Report on
Traffic Accident Reporting and Analysis System in Bangladesh

October 1998
TRAFFIC ACCIDENT REPORTING AND ANALYSIS SYSTEM IN BANGLADESH

SUMMARY

Accurate and comprehensive accident data is the cornerstone on which all road safety activities should be based. An accident data system should establish procedures for the collection, storage, analysis and dissemination of data for all traffic accidents involving a personal injury. The system should ensure that all road safety work whether in engineering, enforcement, education or publicity can be data-led.

The Bangladesh Police have adopted a new accident report form and this is now in use nation-wide. Accident data is being processed and analysed at one of six centres around the country and will be assembled at police HQ to form a national database. Data will then be disseminated to the National Road Safety Council (NRSC) and other interested parties for their own analysis purposes.

The analysis of the data has already identified some severe accident backspots and these have been used to train local engineers to prepare accident remedial schemes. The data also reveals significant regional variations in the pattern of accidents and casualties.

A particularly striking feature of the data collected is the high number of fatal accidents. This indicates that the police are only reporting the most severe accidents and thus the data collected represents only the ‘tip of the iceberg’. Despite this under-reporting the accident database established is extremely useful and provides a benchmark by which all road safety activities can be monitored.

This report is a brief summary of the progress made over the last 3 years. It includes a list of other relevant documentation produced to which the reader is referred for more detailed information.
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## GLOSSARY

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<tr>
<th>Acronym</th>
<th>Description</th>
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<tr>
<td>NRSC</td>
<td>National Road Safety Council</td>
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<td>IDC</td>
<td>Institutional Development Component</td>
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<td>RRMP2</td>
<td>Second Road Rehabilitation and Maintenance Project</td>
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<tr>
<td>DFID</td>
<td>Department for International Development</td>
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<tr>
<td>TRL</td>
<td>Transport Research Laboratory</td>
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<tr>
<td>DMP</td>
<td>Dhaka Metropolitan Police</td>
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<tr>
<td>SI</td>
<td>Sub-Inspector</td>
</tr>
<tr>
<td>IGP</td>
<td>Inspector General of Police</td>
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<tr>
<td>FIR</td>
<td>First Information Report</td>
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<tr>
<td>PRB</td>
<td>Police Regulations Act of Bengal</td>
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<tr>
<td>RHD</td>
<td>Roads &amp; Highways Department</td>
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1 INTRODUCTION

1.1 This report has been prepared as part of the Institutional Development Component (IDC) of the Second Road Rehabilitation and Maintenance Project (RRMP2). IDC is funded by the UK Department for International Development (DFID). It includes a series of short term and one 18 month (road safety engineering) inputs by specialists covering the areas of:

- Road safety engineering
- Vehicle inspection and safety
- Driver training and testing
- Children’s traffic education
- Road safety publicity
- Accident data system
- Accident costing
- Legislation and enforcement

The accident data component was started in an earlier phase of the IDC project and this report records the progress accordingly.

1.2 A series of other documents have been produced that relate directly to the accident data system. These documents are listed below:-

MAAPfive manual from Transport Research Laboratory (TRL)

Supplement to MAAPfive Manual for Bangladesh

Road Inventories

- Dhaka Range
- Chittagong Range
- Rajshahi Range
- Khulna & Barisal Ranges
- Sylhet Range

Accident Analysis Reports

- DMP Annual Report 1996
- DMP Annual Report 1997

Manual of Instructions and Examples for the new Accident Report Form
2 ACCIDENT REPORTING SYSTEM

2.1 The road safety situation in Bangladesh has been hindered by the lack of comprehensive accident data. The police did not record details of accident locations as well as some basic information about the casualties and vehicles. The information that was recorded was not computerised making detailed analysis impractical.

2.2 In May 1995 a new accident report form was designed by IDC and police officers from Police HQ and Dhaka Metropolitan Police (DMP). This form was introduced in the North Division of DMP in June 1995 for all traffic accidents recorded by the Thana police. The pilot test area covered the Thanas of Uttara, Cantonment and Gulshan. The accident report form is included as Appendix A in both English and Bangla.

