Design and Development of MIROS Road Accident Analysis and Database System (M-ROADS)

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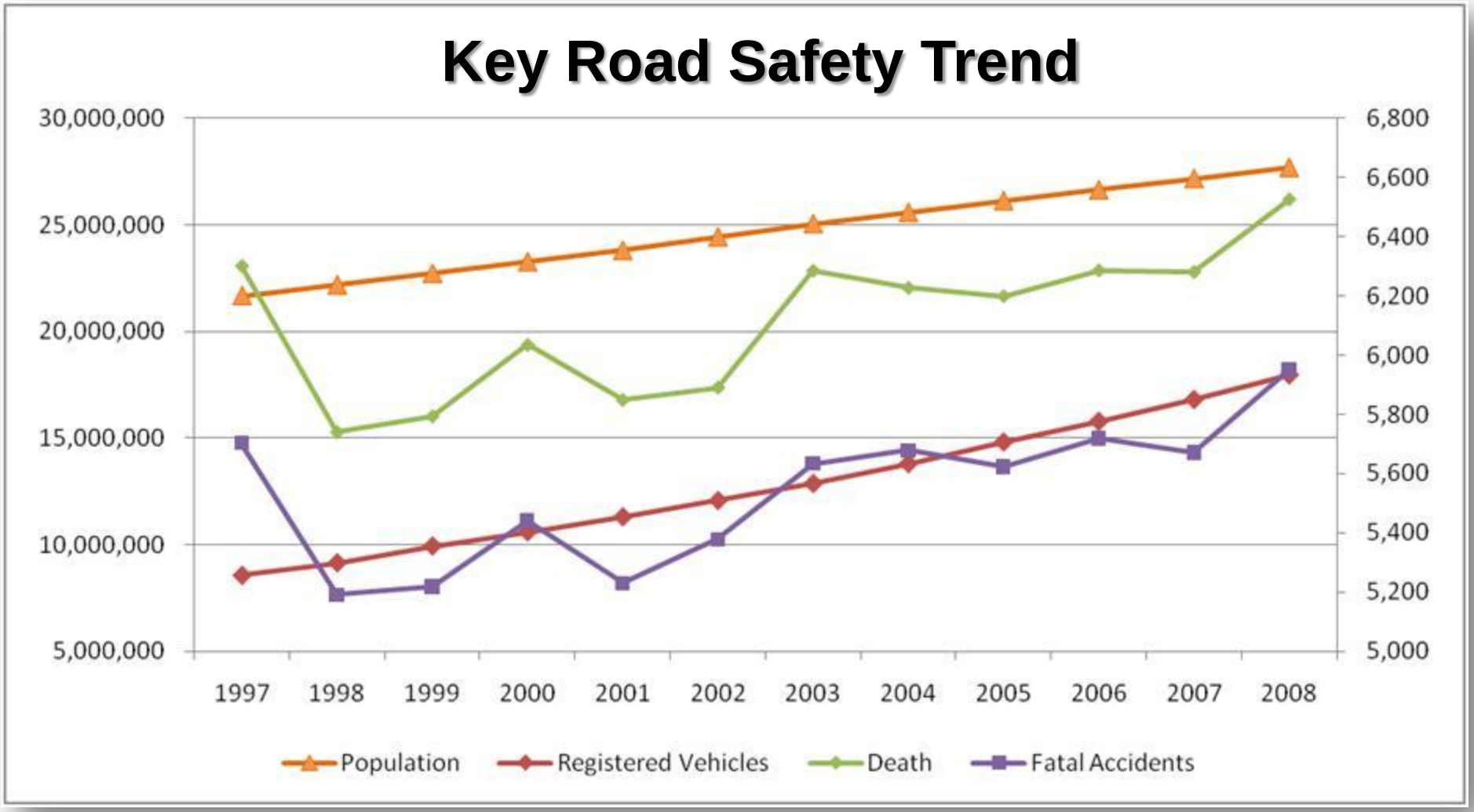
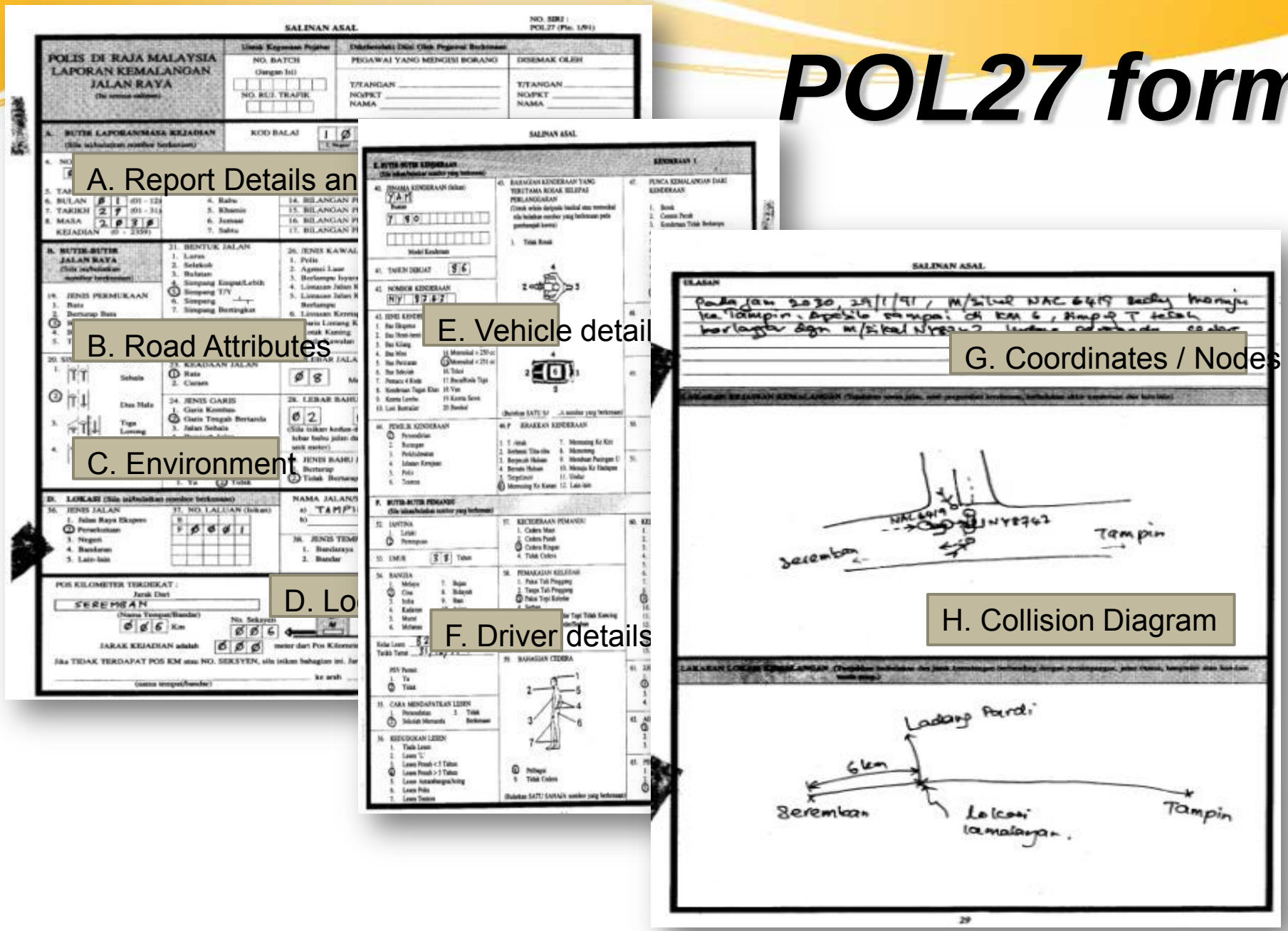
Situation in Malaysia



