

A Forty-One Year Review of Deaths from Motor Accidents in Lagos State, Nigeria (1970-2010)

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Abstract Using mostly secondary data on vehicular accidents obtained from the Nigeria Police Force and Federal Road Safety Commission, the study examined a thirty-two year review of deaths from road traffic accidents (1970-2010) in Lagos State. The reported deaths from road traffic accidents in the 20 Local Government Areas of Lagos State were compared using the Analysis of Variance (ANOVA). The result showed that for the two factors, Local Government Areas and years, the *F*-calculated of 18.32 and 7.43 respectively were higher than the *F*-tabular of 1.64 and 1.32 respectively at 0.05 level of significance. It then implies that the means for each of the factors, reported deaths from road traffic accidents across the 20 Local Government Areas of Lagos State and across different years were significantly different. The result of the multiple regression analysis was 0.32. This implies that the proportion of variation in the dependent variable (i.e. deaths from road traffic accidents) explained by the independent variables (i.e. length of roads, presence of road safety and population) was 32%. Based on the findings, recommendations were proffered on how to reduce the phenomenon of deaths from traffic accidents in Lagos State.

Keywords: Deaths; traffic; forty-one years; accidents; motor

1. Introduction

Road traffic accidents' statistics in Nigeria reveal a serious and growing problem with absolute fatality rate and casualty figures rising rapidly. In majority of developing countries, accident occurrence and related deaths are relative to either population or number of vehicles. Ironically, in Nigeria, studies have indicated that better facilities in terms of good quality and standardized roads have been accompanied by increasing number of accidents (Onakomaiya, 1988, Gbadamosi, 2002; Atubi and Onokala, 2009). This is totally contrary to the trends in countries where even the level of sophisticated road network and volume of vehicular traffic are much higher (Atubi, 2010a).

The number of reported cases of fatal road traffic accidents in Nigeria has shown an increasing trend from 12,212 cases of accidents in 1995 to 13,913 in 1996 and 15,415 in 2004 indicating an increase of 13.9% in fatal road accidents from 1995 to 1996 (Central Bank of Nigeria, 1997). Fatal road accidents figures across the federation of Nigeria rose sharply in 1992 resulting in 22,992 deaths (CBN, 1994). According to the Annual Abstract of Statistics (2008), between 2003 and 2007, a total of 225,891 accident cases were reported by the Nigeria Police Force, out of which 29,490 were fatal, 39,065 were serious cases, 23,380 were minor cases. In Nigeria, the road traffic accident situation over the last three decades has been particularly disturbing. In 1976, there were 53,897 road traffic accidents resulting in 7,717 deaths. Although, in 1981, the magnitude reduced to 5,114 accidents, but the fatality increased to 10,236, which means that there was an average of 96 accidents and 28 deaths for every day of that year (Ogunsanya, 1990). The situation in subsequent years has not been any better. The number of people killed in road accidents between 1990 and 2005 rose from 28,253 to 37,873 and the fatality rate remains consistently high (Atubi, 2009b).

International comparison indicates that the chance of a vehicle killing someone in Nigeria is 47 times higher than in Britain. The proportion of fatalities to injuries reported is also very high. For example, while Czech Republic has only one death in 175 accidents, France one death in 175, South Africa, one death in 47 accidents, Nigeria has one death in 2.65 accidents (Atubi, 2010b).

Road traffic accident rates all over the world show great disparity, most especially between the developed and developing countries. It has been shown by research that the degree of severity of accidents and the frequency with which they occur in the developed continents such as North America and Europe are decreasing, while in the developing continents of Africa and Asia, the rates are increasing (Ghee, et al, 1997; Yang et al, 2003; Suriyawongglassal et al, 2003; Afukaar el al, 2003; Odero, et al, 2003; Atubi, 2010a, 2010c).

Based on data that are at best conservative estimates, Nigeria is a country with a serious and growing road accident problem that is among the worst in the world (Asogwa, 2002). Analysis of global statistics indicates that fatality rates (per licensed vehicle) in developing countries are high in comparison with those of developed countries (Adeniji, 2002). African countries in particular have rates often 30 to 50 times greater than those in the countries of Western Europe.