2.3 The MAAP/ive program was configured for use with the new accident report form and data from the pilot study was entered on a computer at the IDC office. The data analysis capabilities of the new system were demonstrated in a series of presentations using real data from the pilot study. DMP subsequently agreed to the introduction of the new reporting system throughout the city of Dhaka. A computer was installed at DMP HQ and a computer operator was trained to identify the grid co-ordinates of each accident and to enter the data into the computer.

2.4 Training was given by the project team to all Sub-Inspectors (SIs) on how to complete the new accident report form. A ‘Manual of Instructions and Examples’ was produced and this was distributed to all Thanas involved in the expanded pilot study.

2.5 The city-wide accident reporting system was operational by the start of 1996. In early 1997 the first DMP annual report on traffic accidents was produced. This report was a summary of the accidents reported during 1996 in DMP and included messages from the Inspector General of Police (IGP) and the Commissioner of DMP. A second annual report, this time for 1997, has since been produced. This document is a summary of the accidents occurring in 1997 with comparisons to the previous year.

2.6 Following discussions with the IGP and the production of the first DMP annual report the new accident reporting and analysis system was adopted nation-wide by the Bangladesh Police. An extensive training program was devised to allow staff to reach all SIs in the country. Future training will be undertaken by the Police themselves, with IDC assistance. The accident reporting system has been incorporated into the training programme at the Sardah Police Academy where all police officers in the country are trained.
2.7 Progress in implementing the accident reporting system nation-wide and in sustaining data collection in the pilot study area (DMP) was hampered by the absence any legal backing for the new accident report form. During August 1998 however the form is expected to become a legal requirement for the Police and will become part of the First Information Report (FIR) under Police Regulations Act of Bengal [PRB 254(b)]. The police have now assumed responsibility for printing the form. These are major steps forward towards the creation of a sustainable accident data system.

2.8 Six further computers were purchased for the national accident data system. Five of these computers were set up at regional centres to process accident data in a similar manner to DMP. The regional accident data units are responsible for the processing and analysis of the accident data in their area of responsibility as defined in the table below:-

<table>
<thead>
<tr>
<th>Location of Unit</th>
<th>Area of Responsibility</th>
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<tbody>
<tr>
<td>Dhaka Metropolitan Police</td>
<td>DMP</td>
</tr>
<tr>
<td>Dhaka Range</td>
<td>Dhaka Range</td>
</tr>
<tr>
<td>Chittagong Metropolitan Police</td>
<td>Chittagong Range and CMP</td>
</tr>
<tr>
<td>Rajshahi Range</td>
<td>Rajshahi Range and RMP</td>
</tr>
<tr>
<td>Khulna Metropolitan Police</td>
<td>Khulna Range, KMP and Barisal Range</td>
</tr>
<tr>
<td>Sylhet Range</td>
<td>Sylhet Range</td>
</tr>
</tbody>
</table>

Additionally, an accident data unit has been established at Police HQ to assemble the national accident database and to analyse the accident data at a national level. Data should be sent from the regional accident units to the Police HQ as shown in the flow chart in Figure 1.

2.9 The specification of the computers installed at each of the seven locations is shown in the table below:-

<table>
<thead>
<tr>
<th></th>
<th>Windows</th>
<th>RAM (Mb)</th>
<th>Hard Disk</th>
<th>Processor Speed (MHz)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Police HQ</td>
<td>3.11</td>
<td>16</td>
<td>2.1Gb</td>
<td>166</td>
</tr>
<tr>
<td>DMP</td>
<td>3.11</td>
<td>16</td>
<td>520Mb</td>
<td>133</td>
</tr>
<tr>
<td>Dhaka Range</td>
<td>3.11</td>
<td>16</td>
<td>2.1Gb</td>
<td>166</td>
</tr>
<tr>
<td>Chittagong</td>
<td>95</td>
<td>16</td>
<td>2Gb</td>
<td>166</td>
</tr>
</tbody>
</table>
2.10 Two member of staff have been assigned to each of the accident data units and these have been trained to process and analyse the accident data. They will be responsible for ensuring accident report forms are sent in by all the districts and Thanas in their area of responsibility.

