
Changes in Traffic Safety Policies and Regulations in Indonesia (1950–2010)

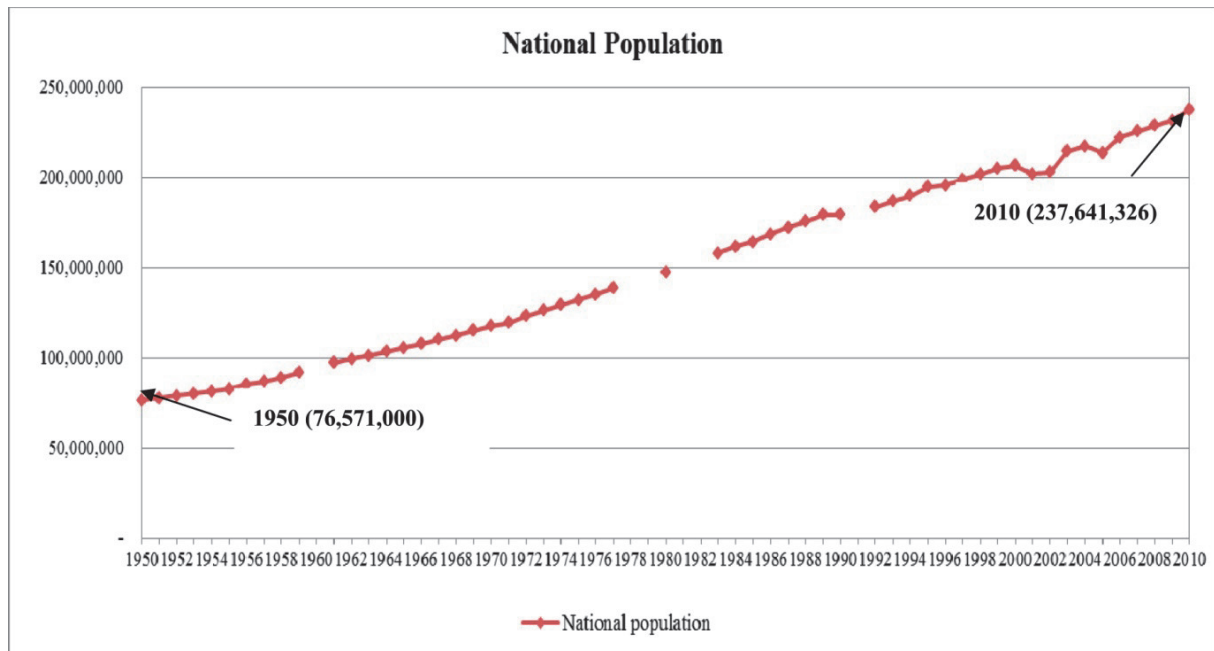
1. Background

Traffic safety policies and regulations in Indonesia are recognized as inseparable from the regulations and policies that govern road transport and traffic issues. Following its independence in 1945, Indonesia produced in 1951 its first supreme law concerning road transport and traffic, enhancing a law enacted earlier by the Dutch colonial government. Afterwards, further legislation on road transport and traffic was passed in 1965, 1980, 1992 and 2009, with the aim of providing safety, security, smoothness and orderliness to road transport and traffic. In addition, various government regulations were established to endorse the implementation of specific provisions of those laws (except the ones enacted in 1951 and 1965). As the Indonesian government increasingly turned its attention to road traffic safety, it produced other regulations dealing with specific safety issues in order to minimize road traffic accidents.

This study examines such regulations in the context of traffic accident data for the period 1950–2010. The structure of this paper is as follows: Section 2 presents time series data related to road traffic safety; Section 3 reviews the traffic accident situation; Section 4 discusses organizations involved in the road traffic safety; Section 5 presents the laws, regulations and programs related to traffic safety, and Section 6 reviews them; Section 7 provides conclusions.

2. Data Related to Road Traffic Safety

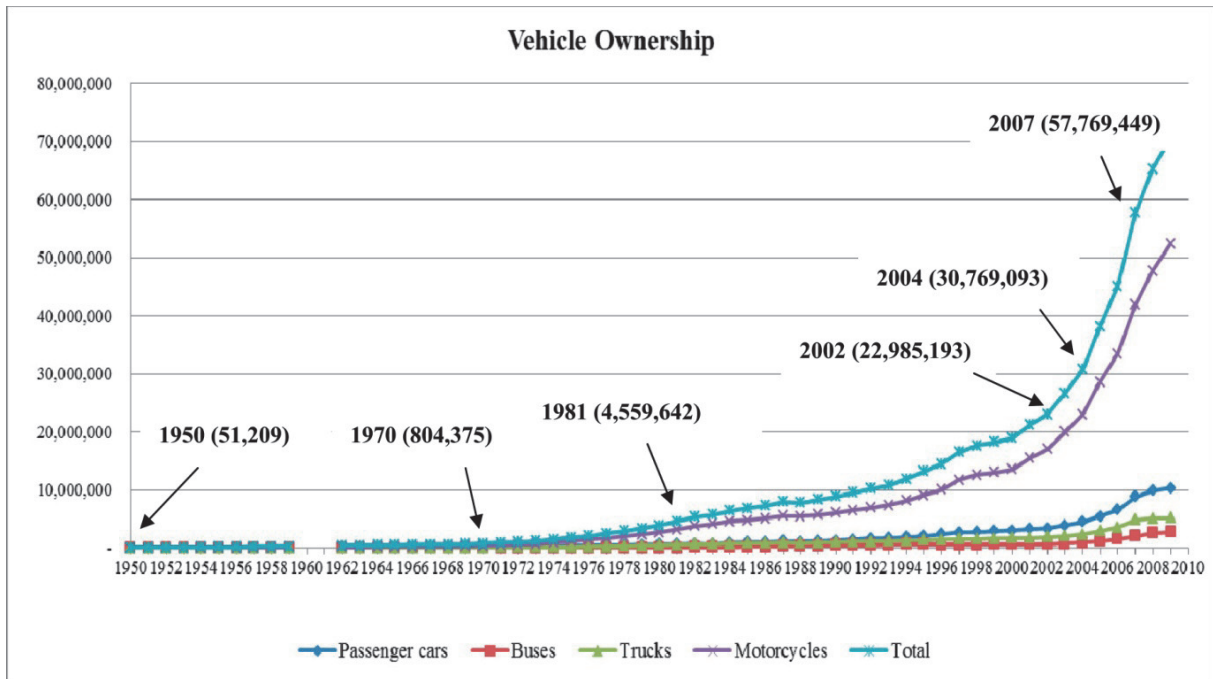
2.1 National Population



Sources: [1], [7], [8], [9], [10] (Note: Some data are not available.)

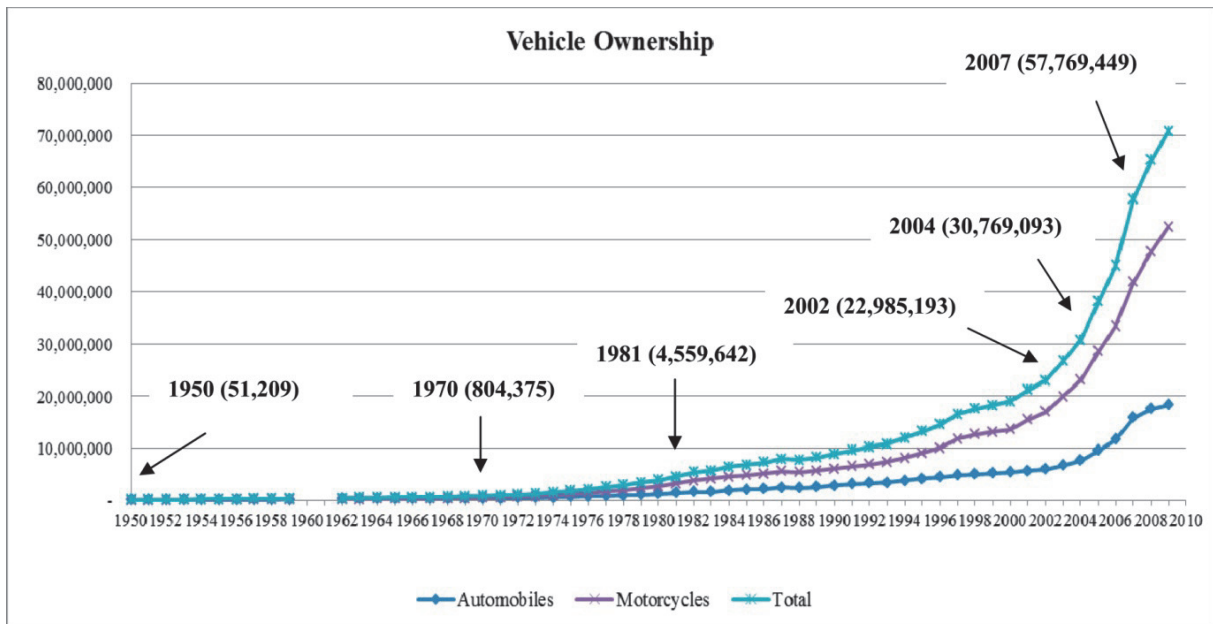
Figure 1 National population

2.2 Vehicle Ownership



Sources: [1], [7], [8], [10], [11] (Note: Some data are not available.)

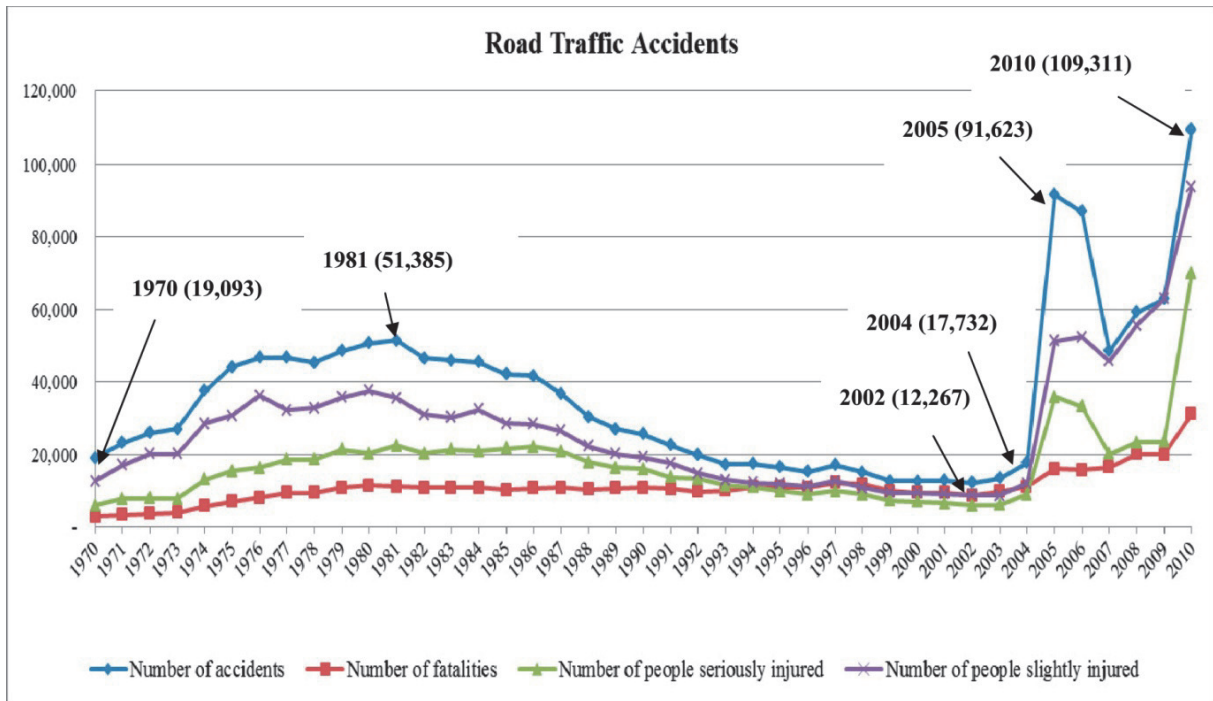
Figure 2a Vehicle ownership (4 classes of motorized vehicles)



Sources: [1], [7], [8], [10], [11] (Note: Some data are not available.)