Road accidents constitute an unmitigated public scandal in Nigeria. Of the thirty-eight countries studied on basis of deaths per 1000 vehicles, the United States of America was in the last position, while Nigeria was first with Ethiopian and Malawi coming second and third respectively (Gbadamosi, 1999).

According to Federal Road Safety Commission, between 1970 and 2001, Nigeria recorded a total of 726,383 road traffic accident, resulting in the death of 208,665 persons and injuries to another 596,425. In that period, each succeeding year recorded more accidents, deaths and injuries. Also, between 1997 and 2002, Lagos State alone recorded a total of 17,141 road accidents, resulting in the death of 3,132 persons and injuries to 9,972 persons.

As in other developing countries, road traffic accidents in Nigeria are one of the most serious problems in need of pragmatic solution. 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 (Akpoghome, 1998; Obinna, 2007, p. 35). 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).

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).

2. Methodology

This study, in a broad sense, under takes a spatial analysis of death from road traffic accidents over a period of 41 years (i.e. 1970-2010) in Lagos State. This attempt to conduct a detailed investigation of accident phenomenon more than the ones that had hitherto engaged the attention of researchers.

Secondary data were collected from various sources, which include the records of the Federal Road Safety Commission, the Nigeria Police, Federal Ministry of Transport and the Federal Office of Statistics. The data collected were analyzed using both descriptive and inferential statistics.

3. Data analysis

The analysis of variance statistical (ANOVA) techniques were used to test for the significance of variability in the spatial pattern of death from road accidents in Lagos State. Also, the multiple regression analysis statistics was used in this study to investigate the factors that influence the number of deaths from reported road traffic accidents in Lagos State. The dependent variable was reported number of deaths from road accident, while the independent variables considered include length of roads in Lagos State from 1970-2010, presence of road safety corps and population. However, data on alcohol induced accidents, over speeding and reckless driving could also have been useful but were not considered for lack of data.

