

Crash Magic Online

Demo Notes



Pd' Programming, Inc.
Lafayette, CO
www.pdmagic.com

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1 Program Overview

1.1 History

- Pd' Programming was founded 25 years ago, in 1987 with the first release of the crash records analysis product "Intersection Magic".
- In 2005, development began on "Crash Magic Online". This product became very popular with state DOT's.
- We now produce both Crash Magic Online and Intersection Magic. A Map Magic ESRI plugin is available for both products.
- Intersection Magic support is now in maintenance mode. Full support, but no additional development except bug fixes. IMW requires a 32-bit operating system.
- Crash Magic currently supports
 - diagrams (including corridors)
 - charts
 - individual crash and aggregate location pin-maps (supported completely internally utilizing ESRI's ArcGIS Online or ArcGIS Server)
 - listings
 - cross-tabs
 - high crash location lists
 - Layouts that combine multiple reports into a single document
 - data entry
 - inter-program communication. (i.e. from your other crash data software)
 - database no longer limited to 52 fields. Now supports any number of fields with any data types.

All of these reports are user-customizable. Hundreds of permutations are possible.

1.2 Browser Based

- Crash Magic operates as a web server, providing reports to client browsers.
- The server that hosts Crash Magic maintains all reports, filters, settings, configuration information, database connections, user information, etc.
- The client browser contains no unique data or software that needs to be backed up or configured.
- Any browser that can connect with the server can be used for analysis.

- Printing done through PDF templates
- Updates to the software are performed on the server, never on the client computers
- SVG or Silverlight viewers provide interactive graphics (working on HTML5 diagrams, perhaps embedded in GIS maps)
- Administration is also performed through a browser, but uses a different login
- Security is defined for "Analysis", "Data entry", "Group administrator", "Master administrator" and "Installation administrator"

1.3 Data flow through Crash Magic

Crash Magic connects directly to standard SQL databases including Oracle, MS SQL Server, DB2 and MySQL.

Most of our users have unique data. This means table layouts, relationships, list of fields, field meanings, and data structure. In order for the program to make use of your unique data, Crash Magic uses settings stored in several xml records. These records, when taken together are described as your "configuration". Preparation of this configuration is usually a part of the purchase of the program.

The access to crash data from the analysis side of the program is "read only". This means that there is no data conversion or even the possibility of changing your crash data from the analysis side of Crash Magic. While reading your crash data, the program uses "calculated fields" to "normalize" the data for use in the program.

In addition to the data to be analyzed, (crash data) Crash Magic requires a "system" database which holds configuration information as well as the projects, studies, reports, users and report settings. Users of the program do not typically address the system database directly.

Unlike Intersection Magic, there are no restrictions on number of fields or field types. There is full support for officer annotations, photos, scanned reports, etc.

1.3.1 Cloud hosted

Pd' Programming uses Microsoft SQL Server for our hosted service.

Data may be provided to Crash Magic through a variety of methods. All data imports use XML as their final import format. Pd' Programming provides the ability to convert data from other formats to XML prior to import:

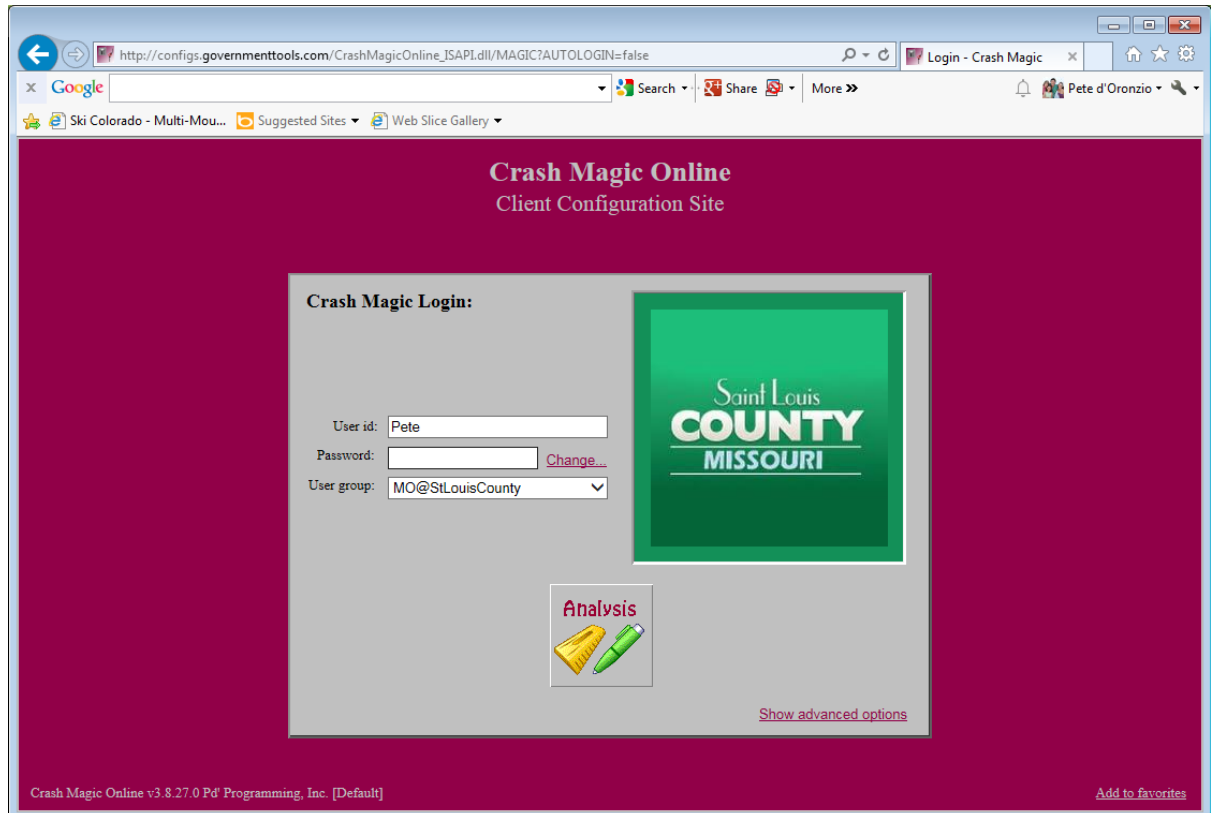
- Import from ASCII files. No charge, predefined importers exist for:
 - Arizona ALISS
 - California SWITRS
 - Colorado DOT - in progress
 - Iowa SAVER

- Oregon TDS
- Import from MS Access (mdb) data files
- Import from any MS ADO supported data format
- In addition, Pd' Programming can set up a periodic sync to an existing SQL Server.

Files may be sent via FTP or HTTP (within the program)

2 Login

Crash Magic has been specifically designed to separate analysis tasks from administrative tasks at program login. The login screen displays "Analysis" as the primary login method.

