

# A Review of Selected Traffic Engineering Parameters in Police Crash Report Forms of Selected Countries

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## Abstract

A preliminary crash report prepared by the police contains factual information known immediately after the crash and it is generally followed by a narrative investigation report. Different agencies use different formats for the preliminary Police Crash Reports. This paper compares the contents of the preliminary Police Crash Report forms of selected ten (10) agencies in terms of three (03) parameters. The studied crash report forms were from California, Florida, Oregon, Texas and Louisiana of USA, British Columbia of Canada, Kent of England, Bangladesh, Malaysia and Sri Lanka. The Highway Safety Manual (2010) of AASHTO classifies the preliminary crash data into three (03) basic categories: information about the crash, the vehicles in the crash and the people in the crash. The Police Traffic Crash Report Form from Oregon, USA is attached to the Highway Safety Manual of AASHTO as a sample. The comparison among different forms revealed that information contents vary significantly. The study revealed that agencies need to readdress the contents and coverage of the necessary information in the forms. When localized condition is an important consideration, to maintain basic uniformity is unavoidable. The study recommended development of a model preliminary crash report format internationally that is to be adopted and used universally.

*Keywords:* Accident report; accident form; crash report form; police crash report; crash information

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## 1.0 INTRODUCTION

The preliminary crash report is the basic information source for any crash database. A preliminary crash report prepared by the police contains factual information known immediately after the crash. In the normal course of time, investigation is usually started on receipt of a report [1]. The contents of this preliminary police report form follows the approved format of the agency. The format of the form governs the availability of the preliminary information on any crash in a crash database. The available data from the crash database forms the basis for the review of safety data that may identify patterns in crash type, crash severity, or roadway environment. The Section 170 of the Road Traffic Act 1988 of the United Kingdom (UK) [2] requires drivers/riders to report to a police officer or police station that they have been involved in an accident involving in any of the following;

- any personal injury
- damage only, where the other driver/ rider did not stop
- damage only, where names and addresses were not exchanged with the other driver/ rider/ cyclist and any other owner of property damaged (even if the other driver stopped)

In Bangladesh, the Police Department through a development project introduced a new crash report form in 1996, known as ARF that resulted in a significant improvement of the data collection system [3]. The review of an accident may identify patterns related to time of day, direction of travel prior to crashes, weather conditions or driver behaviors. Descriptive statistics of crash conditions (e.g. counts of crashes by type, severity, or roadway or environmental conditions) is a key part of the safety data review process. A publication of “The Hindu”—an India’s online newspaper explained that “the accident reporting followed by the police, so far, has been in descriptive form, with little uniformity in recording of data. Hence, the new reporting system follows a prescribed format that is computer-friendly. The format asks for various factors, including weather and road environment in detail [4]. The Highway Safety Manual (HSM) is the pioneer publication on the topic that mentions that the individual crash descriptions are compiled from police reports [5]. An example of a police report from Oregon State, USA is included as an appendix to the HSM. The Oregon form includes twenty four different categories of information along with a narrative sketch in addition to the basic information like date, location and details of involvement.

## ■2.0 PROBLEM STATEMENT AND OBJECTIVES

Though the preliminary police crash report forms act as the basic source of data on any road crash, however the contents of the crash reports vary among agencies. Individual agencies developed and approved their crash report forms per their own requirements and mainly customized to fit the local environment (e.g. climatic condition) and legal issues. Some agencies provide more detailed information where others skip important information about the crash. For example, the Oregon, USA form considers ten (10) different types of road surface conditions but Louisiana, USA form does not provide any information on this. This indicates that the forms have been developed without adequate consideration of the relevant factors. It is very hard to find any crash form with coverage of all types of necessary data. This creates a big gap and differences among the content of the data collected and preserved by different agencies. While comparing crash data among various geographic locations or countries, the different fields of the databases become a major challenge in the study process. With the background information available, the study objective was set

to compare the forms of different agencies (selected ten agencies) in terms of three (03) important crash related parameters.

## ■3.0 DESCRIPTION OF THE FORMS REVIEWED

Almost all agencies across the globe use their own formats to collect crash data using preliminary police crash report forms. The study attempted to collect and compare forms from countries representing both developed and the developing world. Based on the availability of the data either from relevant authorities or reliable internet websites a total number of ten (10) crash forms were studied. This included the Oregon State form as a primary input, which is also a part of the latest version of the Highway Safety Manual, 2010. Forms of Bangladesh, Malaysia, and Sri Lanka were collected from the respective police departments and the remaining forms were downloaded from the internet websites of the Accreditation Commission for Traffic Accident Reconstruction [6] and Kent County, UK website [7]. The following table (Table 1) includes the list of Police Crash Report forms reviewed in this study.