Accident data collection

- Accident data collected by traffic police
- Collection through Police Form 27 (POL.27)
- 91 variables are collected consisting information on:-
  - General accident information
  - Vehicle information
  - Driver information
  - Passenger information
  - Pedestrian information
  - Animal involved information
  - Location information

POL27 form


SALINAN ASAL
POLIS DI RAJA MALAYSIA
LAPORAN KEMALANGAN JALAN RAYA
A. Report Details an
B. Road Attributes
C. Environment
D. Lo
E. Vehicle detail
F. Driver details
G. Coordinates / Nodes
H. Collision Diagram
SEREMBAN
Tampin
6km
Ladang Pordi
Lokasi kemalangan.

Accident recording system

- 1991 – Microcomputer Accident Analysis Package (MAAP)
  - DOS-based
  - Capable of handling medium amount of records
  - Data management and cross-tabulation analysis
- 2006 till Present – Computerised Accident Reporting System (CARS)
  - Data management as well as personnel management
  - Limited variables for cross-tabulation analysis
  - District based and are not centralised

Objective and scope

- To provide government and road safety stakeholders with accurate, continuous and comprehensive information on road crashes

- To increased understanding of the current road safety situation, to plan for appropriate responses and policy, and to evaluate the impact of current and future initiatives

- Only road accident data from RMP is included in the system development

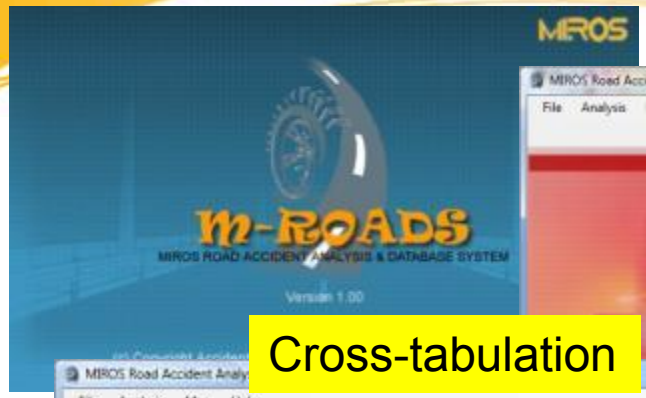
Results

MROADS
Miros Road Accident Analysis & Database System

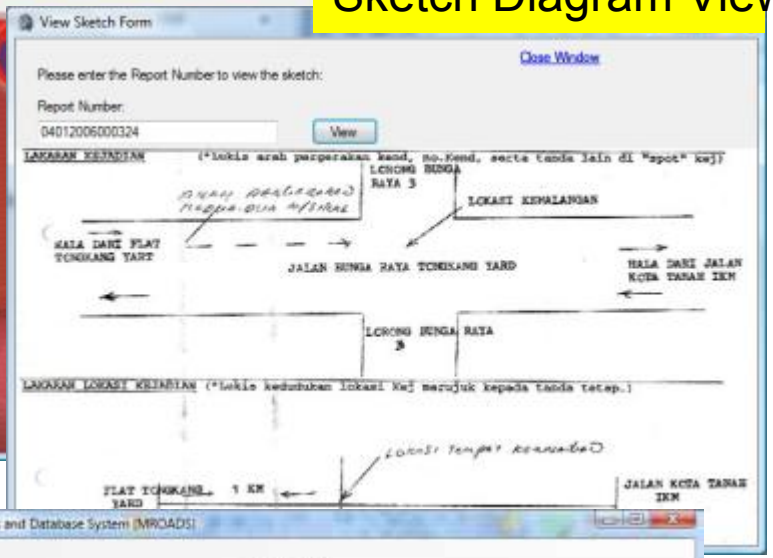
- **M** Management (DB and user)
- **R** Record maintenance
- **O** Cross tabulation
- **A** Accident location ranking
- **D** Data converter
- **S** Set condition