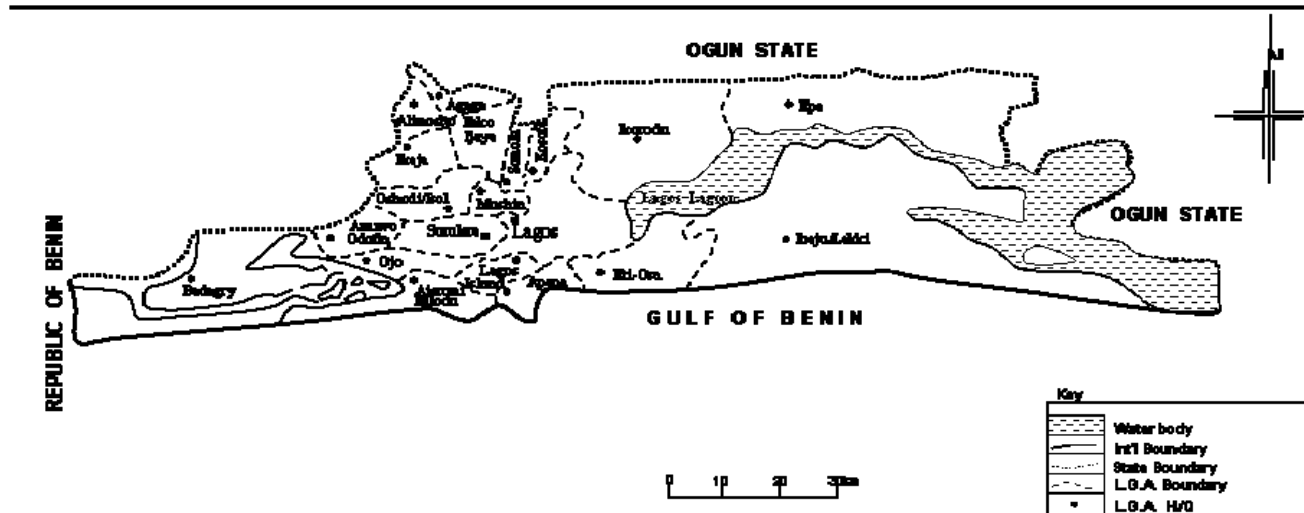
4. Study area

Lagos State is a suitable case study because it hosts metropolitan Lagos, Nigeria's major traffic centre, 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 (Federal Republic of Nigeria, 1997, p. 6). Moreover, the traffic situation in Lagos State is bad because of the absence of effective 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 hours in the last decade (Lagos urban Transport Project, 2002). This population increase has been accompanied by a corresponding increase in motor vehicles and traffic accidents. However, accident rates in Lagos State are still very much on the high side compared to other states in the federation. But, fatalities and

non-survival indices for the state are on the decline. This is attributable to its high level of traffic congestion (which reduces the probability of the high fatality accidents resulting from over speeding) and accessibility to good post – crash medical care in the Lagos metropolitan area.

Fig. 1: Map Of Lagos State Showing The 20 L.G.A.S



Source: Lagos State Ministry of Environment and Physical Planning (1999)

5. Discussion of Findings and Results

The reported number of deaths from road traffic accidents in the twenty Local Government Areas in Lagos State from 1970-2001 were compared using the Analysis of Variance (ANOVA). The results are shown in Table 1.

Table 1: Analysis of variance for reported number of deaths from road traffic accidents in Lagos State

Factor	Source of variation	Sum of squares	Df	Means squares	F-Cal	F-table
Local Govt. Area	Between L.G.A.	81412.48	16	4284.87	18.32	1.64
	Within L.G.A.	88227.27	400	216.55		
	Total	169639.75	416			
Years (1970-2010)	Between years	74814.06	28	2232.81	7.43	1.32
	Within years	95923.73	352	203.5		
	Total	170737.79	380			

The results show that for the two factors, Local Government Areas and years, the F-calculated of 18.32 and 7.43 respectively, were higher than the F-tabulated of 1.64 and 1.32 respectively at the 0.05 significance level. This implies that the means for each of the factors, reported deaths from road traffic accidents across the twenty Local Government Areas in Lagos and across different years 1970-2010 were significantly different. In order to ascertain whether the means were significantly different, the Duncan New multiple Range Test (DNMRT) was used to compare them. The results for the mean comparisons for different Local Government Areas and for different years in Lagos State from 1970-2010 as shown in tables 2 and 3.

Table 2: Means of Reported deaths from road traffic accident in different Local Government Areas in Lagos State

S/N	L.G.A.	N	Means
1	Ikeja	41	58.31a
2	Lagos Island	41	54.62a
3	Ajeromi/Ifelodun	41	36.48b
4	Lagos Mainland	41	35.54bc
5	Mushin	41	31.55bc

6	Apapa	21	29.31bcde
7	Oshodi/Isolo	21	25.22cdef
8	Surulere	21	24.74cdef
9	Ojo	12	22.71defg
10	Agege	12	22.41defg
11	Shomolu	21	21.94defg
12	Badagry	41	20.44defg
13	Ifako-Ijaye	12	1.74efgh
14	Ikorodu	41	18.39efgh
15	Alimosho	12	17.64efgh
16	Epe	41	15.86fgh
17	Ibeju-Lekki	12	14.83fgh
18	Kofofe	12	1.23gh
19	Eti-Osa	12	11.20gh
20	Amuwo-Odofin	12	9.31h