Figure 2b Vehicle ownership (2 classes of motorized vehicles)

2.3 Road Traffic Accidents

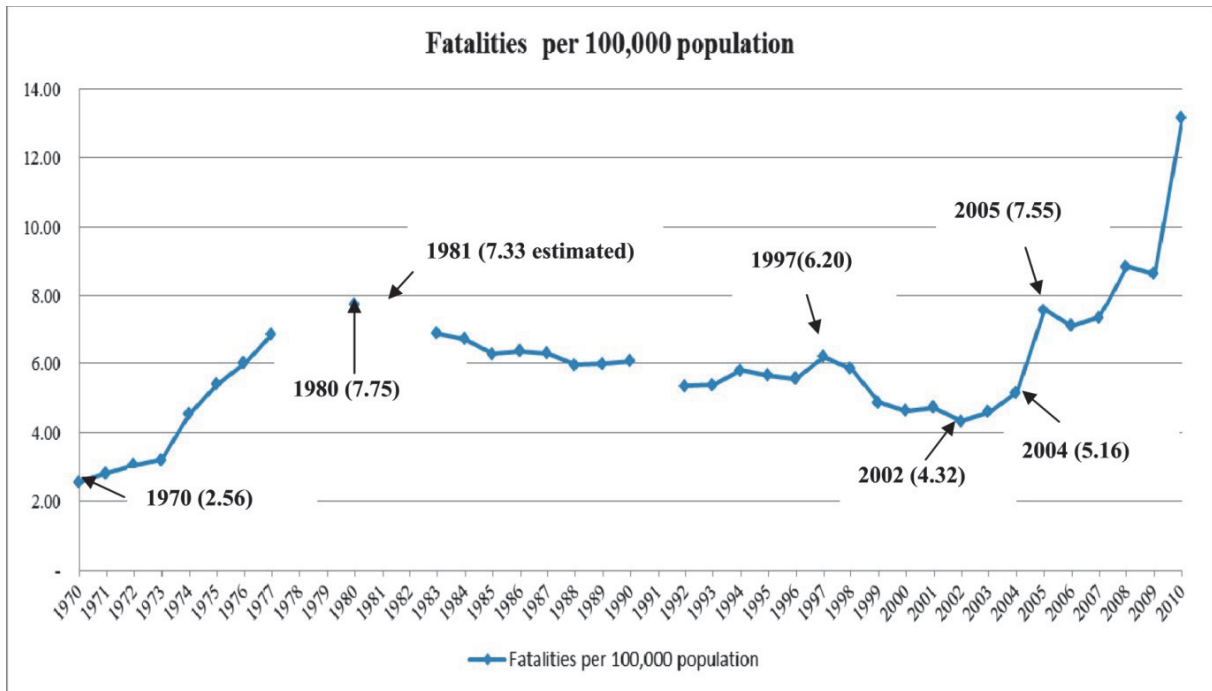


Sources: [1], [6], [10] (Note: Some data are not available.)

Figure 3 Road Traffic Accidents

2.4 Fatalities

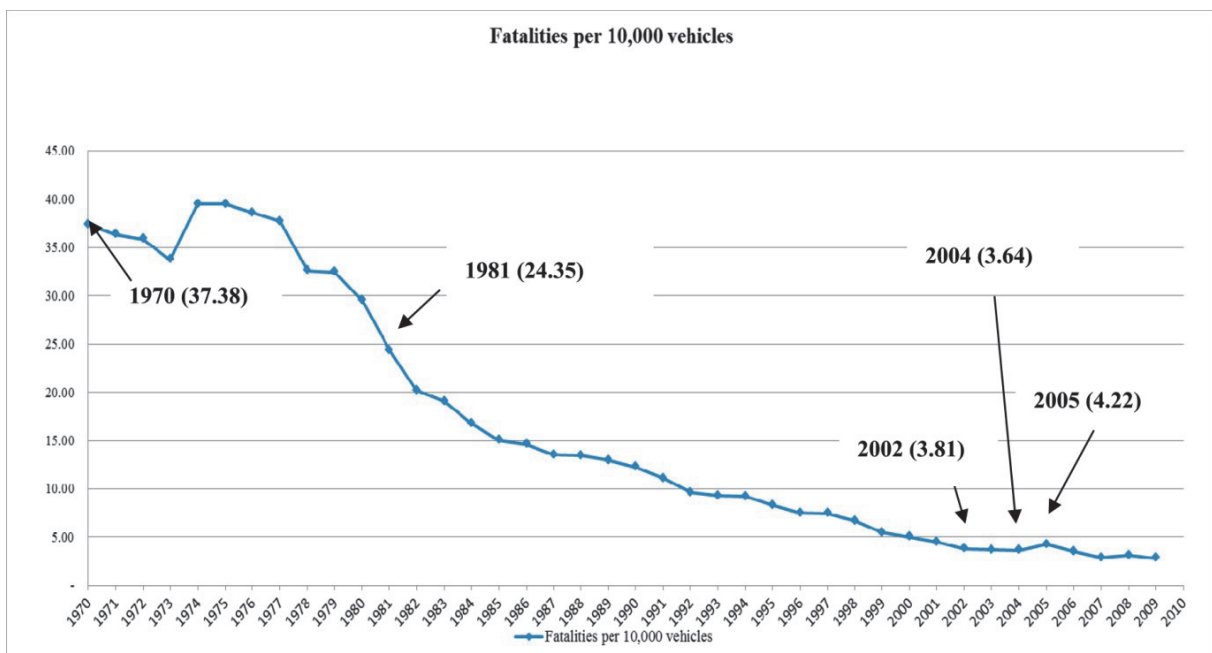
2.4.1 Fatalities per 100,000 population



Sources: Compiled using data from [1], [6], [7], [8], [9], [10]. (Note: Some data are not available.)

Figure 4 Number of fatalities per 100,000 population

2.4.2 Fatalities per 10,000 motorized vehicles

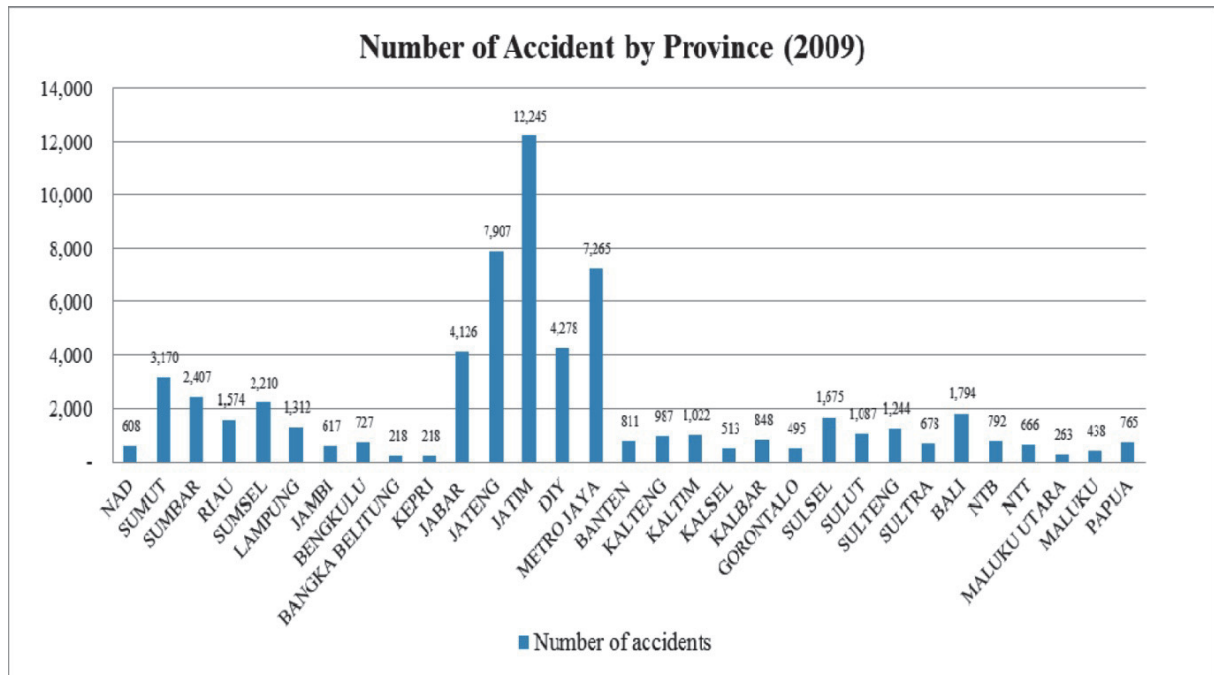


Sources: Compiled using data from [1], [6], [7], [8], [10], [11]. (Note: Some data are not available.)

Figure 5 Number of fatalities per 10,000 vehicles

2.5 Accident Data in 2009

2.5.1 Number of Accidents by Province in 2009



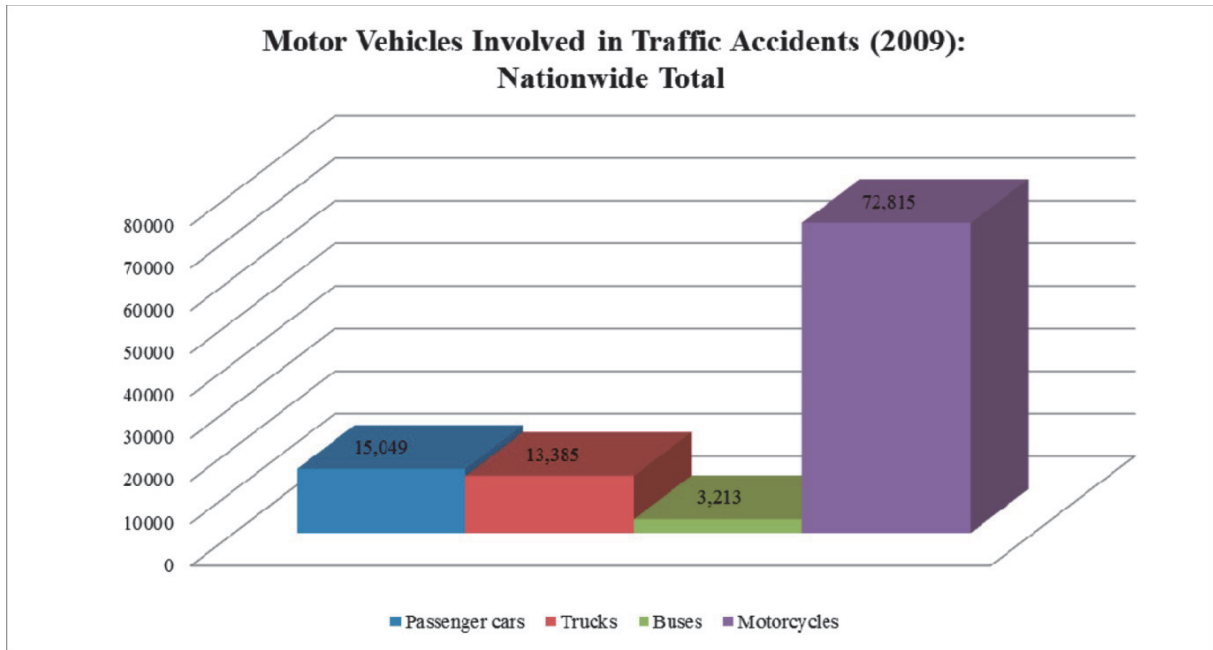
Source: [6]

Figure 6 Number of accidents by province (2009)

2.5.2 Number of Motor Vehicles Involved in Traffic Accidents in 2009

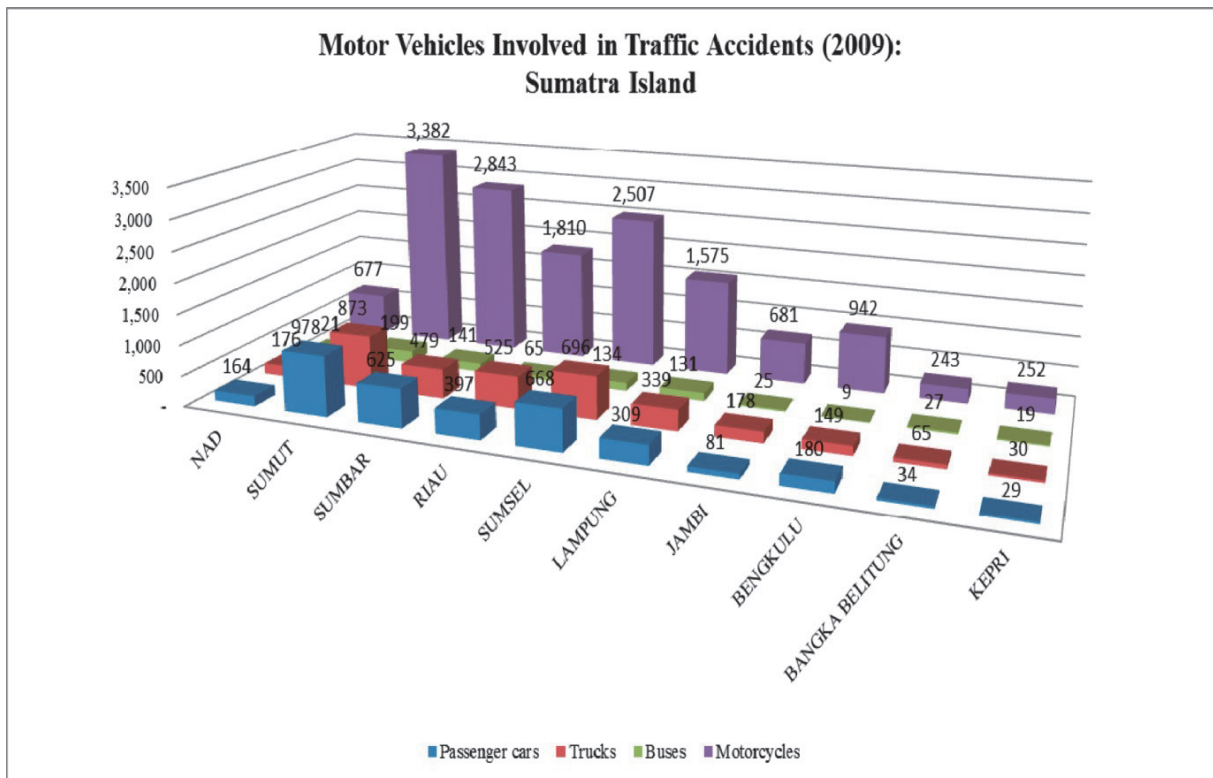
The following bar charts show the number of traffic accidents in 2009 by vehicle type and provinces. Since Indonesia consists of many islands, the province accident data are classified into the following six groups:

- (1) Nationwide total (Figure 7a)
- (2) Sumatra (Figure 7b)
- (3) Kalimantan (Figure 7c)
- (4) Sulawesi (Figure 7d)
- (5) Java (Figure 7e)
- (6) Other islands (Figure 7f)



Source: [6]

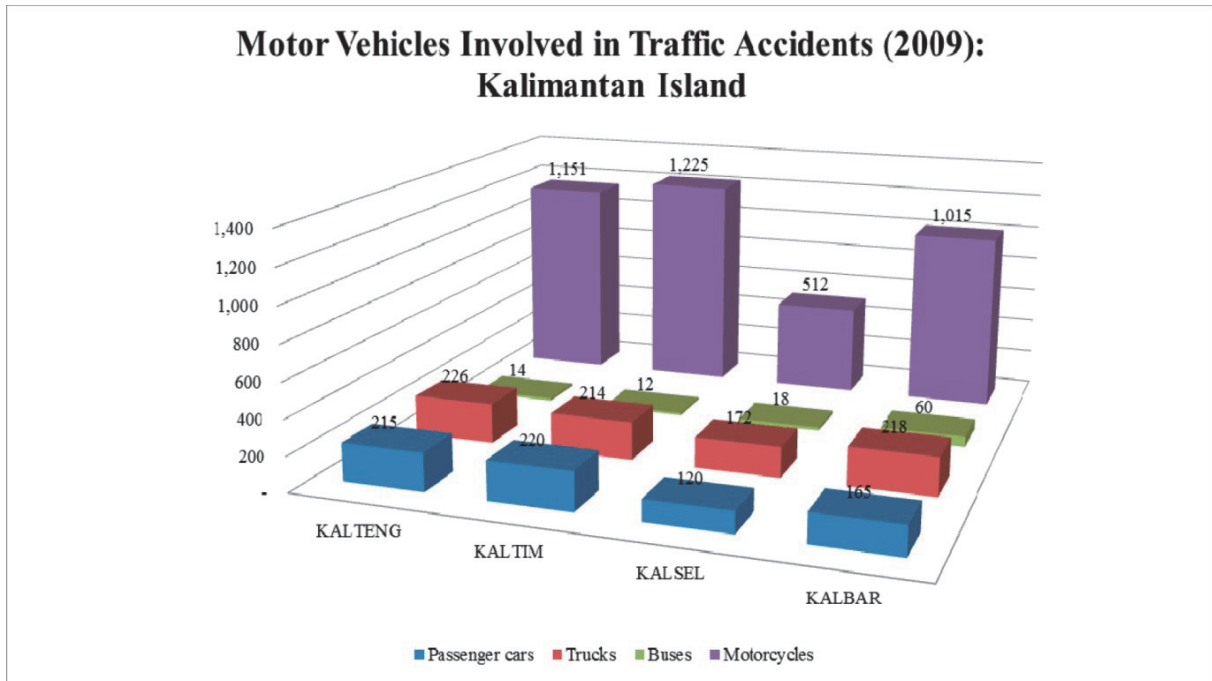
Figure 7a Number of motor vehicles involved in traffic accidents in 2009 (nationwide total)



Source: [6]

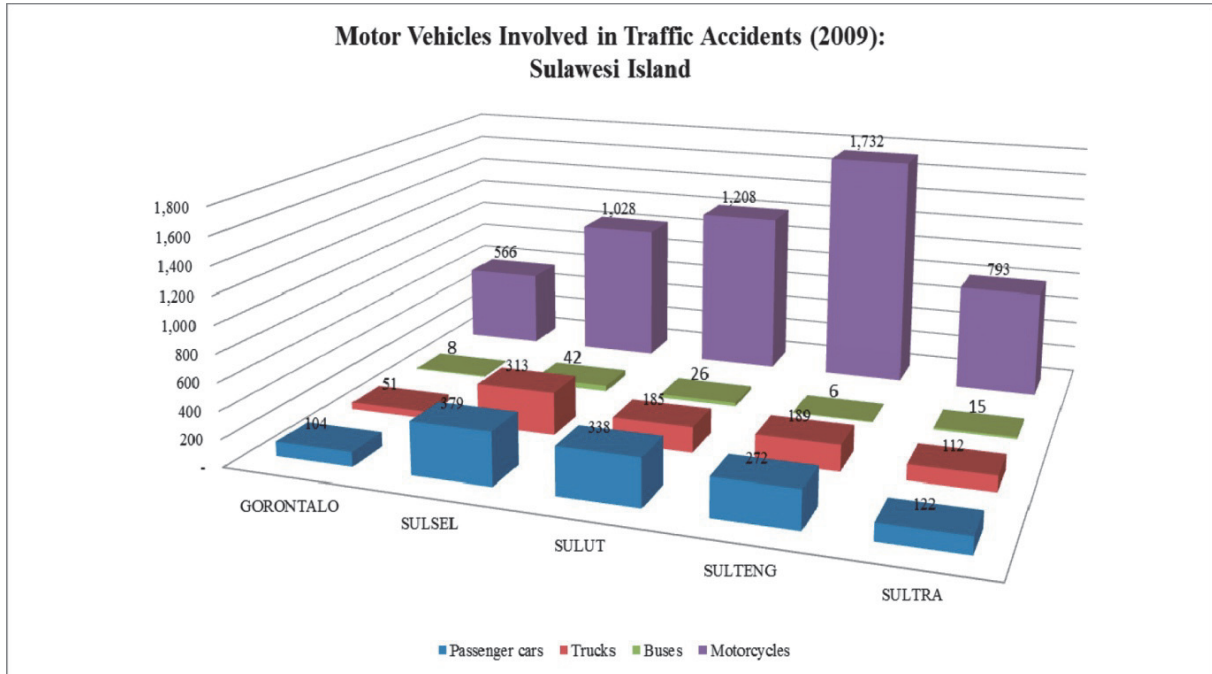
Figure 7b Number of motor vehicles involved in traffic accidents in 2009 (Sumatra Island)

Source: [6]



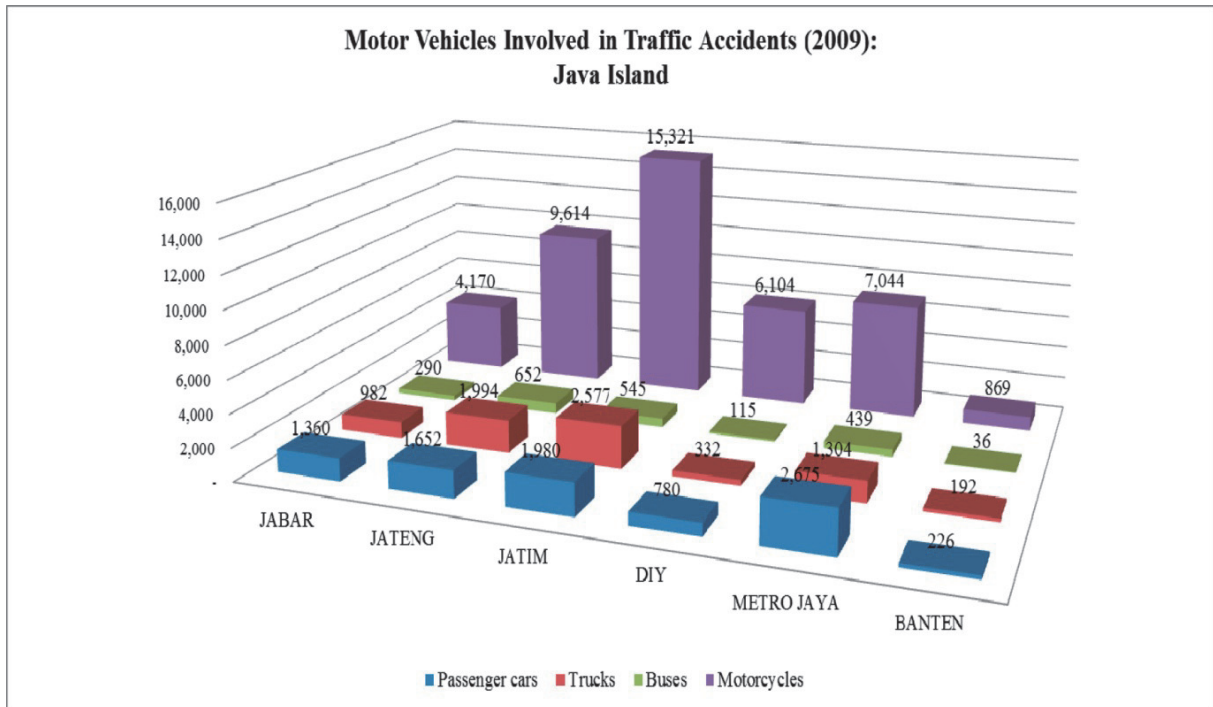
Source: [6]

Figure 7c Number of motor vehicles involved in traffic accidents in 2009 (Kalimantan Island)



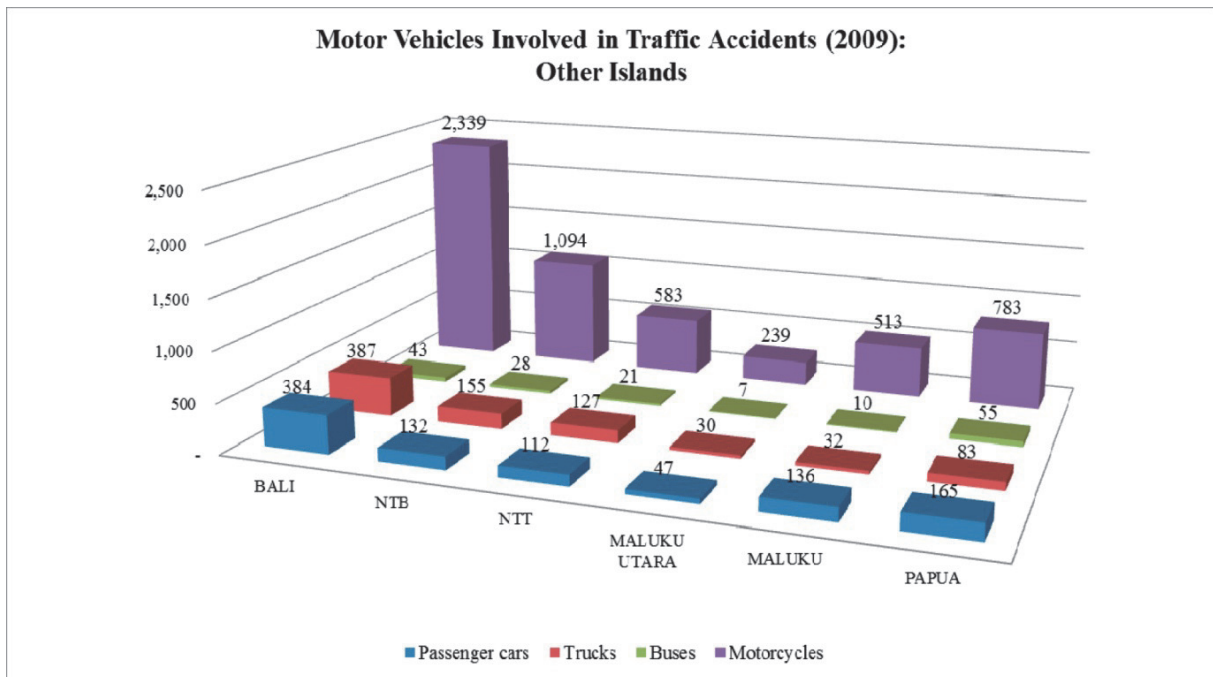
Source: [6]

Figure 7d Number of motor vehicles involved in traffic accidents in 2009 (Sulawesi Island)



Source: [6]

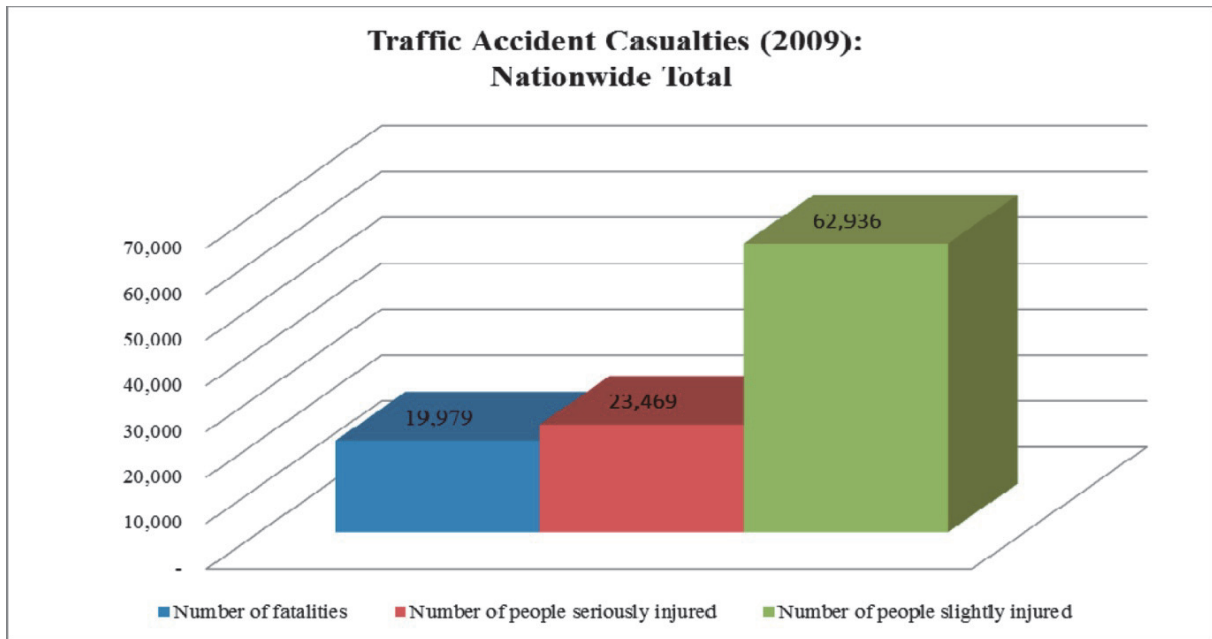
Figure 7e Number of motor vehicles involved in traffic accidents in 2009 (Java Island)



