

Integrated approach to road safety



4th IRF Regional Conference on "Accident
Prevention: Road Safety Measures"
23-24 October 2009 at IHC, New Delhi

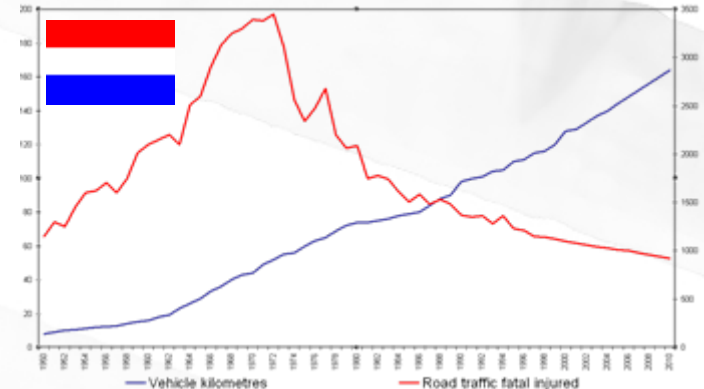


Erik Donkers
Senior Consultant & General Director

Integrated approach to road safety

- » The Netherlands has one of the world's best road safety records
- » The numbers of traffic accident victims are currently still on the decline, despite of the continuous rising traffic volumes
- » This thanks its ability to continue to optimise its approach.

→ there are lessons to learn !



25-year history

- » VIA, consulting agency
 - » Traffic engineering
 - » Specialist on road safety
 - » Software developer
- » We work together with different road safety partners and data delivers
- » Knowledge is expressed in VIA's software
 - » ViaStat
 - » Safe2school
 - » TrafficOpinion
 - » InMaps.



Integrated approach to road safety

page 3



Complete approach

- » Approach is based on the 3 E's: Education, Enforcement & Engineering
- » An approach that is widely supported and applied globally
- » Optimise the approach by focusing on a specific topic
- » Attention in each topic is devoted to
 - » *Education*: public information and awareness
 - » *Enforcement*: credibility and chance of being caught
 - » *Engineering*: inherent safety and forgiving nature.

Objective figures

» First start of this approach in the Netherlands 1970:

→ policy based on objective data: traffic accidents

- » Special accident registration unit to collect the police data
- » The aim: to set up a national database
- » To be consulted national, regional and local
- » Unique feature was the digital map with focus on
 - » The exact location
 - » The circumstances
 - » Parties involved.



Extended approach

- » The numbers of serious accidents have been reduced
- » Accident dilution is complicating analysis based purely on accident data.

→ approach based on combination of data relating to accidents

- » Road and traffic characteristics
- » School routes
- » Subjective safety
- » Interface with other fields of policy: accessibility.

Explanatory traffic data

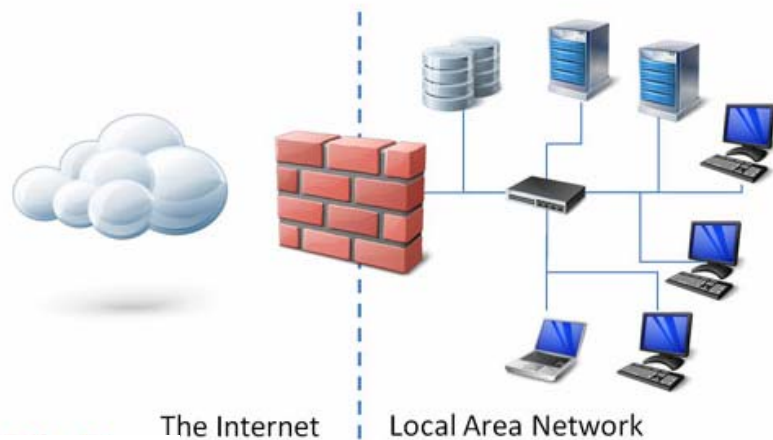
- » Objective data is an essential aspect
- » Data gathering should be aligned with the objective
- » Data collection, starting with traffic accidents, should provide information on
 - » The location (engineering aspect)
 - » The circumstances (enforcement aspect)
 - » The parties involved (education aspect)
- » Data gathering is a duties of all partners
- » Continuity and quality largely determine the success of road safety policy.

Accessibility of data

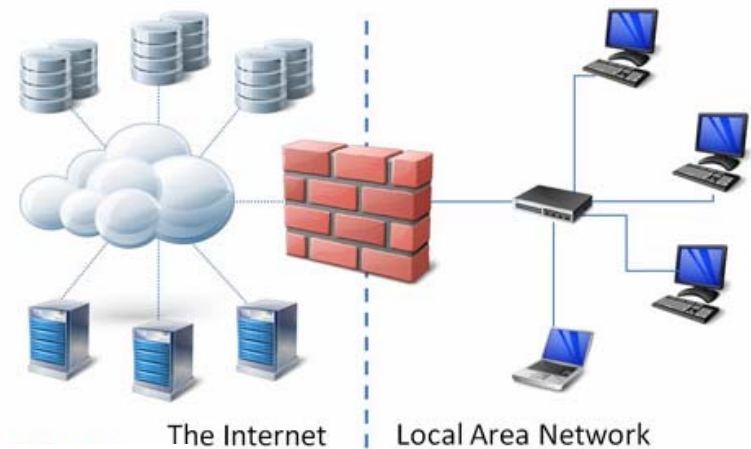
- » All partners have access to the traffic data, beginning with that on traffic accidents
 - » The cost of data gathering are often quite considerable
 - » So the mine of information needs to be utilised to the full
 - » The data is naturally anonymous
- » This can be achieved by web-based solution
 - » Containing validated data
 - » Equipped with ready made tools.
- » Latest trend is **Software As A Service** (SAAS).