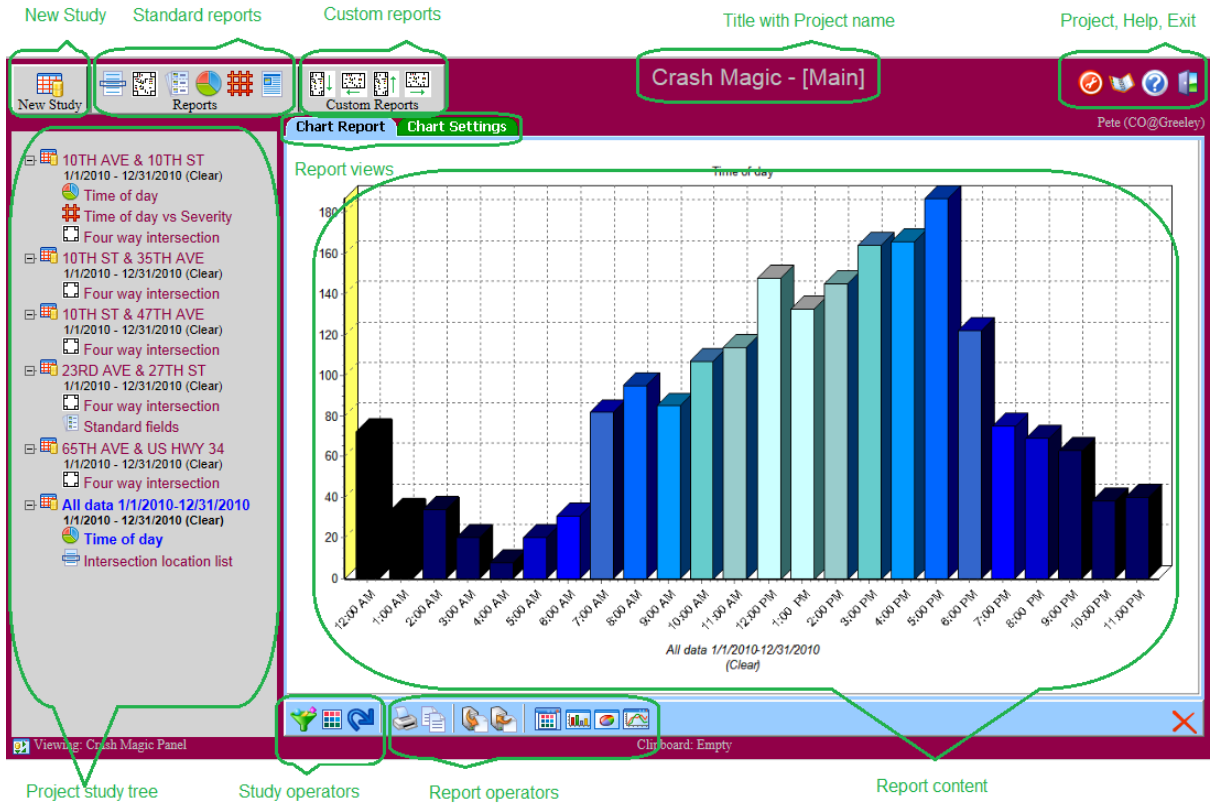


In addition to "Analysis", the user may choose data entry, or they may select "Show advanced options" to expose administrator logins.

Administrative tasks include pre-defined report creation, standard template creation, user and group management, database queries and other "behind-the-scenes" program settings.

3 Main form

The "main form" always contains the following elements:



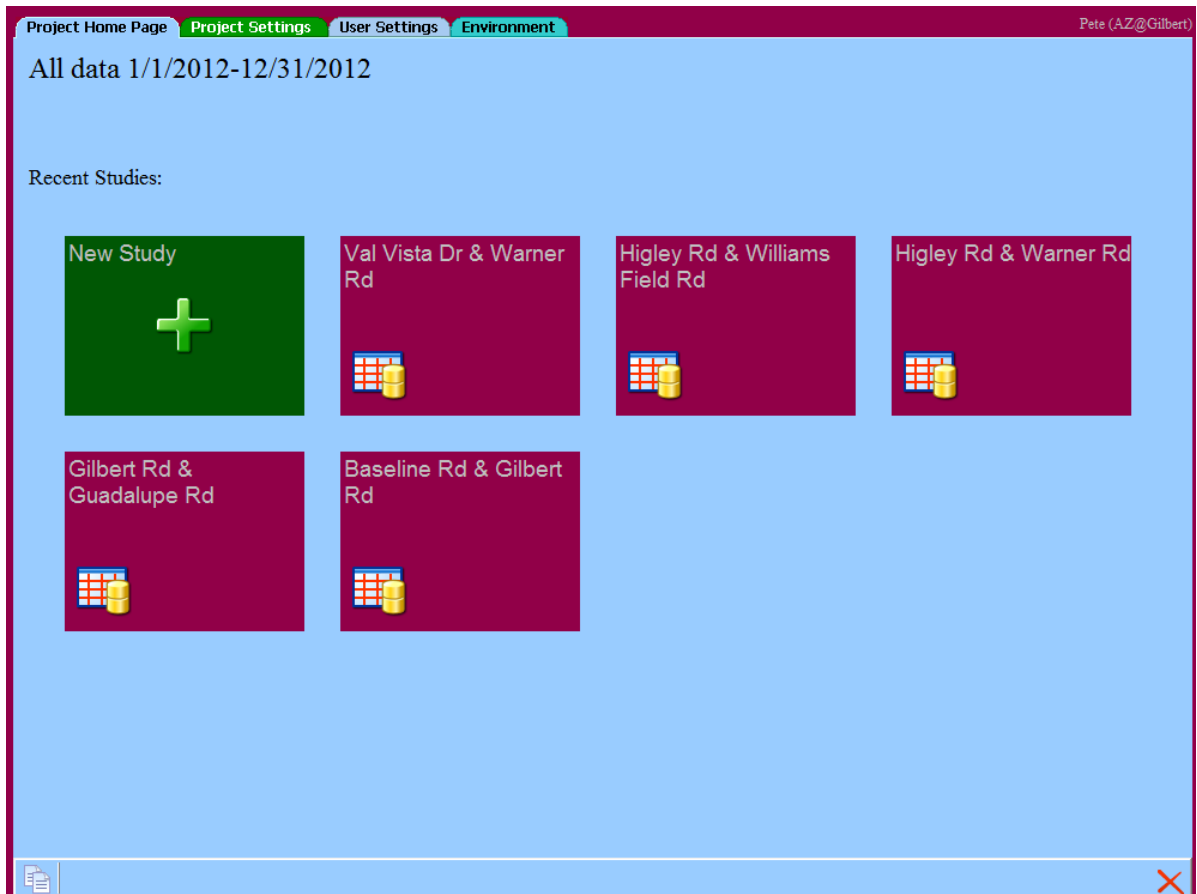
4 Projects

Crash Magic uses projects to organize your work. When you first log in, a project called "Main" is created for you. For some, this will be the only project they ever use. For others, projects will be the basis for groups of work or data they are analyzing. Some project uses:

- Pedestrian or bicycle studies
- Red light running studies
- Injury or Fatality reporting
- End of year report
- Response to specific resident or City Council question / complaint
- Group of reports to share with colleagues
- Collection of data/reports prepared for the media

4.1 Project home page

The default page for Crash Magic is called the "Project home page". This page contains references to recent studies, as well as project settings. Each project has its own home page.



4.2 Project tree

Each Crash Magic user has a "tree" of information linked to each project. This tree contains studies, (the data) and reports using those studies.