Source: [6]

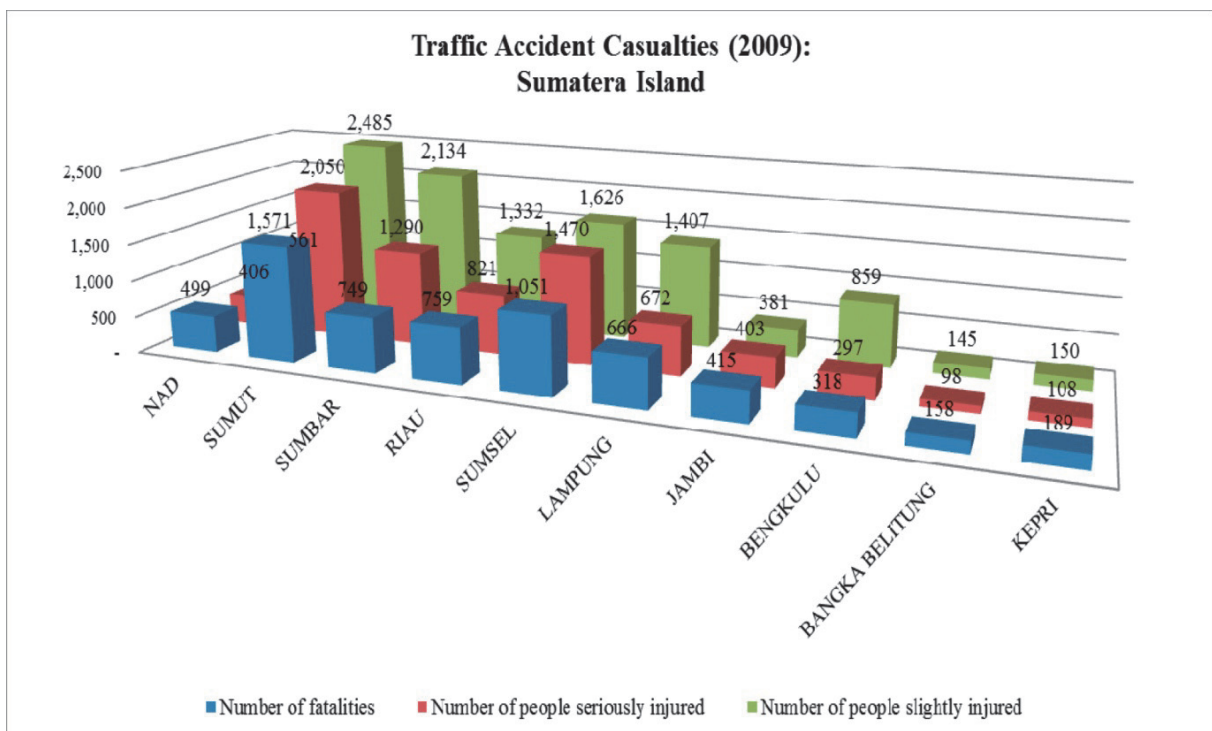
Figure 7f Number of motor vehicles involved in traffic accidents in 2009 (other islands)

2.5.3 Traffic Accident Casualties in 2009



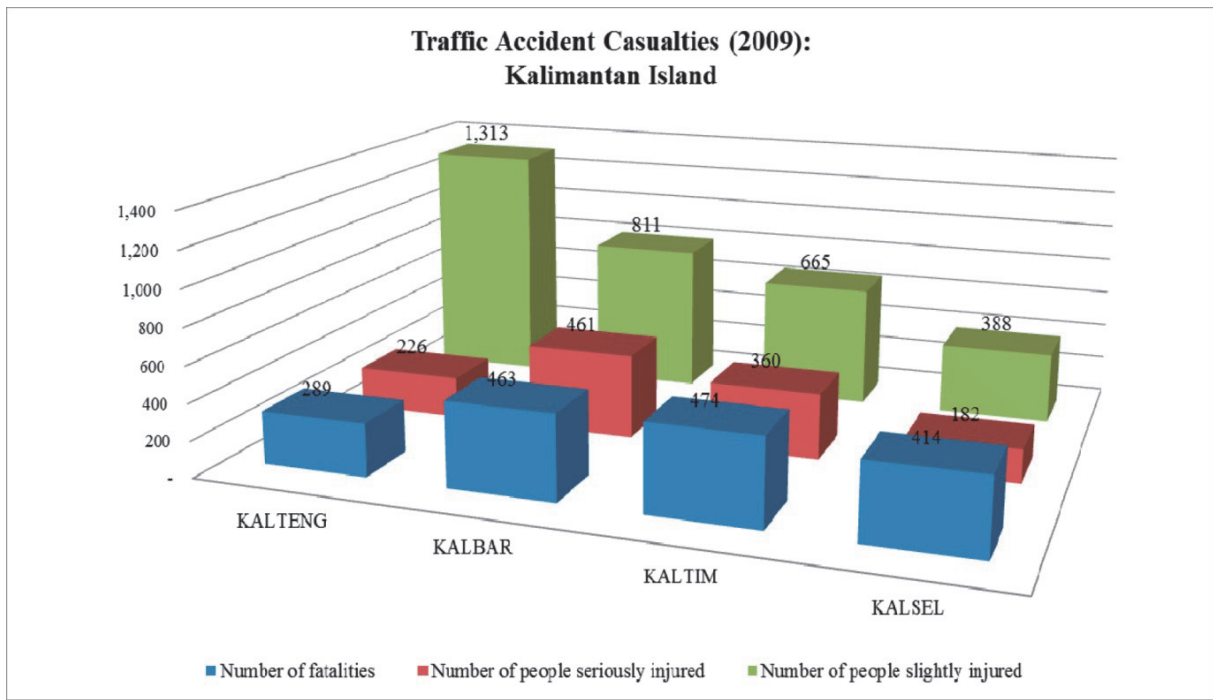
Source: [6]

Figure 8a Traffic accident casualties in 2009 (nationwide total)



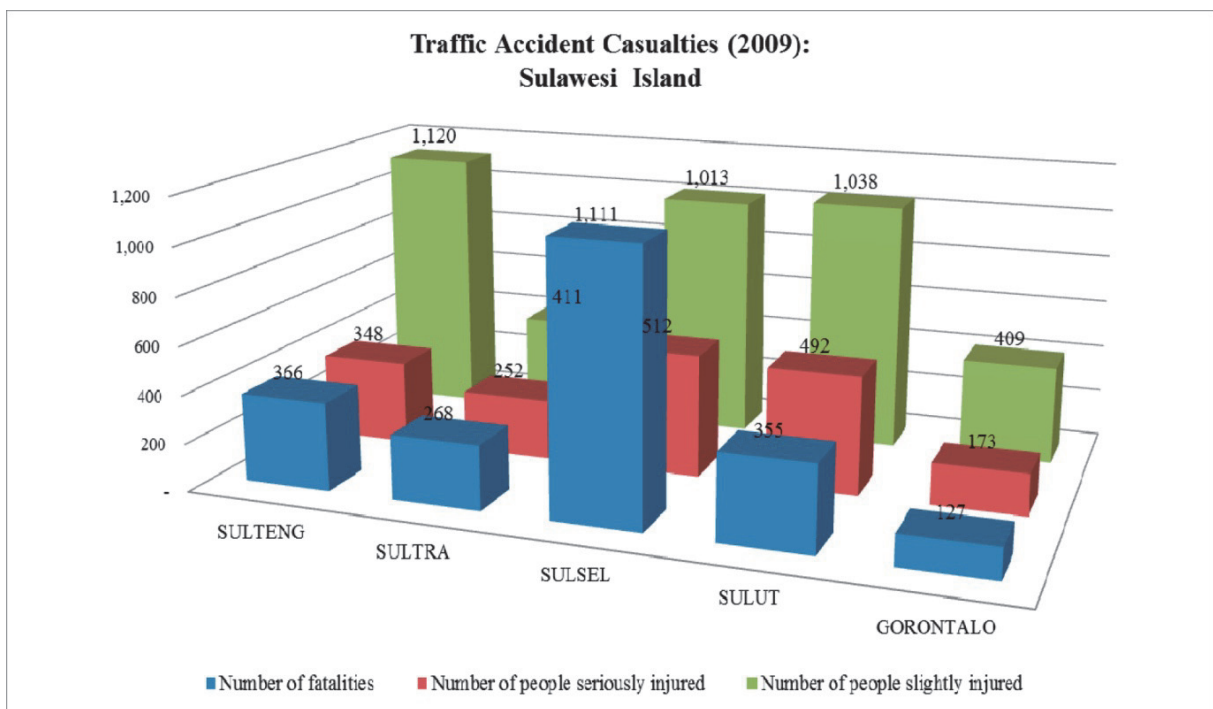
Source: [6]

Figure 8b Traffic accident casualties in 2009 (Sumatra Island)



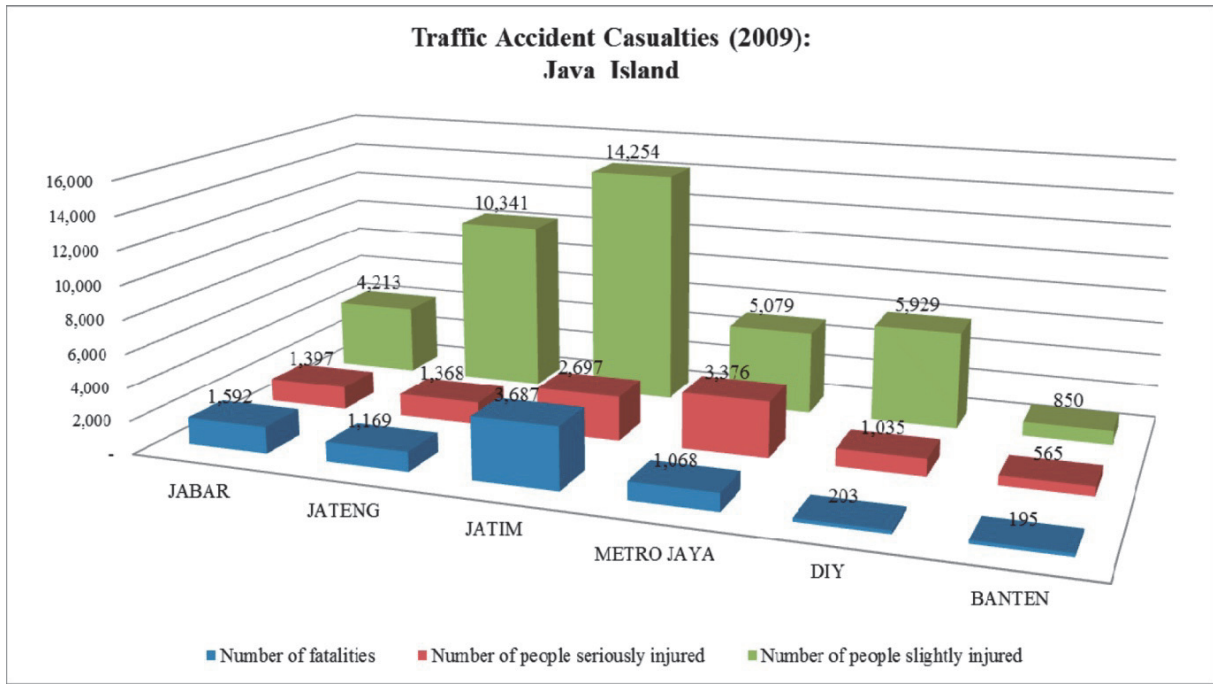
Source: [6]

Figure 8c Traffic accident casualties in 2009 (Kalimantan Island)