**Table 1** Comparison of the forms based on collision types

Agency Name (Language)	Name and Form Number
Bangladesh (Local Language)	Road Accident Registration Form BP Form No. 34, BD Form No.-403 Q
British Columbia, Canada (English)	Motor Vehicle Traffic Accident Police Investigation Report -MV 6020 (0298)
California, USA (English)	Traffic Collision Report CHP 555 (Rev. 7-03)
Florida (English)	Traffic Crash Report HSMV-9003 (01/02)
Kent County, UK (English)	Accident Statistics Report- MG NSRF A thru D
Louisiana, USA (English)	Uniform Motor Vehicle Traffic Crash Report- DSSSSP 3105-11
Malaysia (Local Language)	Polis Diraja Malaysia Repot Polis Pol. 27 (pin.1/91) CARS-1/99
Oregon, USA (English)	Police Traffic Crash Report 735-46A (6-07)
Sri Lanka (Local and English)	Road Accident Report Police 297 B
Texas (English)	Peace Officer's Crash Report CRB-3 (Rev. 01/06)

## ■4.0 SELECTION OF THE PARAMETERS FOR COMPARISON

The preliminary review of the forms indicated that the contents of the individual forms varied largely and the overall formats or basic structures of the forms were different and were customized based on the agency needs and local considerations. For example, the Oregon form considers “Snow/Slush” as one of the Road Surface conditions but the Sri Lanka form does not have it based on the local climatic condition. The number of parameters considered in the forms varied widely. It was found that the difference in the basic structures of the forms made it impossible to directly compare many of the parameters. For example, in the Oregon form “Ruts/Holes” are included in the list of surface conditions along with “Wet or Dry Pavement” conditions. But in the California form “Deep Ruts/Holes” are included in a list of “Defects” of the roadway along with “Obstruction on Roadway”. Therefore, it was decided that important and common parameters would be considered within the scope of this study. An attempt was made to identify parameters that were common in the

reviewed forms. Three (03) sample parameters explaining a) detail of the crash b) road environment during the crash and c) human factor contributing to the crash were chosen. The following three (03) parameters were selected for review and comparisons:

- a) Collision types,
- b) Road surface condition, and
- c) Human (driver) factors

## ■5.0 COMPARISON OF FORMS

The comparison of the forms revealed that the contents of the forms varied in a large extent. Some of the agencies considered the parameters in small number of categories, whereas others considered in a more detailed way. The following tables (Table 2 3 and 4) summarize the basic features of the contents with respect to selected parameters.

**Table 2** Comparison of the forms based on collision types

Agency Name	Details
Bangladesh	A total eleven (11) number of collision types are listed in a section with title “Type of Collision” and provided in a box format. The collision types are Head On, Rear End, Right Angle, Side Swipe, Over Turn, Hitting Road Object, Hitting Road Side Objects, Hitting Parked Car, Hit Pedestrian, Hit Animal and Others
British Columbia, Canada	Collision types are included as a part of the section called “Primary Accident Occurrence” and seventeen (17) types are shown with schematic sketches accommodated in one row.
California, USA	Eight (08) types of collisions are listed with provision of indicating for three (03) different involved parties.
Florida	Included as a part of the “First/Subsequent Harmful Events” section and provisions for four (04) subsequent events for three (03) different parties exist. Forty (40) different types of events are listed including twelve (12) types of Hit Object collision.
Kent County, UK	Nothing clearly mentioned in the form.
Louisiana, USA	Included as a part of the “Harmful Events” section and provisions for identifying a) First Harmful Event and b) Most Harmful Events for two different parties exist. Thirty four (34) different types of events are listed.
Malaysia	Fifteen (15) different types of collisions can be identified including Head On, Rear-End, Right Angle, Angular, Side Swipe, Hit Animal, Overturn, Objects.
Oregon, USA	Included as the “First Harmful Events” section only. Five crash types are mentioned. Six (06) non collision (e.g. Over Turn) and four (04) collision events (e.g. Hit Pedestrian) are listed. Twenty six (26) types of fixed objects are listed.
Sri Lanka	There is a place to mention about collision type but the form does not list the possible types. Only a separate appendix includes that information.
Texas	Collision types are included as a part of the section called “Sequences of Events” and eleven (11) non-collision (e.g. Run Off) and ten (10) collision events (e.g. Hit Pedestrian) are listed. Up to four (04) sequences can be identified without indication of the parties involved.

**Table 3** Comparison of the forms based on road surface condition

Agency Name	Details
Bangladesh	A total of five (05) types of road surface conditions are listed in a box format. The surface types are Dry, Wet, Muddy, Flooded and Others.
British Columbia, Canada	Does not include this information.
California, USA	Four (04) types of surface conditions are listed in a tabular format. Surface conditions are Dry, Wet Snowy-Icy, Slippery (Muddy, Oily etc.).
Florida	Five (05) types of surface conditions are listed in a box format. Surface conditions are Dry, Wet, Slippery, Icy, and Others.
Kent County, UK	Five (05) types of surface conditions are listed in a box format. Surface conditions are Dry, Wet/Damp, Snow, Frost/Icy, and Flood (surface water over 3 cm deep).
Louisiana, USA	Does not include this information.
Malaysia	Six (06) types of surface conditions are available to choose from in the CARS database. Surface conditions are Dry, Flooded, Wet, Oily, Sandy and Under Maintenance.
Oregon, USA	Ten (10) different surface conditions are listed with option to tick mark on one box from each column out of two columns of boxes. Surface conditions are Dry, Wet, Snow/Slush, Icy, Muddy, Debris, Ruts/Holes/Bumps, Worn/Polished, Low/Soft Shoulder and Other.
Sri Lanka	Six (06) types of surface conditions are listed with an option to choose only one of the following: Dry, Wet, Flooded with Water, Slippery Surface (mud, Oil, Garbage, Leaves), Others and Not Known.
Texas	Nine (09) types of surface conditions are listed with an option to choose only one of the following: Dry, Wet, Standing Water, Snow, Slush, Ice, Sand/Mud/Dirt, Others and Unknown.