Results

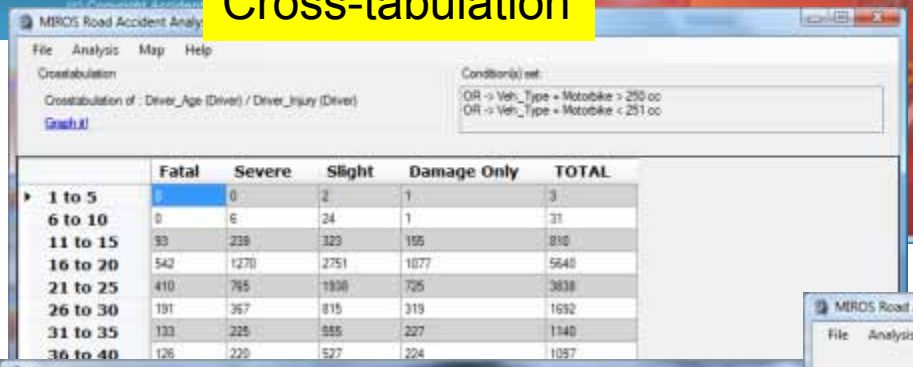
Main menu



Sketch Diagram View

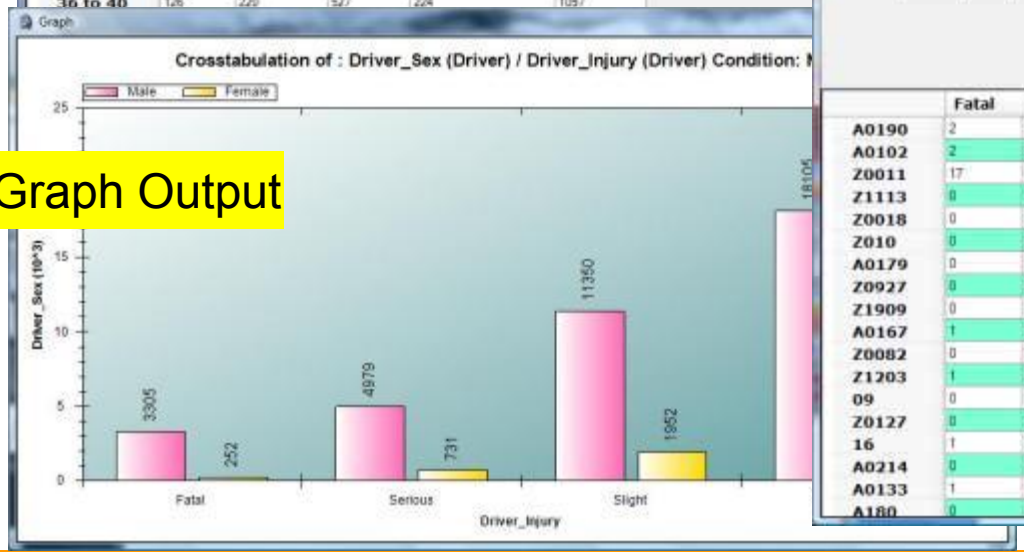


Cross-tabulation

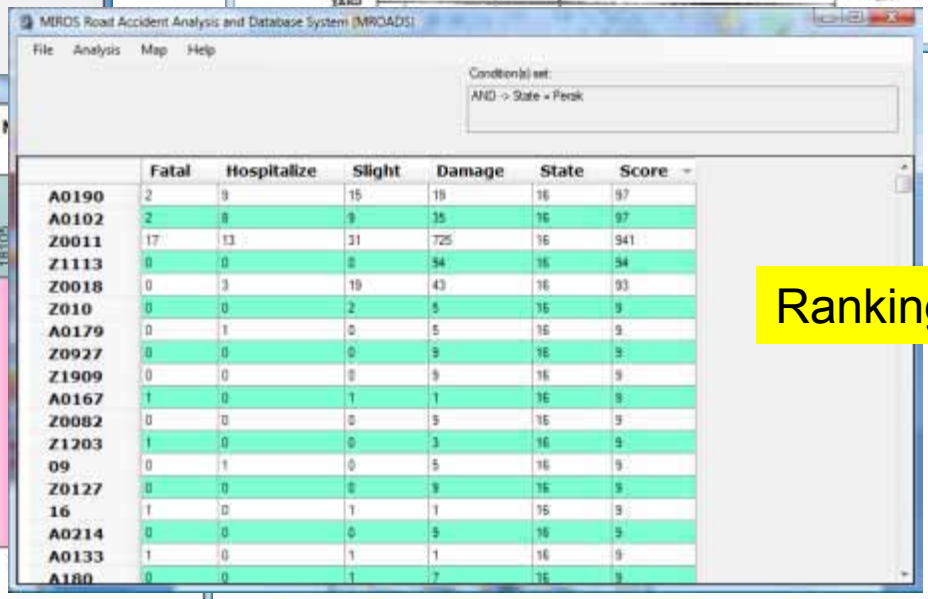


	Fatal	Severe	Slight	Damage Only	TOTAL
1 to 5	0	0	2	1	3
6 to 10	0	6	24	1	31
11 to 15	93	239	323	155	810
16 to 20	542	1270	2751	1077	5640
21 to 25	410	765	1938	725	3838
26 to 30	191	367	815	319	1692
31 to 35	133	225	555	227	1140
36 to 40	126	220	527	224	1097