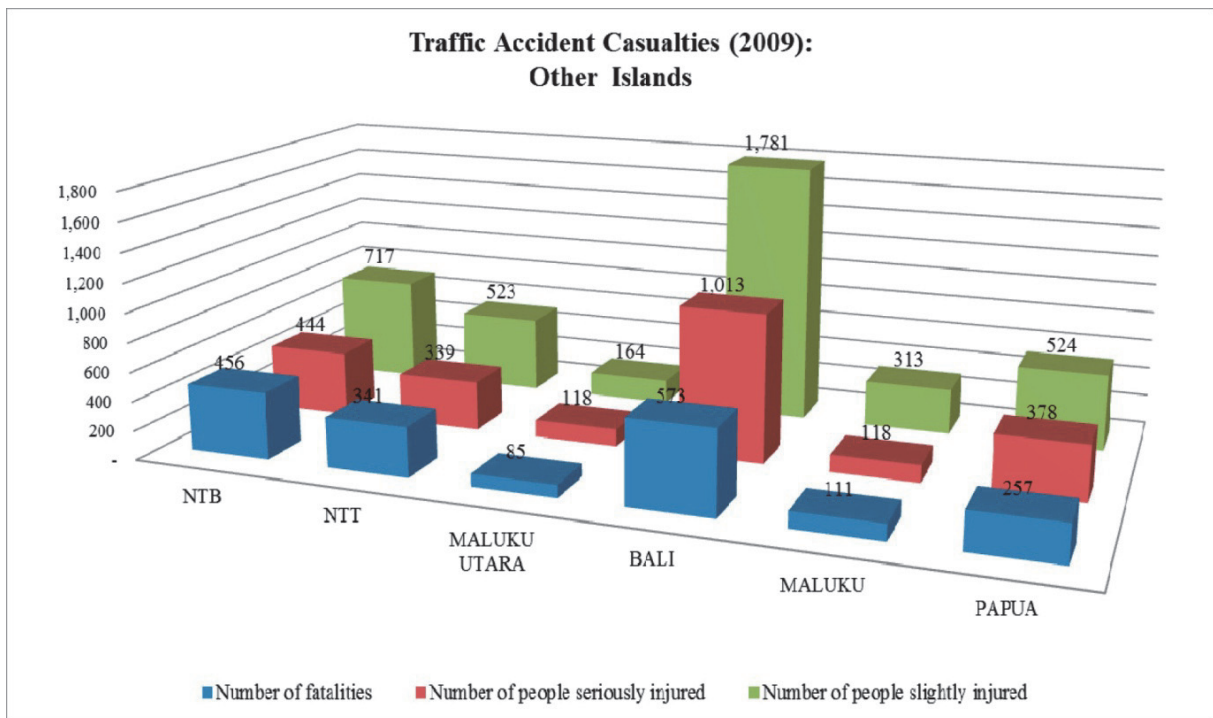
Source: [6]

Figure 8d Traffic accident casualties in 2009 (Sulawesi Island)



Source: [6]

Figure 8e Traffic accident casualties in 2009 (Java Island)



Source: [6]

Figure 8f Traffic accident casualties in 2009 (other islands)

3. Review of Traffic Accident Situation

3.1 General Review

In general, annual data on population and vehicle ownership in Indonesia have been collected relatively effectively since 1950 and have been documented by the Central Bureau of Statistics. However, the same cannot be said for the reporting and documentation of data on traffic accidents, especially road traffic accidents. The collection and documentation of time series data on road traffic accidents was started in 1970, but was initially poor in quality, with many accidents going unreported for various reasons. One of those reasons was that the use of an unaudited reporting process gave police officers the potential to refrain from reporting accidents to the higher echelon in order to keep the reported accident rate low in their areas of duty. Moreover, only the numbers of accidents and resulting casualties were recorded, with no documentation of other accident details.

As the Indonesian government became more concerned with traffic safety, the Indonesian National Police started devoting greater attention to traffic accident prevention, and recognized that the establishment of a proper database of accident information was the key to reducing the number of accidents. An intensive effort to document traffic accidents was launched on 2005. The data collected showed extreme growth in the annual number of traffic accidents, with the number for 2005 (91,623) totaling nearly five times that of 2004 (17,732). However, it is clear that this rise was not the result of an increase in accident incidence, but was rather the effect of intensive reporting by the police. Consequently, studies on traffic accidents in Indonesia must also consider this important phenomenon.

3.2 Trends in Road Traffic Accidents

3.2.1 Growth Rate

The following analysis on road traffic accidents is initially based on the trends in the variables related to traffic accidents. Such trends are represented by the average growth rates of some variables that are developed from data presented in sections 2.1 to 2.4. The growth rates are shown in Table 1. The growth rates of some variables are also represented in bar charts that show the rate fluctuation throughout the time of observation (Figures 9 to 11).

Due to the problem of poor accident reporting and documentation described in section 3.1 and based on the patterns of the time series of variables related to traffic accidents, we decided to divide the time series data into the following six periods of observation:

- (1) 1950–1970
- (2) 1970–1981
- (3) 1981–2002
- (4) 2002–2004
- (5) 2004–2007

(6) 2007–2010

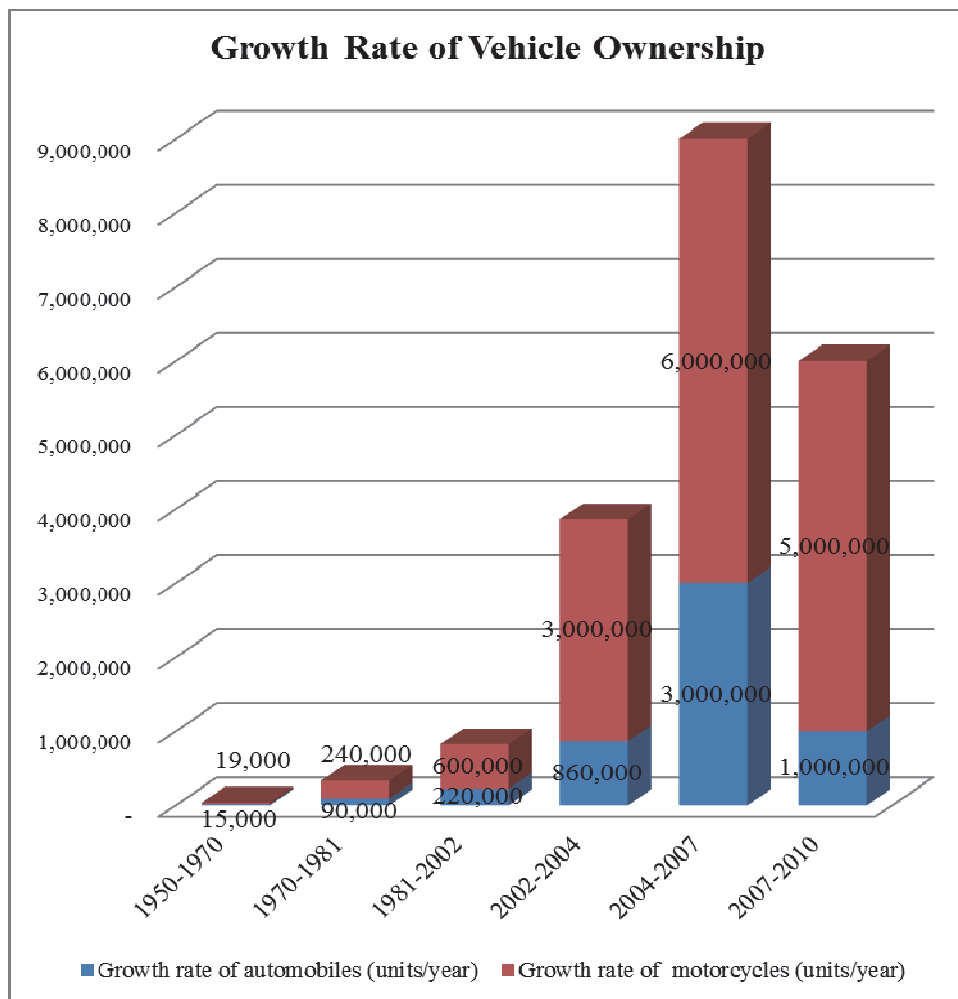
Analysis is carried out based on the figures in the following table and bar charts, as well as the data and graphs presented in Section 2.

Table 1 Average growth rate of selected variables

AVERAGE ANNUAL GROWTH RATE	PERIOD					
	1950-1970	1970-1981	1981-2002	2002-2004	2004-2007	2007-2010
Population	3,000,000					
Number of automobiles**	15,000	90,000	220,000	860,000	3,000,000	1,000,000
Number of motorcycles**	19,000	240,000	600,000	3,000,000	6,000,000	5,000,000
Total number of vehicles**	35,000	330,000	820,000	4,000,000	9,000,000	6,000,000
Number of road traffic accidents		3,000	-1,980	2,700		16,089
Number of people seriously injured		1,669	-880	1,485		11,987
Number of people slightly injured		2,187	-1,331	1,577		13,622
Total number of people injured		3,857	-2,212	3,063		25,609
Number of fatalities		877	*)	1,221		3,792

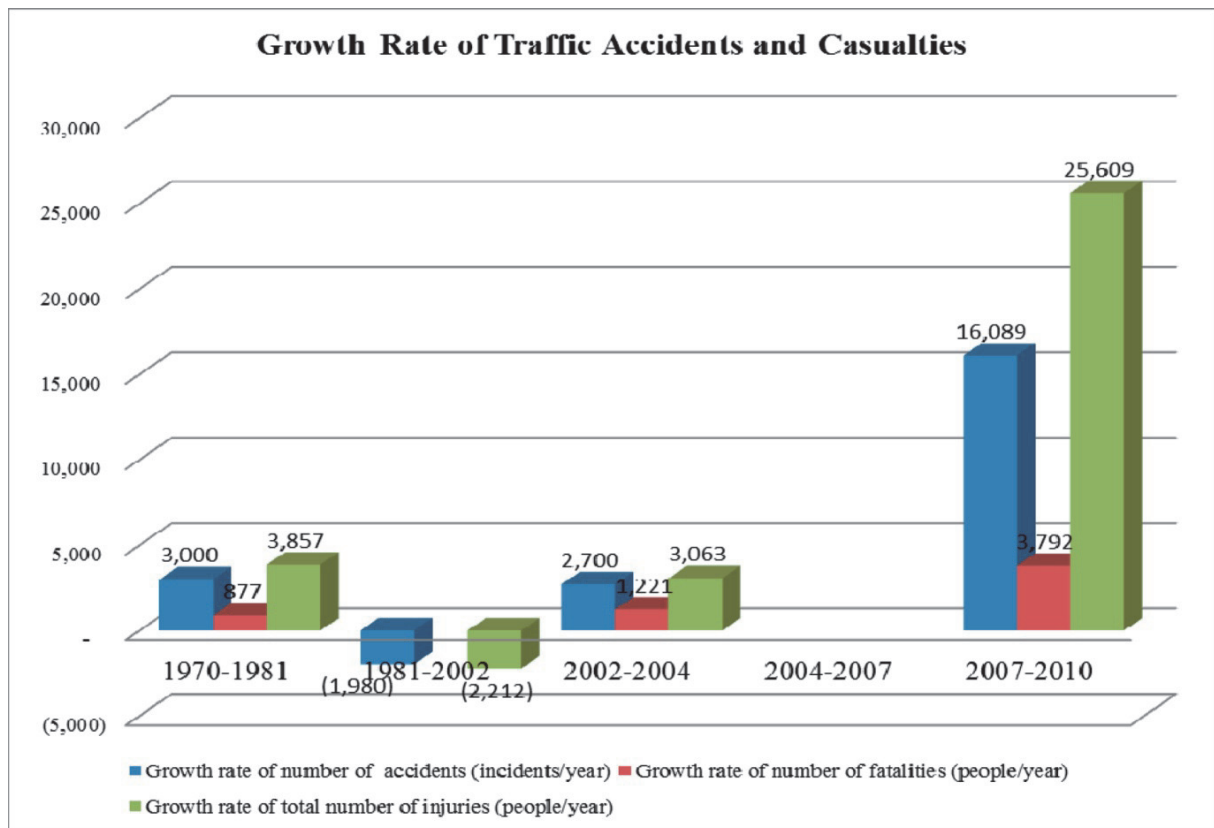
Sources: Compiled using data from [1], [6], [7], [8], [9], [10], [11].(* Not defined due to random fluctuation)

** Data for 2010 are not available.



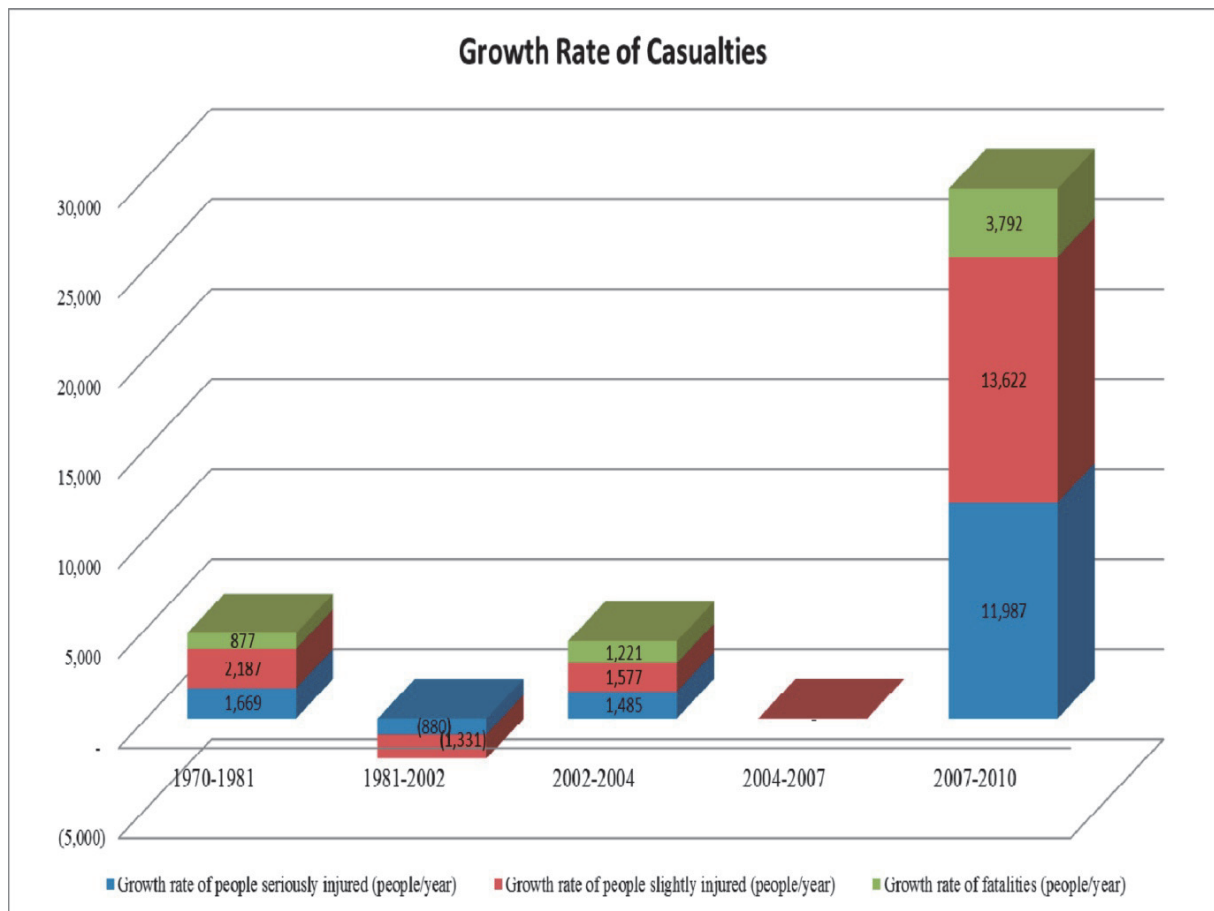
Sources: Compiled using data from [1], [6], [7], [8], [9], [10], [11].