Software As A Service (SAAS)

traditional computing model



software-as-a-service model



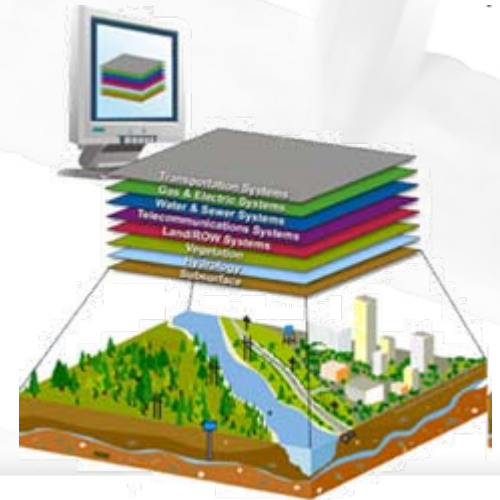
Software As A Service (SAAS)

- » The files and the software program are run on a central Internet server
 - » Users have a login code
 - » Allocated rights controls and protects the data
- » Saving on cost of hardware and software
 - » The data remains up to date
 - » The user can rely on the latest version of the software
- » A personal computer with an Internet connection is sufficient.



GIS

- » GIS (Geographic Information System) enables to link the data to a:
 - » Certain point: the middle of an intersection
 - » Segment: the link between two intersections
- » The points and segments give a representation of the digital road map
- » It creates links between various data like
 - » Traffic accidents
 - » Traffic volumes
 - » Road characteristics.



ViaStat all in one solution

» ViaStat is the convenient combination of:

- » Road safety approach
- » Software As A Service (SAAS)
- » GIS



» Digital maps of Tele Atlas are available



- » The majority of road managers, municipalities and police in The Netherlands already use ViaStat for many years
- » A great deal of knowledge and experience is incorporated
- » Specialist tools are also available.



Integrated approach to road safety

page 12



Personal system

XML-files Region: Feridabad (Crashes)
Work file: Main work file

Main menu

- General
- Crashes
- Downloads
- XML-files**

Explanation ViaStat-Online Download

Within this functionality you can apply for XML-files of the work file you are currently working with. A Zip-file, containing several XML-files, will then come available for you to download. For this purpose you will go through the following steps:

- >> First click the button above: 'apply for file of current restriction'. A script prompt will appear on your screen. In this script prompt you must enter a name for the work file.
- >> Then, in the table below, a new line appears containing your current application for the work file. The column 'status' will say 'file requested'. The file will automatically be composed for you. When the work file is on request you can still cancel the application by clicking the cross mark.
- >> The next day the status of your application will be modified into 'download'. You can then download the file by clicking the check mark in the first column of the table.

Description	Number of Crashes	Date of request ▲	Size	Available till	Status
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You are logged in as: user9a-1031

Other module

Log out (auto logout: 0:39:52)