2.11 A monthly monitoring report will be prepared for each of the six regional accident data units. This will consist of three standard tables from the MAAPfives system showing the total number of accidents on the computer for each month and also the number of accidents reported by each district and by each Thana within each district. In addition to these three tables the number of pending accident report forms should be indicated.
3 ACCIDENT LOCATION SYSTEMS

3.1 An essential part of an accident data system is an accident location system. This should enable to the geographic distribution of accidents to be analysed and accident blackspots to be identified. Two location systems are used to identify accidents in Bangladesh:

- Grid co-ordinate
- Kilometre value along a highway

Further details of the location systems and on accident blackspot identification techniques can be found in the "Supplement to the MAAPfive Manual."

3.2 The grid co-ordinate system is useful for urban areas where good quality maps are available. Ideally two types of maps are required for each area. The first type of map is to allow the XY co-ordinates of each accident to be established. This requires detailed maps with a scale of about 1:10,000. It is very useful if the grid squares on the map are 100mm by 100mm as this will enable the XY co-ordinates to measured accurately with a standard ruler with millimetre markings. The second type of map is to display on the computer screen and to over-plot accidents. The scale of these maps should ideally be between 1:25,000 and 1:50,000 although any scale can used if necessary. These maps do not require the same level of detail as the maps used for identifying the XY co-ordinates.

In practise using one set of maps for identifying co-ordinates and another set for plotting accidents was not possible as the maps available in Bangladesh have significant incompatibilities. To overcome this the maps used for plotting are simply reduced versions of the ones used for establishing co-ordinates. This produces acceptable results and is considered suitable until better maps become available.

The lack of a suitable national grid system has led to a local grid system being developed for each of the major cities. These have been given a code number so that accidents from one city can be easily separated from the other cities.

3.3 Accidents occurring on the highway network outside of the major cities will be assigned a route number and a kilometre value. The route numbering system is consistent with the one currently in use in Roads & Highways Department (RHD). Maps of each zone have been provided to the police accident data units to ensure the correct route numbering system is used.

The kilometre value assigned to each accident on a highway will, as much as possible, be derived directly from the value on the kilometre post. Thus if the accident occurred 200m north of ‘KM Dhaka 56’ on the Dhaka Mymensingh Road then it will be coded as 56.2km on N3. If there is a single ‘zero point’ for each highway and the distance to this ‘zero point’ is be
displayed on the kilometre post then this location system is simple to use. Some highways, however, have kilometre posts with distances to towns but do not include the distance to the "Zero point" of the highways. Further problems occur when kilometre posts are missing and when they are not spaced at kilometre intervals. To overcome these problems an 'Inventory of Landmarks' has been produced for each of the accident data units. These documents include all the routes within the area of responsibility of the accident data unit and indicate the kilometre value to use for each major landmark on the road. The kilometre values in these documents have been ‘tied’ to the kilometre post values where appropriate so that each kilometre of the road could be a slightly different actual length. In more extreme cases there will be an apparent missing section of road or even a duplicate section of road. The latter is usually a result of an inconsistency in kilometre post values on either side of a district boundary.

4 LEVEL OF REPORTING OF ACCIDENTS

4.1 The level of reporting of accidents by the police is understood to be very low. In most cases the accident will only come to attention of the police if it is particularly serious or if an aggrieved party reports the accident. The large number of fatal accidents in the police reported accidents is strong evidence in itself of massive under reporting. In DMP over 30% of all reported accidents are fatal while early data from Khulna Range shows this figure rising to over 70%. Hospital records add further evidence that even many fatal accidents go unreported. Improved reporting of traffic accidents is therefore a priority to allow the full state of the road safety situation in Bangladesh to be understood.

4.2 The low level of accident reporting in Bangladesh has one advantage in that it allows the fledgling accident data units to get established without being overwhelmed by the volume of report forms arriving.