Figure 9 Growth rate of vehicle ownership



Sources: Compiled using data from [1], [6], [7], [8], [9], [10], [11].

Figure 10 Growth rate of traffic accidents and casualties



Sources: Compiled using data from [1], [6], [7], [8], [9], [10], [11].

Figure 11 Growth rate of casualties

3.2.2 Analysis of Traffic Accident Time Series

(1) 1950–1970

The only accident-related data available during this period are vehicle ownership and population. The number of automobiles and the total number of motorcycles increased at the rate of 15,000 units/year and 19,000 units/year, respectively. There were 45,663 automobiles in 1950, rising to 364,730 in 1970. The number of motorcycles in 1950 was only 5,546, but this climbed to 440,005 in 1970. The population grew steadily at an average rate of 3 million people/year, reaching around 117 million in 1970.

(2) 1970-1981

Collection and documentation of time series data on traffic accidents started in 1970. Before 2005, the number of traffic accidents peaked in 1981 at 51,385, with the number of fatalities per 100,000 population estimated at about 7.33, and the number of fatalities per 10,000 vehicles at 24.35. The accidents in 1981 resulted in 11,105 fatalities, 22,529 serious injuries and 35,645 minor injuries. Due to the problem of underreporting before 2009, it is not appropriate to compare those indicators of

safety with the ones of other countries. The underreporting problem will be discussed in detail in Section 6.

From 1970 to 1981, the number of accidents and the number of fatalities increased at the rate of 3,000/year and 877 people/year, respectively. Given that both the number of deaths and the population grew during this period, the increase in the number of fatalities per 100,000 population (health risk) shows that road safety in Indonesia was in poor condition. This implies that the increase in fatalities is more dominant than the increase in population.

Despite the rise in fatalities during this period, one indicator of traffic safety, the fatalities per 10,000 vehicles (traffic risk), tended to decrease. In the same period, the total number of vehicles increased at the average rate of 330,000/year. The greater growth rate of vehicle ownership compared with that of fatalities during that period led to the decrease in traffic risk.

(3) 1981–2002

In the years 1981–2002, the number of traffic accidents tended to decrease, reaching the minimum point of 12,267 in 2002, with the health risk and the traffic risk standing at 4.32 and 3.81, respectively. During this period, the number of accidents and the number of injuries decreased, falling by 1,980 incidents/year and 2,212 people/year, respectively.

The number of fatalities fluctuated randomly, reaching a minimum of 8,762 in 2002, and a maximum of 12,308 in 1997. The annual average was 10,574, with a standard deviation of 769.

Meanwhile, the growth rate of vehicle ownership accelerated at an average of about 820,000 units/year (248% of the average for 1970-1981). This growth continued to lower the traffic risk indicator.

(4) 2002–2004

In the period 2002-2004, traffic safety tend to worsen, with the number of accidents rising to 17,732 in 2004 (growing at 2,700/year), and the number of fatalities increasing to 11,204 in the same year (growing at 1,200/year). During this period, however, the number of fatalities per 10,000 vehicles hovered at about 3.6 to 3.8, mainly due to the significant growth rate of vehicle ownership, which averaged 860,000 units/year (391% of the rate for 1981-2002). Moreover, motorcycle ownership rose by 3,000,000 units/year, which was 500% of the rate for 1981-2002. Given these figures, it is reasonable to presume that vehicle ownership was a factor behind the deterioration of traffic safety during this period, and this point deserves careful investigation.

The other important figures for the years 1995-2004 are the number of fatalities and the number of people seriously injured. During this period, the number of fatalities outweighed the number of serious injuries in some years, while the contrary was the case in the other years.

(5) 2004–2007

In 2005, the number of accidents abruptly rose from 17,732 in 2004 to 91,623 in 2005 (517%). As described in the previous section, the reporting and documentation of road traffic accident was

intensively improved in 2005, including enhancements to accident report formats and to the database system. For this reason, this study excludes the accident data for 2004–2007.

During this period, vehicle ownership continued to increase, growing at the rate of 3 million/year for automobiles, 6 million/year for motorcycles, and 9 million/year for all motorized vehicles. These figures show that this was a period of explosive growth for vehicle ownership, particularly motorcycles. Again, this may have worsened the traffic accident problem.

(6) 2007-2010

Between 2007 and 2010, the number of traffic accidents kept worsening, increasing at the rate of 16,089/year (596% of the rate for 2002-2004). In 2010, the total number of accidents rose to 109,311 and the number of fatalities increased to 31,234. Fatalities per 100,000 population and fatalities per 10,000 vehicles in 2009 were 8.64 and 2.83, respectively.

Vehicle ownership during 2007-2010 continued to increase, albeit at rates lower than those of the preceding period (2004-2007). The rates were 1,000,000 units/year, 5,000,000/year and 6,000,000/year, for automobiles, motorcycles and all motorized vehicles, respectively.

The other important figure is the significant growth in the number of minor injuries, which averaged 13,622 people/year (864% of 2002-2004) and was near the growth rate of accidents. Also, the growth rate of serious injuries was quite similar to that for fatalities.

3.2.3 Analysis of Traffic Accidents by Province and Mode in 2009

As shown in Figure 6, traffic accidents in Indonesia in 2009 were dominated by the provinces on Java Island, namely, East Java (19.45%), Central Java (12.56%), Jakarta Special District (11.54%), West Java (6.55%) and Yogyakarta Special District (6.79%). Given these figures and the fact that most of Indonesia's big cities are located on Java, further investigation should be made to validate the data of the provinces outside Java, since their data may be skewed by underreporting.

In general, motorcycles were the dominant vehicle involved in traffic accidents in all provinces. As shown in Figure 7a, the nationwide total of motorcycles involved in traffic accidents in 2009 was 72,815 (69.7% of all motorized vehicles involved in accidents). This percentage was even larger in some provinces, such as 75% on Java Island (East Java Province), 73.3% on Kalimantan island (East Kalimantan Province) and 78.9% on Sulawesi Island (Central Sulawesi Province).

In contrast, 15,049 passenger cars and 13,385 trucks were involved in traffic accidents in Indonesia in 2009, accounting for 14.4% and 12.8% of the total, respectively. However, in terms of vehicle ownership, passenger cars and trucks made up 14.7% and 7.3% of the total number of vehicles, respectively. From those figures, it can be presumed that trucks are relatively more prevalent in traffic accidents than are passenger cars.

In Central Java and East Java, the accident involvement of trucks exceeded that of passenger cars. Attention should be given to this fact in investigation of the causes of accidents.

In term of casualties, slight injuries outweighed serious injuries and fatalities in all provinces except South Sulawesi (Figure 8d), where minor injuries were on par with fatalities (1,013 and 1,111 people, respectively). In East Java, the province with the biggest number of accidents, the breakdown of casualties 69% for slight injuries, 17.9% for fatalities, and 13.1% for serious injuries.

4. Organizations Involved in Road Traffic Safety

Organizations involved in road traffic safety and their responsibilities are specified in the following laws and regulations.

(1) Indonesian Government Regulation No. 32 of 2011 on Traffic Engineering and Management, Traffic Impact Analysis, and Traffic Demand Management

This regulation prescribes the following responsibilities for the heads of organizations involved in road traffic safety.

a. Minister of Transportation

The Minister of Transportation holds responsibility for transportation-related matters, including:

- Road space utilization
- Road capacity
- Use of roadside land
- Road facilities directly related to road users
- Traffic management
- Traffic performance
- Potential locations of traffic accidents and congestion

b. Minister of Public Works

The Minister of Public Works is responsible for road-related problems, such as:

- Highway and intersection geometry
- Highway structures
- Road facilities indirectly related to road users
- Potential locations of traffic accidents and congestion
- Utilization of parts not utilized by road users

c. Head of Indonesian National Police

The Head of the Indonesian National Police is responsible for:

- Traffic operation performance
- Traffic safety culture
- Traffic management
- Areas with potential for

-
- Security violations
 - Traffic accidents
 - Traffic congestion
 - Traffic violations
 - Operation of traffic engineering
- d. Governors, heads of regency, and city mayors are locally responsible for:
- Highway and intersection geometry
 - Highway structures
 - Road facilities directly and indirectly related to road users
 - Potential locations of traffic accidents and congestion
 - Utilization of parts not utilized by road users
 - Road space utilization
 - Road capacity
 - Use of roadside land
 - Traffic management
 - Traffic performance
- (2) Indonesian Law No. 22 of 2009 on Road Transport and Traffic
- Under this law, the institutions involved in road traffic safety are designated as follows.
- a. Ministry of Public Works: Responsible for road-related problems.
 - b. Ministry of Transportation: Responsible for road transport and traffic facilities.
 - c. Ministry of Industry: Responsible for the development of industries related to road transport and traffic facilities.
 - d. Ministry of Research and Technology: Responsible for the development of technologies related to road transport and traffic facilities.
 - e. Indonesian National Police: Responsible for motor vehicle and driver registration/identification, law enforcement, traffic engineering and management operation, and traffic safety education.
- (3) Indonesian Government Regulation No. 37 of 2011 on the Forum of Road Transport and Traffic.
- This regulation designates the following institutions as organizations involved in road traffic safety.
- a. Ministry of Public Works: Responsible for road-related problems.
 - b. Ministry of Transportation: Responsible for road transport and traffic facilities.
 - c. Ministry of Industry: Responsible for the development of industries related to road transport and traffic facilities.
 - d. Ministry of Research and Technology: Responsible for the development of technologies related to road transport and traffic facilities.
-

- e. Indonesian National Police: Responsible for the motor vehicle and driver registration/identification, law enforcement, traffic engineering and management operation, and traffic safety education.

(4) National General Plan on Road Transport and Traffic Safety

According to this guideline, the following five institutions are involved in road traffic safety.

- a. Ministry of Transportation: Responsible for coordinating the stakeholders involved in road safety management.
- b. Ministry of Public Works: Responsible for providing safer roads.
- c. Ministry of Industry: Responsible for providing safer vehicles, in which every vehicle on the road is compliant with high safety standards.
- d. Indonesian National Police: Responsible for shaping road user behavior to create safer road users.
- e. Ministry of Health: Responsible for providing adequate treatment of traffic accident injuries.

5. Laws, Regulations and Program

5.1 Traffic Safety-related Laws, Regulations and Program

The laws, regulations and a program related to traffic safety are presented in Table 2.

5.2 Description of Laws, Regulations and Program

This section describes laws and regulations that explicitly mention road traffic accidents rather than traffic safety as a general target of road and traffic management. Moreover, one program related to traffic safety is presented since it has become a milestone of traffic accident data collection in Indonesia.

In order to show the continuity of the description about the impacts of these normative issues on traffic accidents, the impacts of the regulations will be discussed in the next section.