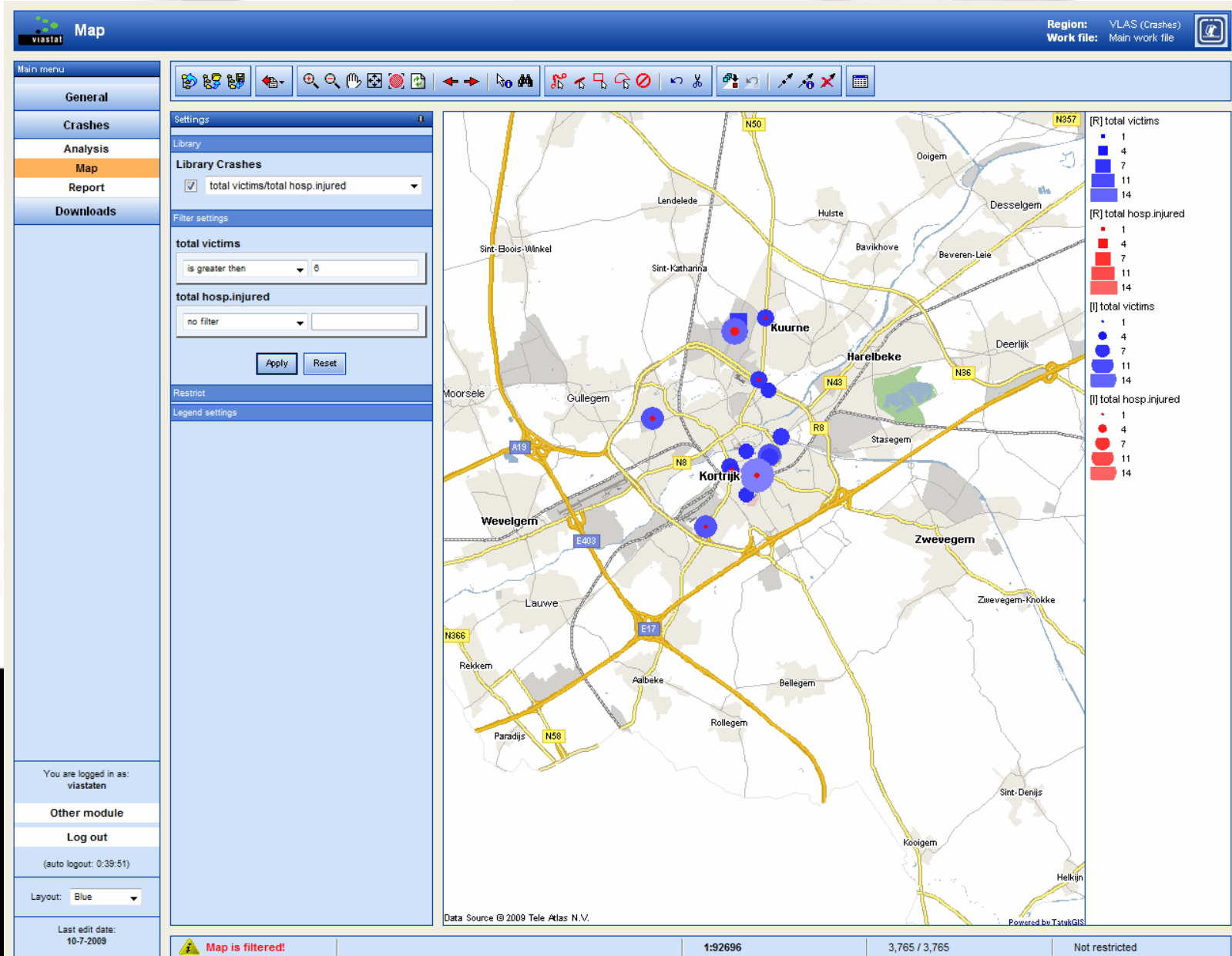
Layout: Blue

Last edit date: 10-7-2009

63 / 63 Has been restricted



Focus at black spots



t

Focus at locations: black spot

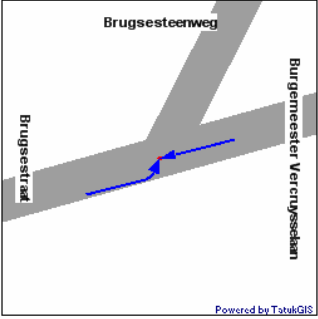
Map Region: VLAS (Crashes)
Work file: Main work file

Main menu: **General**, Crashes, Analysis, **Map**, Report, Downloads

Status: **Complete**

Data crash

Identification code (ID)	20041072
Police report	Available
Entered by	Demo User
Status	Complete
Choice of crash level	Level 2: no victims/maneuver data known
Location	Intersection
Region	Vlaams Gewest
Province	West-Vlaanderen
District	Kortrijk
Municipality	Kortrijk
City	Kortrijk
Postal code	8500
Streets (clockwise)	Brugsesteenweg (1) Burgemeester Vercruysselan (2) Brugsestraat (8)



Powered by TatakGIS


Change collision point

Data location

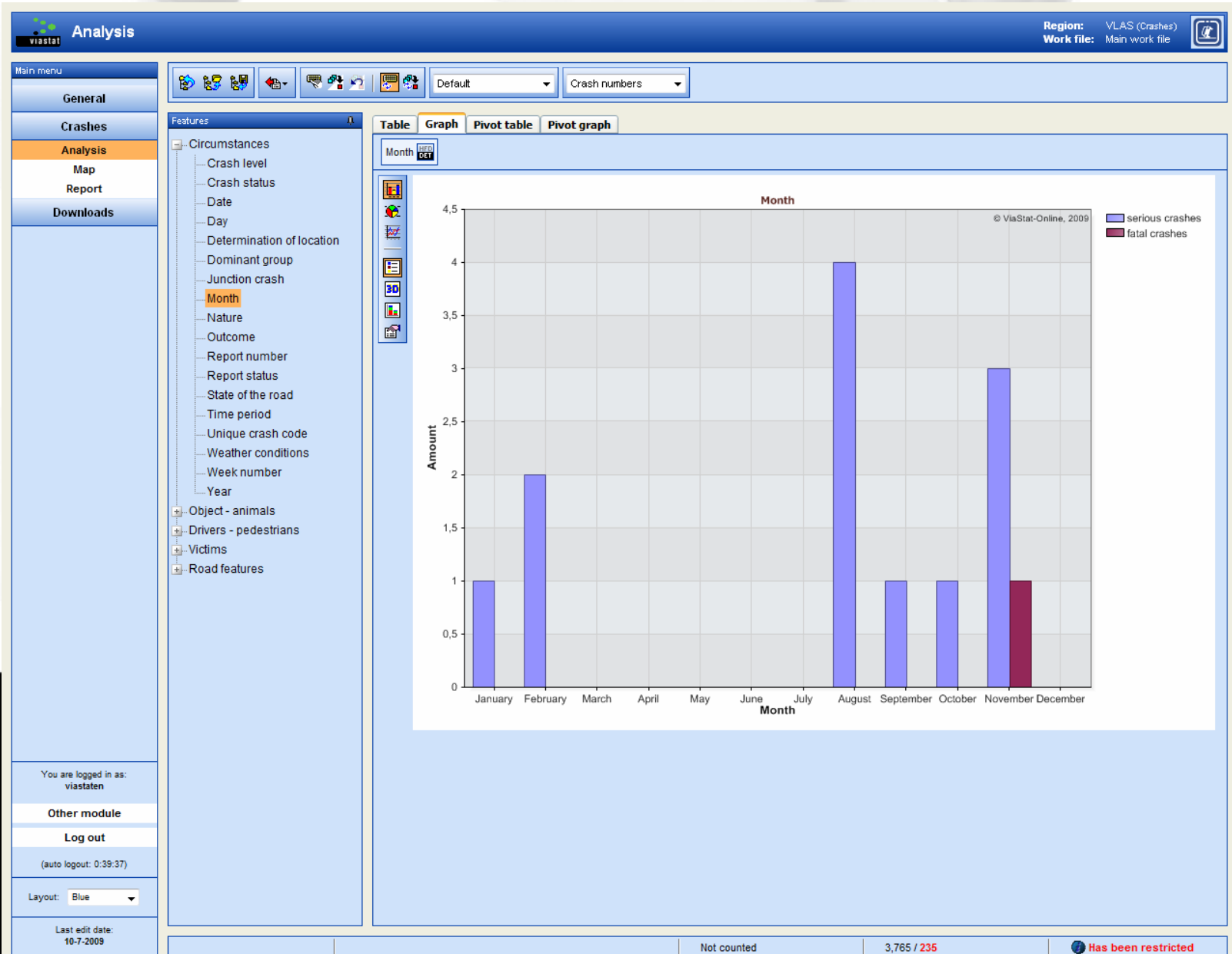
Date [M/d/yyyy]	6/30/2004
Time of day [h:mm tt]	12:47 PM
Built-up area	Within the built-up area
Speed Restriction (Min. 0 - Max. 999)	50
Determination of location	House number/junction
Report number	KO.91.L1.201400/2004
Weather conditions	Normal
State of the road	Dry