Graph Output



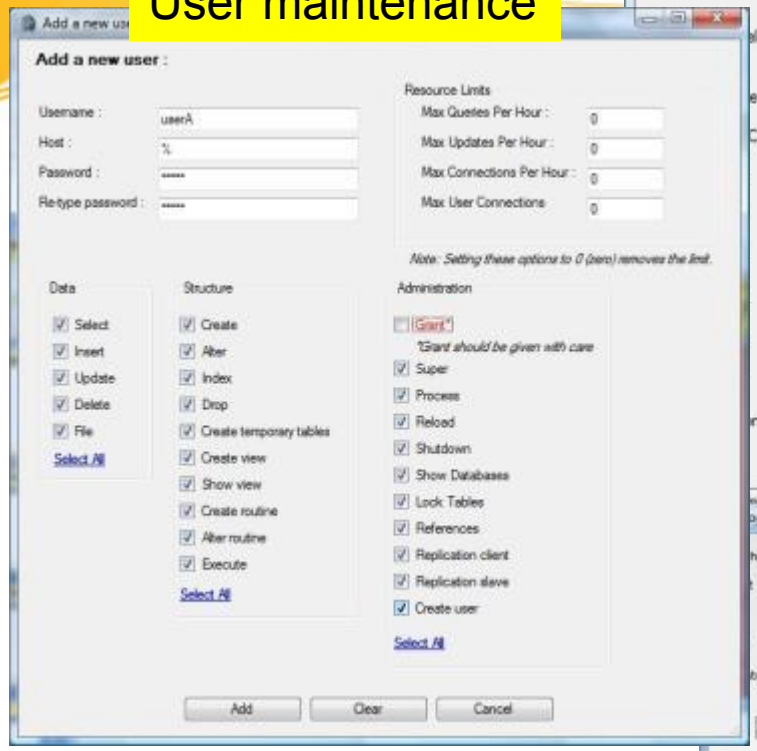
Ranking

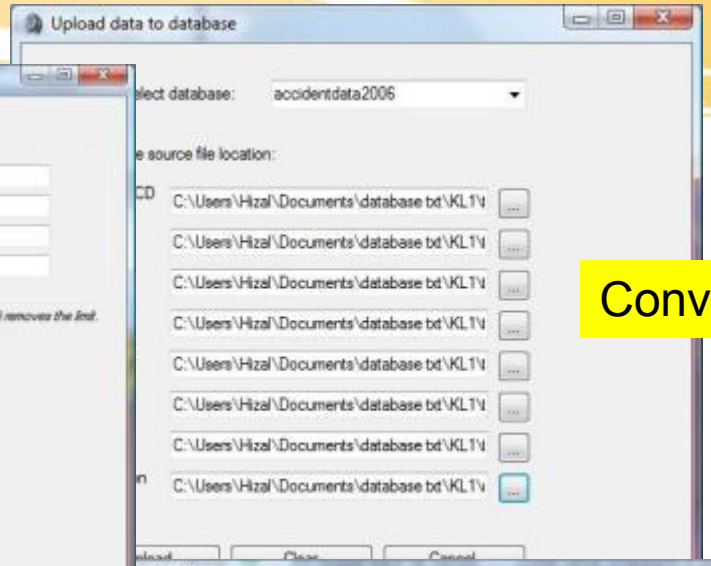


	Fatal	Hospitalize	Slight	Damage	State	Score
A0190	2	9	15	19	16	97
A0102	2	8	9	35	16	97
Z0011	17	13	31	725	16	941
Z1113	0	0	0	54	16	54
Z0018	0	3	19	43	16	93
Z010	0	0	2	5	16	9
A0179	0	1	0	5	16	9
Z0927	0	0	0	9	16	9
Z1909	0	0	0	9	16	9
A0167	1	0	1	1	16	9
Z0082	0	0	0	9	16	9
Z1203	1	0	0	3	16	9
09	0	1	0	5	16	9
Z0127	0	0	0	9	16	9
16	1	0	1	1	16	9
A0214	0	0	0	9	16	9
A0133	1	0	1	1	16	9
A180	0	0	1	7	16	9