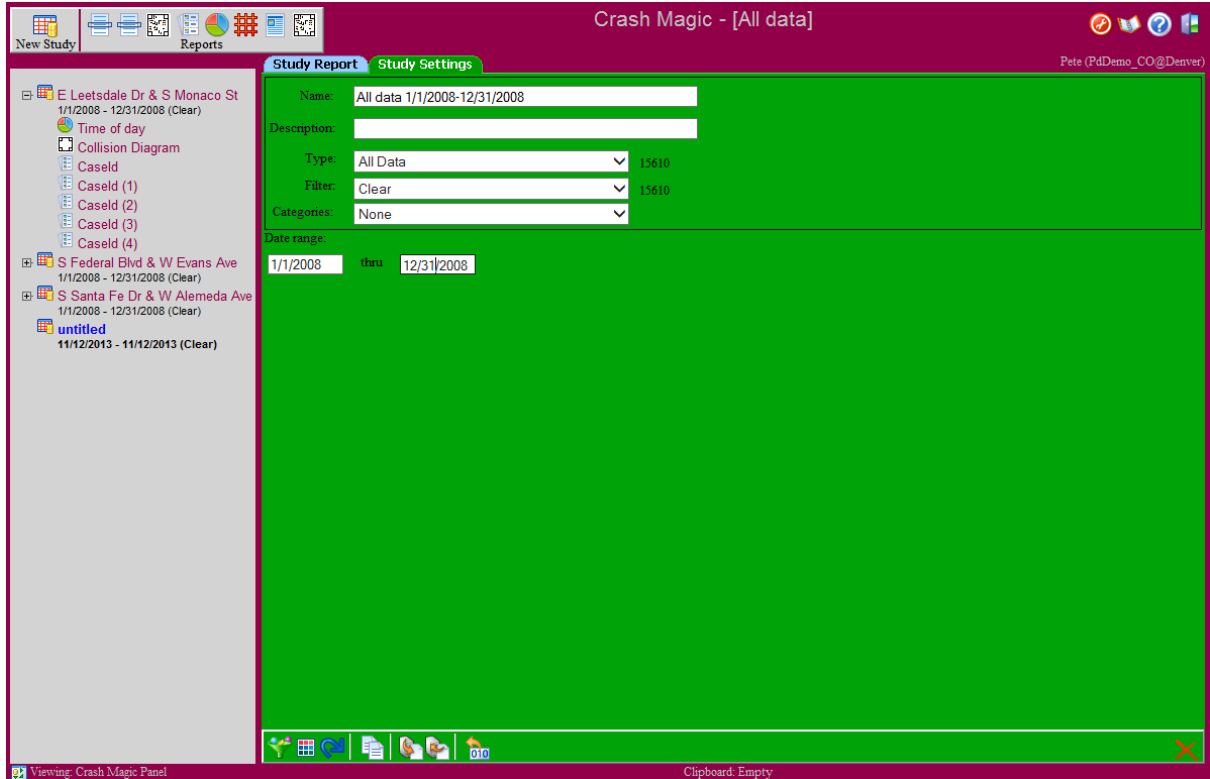


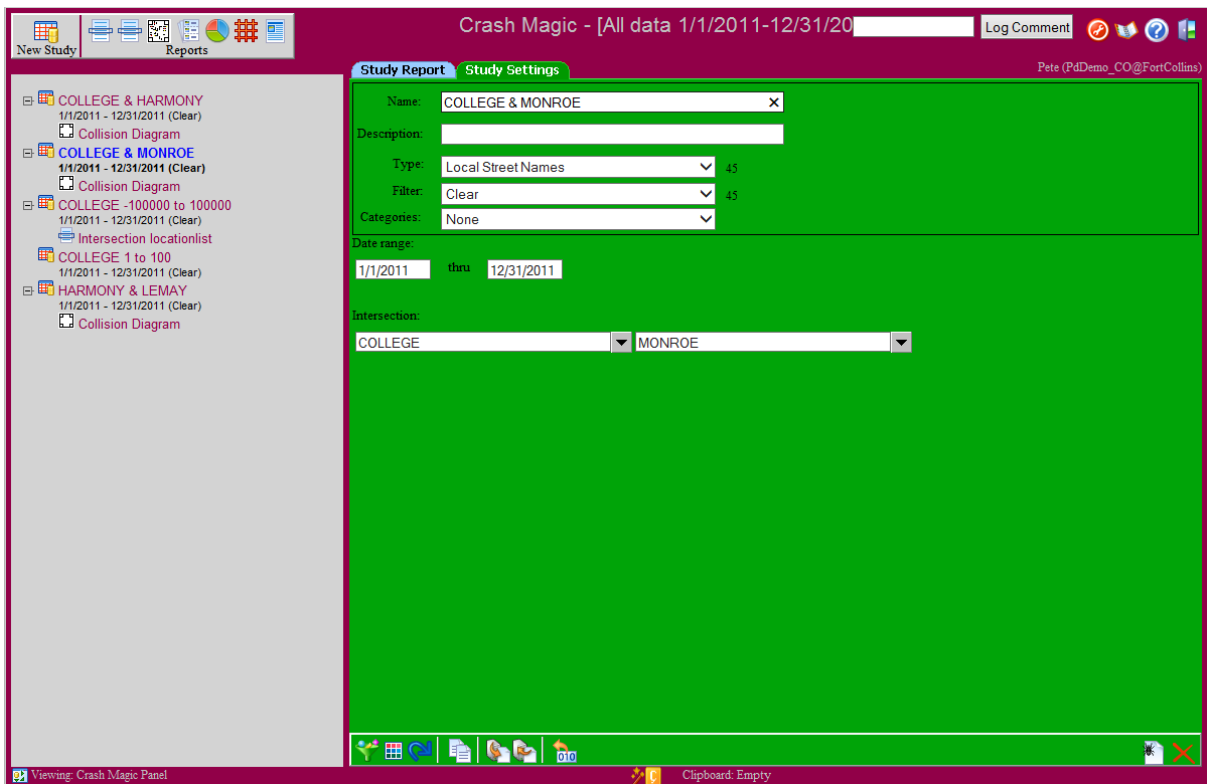
Your project tree is preserved between sessions and is available wherever you login from.

5 Studies

A study is a reference to a data set, or query. Each study contains the information required to query the database for crash data. Studies also encapsulate filters and category lists.

A given study will accept different parameters depending on its type. For example, an "All Data" study only accepts a start and end date. An "Intersection" study also accepts a primary and cross street.





5.1 Study types

Depending on how your crashes are stored you could have one or more different types of studies. A number of different study types are available:

- All Data
- Case Id
- Intersection
- *Intersection corridor (coming soon)*
- Route + Milepost
- X,Y Coordinate
- Street address
- Node
- Case Id list
- User CID 1 and 2

6 Reports

6.1 Collision diagrams

A collision diagram is a schematic representation of a group of crashes. The template used to arrange the crashes on the display is referred to as a diagram schematic. A variety of schematics are available that describe location types such as intersections, T's, corridors, etc. There are about 100 different schematics packaged with the program. Custom schematics can be created (in administrator mode) by copying an existing schematic or starting from scratch.