Data party 1

Type of party	Private car
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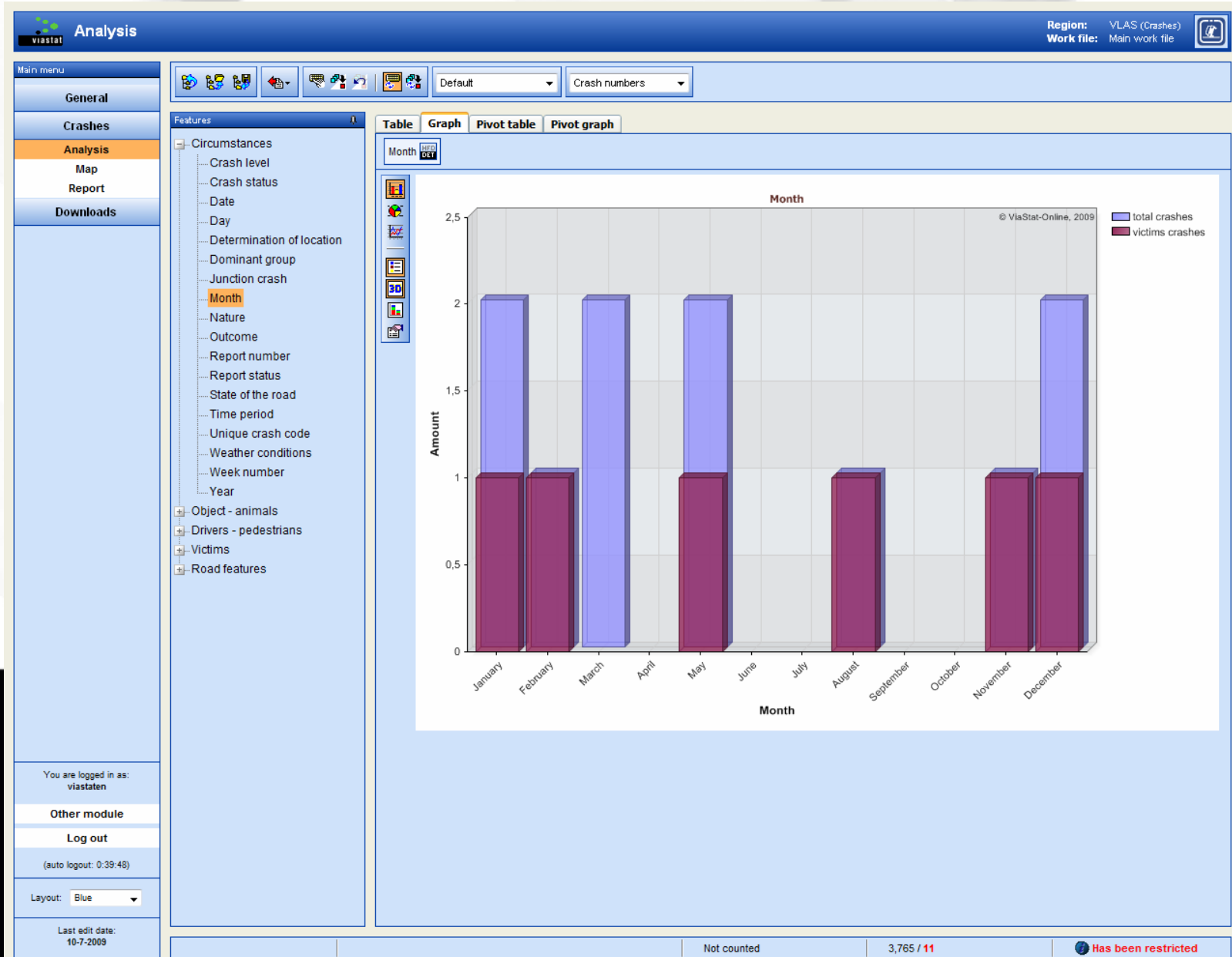