Results

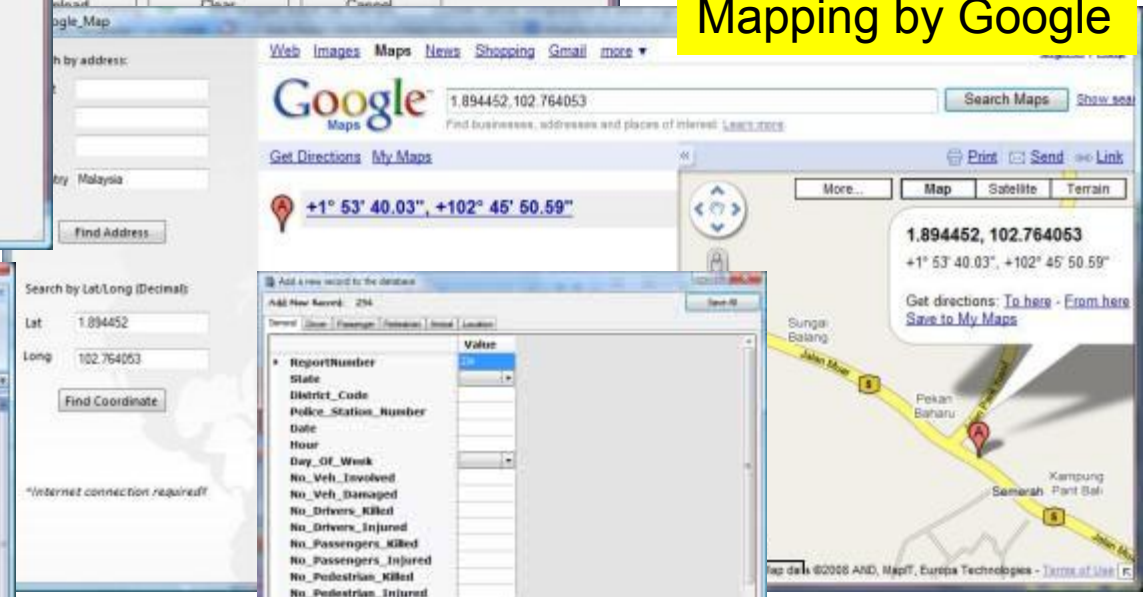
User maintenance

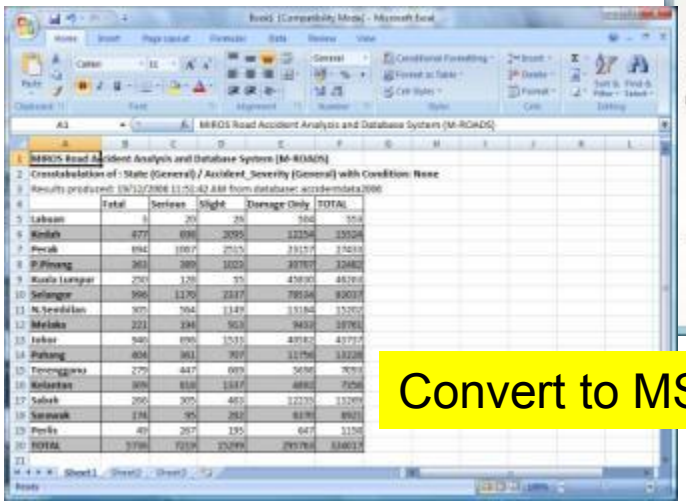




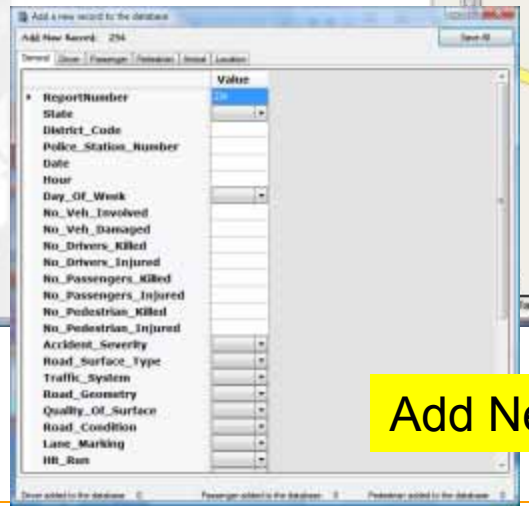
Convert data

Mapping by Google





Convert to MS Excel

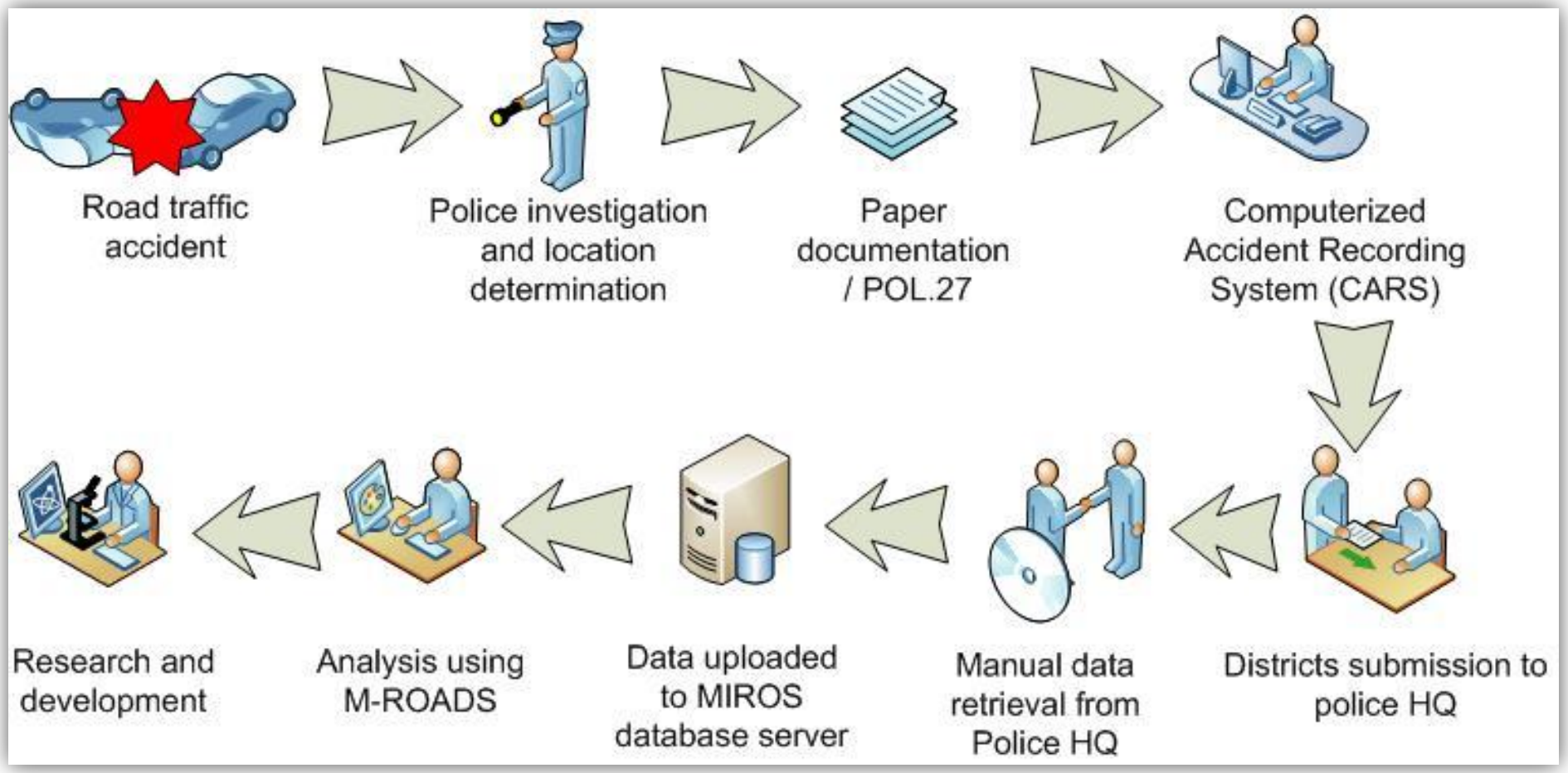


Add New Record

MIROS

MROADS
Miros Road Accident Analysis & Database System

M-ROADS Process Flow



Advantage of M-ROADS

- Flexible data tabulation
  - All variables collected can be analysed
  - Specific condition
- Black-spot location ranking
  - District
  - Route no
  - Location
  - Coordinate
- Centralized database server
  - Record management

Application

- Road safety target setting
- Hypothesis for road safety research
- Evidence for road safety intervention
- Road safety performance monitoring
- Statistics as requested by Ministers and MPs
- External data request
  - Government agencies
  - Private sector
  - Universities
  - International

Application - MIROS

Intelligence-based policing by traffic enforcement

Automated Enforcement System (AES)

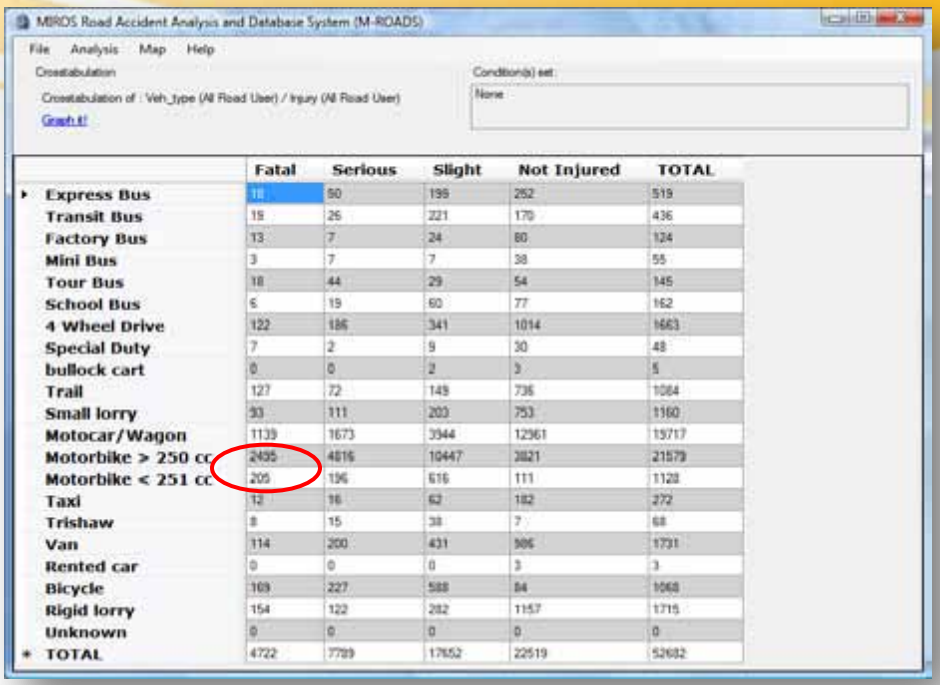
Community-based program (CBP)

Road safety education (RSE)