**Table 4** Comparison of the forms based on human factors

Agency Name	Details
Bangladesh	No separate section for Human (Driver related) Error factors exists. A total of eight (08) types of driver's errors are included within a big list of contributing factors. Those are Speeding, Reckless Driving, Fatigue, Following Too Close, Improper Signal of Driver, Improper Overtaking, Improper Turning and Alcohol.
British Columbia, Canada	Does not include this information.
California, USA	No separate section for Human (Driver related) Error factor exists. The Primary Collision Factor section lists five types of human errors. Those are: Violation of Law, Other Improper Driving, Other than Driver, Unknown and Fell Asleep.
Florida	Twenty Five (25) types of Driver and Pedestrian related factors are combined together in one section. Those factors include uncommon but important factors like Fleeing Police, Driver Distraction etc.
Kent County, UK	Driver related factors are divided in to three categories shown in three different rows. The categories are a) Driver's Error Type- including Poor Turn, Sudden Braking etc. b) Impairment or Distraction- Alcohol, Drugs, Fatigue, Mobile Phone etc. and c) Behaviour or Inexperience- Aggressive Driving, Nervous, Uncertain or Panic.
Louisiana, USA	Twelve (12) factors are listed in a box called "Condition of Drivers and Pedestrians" to be tick marked separately for drivers and pedestrians. The factors include Physical impairment (Eyes, Ear, Limb) and also Illness etc.
Malaysia	Fifteen (15) types of driver's errors are available to enter to the CARS database. Those include Signal Violation, Drug and Careless Driving.
Oregon, USA	Eighteen (18) factors are listed in a box called "Driver Factors" to be marked separately for two different drivers/parties. The factors include Cell Phone Use, Failed to Yield Right of Way, Improper Lane Change, Ill/Blackout etc.
Sri Lanka	Ten (10) types of Driver related factors are listed in one section. Those factors include uncommon factors like Poor Eye Sight, Handling Radio etc.
Texas	No separate section on Human (Driver related) Error factor exists. The "Factors and Conditions" section includes seventy four (74) different types of factors and the Driver Error factors are included with in that big list. The Driver Factor includes Road Rage, Handicapped Driver, Taking Medication while Driving etc.

## 6.0 CONCLUSION

The comprehensive review of the selected three (03) parameters that are commonly present in the preliminary crash report forms revealed the following:

- a) Collision Types-
  - i) In the Oregon, USA form (that is included in the HSM as a sample), the Collision Type information is included in the "First Harmful Events" section. Twenty six (26) types of fixed object crashes are listed.
  - ii) Florida has a reporting system on Collision Types in terms of four (04) sequential Harmful Events for three (03) different involved parties.
  - iii) Kent County, UK form does not have any information clearly noted as collision type.
  - iv) Sri Lanka form has a specified field for mentioning of collision types but the list of collision types is not included in the main form.
- b) Road Surface Condition-
  - i) Oregon, USA form considers ten (10) different types of road surface conditions including Dry, Wet, Snow/Slush, Icy, Muddy, Debris, Ruts/Holes/Bumps, Worn/Polished, Low/Soft Shoulder and Other. Greater number of surface types offers more detailed reporting.
  - ii) British Columbia, Canada and Louisiana, USA forms do not include any information about the road surface conditions of the crash location leading to inadequate reporting in some aspect.
- c) Human Factors Contributing to the Crash-
  - i) In the Oregon, USA form, eighteen (18) factors are listed in a box called "Driver Factors" to be

marked separately for two different drivers/parties.

- ii) In the Kent County, UK form, driver related factors are divided in to three (03) categories. These separations of parameters as a) Driver's Error Type b) Impairment or Distraction and c) Behavior or Inexperience factor; expected to allow a more efficient reporting.
- iii) In the Texas form, no separate section on Human Error factor exists. These factors exist in mixed condition as a part of the seventy four (74) different types of factors in the report resulting inadequate separation of different types of factors.

## 7.0 RECOMMENDATIONS

Based on the review and comparison of the three (03) important parameters of selected ten (10) preliminary police crash report forms, it is visible that contents of the forms vary significantly. There is a need for maintaining uniformity in the crash data formats among various agencies to facilitate efficient comparison of crash data among different agencies. Development of a model preliminary crash report format is essential at the international level. It is recommended to develop an ideal or optimum form based on further consider of the overall requirement of data and grouping of the factors. However, an individual agency would need to consider their local conditions. The model format recommended to be developed will have to be universal enough and should have options open to get adjusted for individual agencies according to the local needs.

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