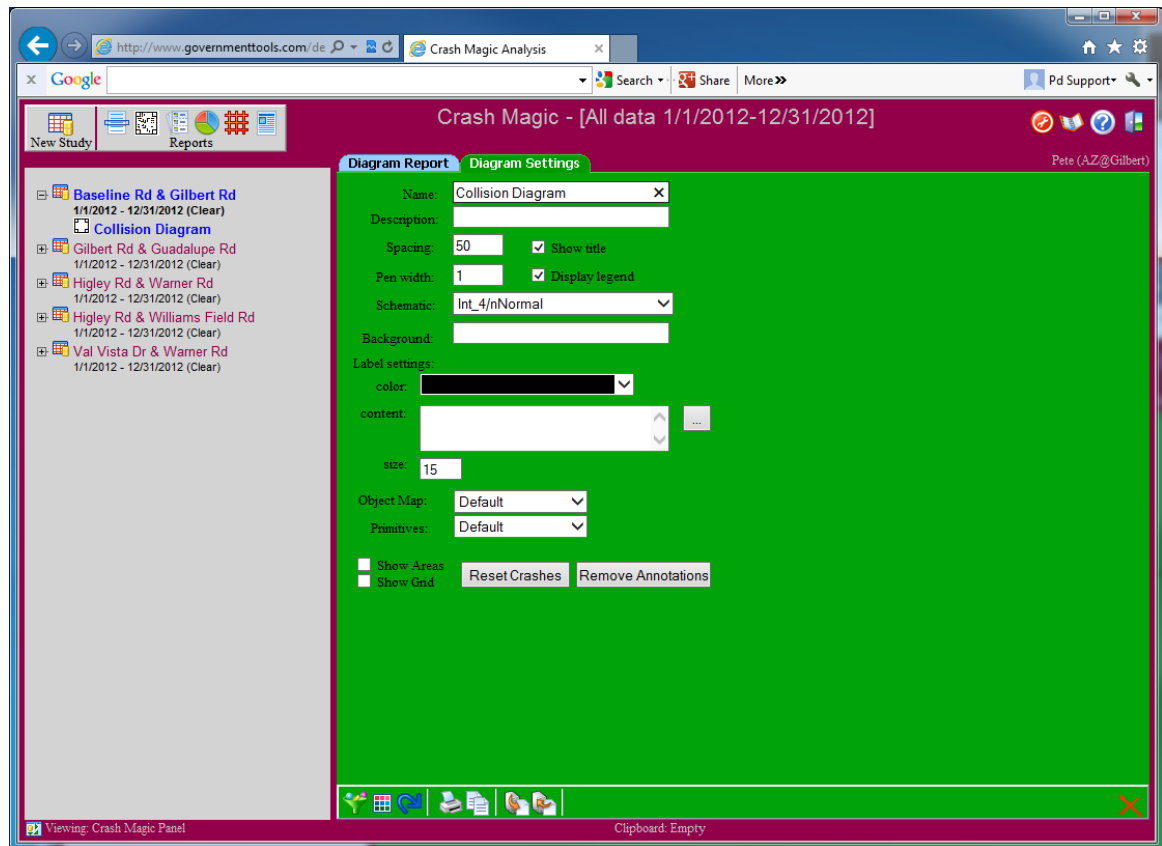
Collision diagrams provide a click-on report to show the details of a particular crash record. This report may show a map, scanned report, photo, any fields from the database, or other crash-related information.

The screenshot displays the Crash Magic software interface. The main window is titled "Crash Magic - [All data 1/1/2012-12/31/2012]". The interface is divided into several panels:

- Left Panel:** A list of study locations including "Baseline Rd & Gilbert Rd", "Gilbert Rd & Guadalupe Rd", "Higley Rd & Warner Rd", "Higley Rd & Williams Field Rd", and "Val Vista Dr & Warner Rd".
- Diagram Report Panel:** Displays a "Collision Diagram" for "45 crashes". The diagram shows a schematic of an intersection with various crash icons and labels. A legend below the diagram lists crash types such as Straight, Stopped, Unknown, Backing, Overtaking, Sideswipe, Parked, Erratic, Out of control, Right turn, Left turn, U-turn, Pedestrian, Bicycle, Injury, Fatality, Nighttime, DUI, and Fixed objects (General, Pole, Signal, Tree, Curb, Animal).
- ClickOn Panel:** Provides details for a specific incident:
 - Incidentid: 2657306
 - Incidentdate: 10/12/2012
 - Googlemap: Includes a small satellite map view.
 - Age_Drv1: 24
 - Age_Drv2: 2
 - Collisionmanner: Single_Vehicle
 - Estimatedspeed_One: 45
 - Estimatedspeed_Three: 3
 - Firsttharmfile: Utility_Pole_Light_Support

The bottom status bar shows "Viewing: Crash Magic Panel" and "Clipboard: Empty".

Most diagram settings are made using this panel.



6.2 Charts

Charts are created using "category lists". A category list is merely a field grouped into categorical values. Any field in the database may be used as a category list, and fields that are already categorical can be used directly.

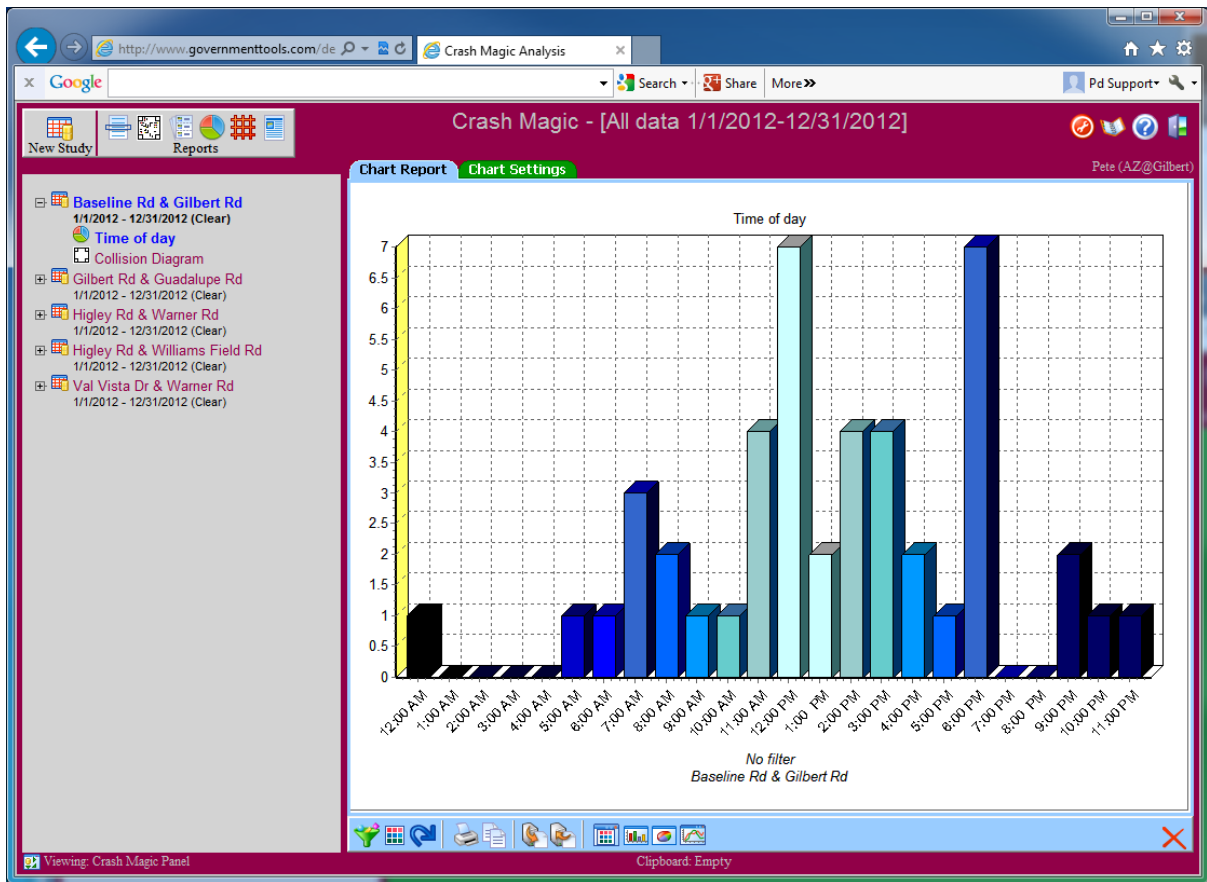


Chart settings include chart type, annotations, fonts, etc.