Case study: Evidence-based Policing

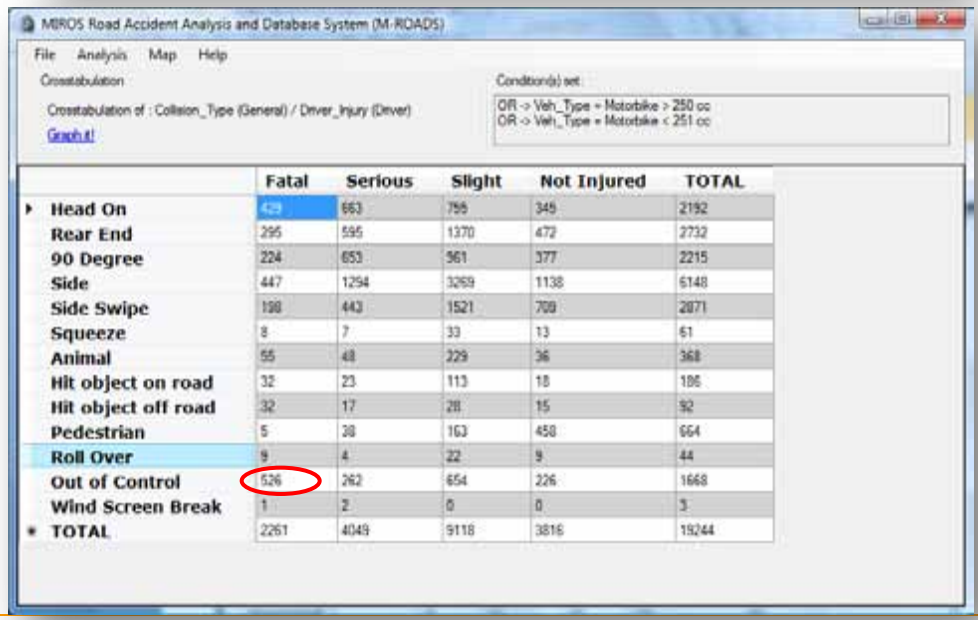
- Application of data in planning for enforcement strategy
- Introduced during capacity building course for enforcement personnel in March 2009
- Answers the basic fundamental questions
  - 5 W and 1 H

1. Who?



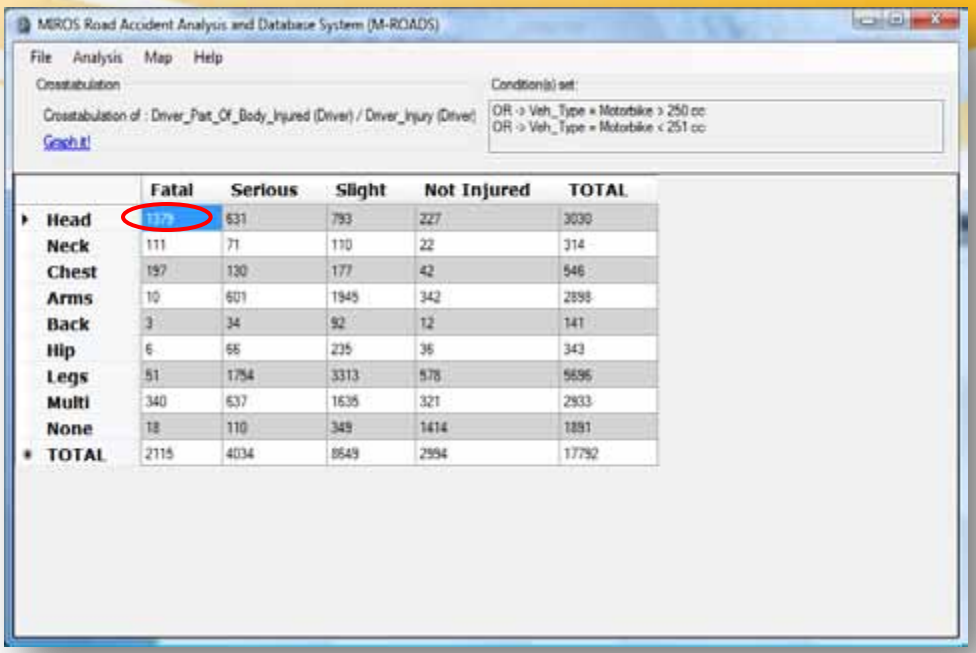
	Fatal	Serious	Slight	Not Injured	TOTAL
Express Bus	18	50	199	252	519
Transit Bus	19	26	221	170	436
Factory Bus	13	7	24	80	124
Mini Bus	3	7	7	38	55
Tour Bus	18	44	29	54	145
School Bus	6	19	60	77	162
4 Wheel Drive	122	186	341	1014	1663
Special Duty	7	2	9	30	48
bullock cart	0	0	2	3	5
Trail	127	72	149	736	1084
Small lorry	33	111	203	753	1160
Motocar/Wagon	1139	1673	3944	12961	19717
Motorbike > 250 cc	2495	4816	10447	3821	21579
Motorbike < 251 cc	205	196	616	111	1128
Taxi	12	16	62	182	272
Trishaw	8	15	38	7	68
Van	114	200	431	986	1731
Rented car	0	0	0	3	3
Bicycle	169	227	588	84	1068
Rigid lorry	154	122	282	1157	1715
Unknown	0	0	0	0	0
* TOTAL	4722	7789	17652	22519	52682

2. Why?



	Fatal	Serious	Slight	Not Injured	TOTAL
Head On	429	663	799	349	2192
Rear End	295	595	1370	472	2732
90 Degree	224	653	961	377	2215
Side	447	1294	3269	1138	6148
Side Swipe	198	443	1521	709	2871
Squeeze	8	7	33	13	61
Animal	55	48	229	36	368
Hit object on road	32	23	113	18	186
Hit object off road	32	17	28	15	92
Pedestrian	5	28	163	458	664
Roll Over	9	4	22	9	44
Out of Control	526	262	654	226	1668
Wind Screen Break	1	2	0	0	3
* TOTAL	2261	4049	9118	3816	19244

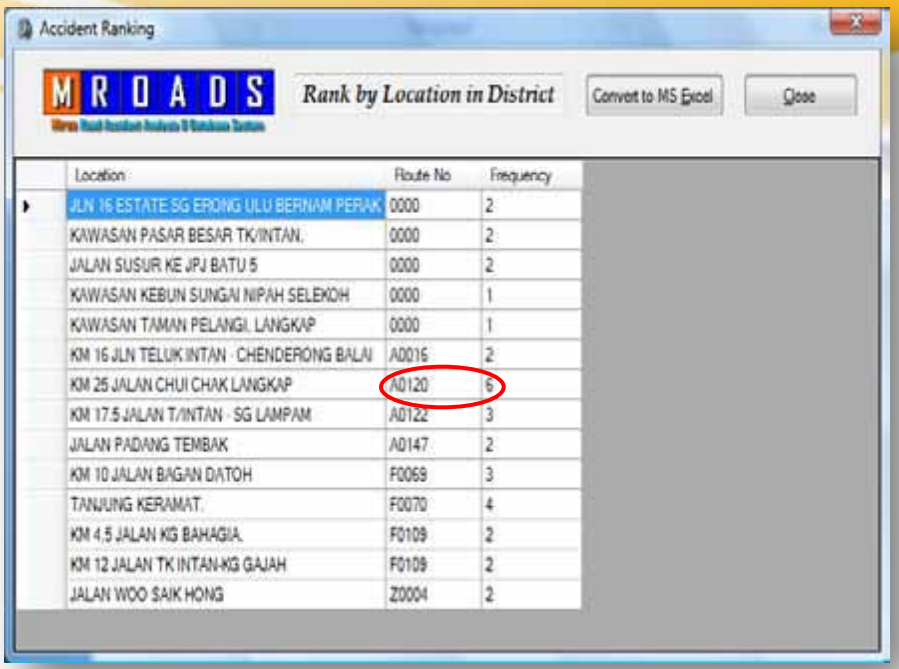
3. What?