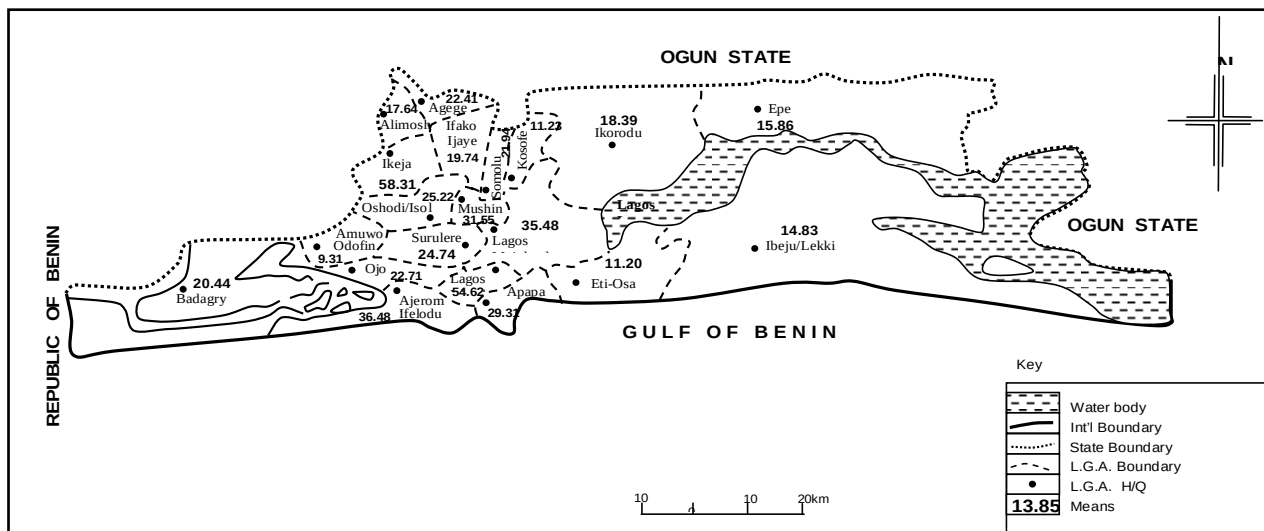
Table 3: Means of reported number of deaths from road traffic accidents 1970-2010

S/N	Years	N	Means
1	1985	8	65.38a
2	1980	8	60.38a
3	1979	8	60.38b
4	1978	8	54.88abc
5	1981	8	52.13abcd
6	1976	8	51.75abcde
7	1973	8	47.25bcde
8	1975	8	47.25bcdef
9	1988	12	42.63cdefg
10	1977	8	42.08cdefg
11	1986	12	40.25cdefg
12	1982	8	38.08defgh
13	1984	8	37.13defghi
14	1987	12	37.00defghi
15	1983	8	36.33efghij
16	2004	8	35.31efghij
17	1974	8	32.00fghijk
18	1989	20	30.75ghijk
19	2009	20	30.70ghijk
20	2001	20	24.10hijk
21	2002	20	23.44hijk
22	2010	20	24.08hijk
23	1990	20	22.60ijk
24	2003	20	22.52ijk
25	1996	20	21.60jk
26	1997	20	19.70k
27	2008	20	19.65k
28	1994	20	19.45k
29	1972	8	19.45k
30	1993	20	19.38k
31	2005	20	10.30k
32	1995	20	18.65k
33	1998	20	17.55k
34	2006	20	17.50k
35	1991	20	19.25k
36	2007	20	17.21k
37	1999	20	17.05k
38	1970	8	16.75k
39	2000	20	16.55k
40	1992	20	16.25k
41	1971	8	16.25k

The letters in the means columns in tables 2 and 3 show means of reported deaths from road traffic accidents that were identified as significantly or insignificantly different by Duncan New Multiple Range Test. Means of reported number of

deaths from road traffic accidents with different letters of alphabets are significantly different while means with the same letters of alphabet are not significantly different. In tables 2 and 3 the means were arranged from the highest to the lowest. From table 2 the means of reported number of deaths from road traffic accidents in Ikeja and Lagos Island are not significantly different or equal and significantly different from those in Ajeromi/Ifeلودun, Lagos Mainland, Mushin and Apapa Local Government Areas which are not significantly different (Fig. 2). However, that of Ajeromi/Ifeلودun is significantly different from that of Oshodi/Isolo Local Government Area is not significantly different from those of Lagos mainland, Mushin and Apapa Local Government Areas which were equal with that of Ajeromi/Ifeلودun Local Government Area.

