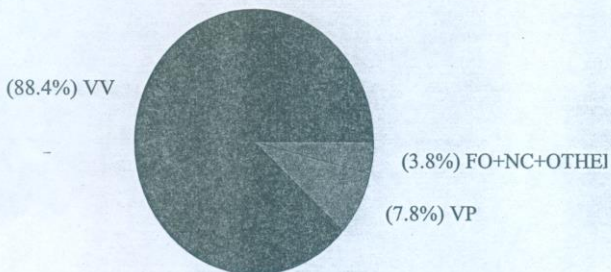
TABLE 4.0
SUMMARY STATISTICS OF ROAD TRAFFIC ACCIDENTS
BY ENTITIES INVOLVED IN THE CITY OF MANILA

Year	Ave. Daily Accident VV	Ave. Daily Accident VP	Ave. Daily Accident FO	Ave. Daily Accident NC	Ave. Daily Accident OTHERS	Total
83	19.871	2.123	0.323	0.151	0.386	22.855
84	15.661	1.749	0.301	0.112	0.244	18.066
85	14.479	1.803	0.356	0.222	0.247	17.107
86	10.140	1.230	0.203	0.093	0.205	11.871
87	9.915	1.047	0.241	0.082	0.170	11.455
88	9.549	0.689	0.189	0.117	0.164	10.708
89	8.532	0.523	0.200	0.107	0.121	9.482
90	9.225	0.504	0.175	0.027	0.162	10.093
91	9.666	0.436	0.134	0.047	0.096	10.378
92	11.079	0.642	0.090	0.022	0.123	11.957
93	10.532	0.627	0.145	0.019	0.225	11.548
total	128.649	11.372	2.357	0.999	2.142	145.520
%	88.406	7.815	1.620	0.687	1.472	100.000

legend:

- VV -vehicle versus another vehicle
- VP -vehicle versus pedestrian
- FO -vehicle versus fix object
- NC -non-collisions
- Others -includes vehicle versus horse-drawn vehicle, railroad train, pushcart, bicycle

ROAD TRAFFIC ACCIDENTS BY ENTITIES INVOLVED City of Manila, 1983-1993



- veh vs another veh
- veh vs pedestrian
- veh vs fix object, non-collisions, others

source: WPD-TMD

Figure 5.0

TABLE 5.0

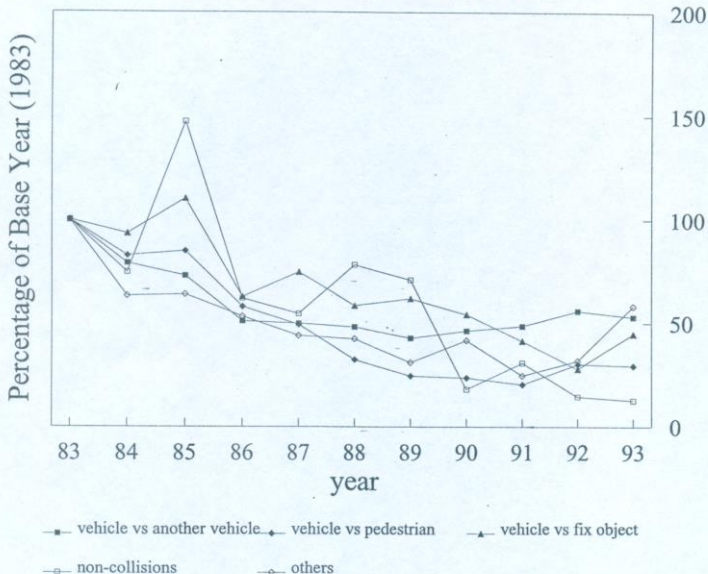
CHANGES IN ROAD TRAFFIC ACCIDENTS BY ENTITIES INVOLVED IN THE CITY OF MANILA

Year	VV	a	b	VP	a	b	FO	a	b	NC	a	b	Others	a	b
83	7253	100.0	0.0	775	100.0	0.0	118	100.0	0.0	55	100.0	0.0	141	100.0	0.0
84	5732	79.0	-21.0	640	82.6	-17.4	110	93.2	-6.8	41	74.5	-25.5	89	63.1	-36.9
85	5285	72.9	-7.8	658	84.9	2.8	130	110.2	18.2	81	147.3	97.6	90	63.8	1.1
86	3701	51.0	-30.0	449	57.9	-31.8	74	62.7	-43.1	34	61.8	-58.0	75	53.2	-16.7
87	3619	49.9	-2.2	382	49.3	-14.9	88	74.6	18.9	30	54.5	-11.8	62	44.0	-17.3
88	3495	48.2	-3.4	252	32.5	-34.0	69	58.5	-21.6	43	78.2	43.3	60	42.6	-3.2
89	3114	42.9	-10.9	191	24.6	-24.2	73	61.9	5.8	39	70.9	-9.3	44	31.2	-26.7
90	3367	46.4	8.1	184	23.7	-3.7	64	54.2	-12.3	10	18.2	-74.4	59	41.8	34.1
91	3528	48.6	4.8	159	20.5	-13.6	49	41.5	-23.4	17	30.9	70.0	35	24.8	-40.7
92	4055	55.9	14.9	235	30.3	47.8	33	28.0	-32.7	8	14.5	-52.9	45	31.9	28.6
93	3844	53.0	-5.2	229	29.5	-2.6	53	44.9	60.6	7	12.7	-12.5	82	58.2	82.2
total	46993			4154			861			365			782		

legend:

- a -index
- b -change ratio compared with the previous year, %
- VV -vehicle versus another vehicle
- VP -vehicle versus pedestrian
- FO -vehicle versus fix object
- NC -non-collisions
- Others-includes vehicle versus horse-drawn vehicle, railroad train, pushcart, bicycle

TRENDS IN TRAFFIC ACCIDENTS BY ENTITIES INVOLVED
City of Manila, 1983 - 1993

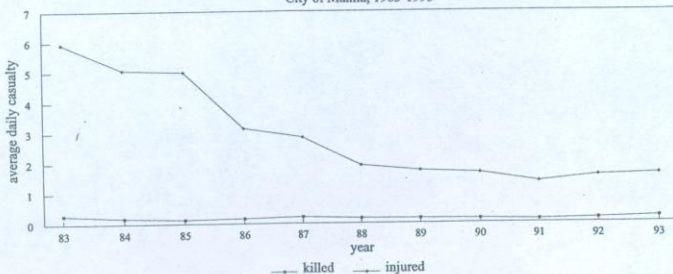
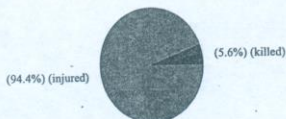


source: WPD-TMD
Figure 6.0

TABLE 6.0

SUMMARY STAT. OF ROAD TRAFFIC ACCIDENT CASUALTIES

Year	Ave. Daily Casualty (killed)	Ave. Daily Casualty (injured)	Ave. Daily Casualty (total)
83	0.28	5.93	6.21
84	0.19	5.06	5.25
85	0.14	5.00	5.14
86	0.17	3.15	3.32
87	0.21	2.84	3.06
88	0.17	1.92	2.09
89	0.16	1.74	1.90
90	0.14	1.66	1.79
91	0.11	1.37	1.47
92	0.14	1.57	1.71
93	0.19	1.62	1.81
total	1.91	31.86	33.76
%	5.64	94.36	100.00

SUMMARY OF ROAD TRAFFIC ACCIDENT CASUALTIES
City of Manila, 1983-1993source: WPD-TMD
Figure 7.0SUMMARY OF ROAD TRAFFIC ACCIDENT CASUALTIES
City of Manila, 1983-1993

killed
 injured

source: WPD-TMD
Figure 8.0

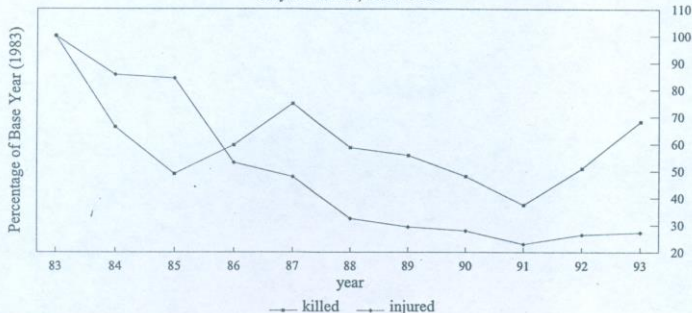
TABLE 7.0

CHANGES IN ROAD TRAFFIC ACCIDENT CASUALTIES IN THE CITY OF MANILA

Year	Killed	Index	Change Ratio Compared with Previous Year, %	Injured	Index	Change Ratio Compared with Previous Year, %	Total	Index	Change Ratio Compared with Previous Year, %
83	104	100.0	0.0	2164	100.0	0.0	2268	100.0	0.0
84	69	66.3	-33.7	1853	85.6	-14.4	1922	84.7	-15.3
85	51	49.0	-26.1	1824	84.3	-1.6	1875	82.7	-2.4
86	62	59.6	21.6	1150	53.1	-37.0	1212	53.4	-35.4
87	78	75.0	25.8	1038	48.0	-9.7	1116	49.2	-7.9
88	61	58.7	-21.8	703	32.5	-32.3	764	33.7	-31.5
89	58	55.8	-4.9	636	29.4	-9.5	694	30.6	-9.2
90	50	48.1	-13.8	605	28.0	-4.9	655	28.9	-5.6
91	39	37.5	-22.0	499	23.1	-17.5	538	23.7	-17.9
92	53	51.0	35.9	574	26.5	15.0	627	27.6	16.5
93	71	68.3	34.0	591	27.3	3.0	662	29.2	5.6