	Fatal	Serious	Slight	Not Injured	TOTAL
Head	1379	631	793	227	3030
Neck	111	71	110	22	314
Chest	197	130	177	42	546
Arms	10	601	1945	342	2898
Back	3	34	92	12	141
Hip	6	66	235	36	343
Legs	51	1754	3313	578	5696
Multi	340	637	1635	321	2933
None	18	110	349	1414	1891
TOTAL	2115	4034	8649	2994	17792

4. How?

5. Where?

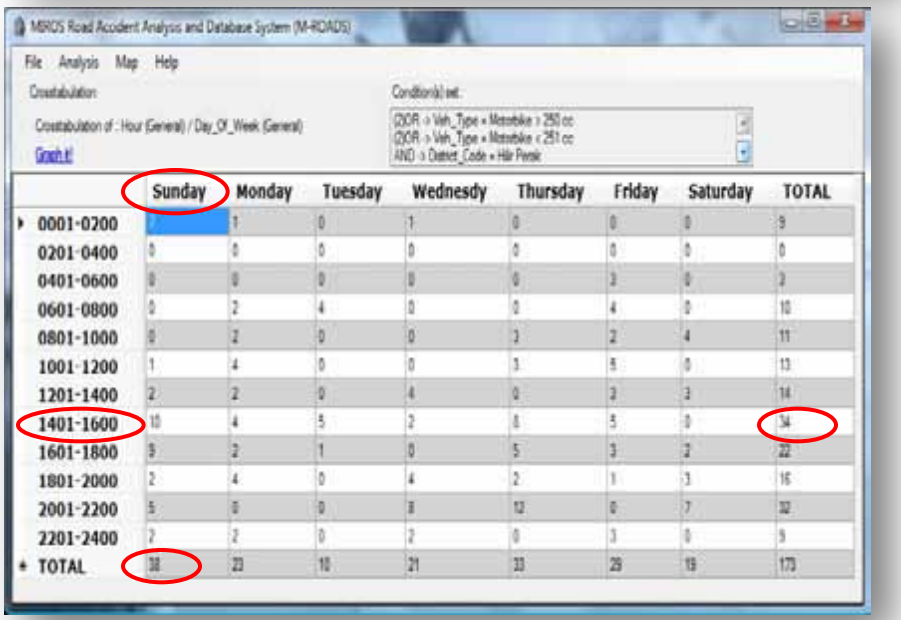


Location	Route No	Frequency
JLN 16 ESTATE SG ERONG ULU BERNAM PERAK	0000	2
KAWASAN PASAR BESAR TK/INTAN.	0000	2
JALAN SUSUR KE JPJ BATU 5	0000	2
KAWASAN KEBUN SUNGAI NIPAH SELEKOH	0000	1
KAWASAN TAMAN PELANGI, LANGKAP	0000	1
KM 16 JLN TELUK INTAN - CHENDERONG BALAI	A0016	2
KM 25 JALAN CHUI CHAK LANGKAP	A0120	6
KM 17.5 JALAN T/INTAN - SG LAMPAM	A0122	3
JALAN PADANG TEMBAK	A0147	2
KM 10 JALAN BAGAN DATOH	F0069	3
TANJUNG KERAMAT.	F0070	4
KM 4.5 JALAN KG BAHAGIA.	F0109	2
KM 12 JALAN TK INTAN-KG GAJAH	F0109	2
JALAN WOO SAIK HONG	Z0004	2