Focus at circumstances: weather 1



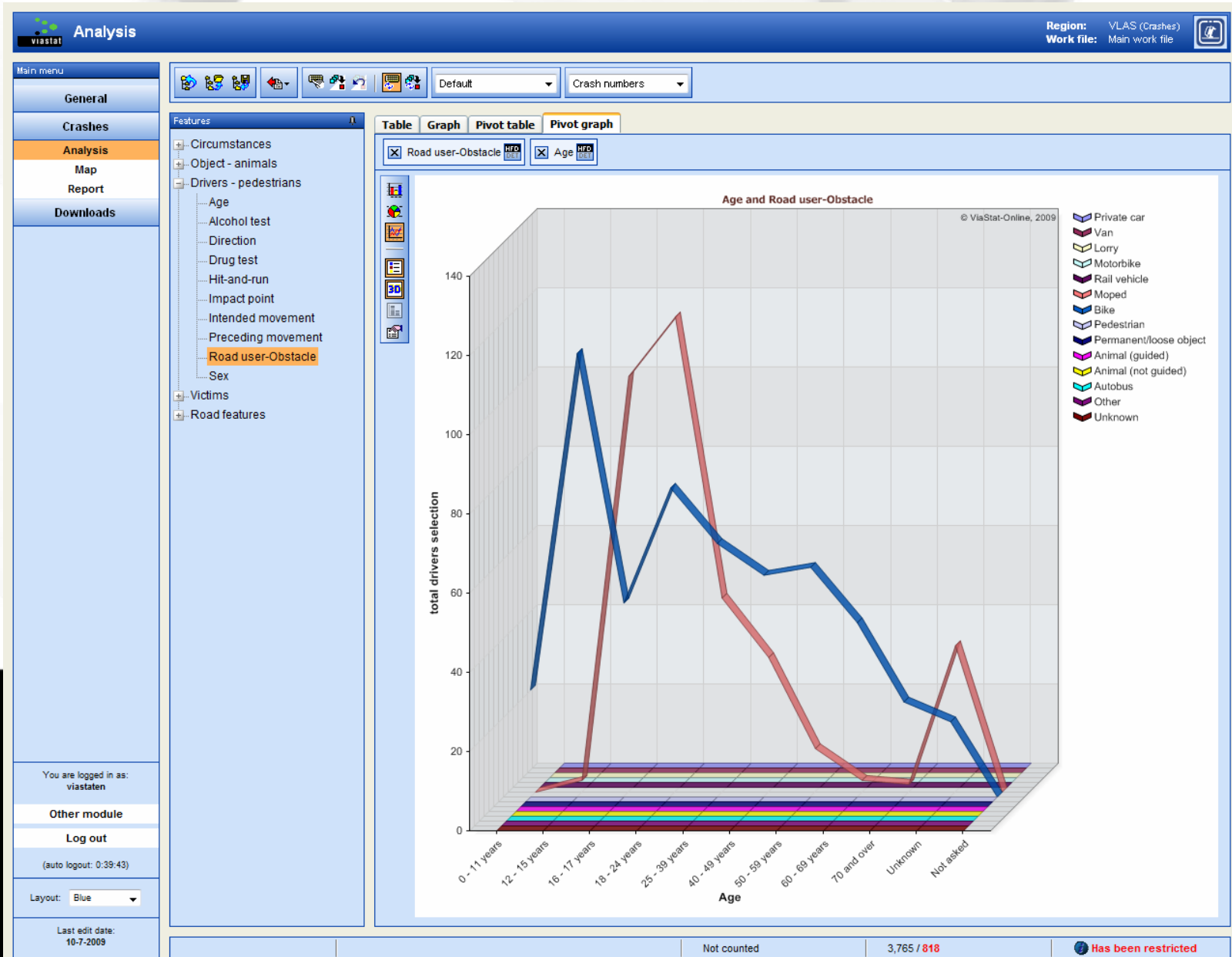
t

Focus at circumstances: weather 2



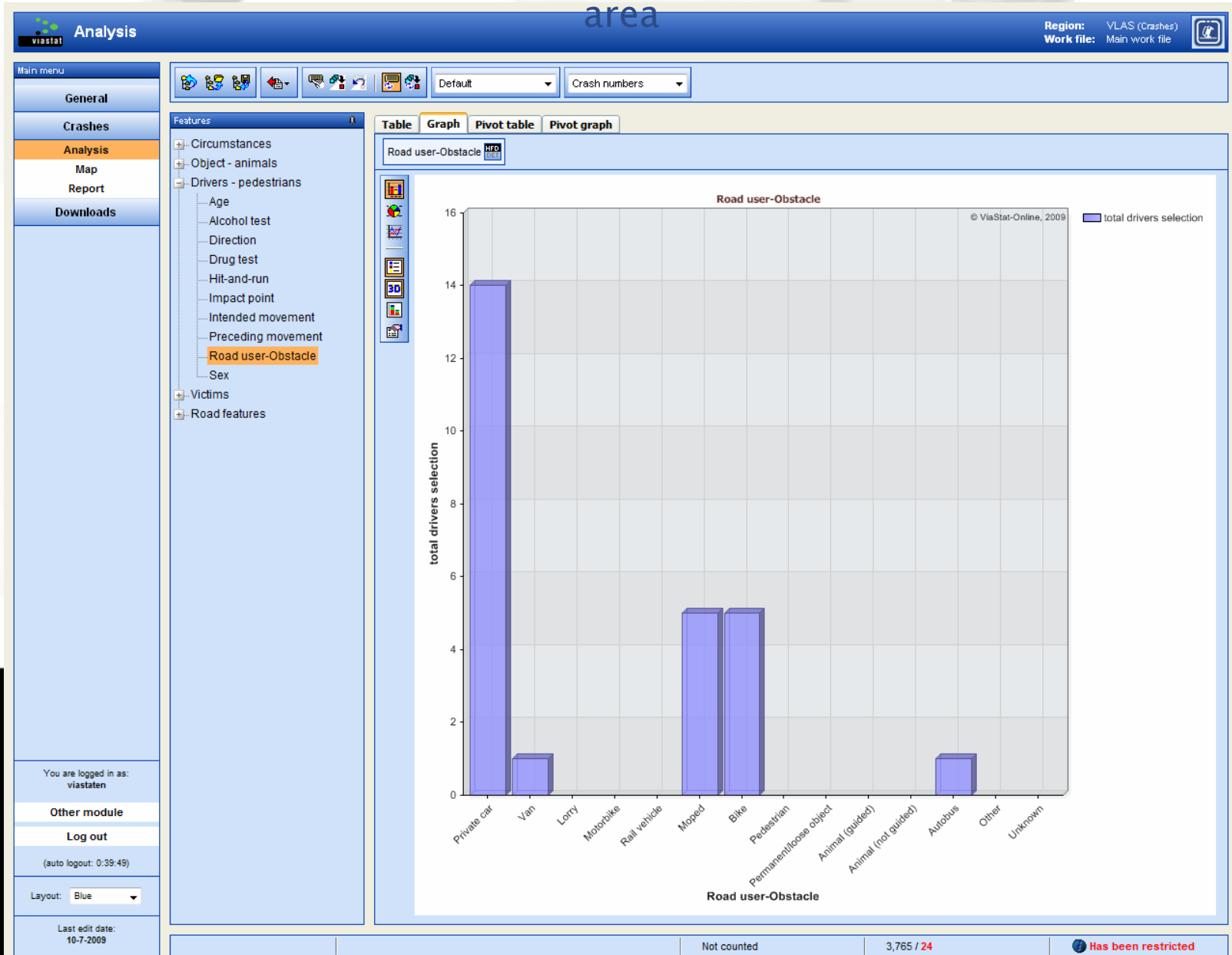
t

Focus at parties involved: target groups

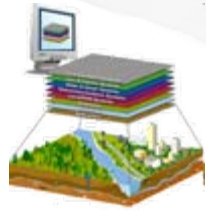


t

Focus at parties involved and specific area



Step by step



1970

1986

2002

2004

2005

2006

2007

2009

d'Ongeval

viastat

Verkeersopinie.nl
Uw mening over verkeer!