Fig. 2: Map of Lagos State Showing L.G.A's with Different Means of Reported Deaths from R.TA's



Source: Adopted from Table 2.

Generally, Lagos Island, Ajeromi/Ifeلودun, Ikeja and Mushin Local Government Areas had the highest number of reported deaths from road traffic accidents while Badagry, Epe and Ikorodu Local Government Areas had the least. This could be because of the fact that Lagos Island, Ajeromi/Ifeلودun, Ikeja and Mushin Local Government Areas are in the "heart" of Lagos State with more traffic than Badagry, Epe and Ikorodu Local Government Areas which are at the outskirts of Lagos State.

In order to ascertain the factors that influence the number of deaths from road traffic accidents, a Multiple Regression Analysis was used. The dependent variable was reported number of deaths from road traffic accidents, while the independent variables considered included length of roads (in km) in Lagos State from 1970-2010, presence of road safety corps and population. Besides the road safety variable, which was a dummy variable (1 for years when the road safety corps are on the road, 0 for otherwise), the rest were actual values (see table 4). Out of the three regression models tried, linear form proved better than the logarithmic to the power of two form and the logarithmic form considering the number of significant variables, sign of the coefficients and R^2 value. The result of the analysis shows that the R^2 value was 0.32. This implies that the proportion of variation in the dependent variable (deaths from road traffic accidents) explained by the independent variable was 32%. This value is low suggesting that some other factors other than the ones used may have influenced deaths from road traffic accidents. The F-ratio of 3.63 was higher than the table F-value of 2.98 at 0.05 level of probability indicating that at least one of the independent variables had significant influence on the dependent variable. The choice of the three variables (i.e. length of roads, presence of road safety and population) was partly influenced by data availability. Other variables like alcohol induced accidents, over speeding and reckless driving would also have been useful but were not considered for lack of data. Table 5 shows the regression result.

Table 4: Population, length of roads (in km), and presence of road safety corps in Lagos State from 1970-2010

Year	Population	Length of roads (km)	Road safety Presence
1970	1,028,327	140	0 (No)
1971	1,085,913	142	0

1972	1,146,724	144	0
1973	1,210,940	147	0
1974	1,278,752	150	0
1975	1,350,362	152	0
1976	1,425,982	154	0
1977	1,505,836	156	0
1978	1,647,384	157	0
1979	1,802,238	157	0
1980	1,971,648	157	0
1981	2,156,982	158	0
1982	2,359,938	161	0
1983	2,581,553	164	0
1984	2,824,218	160	0
1985*	3,089,694	148	0
1986	3,380,125	144	1 (yes)
1987	3,697,856	130	1
1988	4,024,554	130	1
1989	4,425,726	130	1
1990	4,842,744	130	1
1991	5,680,000	135	1
1992	6,213,920	135	1
1993	6,790,028	150	1
1994	7,097,141	194	1
1995	7,416,512	197	1
1996	7,661,256	203	1
1997	7,914,077	200	1
1998	8,175,241	250	1
1999	8,445,025	250	1
2000	8,723,709	256	1
2001	9,011,591	300	1
2002	9,401,288	318	1
2003	9,611,201	423	1
2004	9,801,312	500	1
2005	9,910,101	520	1
2006	10,010,001	570	1
2007	10,210,112	600	1
2008	10,323,212	641	1
2009	10,510,111	677	1
2010	10,623,101	701	1

Source: Lagos Metropolitan Area Transport Authority

(LAMATA, 2002); Master Plan Project, Urban and Regional Planning Division, Lagos State Ministry of Economic Planning and Land Matters, 2002.

* There was a decline in length of roads in the country between 1985 and 1992 because these were the years of military rule in Nigeria and the various ministry regimes of that era disregarded the development of infrastructure such as roads. Moreover, flagrant abuse of power and massive corruption greatly diminished the resources available for road and other infrastructural developments.