6. When?

-Time

-Day

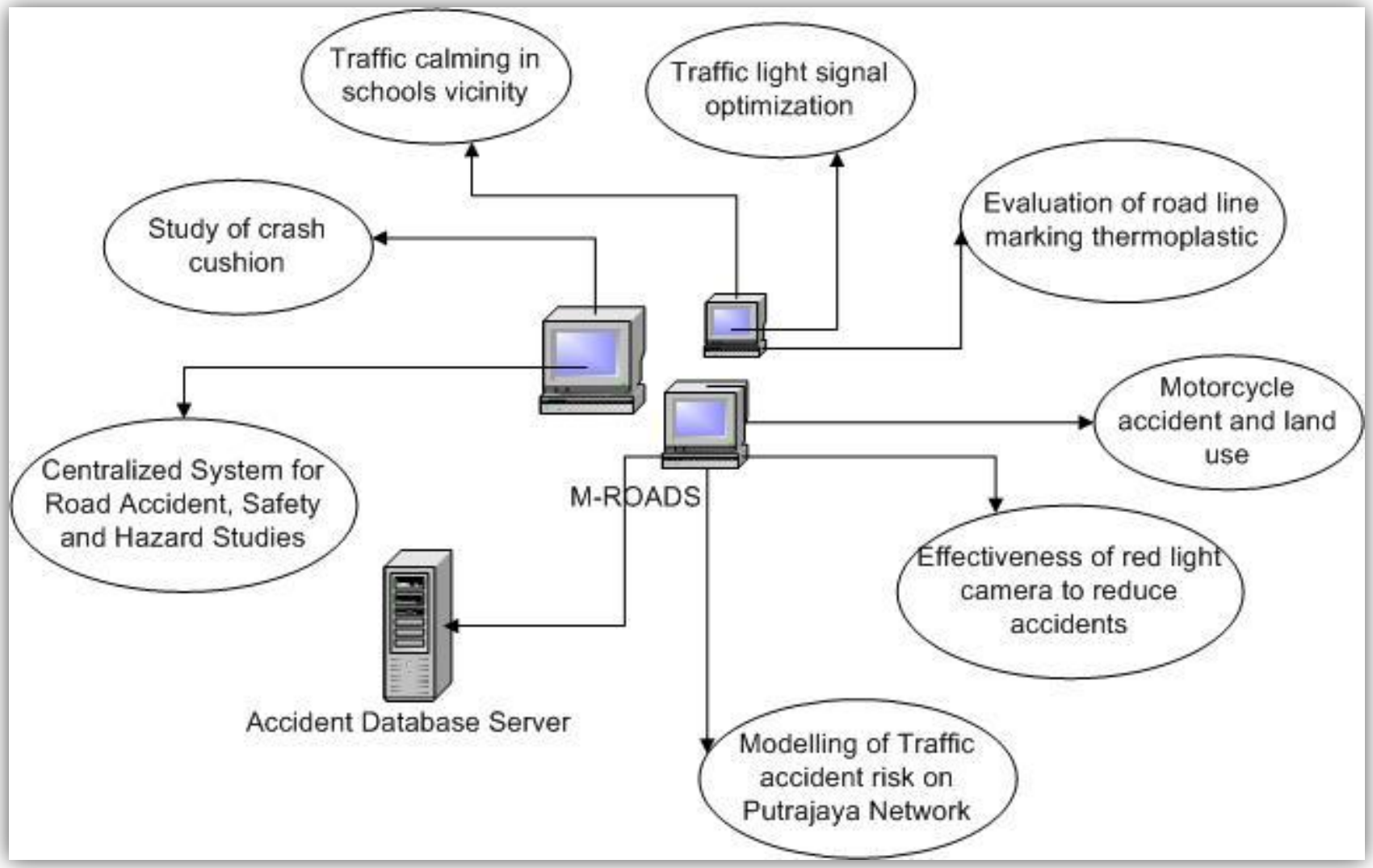


	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	TOTAL
0001-0200	2	1	0	1	0	0	0	9
0201-0400	0	0	0	0	0	0	0	0
0401-0600	0	0	0	0	0	3	0	3
0601-0800	0	2	4	0	0	4	0	10
0801-1000	0	2	0	0	3	2	4	11
1001-1200	1	4	0	0	3	5	0	13
1201-1400	2	2	0	4	0	2	3	14
1401-1600	10	4	5	2	8	5	0	34
1601-1800	9	2	1	0	5	3	2	22
1801-2000	2	4	0	4	2	1	3	16
2001-2200	5	0	0	8	12	0	7	32
2201-2400	2	2	0	2	0	3	0	9
TOTAL	38	23	10	21	33	29	19	173

Case Study summary

- What is the problem? – Motorcycle
- What is the issue? – Head injury
- How? – Helmet wearing enforcement
- Where to enforce? – Hilir Perak
- Where in Hilir Perak? - Before KM 25, Route A0120 (refer to map)
- When to enforce?
  - Day – Sunday
  - Time to enforce – From1400 to 1600

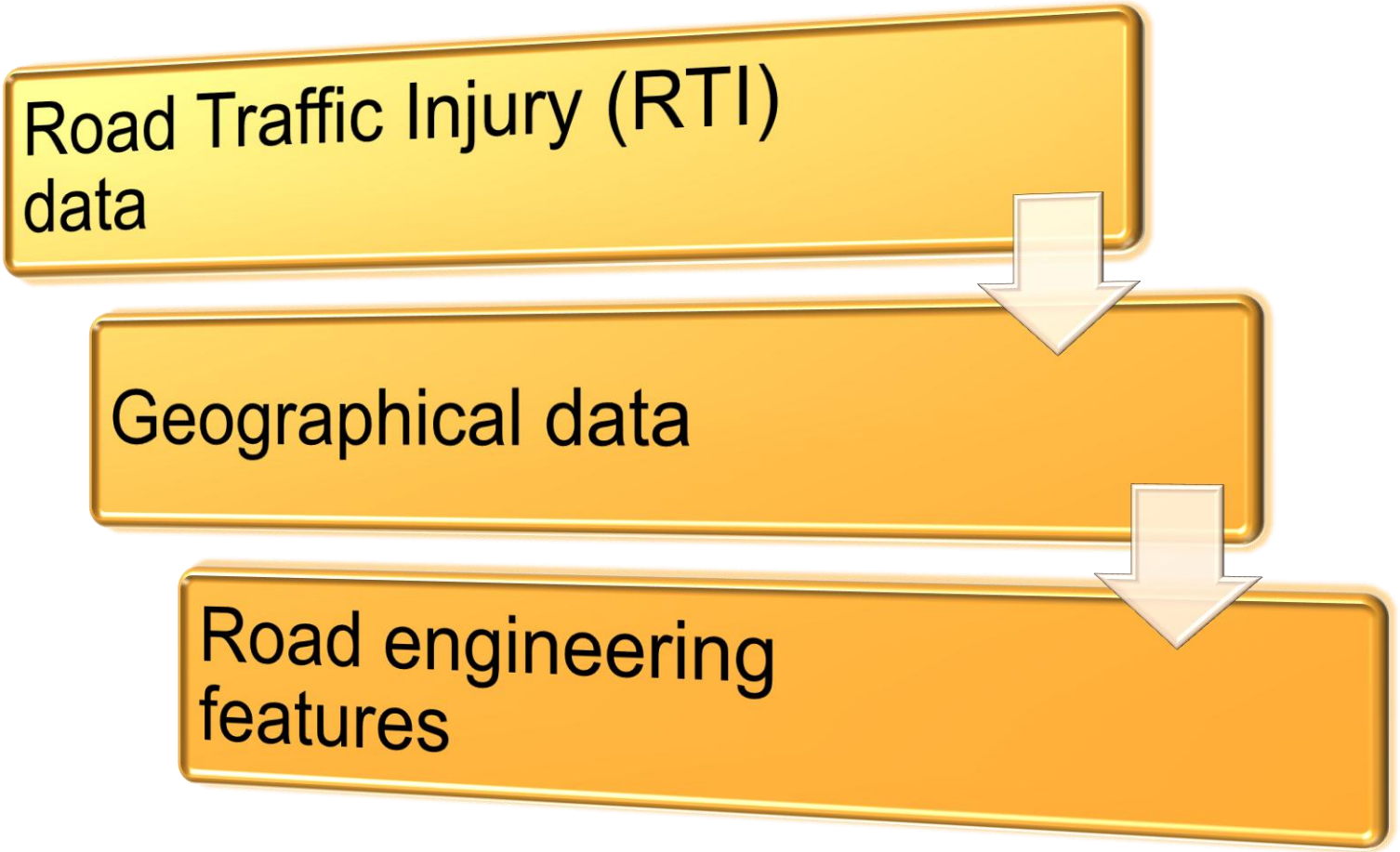
Application - REER



Achievement

- Presented at 4th IRTAD Conference in Seoul, South Korea
- GRSP Level 3 Professional Development of Traffic Policing
- Presented in HUSM ICT Workshop
- Malaysian International Road Safety Exhibition (MIREX)
- Information and statistics retrieval to support request from various parties in timely manner

Future expansion



Conclusion

"Accident data can be used to serve as evidence for planning on road safety programmes and interventions"

"Accident data can be used to evaluate road safety situation in the country as well as for performance monitoring"

Thank you

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