25 JAAR
via
.NL

TOMTOM

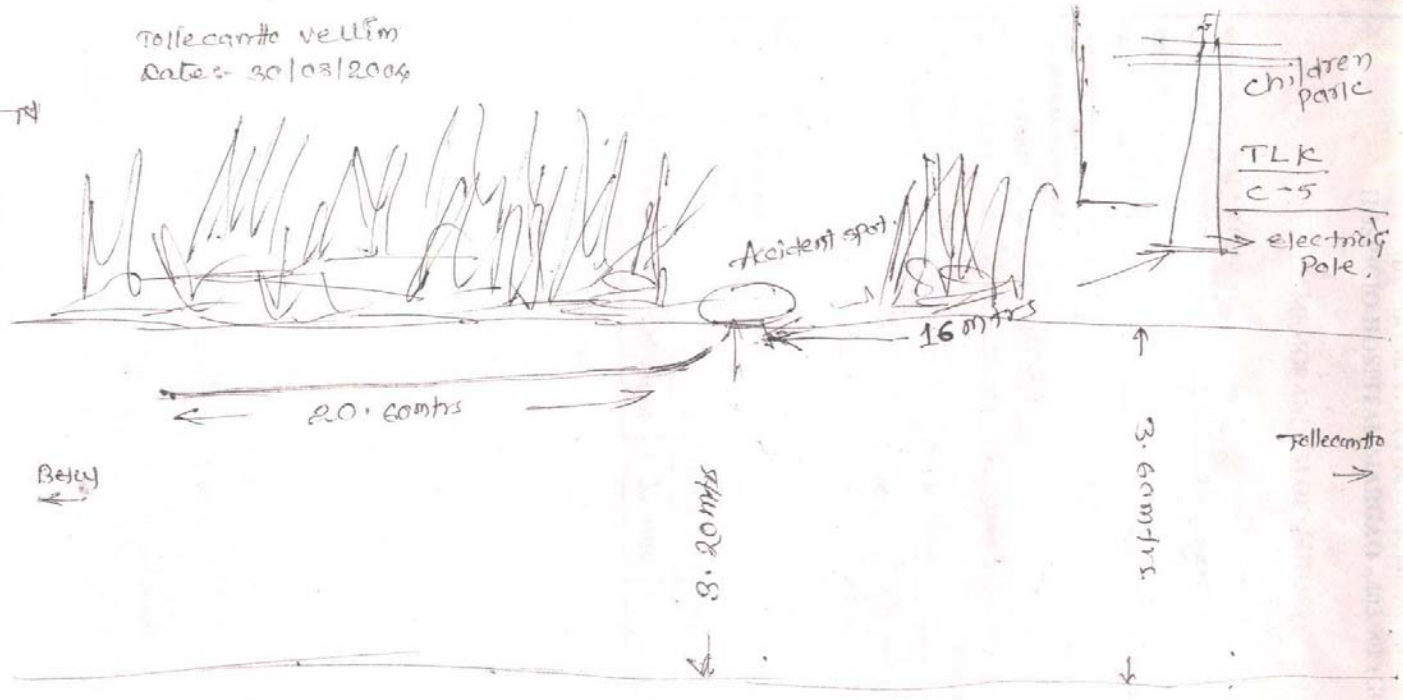


Integrated approach to road safety

page 20



Tollecamto vellim
 Date: 30/03/2006



'Before me'
 M. Mallon
 He 3548
 L.V. Panchas
 (He 3548)
 (Carolina P.S.)

Panchas 1) 6/10
 2) Pint



S.R.NO.: 314
CIPA-R1.11 00

FIRST INFORMATION REPORT
(Under Section 154 Cr.P.C.)

BOOK NO.: 1

1-A

1. District: FARIDABAD P.S: FARIDABAD CENTRAL Year: 2009 FIR No.: 314 Date: 29-06-2009

2. Act(s):
(i) Indian Penal Code 1860
(ii)
(iii)
(iv)

Section(s):
279/337

- The location of the accident spot is not clear. One cant locate the spot where the accident really happened. The location should be pinpoint and accurate.
- The GPS hand held devices should be used to mark the spot

(R/O)

(ii)

(iii)

8. Reason for delay in reporting by the complainant/Informant:

9. Particulars of the properties stolen/involved(attach separate sheet if necessary):

Sl.No.	Property Type(Description)	Est. Value(Rs.)	Status
(i)			
(ii)			
(iii)			

10 - Total value of property stolen:

11 - Inquest Report/U.D Case No., if any:



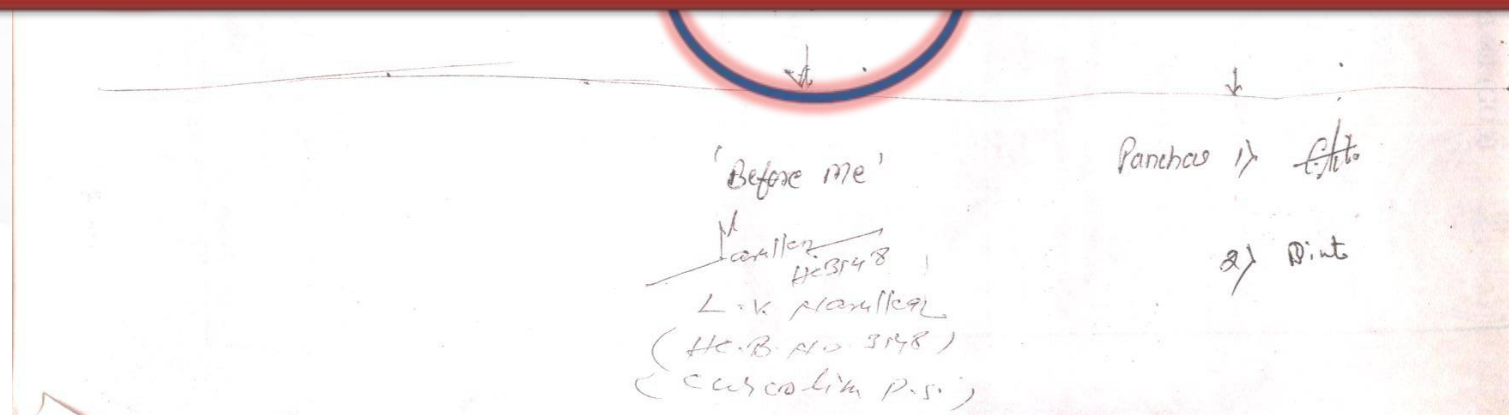
Integrated approach to road safety

page 22





- The location map of the accident is not attached to the Reporting Format.
- The landmark and building number outside which the accident occurred is also not the in the reports.
- If one can get the sketch of accident spot, not many things can be visualized out from that.
- The sketch should be clear and specific so that something can be carved



12 - F.I.R Contents(attach separate sheet.if required):

- The reporting done is more like a story rather than a investigating report.
- The reporting should be done in such a way so that cause of the accident cant be known.