Table 2 Laws, regulations and program related to traffic safety

No.	Year	Law / Regulation / Policy	Concerning	Remarks
1	1951	Indonesian Law No. 7 of 1951	Revision and addendum of Government Legislation No. 86 of 1933 on road traffic	No specific clauses concerning safety issues and no regulations derived from this law.
2	1965	Indonesian Law No. 3 of 1965	Road transport and traffic	This law enhances Indonesian Law No. 7 of 1951. No specific clauses concerning safety issues and no regulations derived from this law.
3	1980	Indonesian Law No. 13 of 1980	Roads	This law enhances Indonesian Law No. 3 of 1965. No specific clauses concerning safety issues.
4	1985	<ul style="list-style-type: none"> ▪ Indonesian Government Regulation No. 26 of 1985 (derived from Indonesian Law No. 13 of 1980) 	Roads	No specific clauses concerning safety issues.
5	1992	Indonesian Law No. 14 of 1992	Road transport and traffic	This law enhances Indonesian Law No. 13 of 1980. No specific clauses concerning safety issues.
6	1993	<ul style="list-style-type: none"> ▪ Indonesian Government Regulation No. 41 of 1993 (derived from Indonesian Law No. 14 of 1992) 	Road transport	No specific clauses concerning safety issues.
7	1993	<ul style="list-style-type: none"> ▪ Indonesian Government Regulation No. 42 of 1993 (derived from Indonesian Law No. 14 of 1992) 	Inspection of motorized vehicles on the road	No specific clauses concerning safety issues.
8	1993	<ul style="list-style-type: none"> ▪ Indonesian Government Regulation No. 43 of 1993 (derived from Indonesian Law No. 14 of 1992) 	Road traffic and infrastructure	This regulation endorses implementation of clauses of Indonesian Law No. 14 of 1992. Two clauses of this regulation define traffic accidents and the authority for traffic accident data reporting and investigation
9	1993	<ul style="list-style-type: none"> ▪ Indonesian Government Regulation No. 44 of 1993 (derived from Indonesian Law No. 14 of 1992) 	Vehicles and drivers	No specific clauses concerning safety issues.
10	1998	<ul style="list-style-type: none"> ▪ Indonesian Government Regulation No. 71 of 1998 (derived from Indonesian Law No. 14 of 1992) 	Postponement of implementation of regulation concerning the obligations of providing and using safety belts	As stated in Indonesian Law No. 14 of 1992, drivers and front-seat passengers must wear safety belts.
11	2009	Indonesian Law No. 22 of 2009	Road transport and traffic	This law enhances Indonesian Law No. 14 of 1992. There are specific chapters concerning: - Road transport and traffic safety and security (Chapter XI, clauses 200-208) - Traffic accidents (Chapter XIV, clauses 226-241)

12	2011	<ul style="list-style-type: none"> ▪ Indonesian Government Regulation No. 32 of 2011 (derived from Indonesian Law No. 22 of 2009) 	<ul style="list-style-type: none"> - Traffic engineering and management - Traffic impact analysis - Traffic demand management 	<p>This regulation endorses implementation of clauses of Indonesian Law No. 22 of 2009 concerning:</p> <ul style="list-style-type: none"> - Traffic engineering and management, including data inventory and analysis on the number of traffic violations and accidents - Traffic impact analysis - Traffic demand management
13	2011	<ul style="list-style-type: none"> ▪ Indonesian Government Regulation No. 37 of 2011 (derived from Indonesian Law No. 22 of 2009) 	Road Transport and Traffic Forum	<p>This regulation endorses implementation of a clause in Indonesian Law No. 22 of 2009 concerning the coordination among the stakeholders of road transport and traffic.</p>
14	2011	<ul style="list-style-type: none"> ▪ National General Plan on Road Transport and Traffic Safety 2011–2035 (derived from Indonesian Law No. 22, 2009) 	<p>Development of a national general plan concerning:</p> <ul style="list-style-type: none"> - Development of national program on road transport and traffic safety - Provision and maintenance of facilities and instruments for road transport and traffic safety - Studies on road transport and traffic safety issues - Management of road transport and traffic safety 	<p>This plan is for implementing one clause of Indonesian Law No. 22 of 2009, but it has not yet been legalized by government regulation.</p>
15	2007 - 2011	Indonesia Integrated Road Safety Management Systems (IIRMSs)	<p>Road safety improvement in some big cities and intercities on Java and Sumatra islands</p>	<p>This program deals with long-term strategies and the implementation framework for road safety, and with the database system for road traffic accident and road safety management.</p>

Sources: [3], [4], [5]

5.2.1 Indonesian Government Regulation No. 43 of 1993

(1) Background

This regulation endorses implementation of Indonesian Law No. 14 of 1992 on road transport and traffic. It concerns traffic management and engineering, road networks, road facilities, pedestrians, and traffic accidents.

(2) Objective

Optimize network and traffic movement utilization in order to ensure the security, safety, orderliness and smoothness of road transport and traffic.

(3) Content and period of policy

This regulation concerns the following road traffic accident issues.

a. Definitions related to traffic accidents

Fatality: Traffic accident victim who dies within 30 days after the crash.

Seriously injured: Traffic accident victim who incurs permanent physical damage or is hospitalized for more than 30 days after the crash.

Slightly injured: Traffic accident victim other than the preceding two categories.

b. The authority for traffic accident recording and investigation

The Indonesian National Police has the authority to record traffic accident information and develop the traffic accident information system. Investigation of fatal accidents is carried out by the police, the Ministry of Transportation and the Ministry of Public Works.

This regulation went into effect in 1993.

(4) Organizations responsible for executing the policy

The Indonesian National Police, the Ministry of Transportation and the Ministry of Public Works are responsible for executing the provisions of this regulation that are related to the traffic accident issues.

(5) Scope of the policy and its sources of funding

This regulation covers the national level and is funded from national and local government budgets.

5.2.2 Indonesian Law No. 22 of 2009 on Road Transport and Traffic

(1) Background

Indonesian Law No. 22 of 2009 is an improvement of Indonesian Law No. 14 of 1992 concerning road transport and traffic problems. It is realized that the role and potency of road

transport as part of the national transportation system must be improved to ensure safety, security, smoothness and orderliness for the transportation system.

This law is the current supreme regulation concerning transportation issues, and deals with certain safety issues as well.

(2) Objectives

- a. Establish road transport and traffic that provide safety, security, smoothness and orderliness, and are well connected to other modes of transportation.
- b. Establish ethics for transportation.
- c. Establish the law enforcement and certainty for the community.

(3) Content and period of policy

This regulation concerns the following road transport and traffic safety matters.

- a. The Indonesian government is responsible for establishing safety in road transport and traffic through the national general plan on road transport and traffic safety, which includes:
 - Creating national programs on road transport and traffic safety.
 - Providing and maintaining facilities related to road transport and traffic safety.
 - Conducting research on road transport and traffic safety issues.
 - Implementing road transport and traffic safety management.
- b. Supervision of the road transport and traffic safety programs includes:
 - Auditing by an independent auditor
 - Inspection by a mandatory (body) for road transport and traffic.
 - Observation and monitoring by a mandatory (body) for road transport and traffic
- c. The mandatory (body) for road transport and traffic is responsible for building road transport and traffic safety culture through policies and programs that include:
 - Traffic safety education for young people
 - Internalization of and campaigns for traffic safety programs, culture and ethics
 - Appreciation to the traffic safety-related actions
 - Establishment of spaces that encourage people to use transportation in an orderly fashion
 - Sustainable and consistent law enforcement

This law went into effect in 2009.

(4) Organizations responsible for executing the policy

The organizations responsible for executing the road traffic safety programs under this law are as follows.

- a. Ministry of Public Works: Responsible for road-related problems.
- b. Ministry of Transportation: Responsible for the road transport and traffic facilities.
- c. Ministry of Industry: Responsible for the development of industries related to road transport and traffic facilities.
- d. Ministry of Research and Technology: Responsible for the development of technologies related to road transport and traffic facilities.
- e. Indonesian National Police: Responsible for motor vehicle and driver registration/identification, law enforcement, traffic engineering and management operation, and traffic safety education.

(5) Scope of the law and its sources of funding

This law covers the national level, and there are some regulations derived from this law to endorse its implementation. It is funded from national and local government budgets.

5.2.3 Indonesian Government Regulation No. 32 of 2011 on Traffic Engineering and Management, Traffic Impact Analysis, and Traffic Demand Management

(1) Background

This regulation endorses implementation of Indonesian Law No. 22 of 2009, particularly with regard to issues related to traffic engineering and management, traffic impact analysis, and traffic demand management, including traffic safety issues.

(2) Objective

Optimize network and traffic movement utilization in order to ensure the security, safety, orderliness and smoothness of road transport and traffic.

(3) Content and period of policy

This regulation concerns the following road traffic accident issues.

- a. Identification of potential traffic accident locations by the Ministry of Transportation, the Ministry of Public Works, the Indonesian National Police and locally by the governors, heads of regency and city mayors.
- b. Data inventory and analysis of the traffic situation, including data on potential locations of traffic/security violations, traffic accidents and congestion. This is carried out by the Indonesian National Police.
- c. Data inventory and analysis of the number of traffic violations and accidents on certain links or areas. This is carried out by the Indonesian National Police, and includes:
 - Data collection, data base development and analysis of existing traffic violations and accidents on all links.

- Data collection, database development and analysis of the causative factors of existing traffic violations and accidents on all links.
- Comparative analysis of the number of traffic violations and accidents between the current year and previous years, and among the causative factors of accidents.
- Analysis and evaluation of efforts to reduce and prevent traffic violations and accidents.

This regulation went into effect in 2011.

(4) Organizations responsible for executing the policy

The Indonesian National Police, the Ministry of Transportation, the Ministry of Public Works, governors, heads of regency, and mayors are responsible for executing the provisions of this regulation that are related to the traffic accident issues.

(5) Scope of the policy and its sources of funding

This regulation covers the national level and funded from national and local government budgets.

5.2.4 Indonesian Government Regulation No. 37 of 2011 on the Forum of Road Transport and Traffic

(1) Background

Under Indonesian Law No. 22 of 2009, the institutions involved in road traffic safety are: the Ministry of Public Works, which is responsible for road-related problems; the Ministry of Transportation, which is responsible for road transport and traffic facilities; the Ministry of Industry, which is responsible for the development of industries related to road transport and traffic facilities; the Ministry of Research and Technology, which is responsible for the development of technologies related to road transport and traffic facilities; the Indonesian National Police, which is responsible for motor vehicle and driver registration/identification, law enforcement, traffic engineering and management operation, and traffic safety education.

In order to coordinate these institutions, it is necessary to create a forum consisting of a mandatory (body), policy executors, scholars and community representatives.

(2) Objective

The Forum of Road Transport and Traffic is aimed at coordinating the institutions involved in the planning and execution of road transport and traffic matters at the local and national levels, including traffic safety issues.

(3) Content and period of policy

This regulation describes the membership, function and working mechanism of the forum.

The forum membership is separated into national, provincial and regency/city levels. In general, the membership consists of:

- a. The Minister of Public Works, the Minister of Transportation, the Minister of Industry and the Minister of Research and Technology for the national level, or the Governor for the provincial level, or the Head of Regency/Mayor for the regency/city level.
- b. The Head of the Indonesian National Police for the national level, or the Head of Provincial Police for the provincial level, or the Head of Resort/City Police for the regency/city level.
- c. State-owned companies related to road transport and traffic matters
- d. Associations of public transport companies
- e. Representatives from higher education institutions
- f. Road transport and traffic experts
- g. Non-governmental organizations
- h. Road transport and traffic observers

This forum was established in 2011.

(4) Organizations responsible for executing the policy

All the members represent the organizations involved in this forum.

(5) Scope of the policy and source of funding

This policy covers the national level and funded from national and local government budgets.

(6) Impact of policy

Since the forum was established in 2011, it is too early to identify its impacts.

5.2.5 National General Plan on Road Transport and Traffic Safety (RUNK)**(1) Background**

In March 2011, the United Nations General Assembly designated the period 2011–2020 as the Decade of Action (DoA) for Road Safety, with the aim of controlling and reducing traffic accident fatalities globally by intensifying safety programs at the national, regional and global levels. This concept is in line with the message of Indonesian Law No. 22 of 2009 regarding road transport and traffic, particularly regarding the need to develop the National General Plan on Road Transport and Traffic Safety (RUNK). Having this momentum, the government of Indonesia established the RUNK and declared DoA to be part of it.[2]

(2) Objectives

RUNK is intended to be a guide for stakeholders of road safety in planning and implementing road safety programs in coordinated and integrated ways. Moreover, RUNK is also intended as a guide for local governments to incorporate the plan into the implementation as programs of their regions.

(3) Content and period of policy

RUNK involves not only the development of national programs on road transport and traffic safety, but also provision and maintenance of road safety facilities, studies on road safety, and road safety management.

In order to ensure its sustainability, RUNK encompasses a vision, missions, directions, targets, strategies, policies, programs and activities.

The development of RUNK is based on the following five pillars of road safety:

- a. Road safety management
- b. Safer roads
- c. Safer vehicles
- d. Safer road users
- e. Post-crash action.

Programs and activities are formulated within each pillar, and the associated indicators, parameters and targets are set for five consecutive 5-year periods.

Policies established for the first 5-year period include the following objectives:

- a. Redefine some terminologies related to traffic accidents and set a standard operational procedure for accident care.
- b. Harmonize the information flow, communication, coordination and cooperation among stakeholders.
- c. Synchronize the financial resources from the government, business world, communities and road users.
- d. Encourage the stakeholders involved in research and education on traffic safety as well as data and traffic accident surveillances.

The programs are also provided by the leading and supporting sectors responsible for the action of the each program, namely, the National Development Planning Agency, the Ministry of Transportation, the Ministry of Public Works, the Ministry of Health, the Ministry of Communication and Information, the Ministry of Research and Technology, the Ministry of Education, the Ministry of Industry, the Ministry of Internal Affairs, the Ministry of Justice and Human Rights, the Ministry of Labor, the Ministry of Religious Affairs, the Ministry of Social Affairs, the Ministry of the Environment, insurance companies, local governments, the business world, the Road Transport Entrepreneur Organization, national/international partners,

higher education institutions, and communities.

RUNK was launched in 2011.

(4) Organizations for executing the policy

All the organizations involved in RUNK are assigned as executors of the programs.

(5) Scope of the policy and source of funding

RUNK covers the national level, but has not yet been legalized by government regulation.

(6) Impact of policy

Since RUNK was launched in 2011, it is too early to identify its impacts.