The screenshot shows a web browser window with the URL <http://www.governmenttools.com/de> and a tab titled "Crash Magic Analysis". The browser's address bar contains "Google" and "Search". The main application window is titled "Crash Magic - [All data 1/1/2012-12/31/2012]" and features a user profile "Pete (AZ@Gilbert)".

The interface is divided into a left sidebar and a main content area. The sidebar lists several study locations, each with a "Clear" button:

- Baseline Rd & Gilbert Rd (1/1/2012 - 12/31/2012)
- Time of day (selected)
- Collision Diagram
- Gilbert Rd & Guadalupe Rd (1/1/2012 - 12/31/2012)
- Higley Rd & Warner Rd (1/1/2012 - 12/31/2012)
- Higley Rd & Williams Field Rd (1/1/2012 - 12/31/2012)
- Val Vista Dr & Warner Rd (1/1/2012 - 12/31/2012)

The main content area is titled "Chart Report" and "Chart Settings". It contains the following configuration options:

- Name: Time of day
- Description: (empty field)
- Bottom title: (empty field)
- Chart type: Bar
- Sort Order: None
- Category list: Time of day
- Show Empty Bins:
- Text attributes: Title | Legend | Marks | Left axis | Bottom axis | Footer

The "Text attributes" section is expanded to show settings for the "Title" element:

- Visible:
- Font Size: 10
- Font Color: Black

A small preview window shows a pie chart with a "Title" label and a "Footer" label. The bottom status bar indicates "Viewing: Crash Magic Panel" and "Clipboard: Empty".

6.3 Crash listings

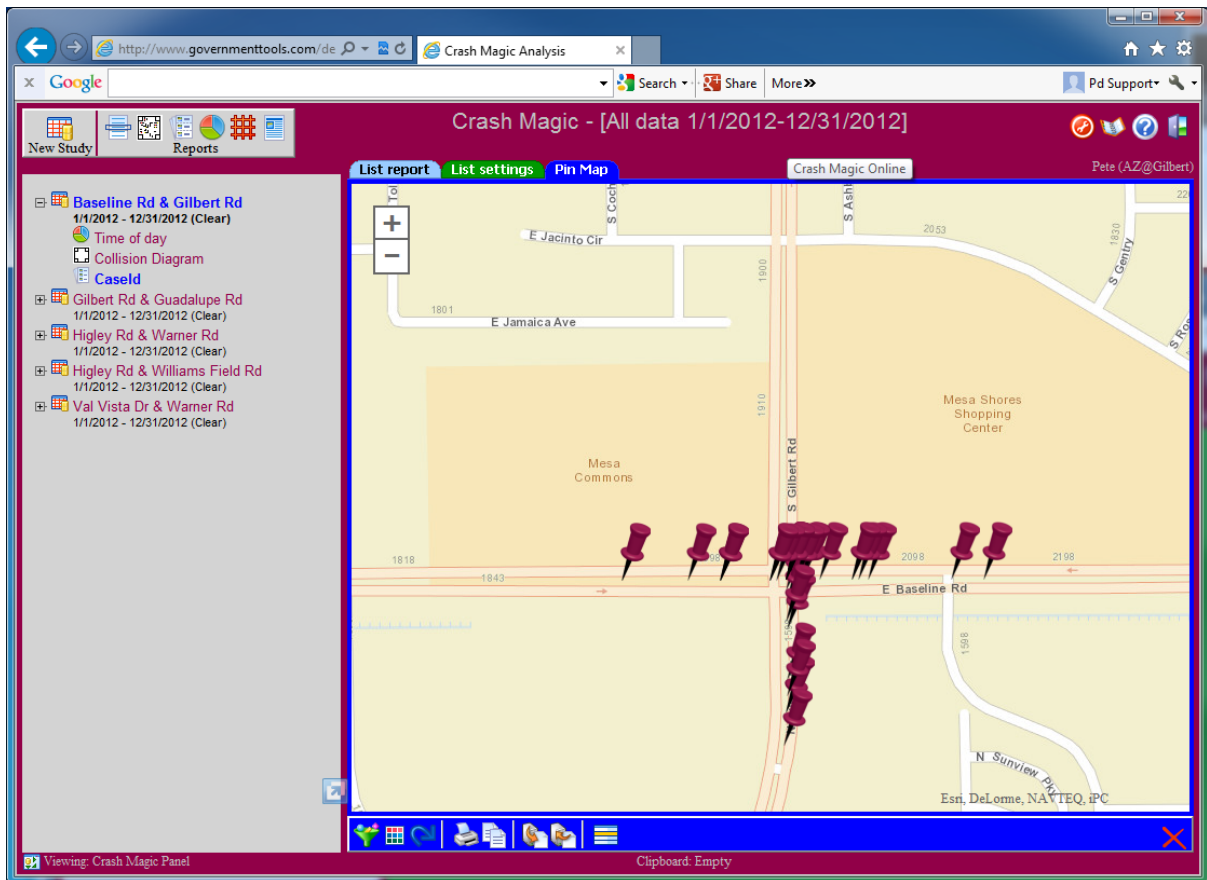
This report presents you with a list of crashes from the current study. You can select the fields to display by editing the report format.

The screenshot shows the 'Crash Magic' software interface. The title bar indicates the URL is <http://www.governmenttools.com/de> and the page title is 'Crash Magic Analysis'. The main content area is titled 'Crash Magic - [All data 1/1/2012-12/31/2012]'. On the left, there is a navigation pane with a tree view showing study locations: 'Baseline Rd & Gilbert Rd', 'Gilbert Rd & Guadalupe Rd', 'Higley Rd & Warner Rd', 'Higley Rd & Williams Field Rd', and 'Val Vista Dr & Warner Rd'. The main area has tabs for 'List report', 'List settings', and 'Pin Map'. Below the tabs is a 'CaseId' filter and a table of crash data.

CaseId	Date	Time
2652462	9/24/2012	10:53 am
2649773	6/17/2012	5:30 pm
2654377	9/21/2012	6:46 pm
2657306	10/12/2012	1:28 pm
2656768	9/28/2012	4:42 pm
2649296	6/15/2012	12:52 pm
2643125	8/21/2012	6:46 pm
2638704	8/3/2012	9:29 pm
2643872	8/30/2012	7:30 am
2649068	9/9/2012	12:4 am
2645638	8/29/2012	12:25 pm
2677570	12/22/2012	6:12 pm
2675869	12/11/2012	6:45 pm
2680064	12/17/2012	11:48 pm
2746861	2/8/2012	8:36 am
2680102	12/29/2012	6:16 pm
2674453	11/29/2012	11:39 am
2667578	11/15/2012	6:35 pm
2667024	11/14/2012	3:33 pm

6.3.1 Listing pin map

Listings may be presented as pin maps by creating a field list that includes latitude and longitude fields.