सफदरजंग दिल्ली का रैफर कर दिया जो अब अशोक कुमार सफदरजंग हस्पताल मे अपना ईलाज करवा रहा है। लेकिन मेरा भाई अब आराम महसुस कर रहा है। इसलिए मेरे बड़े भाई के पास फील्मीस्तान गया है। यह Accident बस उपरोक्त के ड्राईवर जिसका बाद मे मझे नाम विजय मालूम हुआ की लापरवाही से हुआ है उसके खिलाफ कानुनी कार्यवाही की जावे ब्यान लिख दिया सुन लिया ठीक है।
Attested Sumer singh HC PP Sec 16 dt 19-8-09 R.T.I ईसलाम उर्फ छोटा कार्यवाही पुलिस .- आज एक टेलीफोन BKHगार्ड से पुलिस चौक से पुलिस चौकी पर प्राप्त हुआ कि अशोक पुत गोपाली निवासी जनता कालोनी डबूआ फरीदाबादल वा डबू पुत्र अबरार निवासी उजीयानी जिला बदायु RSAमे मजरूब होकर दाखिल BKH है। रूक्या व MLR BKHगार्ड से प्राप्त करे तथा कार्यवाही के लिए I/o भेजे जिस पर मन एच.सी.मय सि. विक्रम सिंह 1570 के बराये हसुल ब्यान मजरूबान BKHगार्ड से रूक्या वा MLR No SKA-553/09 dt 19-8-09 अजाने अशोक वा SKH-554/09 अजाने डबू प्राप्त करके डा0 साहब से राय हासिल की जिस पर डा0 साहब ने मजरूबान को अपनी मर्जी से जाना तहरीर किया गया है तथा पता चला है की मजरूबान सफदरजंग हस्पताल गये है जिस पर मन एच.सी.मय हमराही सि. के सफदरजंग हस्पताल पहुंचाई जहां पर डा0 साहब से मजरूबान बारे राय हासिल की जो डा0 साहब ने मजरूब अशोक कुमार उपरोक्त को unfit for statament तहरीर किया है तथा मजरूब डबू सफदरजंग मे दाखिल होना नहीं पाया तथा सफदरजंग हस्पताल मे श्री ईसलाम उर्फ छोटा पुत अबरार उपरोक्त ने मुलाकी होकर अपने उपरोक्त ब्यान तहरीर करवाये जो हरूफ बा हरूफ लिखे जाकर पढकर सुनाये जिसने अपने ब्यान को ठीक मानकर अपने ब्यान के नीचे अपने हस्ताक्षर बा हरूफ अपना दाहीने हाथ का अगुठा लगाया जिसकी मै तसदीक करता हूँ ब्यान बाला वा MLR उपरोक्त से मामला सरेदस्त सुरत जुर्म जेर धारा 279,337 IPC का होना पाया जाता है लिहाजा तहरीर हजा बराये कायमी मुकदमा बदस्त सि. विक्रम सिंह 1570 के अरसाल थाना है बाद कायमी मुकदमा नम्बर पर्चा से सुचित करे मन एच.सी. मुदई को हमरा लेकर रवाना घटना स्थल का होता हूँ। अज :- सफदरजंग हस्पताल दिल्ली Sd:- Sumer Singh HC PP Sec 16 dt 19-8-09 at 3-00 PM अज थाना 0--- उपरोक्त लेख थाना मे प्राप्त होने पर मुकदमा बाजुर्म दर्ज रजिस्टर किया जाकर प्रथम सूचना रिपोर्ट की प्रतियाँ नियमानुसार कम्प्यूटर द्वारा तैयार करके बजरिया डाक अफशरान बाला की सेवा मे भेजी जा रही है नकल मिशल पुलिस मय असल तहरीर आरिन्दा सिपाही के निज्द एच.सी. बर मौका भेजी जा रही है।

Problems with accident reporting

- ✓ In some of the case it is not clear how the accident happened (maneuvering) the detailed summary does not show that
- ✓ The condition of the road, road features, road geometry and type of junction are not clear in the Reporting Format
- ✓ The result of the alcohol tests after accidents which should be there are not present in the Reporting Format
- ✓ The effect of the weather condition and other miscellaneous things is not also mentioned
- ✓ The presence of road furniture on the road is also not clear
- ✓ In some of the cases what was the of impact of accident on the material and the machine is also not clear in the reporting format
- ✓ In some of the Reporting Format even the time of the accident is not clear

Improvements

- Proper training should be given to investigating officer so that he can have the clear view of the causes of the accident
- It is very important in accident investigation to collect the evidences within the first hour
- Use a GPS device for the exact location
- Use forms that collect data to build a digital database