5.2.6 Indonesia Integrated Road Safety Management Systems (IIRMSs)

(1) Background

The Indonesian government recognizes that traffic congestion in the cities and intercities has adverse impacts on macroeconomic growth. In order to overcome such problems, the government of Indonesia, working through the Ministry of Public Works, created the Strategic Roads Infrastructure Project (SRIP) with the World Bank to improve the capacities of the national road networks of some big cities and intercities on Java and Sumatra islands. One of the objectives of SRIP was to improve the safety of road users through creation of the Indonesia Integrated Road Management Systems (IIRMSs). The Ministry of Transportation and the Indonesian National Police were assigned as Project Implementing Units.[4]

(2) Objectives

IIRMSs was aimed at:

- a. Developing the National Road Safety Strategy and the implementation framework of the institutions and policies involved in road safety.
- b. Developing road safety management and a database system of road traffic accidents.

(3) Content and period of policy

This project consisted of the following elements:

- a. Building a road safety “Results Focus” in Indonesia through capacity building; detailed planning for a multi-sectoral pilot project and preparation of an integrated road safety strategy, led by the Directorate General of Land Transport with involvement of key road safety agencies.
- b. Creating a specification document that details the design of a road safety management information system, using accident data from the Indonesian National Police and other sources.

Period of project: September 2007–December 2011.

(4) Organizations responsible for executing the policy

IIRMSs was conducted by the two Project Implementing Units:

- a. Directorate of Land Transport Safety of the Ministry of Transportation, which was responsible for the development of the long-term strategies and the implementation framework of the institutions and policies involved in road safety.
- b. Directorate of Traffic of the Indonesian National Police, which was responsible for the development of the database system for road traffic accidents and road safety management.

(5) Scope of the policy and its sources of funding

IIRSMSs covered the road networks of some big cities and intercities on Java and Sumatra islands, and was financed with a World Bank loan.

(6) Impact of the program

As one focus of this project was to set up a database system for road traffic accidents, the program encouraged the Indonesian National Police to treat traffic accident data more intensively and professionally, leading to an increase in the amount of traffic accident data collected. This resulted in an extremely large jump in the number of accidents reported in 2010. As part of establishing the database system, the year 2009 was selected as the current reference point for the traffic accident analysis.

6. Review of Major Changes in Traffic Safety Policies and Regulations

In general, the laws and associated government regulations discussed herein were intended to optimize the utilization of network and traffic movement in order to ensure the security, safety, orderliness and smoothness of road transport and traffic. Most of the clauses of those laws and regulations did not explicitly mention about the issues of traffic safety, except for safety as a final target of road transport and traffic management.

The first government regulation concerning the road transport and traffic was Indonesian Government Regulation No.26 of 1985. It was derived to endorse implementation of Indonesian Law No.13 of 1980. Even though no clauses mentioned traffic safety explicitly, it was understood that this regulation was intended to make people safe in their utilization of transportation. It is believed that this regulation contributed to the decreasing trend in the number of accidents between 1985 and 1993.

Reflecting mounting concern about traffic safety, Indonesian Government Regulation No. 43 of 1993 highlighted the issue of traffic safety explicitly, albeit simply, in its two clauses on the definition of traffic accidents, and on the authority for traffic accident data reporting, recording and investigation.

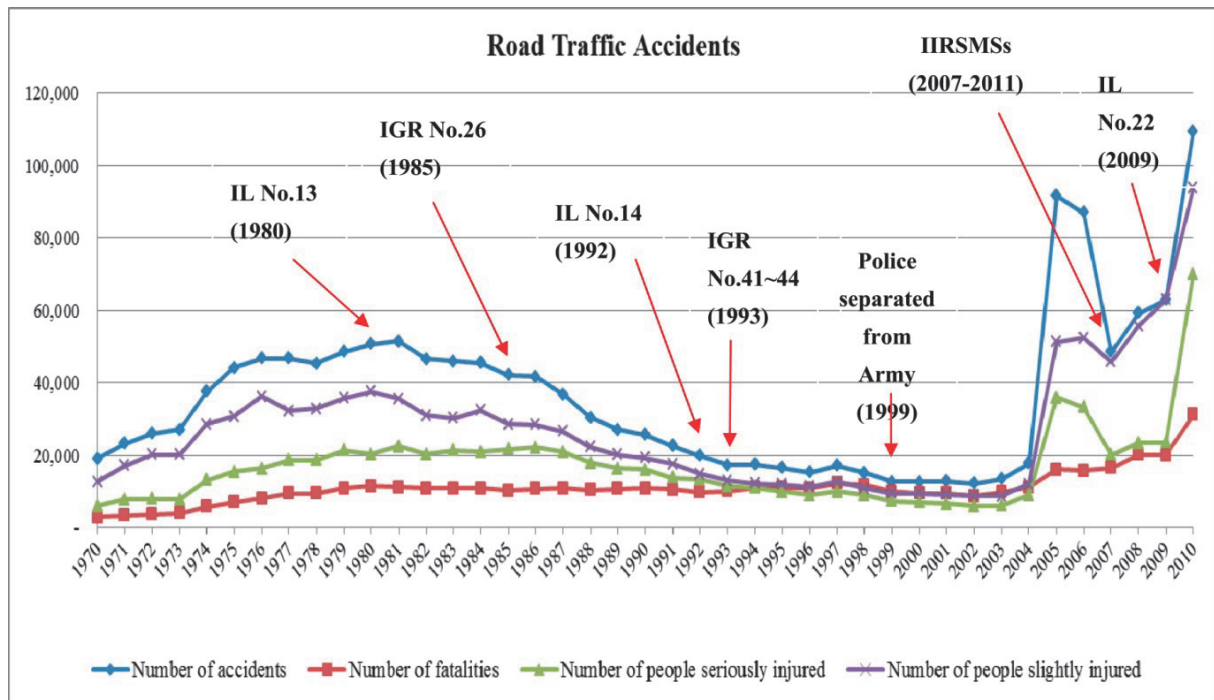
These clauses were produced to highlight the importance of traffic accident data reporting and recording.

This regulation defined fatalities as traffic accident victims who die within 30 days after the crash. However, in practice, the Indonesian National Police categorized as fatalities only victims who died at the scene, and categorized victims who died on the way to the hospital or within 30 days after the crash as seriously injured victims [12]. To date, the Indonesian National Police still use these definitions, while insurance companies and the Ministry of Health use different definitions. Consequently, there were still disparities between the data collected by different units of the Indonesian National Police (internally different) and also between the data of police units and other institutions related to traffic accidents (externally different) [12].

Moreover, the Indonesian National Police only took into account the road traffic accidents that were processed up to the courts. All the other road traffic accidents were not counted in the data base.

In addition to the problems of traffic accident definitions, and the way the traffic accidents were considered in the database, there was an important issue concerning the position of the Indonesian National Police within the government. Before 1999, the Indonesian National Police were organized under the Indonesian National Armed Forces. This position made the police more concerned about security issues than about safety ones. Due to this situation, police concern about traffic accident issues, including the issue of data reporting and recording, were likely diminished around 1980. It is understood that this may lead to a decrease in the traffic accident rate due to the problem of underreporting. However, as mentioned above, such a trend may also due to the existence of regulations related to traffic and road transport.

In 1999 the Indonesian National Police was separated from Indonesian National Army. This move was aimed at making the Indonesian National Police more professional in community services, including safety and security services. As a result, traffic accident data management started to be addressed more professionally, with the police working to recover the data recording system at the national level. These milestones are believed to have contributed to the increasing trend in traffic accidents after 2000, particularly the extreme rises in 2005 and 2006 (see figure 12). It is quite reasonable to presume that such increases were more affected by the intensive data collection, rather than the effect of certain serious technical problems in traffic safety management. The significant rise in 2005 and 2006 was presumed due to the individual-based data recording program rather than institutional-based one.



Source : Compiled using data from [1], [3], [4], [5], [6], [10]

Note: IGR : Indonesian Government Regulation

IL : Indonesian Law

Figure 12 Trends in road traffic accidents in association with traffic safety laws, regulations and program

In line with its policy concerning a data recording system, in 2007-2011 the Indonesian National Police conducted a project with a World Bank loan to develop IIRMSs (Indonesia Integrated Road Safety Management Systems). It focused on the issues of traffic accident database, including the improvement of accident data reporting, recording and auditing. Again, it was believed to have contributed to the increasing trend in traffic accidents.

Besides the problem of data collection, the increasing trend in traffic accidents after 2000 was believed to be due to the extremely rapidly increasing vehicle ownership, which was dominated by motorcycles. During the periods 1981-2002, 2002-2004, 2004-2007 and 2007-2009, ownership of motorcycles grew annually by about 600,000, 3 million, 6 million and 5 million units/year respectively. This is supported by the traffic accident figures for 2009, which show that motorcycles significantly dominated traffic accidents in all provinces. The total number of motorcycles involved in traffic accidents in 2009 was 72,815 (69.7% of the total number of motor vehicles involved in accidents). This figure was even larger in some provinces, such as 75% on Java Island (East Java Province), 73.3% on Kalimantan Island (East Kalimantan Province) and 78.9% on Sulawesi Island (Central Sulawesi Province).

Furthermore, as an improvement of the preceding law, Indonesian Law No. 22 of 2009 provides more clauses concerning road transport and traffic safety and security, as well as traffic accidents. These clauses were then endorsed in government regulations concerning:

- Data inventory and analysis on traffic violations and accidents (Indonesian Government Regulation No.32 of 2011)
- Coordination among the stakeholders of road transport and traffic (Indonesian Government Regulation No.37 of 2011)
- Development of the National General Plan on Road Transport and Traffic Safety 2011–2035

It is realized that those were critical issues that had been raised to reemphasize the importance of data inventory and analysis, coordination and planning on traffic safety programs.

Besides the issue of data inventory, the other important issue addressed in Indonesian Law No. 22 of 2009 was the coordination among the stakeholders involved in road transport and traffic problems. As described above, the organizations involved in road transport and traffic problems, including the road traffic safety issues, are the Ministry of Public Works, the Ministry of Transportation, the Ministry of Industry, the Ministry of Research and Technology and the Indonesian National Police (refer to Indonesian Government Regulation No. 37 of 2011). The Forum of Road Transport and Traffic was introduced to highlight the importance of collaboration and coordination among those institutions, and the Ministry of Transportation was assigned to take the lead of the forum. Furthermore, in order to focus on traffic safety issues, each of those institutions developed a special unit or division to be responsible for road safety matters.

Indonesian Law No. 22 of 2009 also addressed the establishment of National General Plan on Road Transport and Traffic Safety (RUNK) for the period 2011–2035. This plan was a comprehensive long-term plan on traffic safety that was in line with the spirit of the United Nations' Decade of Action (DoA) for Road Safety 2011-2020. RUNK was developed to be a guide for implementation of national safety programs, and encompasses strategies, policies, programs, indicators and targets to be implemented in five consecutive time periods. RUNK was launched in June 2011, together with the launching of the DoA of Indonesia, and it demonstrated that the Indonesian government was devoting serious attention to controlling and minimizing the number of traffic accidents and fatalities. However, it has not yet legalized by the implementation regulation.

Furthermore, some safety programs have been conducted in last decade by the central or local governments and communities, either in the form of international collaboration/partnership or self-conducted programs, at the local, national, regional or international level in order reduce the traffic accidents. Those programs are GRSP (Global Road Safety Partnerships, 2003-2007), ITSAP (Indonesia Transport Safety Assistance, 2010-2014), Police Goes to Campus, Safety Riding, Traffic Safety Campaign, School Security Patrol, Traffic Management Center, etc.

Again, as Indonesia is still dealing with the recovery of accident database, it is quite injudicious to investigate accurately the effect of those programs on the national trends in accident data.

7. Conclusions

Based on the analysis carried out on the time series data, as well as regulations related to traffic accidents in Indonesia during 1970–2010, the following points can be highlighted:

- (1) The growth rate of motor vehicles in Indonesia continuously increased between 1980 and 2009, especially from 2000-2009, and was dominated by motorcycles. Moreover, motorcycles are suspected to have greatly contributed to the increasing trend of traffic accidents after 2000.
- (2) The Indonesian government has devoted increasing attention to road traffic safety issues in last three decades, as evidenced by the laws and regulations produced by the government to support the safety programs. Some critical issues have been raised to underline the importance of the effort to reduce the number of traffic accidents. Those include accident data inventory and analysis, organization and coordination among the stakeholders of traffic safety and planning of traffic safety programs. In terms of organizations and coordination, some institutions having a major role in traffic safety have established special units/divisions to handle road safety issues, and a forum has been set up to coordinate the stakeholders of traffic safety. Moreover, the National General Plan on Road Transport and Traffic Safety has been also created to be a guide for stakeholders of road safety in planning and implementing road safety programs in coordinated and integrated ways.
- (3) The recording and reporting of traffic accident data and analysis before 2009 was fairly poor, partly due to underreporting, resulting in the skewing of the traffic accident data collected. However, the government, particularly the Indonesian National Police, has intensively improved its database in last two decades. This may be a factor behind the increasing trend in traffic accidents for the last two decades. Moreover, this trend is also suspected to be due to the extremely rapidly increasing number of motor vehicles, during the last decade, particularly motorcycles.
- (4) Since the Indonesian National Police is still dealing with the recovery of accident data base and the massive safety programs (RUNK) that are still to be implemented, it is quite injudicious to investigate accurately the impact of safety programs or regulations on the national trends in traffic accidents during the period 1970-2010.

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