6.4 High crash locations

High crash locations lists are available for intersections and nodes. Development is underway to support sliding spot or "sliding window" reports.

These lists support ranking by user-defined expressions, including access to other databases, such as roadside inventory. The default ranking is count, and a rate report is available as well.

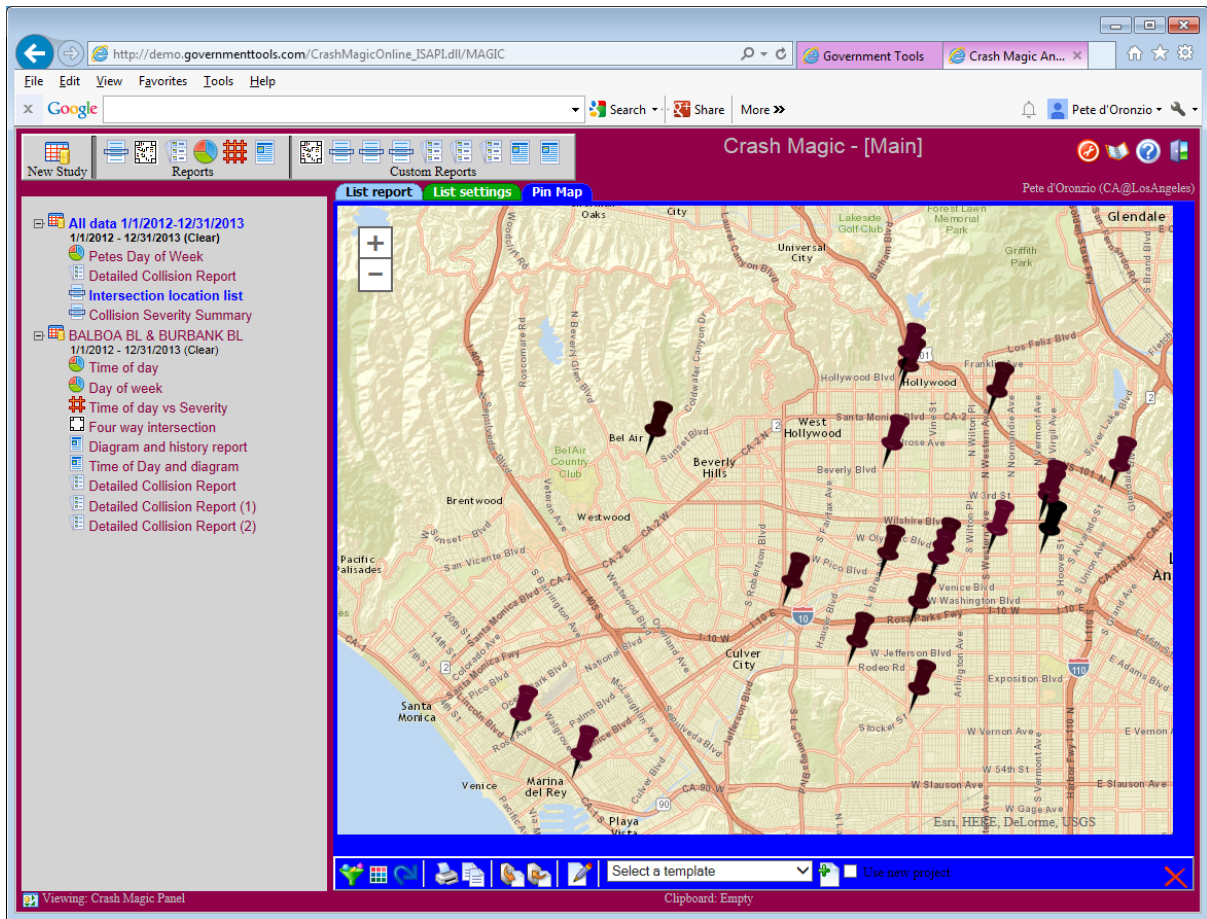
The screenshot shows a web browser window with the URL <http://www.governmenttools.com/de> and the page title 'Crash Magic Analysis'. The application interface is titled 'Crash Magic - [Main]' and includes navigation tabs for 'List report', 'List settings', and 'Pin Map'. The user is identified as 'Pete (AZ@Gilbert)'. The main content area displays a 'High Crash Location List' for a report run on 9/8/2013 at 7:16:43 PM (GMT-6). The table lists 21 locations with their respective counts, and the first 8 rows are selected with checkboxes.

Choose the rank	location	Count
<input type="checkbox"/>	1 Baseline Rd & Gilbert Rd	45
<input type="checkbox"/>	2 Gilbert Rd & Guadalupe Rd	45
<input type="checkbox"/>	3 Val Vista Dr & Warner Rd	43
<input checked="" type="checkbox"/>	4 Higley Rd & Williams Field Rd	42
<input checked="" type="checkbox"/>	5 Higley Rd & Warner Rd	41
<input checked="" type="checkbox"/>	6 Elliot Rd & Val Vista Dr	35
<input checked="" type="checkbox"/>	7 Baseline Rd & Higley Rd	33
<input checked="" type="checkbox"/>	8 Lindsay Rd & Warner Rd	33
<input type="checkbox"/>	9 Cooper Rd & Guadalupe Rd	33
<input type="checkbox"/>	10 Pecos Rd & Power Rd	31
<input type="checkbox"/>	11 Guadalupe Rd & Val Vista Dr	31
<input type="checkbox"/>	12 Market St & Santan Village Pkwy	28
<input type="checkbox"/>	13 Guadalupe Rd & Mcqueen Rd	27
<input type="checkbox"/>	14 Guadalupe Rd & Lindsay Rd	27
<input type="checkbox"/>	15 Elliot Rd & Mcqueen Rd	26
<input type="checkbox"/>	16 Elliot Rd & Lindsay Rd	26
<input type="checkbox"/>	17 Cooper Rd & Warner Rd	26
<input type="checkbox"/>	18 Germann Rd & Val Vista Dr	24
<input type="checkbox"/>	19 Lindsay Rd & Ray Rd	22
<input type="checkbox"/>	20 Cooper Rd & Elliot Rd	22
<input type="checkbox"/>	21 Gilbert Rd & Warner Rd	21

At the bottom of the application window, there is a status bar with the text 'Viewing: Crash Magic Panel' and a button labeled 'Create diagrams for locations'.

6.4.1 High crash locations pin map

The high crash locations list may also be presented as a pin map



6.5 Crosstab reports

Cross tab reports compare one category list to another. In this example we compare lighting to injury severity.