Table 5: Regression Results of the Factors that influence road traffic accidents in Lagos State

Independent variables	Regression coefficients	Std. Error	T-start	Remark
Length of roads (km)	1.69	0.570	2.98	S
Presence of road safety	29.75	71.877	0.41	NS
Population	-2.38x10 ⁻⁵	0.00	-1.54	NS
Constant	-33.48	130.97	-0.26	

S = Significant at 0.05 level of probability

NS = Not significant

From table 5, only the length of roads (km) positively and significantly influenced deaths from road traffic accidents at the 0.05 level of probability in the study area. This shows that deaths from road traffic accidents significantly increase with increased length of roads (km). Thus, the greater the areal extent and length of highways, the higher the number of deaths from road traffic accident occurrences in Lagos State. While it is expected that large areas are likely to have greater accident occurrences than smaller areas because of higher traffic volumes, it is, however, note worthy that the more the highways is of generally high quality, the greater the number of accidents. This result confirms findings from other studies that the better the quality of the roads in Nigeria, the higher the level of road traffic accidents in the country because drivers most likely over speed on good roads, leading to more frequent and fatal accidents (Onakomaiya 1988; Filani and Gbadamosi, 2007; Atubi, 2010a).

This finding leads to one conclusion. It suggests that constructing more roads will lead to increased death from road traffic accidents. Since increasing the number of roads may be beneficial in other ways, especially as government increases the road network as part of increasing the nation's infrastructure base, the benefits of such developments will have to be balanced with the expected increase in road traffic accidents. In general, the variability of deaths from road traffic accident occurrences within the study area in the 41 year period can be attributed to the variation in traffic density. This is because improvements in the quality and density of roads has not led to appreciable changes in driving, safety provisions or stronger procedures for monitoring road users compliance with traffic rules and regulations across the country. Moreover, poor police practices, regional disparities in traffic police strength and inadequate facilities have limited their ability to effectively enforce traffic regulations, and by extension, their ability to be effective road safety agents.

Although the traffic accident situation in Lagos State is pathetic, the situation is especially serious in Lagos Island, Ajeromi/Ifelodun, Ikeja, Mushin, Shomolu, Agege, and Ifako/Ijaye. These areas are accident prone because they are most commercialised and motorized areas in Lagos State (Atubi, 2006).

6. Recommendations for Nigeria

The recommendations for Nigeria are presented as follows:

- Proper traffic patrol at the times of very high accident occurrence will go a long way towards reducing deaths from traffic accidents and the associated injuries in Nigeria.
- Ensuring that drivers are constantly trained to ensure that they operate vehicles safely at all times
- Learn from other countries with better traffic management systems e.g. the U.S. and Great Britain
- Increase the level of road user compliance with traffic regulations
- Ensure adequate funding for the Federal Road Safety Corps

7. Recommendations/Policy implications specific to Lagos State

To deal with the accident prone areas of Lagos State (i.e. Lagos Island, Ajeromi/Ifelodun, Ikeja, Mushin, Shomolu, Agege, Ifako/Ijaye) the authorities should:

- Decongest the CBD
- Improve traffic patrol especially in accident prone season times.
- Provide recommendations for effective transport planning, human –misuse, poor management, inadequate street parking, traffic congestion, delays and accidents.
- Strong political commitments to ensure on a long term basis, appropriate monitoring of the road accident situation on which pertinent decisions can be made.
- Proper design of road networks as well as the planning of the general public transport system.

These measures, if well executed will contribute positively towards reducing the ugly incidence of deaths from road traffic accident in Lagos State and Nigeria in general. The current poor road safety record in Nigeria is not inevitable. As other countries like the U.S.A. and Britain have shown, population and vehicular traffic growth does not have to lead to increases in traffic crashes, deaths and permanent injuries as these undesirable outcomes can be minimized through adequate traffic accident control and injury prevention (Atubi, 2006).

8. Conclusion

Accident on our roads is the leading cause of deaths in Nigeria and Road Traffic Accident (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 we are to continue to move forward in an ever-changing society. Those areas that are accident prone is because they are most commercialized and motorized areas of Lagos State. As Atubi (2006) further observes, traffic jams, due to deep potholes, blocked drainages, and the poor road network, keep Lagos motorists on the roads for hours.

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