New form for accident recording



ACCIDENT REPORTING FORM			
1. FIR NO.		2. DATED:	
4. STATE:		3. U/S:	
7. POLICE ZONE/STATION:		5. DISTRICT:	
8. ACCIDENT DATE:		6. CITY/TOWN/VILLAGE:	
9. TIME:			
10. DAY OF THE WEEK:			
11. SEVERITY:		12. No. of Vehicles Involved :	
1. Fatal		13. No. of Driver Casualties :	
2. Serious Injury		14. No. of Passenger Casualties :	
3. Minor Injury		15. No. of Pedestrian Casualties :	
4. Non Injury			
16. NAME OF ROAD:			
17. CLASSIFICATION OF ROAD:			
18. LOCATION OF AREA:			
19. TYPE OF AREA:			
20. WEATHER CONDITIONS:			
21. CAUSE OF ACCIDENT:			
22. LIGHT CONDITIONS:			
23. TYPE OF TRAFFIC CONTROL:			
24. INTERSECTION TYPE:			
25. NATURE OF ACCIDENT:			
26. NATURE OF ACCIDENT:			
27. HIT & RUN:			
28. ROAD CHARACTER:			
29. TYPE OF SURFACE:			
30. SURFACE CONDITION:			
31. NATURE OF SURFACE:			
32. ROAD FEATURES:			
33. SKETCH OF THE SITUATION (Mark Distances)			

VEHICLE		REGISTRATION NO.		VEHICLE		REGISTRATION NO.	
35. Owner's Name:		36. Address:		35. Owner's Name:		36. Address:	
37. VEHICLE DETAILS:		40. VEHICLE MANOEUVRE:		37. VEHICLE DETAILS:		40. VEHICLE MANOEUVRE:	
38. VEHICLE DEFECTS:		39. TYPE OF DAMAGE:		38. VEHICLE DEFECTS:		39. TYPE OF DAMAGE:	
41. FITNESS CERTIFICATE:		42. LICENSE NUMBER:		41. FITNESS CERTIFICATE:		42. LICENSE NUMBER:	
43. DRIVER'S NAME:		44. ADDRESS:		43. DRIVER'S NAME:		44. ADDRESS:	
45. DRIVER SEX:		46. DRIVER AGE:		45. DRIVER SEX:		46. DRIVER AGE:	
47. ALCOHOL/DRUGS:		48. TYPE OF LICENSE:		47. ALCOHOL/DRUGS:		48. TYPE OF LICENSE:	
49. SEAT BELT/HELMET:		50. VEHICLE MANOEUVRE:		49. SEAT BELT/HELMET:		50. VEHICLE MANOEUVRE:	
51. FROM VEH. IN WHICH OF THE ABOVE VEHICLE PASSENGER WAS TRAVELLING:		52. INJURY:		51. FROM VEH. IN WHICH OF THE ABOVE VEHICLE PASSENGER WAS TRAVELLING:		52. INJURY:	
53. PASSENGER POSITION:		54. PED. ACTION:		53. PASSENGER POSITION:		54. PED. ACTION:	
55. BELT/HELMET:		56. HIT BY:		55. BELT/HELMET:		56. HIT BY:	
57. OTHER IMPROPER ACTIONS (specify):		58. HIT BY:		57. OTHER IMPROPER ACTIONS (specify):		58. HIT BY:	



Integrated approach to road safety



Reports from ViaStat



Data crash

Identification code (ID)	20024
Police report	Available
Entered by	use6a-1051
Status	Complete
Choice of crash level	Level 3: victims/maneuver data known
Location	Intersection
Region	Haryana
District	Faridabad
Province	Balkeghar
Municipality	Faridabad
City	Faridabad
Postal code	
Streets (clockwise)	Lal Bahadur Shastri Marg (EN4) (3) Mathura Road (EN4) (9) Lal Bahadur Shastri Marg (EN4) (9) Mathura Road (EN4) (12)

Data location

Date (M/d/yyyy)	8/6/2009
Time of day (h:mm tt)	9:45 PM
Build-up area	Within the built-up area
Speed Restriction (Min. 0 - Max. 999)	0
Determination of location	House number/junction
Report number	379 vis 273037 , Dated 6-8-2009
Weather conditions	Normal
State of the road	Dry

Data party 1

Type of party	Motorbike
Impact point (Detail)	Front side middle
Preceding movement (Detail)	Moving forward with constant speed

License plate number	HR 29 T 6785
Road user-Obstacle (Detail)	Motorbike
Hi-and-run	Not run away

Data person involved 1

Date of birth (M/d/yyyy)	Unknown
Sex	Man
Seriousness	Seriously injured
Alcohol test	None proposed
Drug test	None proposed

Data person involved 2

Date of birth (M/d/yyyy)	Unknown
Sex	Man
Seriousness	Slightly injured
Alcohol test	None proposed
Drug test	None proposed

Data party 2

Type of party	Private car
Impact point (Detail)	Left side middle
Preceding movement (Detail)	Moving forward with constant speed
License plate number	HR 51 A C 2081
Road user-Obstacle (Detail)	Private car
Hi-and-run	Run away

Pilot in Faridabad

Report Region: Faridabad (Crashes)
Work file: Main work file

Main menu: **General**, Crashes, Analysis, Map, **Report**, Downloads

Status: Complete

Data crash

Identification code (ID)	- NEW -
Police report	Available
Entered by	user9a-1031
Status	Complete
Choice of crash level	Level 3: victims/maneuver data known
Location	Intersection
Region	Haryana
District	Faridabad
Province	Ballabgarh
Municipality	Faridabad
City	Faridabad
Postal code	
Streets (clockwise)	- () (3) Shahid Bhagat Singh Marg (ENG) (6) Shahid Bhagat Singh Marg (ENG) (11)

Data location

Date [M/d/yyyy]	10/16/2009
Time of day [h:mm tt]	9:31 AM
Built-up area	Within the built-up area
Speed Restriction (Min. 0 - Max. 999)	0
Determination of location	House number/junction
Report number	123456789
Weather conditions	Normal
State of the road	Dirt (sand, gravel, leaves,...)

Data party 1

Type of party	Private car
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Shahid Bhagat Singh Marg
Shahid Bhagat Singh Marg
Powered by TutukGIS
[Change collision point](#)



Implementation

- » The Netherlands is utilising this knowledge
- » VIA is involved in this process and developed the software
- » However traffic situation in The Netherlands can't directly compared to that in India
- » Traffic on the other hand is largely comparable

→ VIA therefore proposes to share its knowledge and to customise the software for the circumstance in India

Thank you !