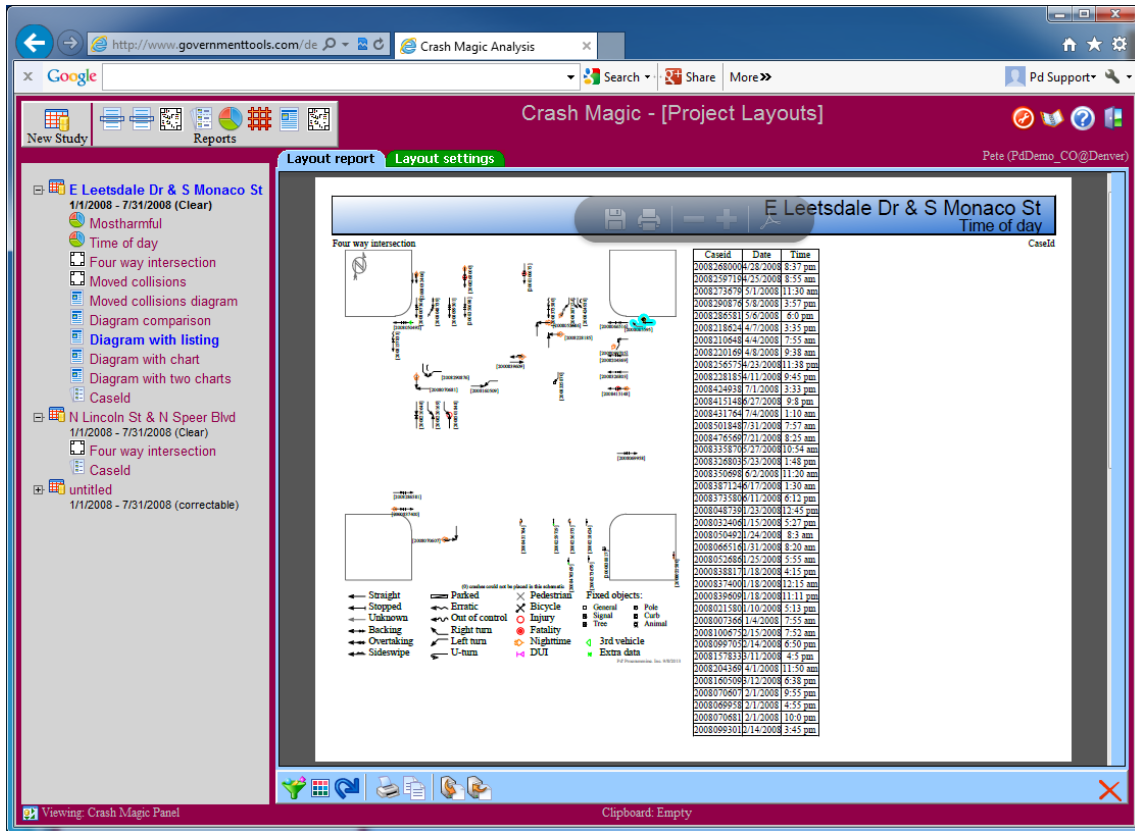
The screenshot displays the 'Crash Magic Analysis' web application interface. The browser address bar shows the URL 'http://www.governmenttools.com/de'. The application title is 'Crash Magic - [Main]'. The user is logged in as 'Pete (AZ@Gilbert)'. The main content area shows a 'Cross Tab Report' for 'Severity v Lighting'. The report includes a table with the following data:

	Fatal	Injury	PDO	Total
Daylight	3	433	1445	1881
Dawn	0	10	26	36
Dusk	1	14	62	77
Dark_Lighted	3	129	366	498
Dark_Not_Lighted	0	10	31	41
Dark_Unknown_Lighting	0	0	8	8
Unknown	0	0	0	0
Other_Or_Null	0	0	0	0
Total	7	596	1938	2541

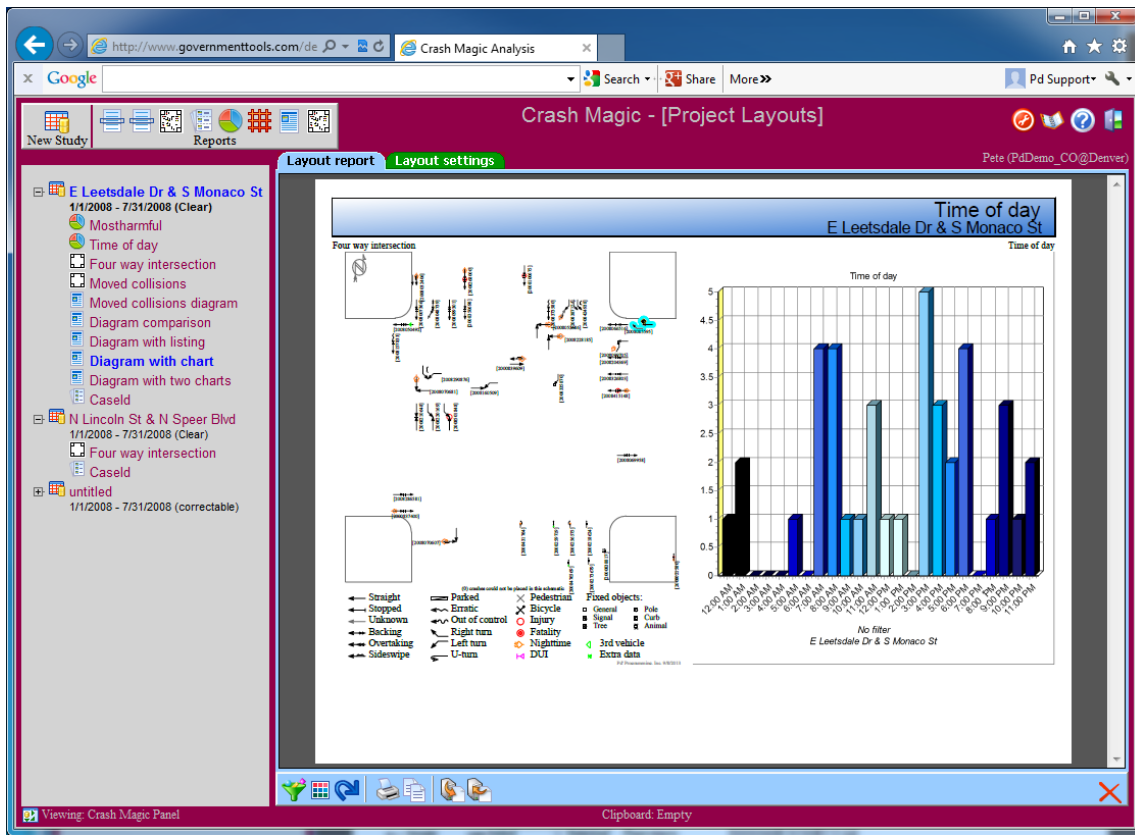
The interface also includes a left sidebar with navigation options like 'New Study' and 'Reports', and a top navigation bar with 'Cross Tab Report' and 'Cross Tab Settings' tabs. The bottom status bar indicates 'Viewing: Crash Magic Panel' and 'Clipboard: Empty'.