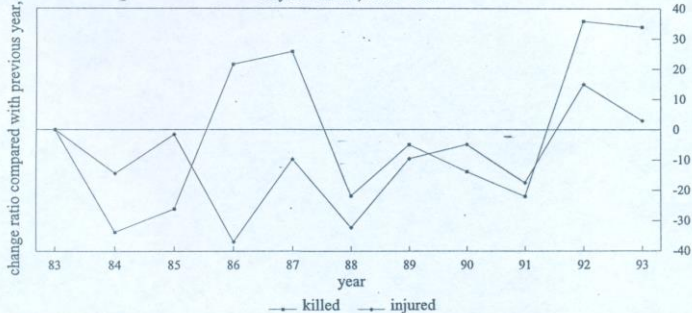
TRENDS IN ROAD TRAFFIC ACCIDENT CASUALTIES

City of Manila, 1983 - 1993

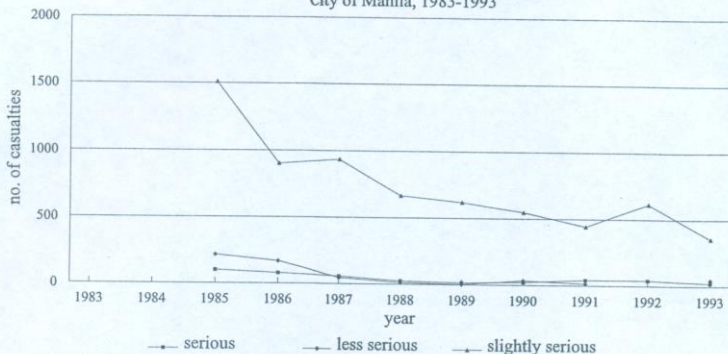
source: WPD-TMD
Figure 9.0

ANNUAL CHANGE IN TRAFFIC ACCIDENT CASUALTIES

City of Manila, 1983 - 1993

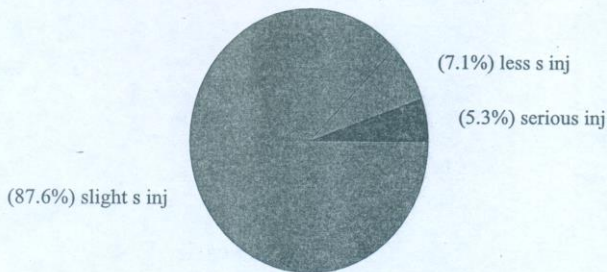
source: WPD-TMD
Figure 10.0

SEVERITY OF ROAD ACCIDENT CASUALTIES City of Manila, 1983-1993



source: WPD-TMD
Figure 11.0

SEVERITY OF ROAD ACCIDENT CASUALTIES City of Manila, 1983-1993



serious
 less serious
 slightly serious

source: WPD-TMD
Figure 12.0

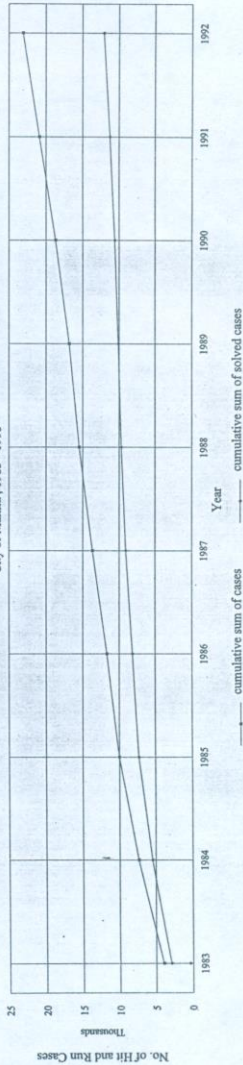
TABLE 8.0
SUMMARY OF HIT AND RUN CASES FILED
City of Manila, 1983-1993

Year	Solved Cases *	Pending Cases *	Total	Cum. sum of Cases	Cum. Sum of Solved Cases
1983					
1984	2942	1043	3985	3985	2942
1985	2534	852	3386	7371	5476
1986	1828	815	2643	10014	7304
1987	862	826	1688	11702	8166
1988	928	1055	1983	13685	9094
1989	617	1194	1811	15496	9711
1990	404	953	1357	16853	10115
1991	510	1333	1843	18696	10625
1992	641	1550	2191	20887	11266
1993	814	1386	2200	23087	12080

* data not available

STATUS OF HIT AND RUN CASES

City of Manila, 1983 - 1993



source: WFPD-TMD Records Section
Figure 13.0