4.3 Improved reporting levels of accidents would make accident blackspot identification and investigation easier and more scientific but the enormous scale of the accident problem in Bangladesh means that blackspots can be easily identified, even at the current low reporting levels.
5 CONCLUSIONS

5.1 Large steps towards the establishment of a sustainable accident data system have been made in the last three years. The Bangladesh Police are now committed to the systems proposed by IDC and positive results are already resulting from this.

5.2 The new accident report form is about to become mandatory for the police to use thus ensuring it’s use will continue after the technical assistance has finished. Inclusion of the accident reporting system at the Sardah Police Academy is further evidence of the long term commitment of the police.

5.3 The progress made over the last three years must be protected by the provision of further technical assistance that will lead to the system becoming completely self-contained within the police.
6 RECOMMENDATIONS FOR IDC-3

The objective of further assistance during IDC-3 should be: ‘To continue assisting Bangladesh Police in the implementation of a comprehensive accident reporting and analysis system’. Two levels of accident data units have now being established and these should be assisted so that they provide the following functions:

Police HQ Accident Data Unit

- Annual national accident reports should be prepared and disseminated
- The accident database should be made available to NRSC, RHD, City Authorities and other relevant organisations
- Overall co-ordination of the accident reporting system should be taken over from IDC

Six Regional Accident Data Units

- All six regional police accident data units should operate effectively
- The location of all accidents should be accurately coded
- Regional analysis of the accident data should be made available to Police and RHD
- Police HQ should be provided with a quarterly copy of the data via diskette.

The local IDC consultant must be retained continuously as accident data co-ordinator. His full time support will be necessary for two years with a further two years at half-time. There should be six weeks of foreign consultancy input per year to support the local consultancy during this period. The tasks for IDC-3 should be:

- Continue training of accident data units to process and analyse data
- Train Police HQ unit to ensure the accident reporting system becomes a fully adopted and police supported system
- Install MAAP for Windows when police computer network extends to incorporate the Range and Metropolitan Police HQs or when considered appropriate
- Translate MAAP for Windows into Bangla
- Improve the level of accident reporting
Costing

Foreign Consultant: 2 x 3 week visits per year

Local Consultant: First/Second Year - 12 months
Subsequent years - 6 months per year

Computer Equipment: Upgrading of computer equipment
Extra RAM and peripherals for other units

MAAP for Windows: Multi-site licence

Overseas Study Tour: For senior police officer assigned to co-ordinate the national accident data system and local IDC consultant.

Risks and Assumptions

The Bangladesh Police HQ will assume a co-ordinating role for the accident reporting and analysis system.
APPENDIX A

NEW BANGLADESH POLICE ACCIDENT REPORT FORM

Bangla x 2 Pages (reduced from legal size)
English x 2 Pages (as will appear in police gazette)
APPENDIX B

TERMS OF REFERENCES
13 February 1998

Accident Data Specialist

Location : DMP Accounts Departments BRTA Accident Investigation Unit

Reporting to : DMP Police Commissioner

Objective : To facilitate the continuation and expansion of the new accident reporting system and train the police in the use of accident analysis in designing enforcement strategies.

Description of Role and Tasks:

2. Implement any changes in the procedures as a result of the pilot study.
3. Assist a police led expansion of the accident data system to all of Bangladesh.
4. Supervise the accident data entry and analysis at DMP accident data unit.
5. Train police in use of accident analysis findings to identify and prioritise enforcement strategies.
6. Assist with the production of the first accident summary report.
7. Identify any modifications necessary to ensure sustainability of system.

Counterpart from Government : DMP Accounts Supervisor (oversees MAAP data entry)

Counterpart from IDC Consultant : IDC Accident Data Supervisor

Milestone Achievements :

1. First Road Accident Summary Report
2. Reporting system formally adopted city-wide
3. Expansion of pilot project

Timing of Input:

10 Week total input with three 3 week visits and 6 days UK input for support service. Note some of this work has already been carried out on previous visits.

Risks and Assumptions :

DMP will formally adopt accident reporting system.
Current liaison officer be extended and additional liaison officer be employed to assist with the gradual expansion of the accident reporting system.