6.6 Layout

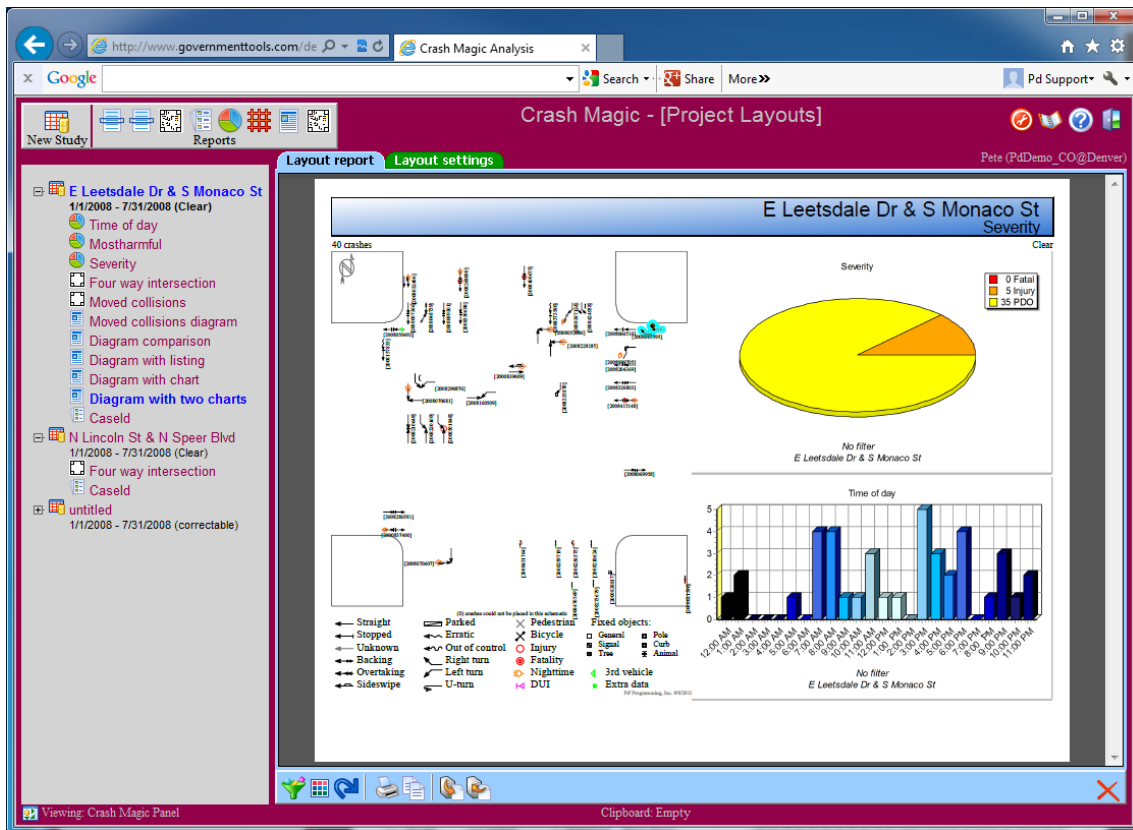
Layouts are PDF documents with content drawn from any reports in the current project.



Single page, two reports



Single page, two reports (with chart)



Single page, three reports

The screenshot displays the 'Crash Magic - [Main]' web application. On the left is a navigation menu with options like 'All data 1/1/2012-12/31/2013', 'Petes Day of Week', and 'BALBOA BL & BURBANK BL'. The main area features a 'Layout report' and 'Layout settings' tab. A schematic diagram shows a road intersection with various crash icons and labels such as [5556391], [5886980], [5465002], [5673580], [5746800], [6268020], and [5999053]. Below the schematic is a legend for crash types (e.g., Straight, Stopped, Unknown) and fixed objects (e.g., General, Signal, Tree). At the bottom, a table provides detailed crash data for report # 5465002.

Report#	Date	Time	Dist.	Dir.	Type of Collision	Motor Veh. Involved With	Dir. of Travel 1	Movement Prec. Coll. 1	Dir. of Travel 2	Movement Prec. Coll. 2	PCF	Inj	Kill
5465002	1/11/2012	8:00 am	500	South	Sideswipe	Other Motor Vehicle	South	Proceeding Straight	South	Stopped	Other Improper Driving	0	0

Multi-page two reports

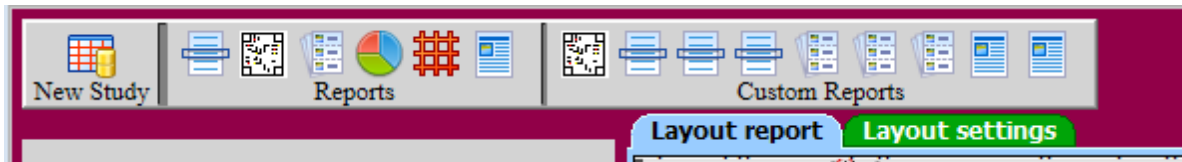
7 Common Themes

Using common user-interface elements means there is less to remember each time you use the program.

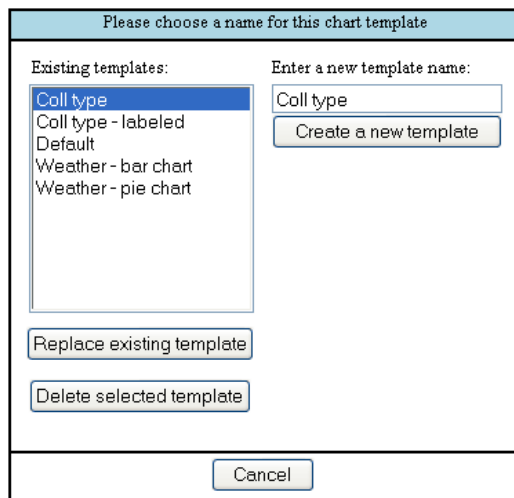
7.1 Templates

Templates are studies or reports that have been saved for future use. Any report can be saved as a template.:


- Templates enable the user to save settings used for a report, and then apply the same settings to other reports.
- Templates enable the user to create a new report for a study without adjusting settings
- The "Custom Reports" buttons at the top of the screen are all templates.

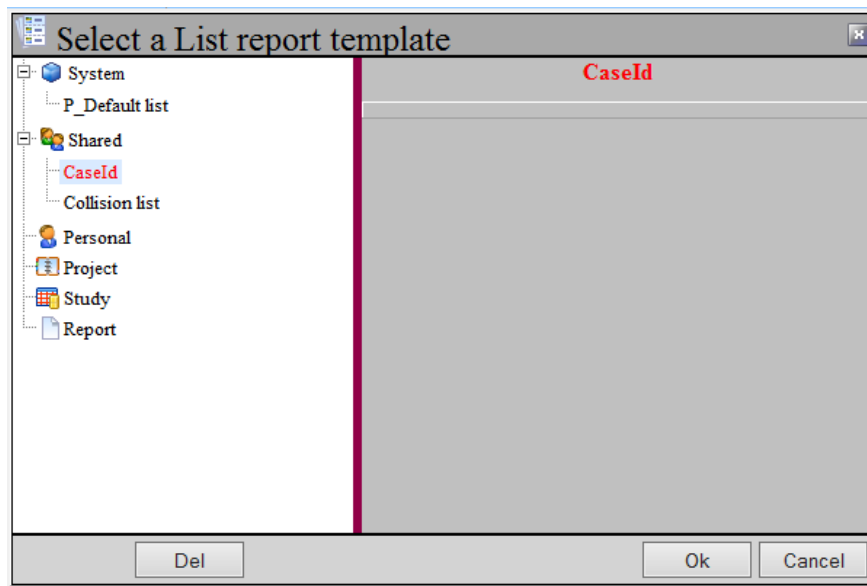


 Template Save. Settings can be saved by clicking on the save template button.

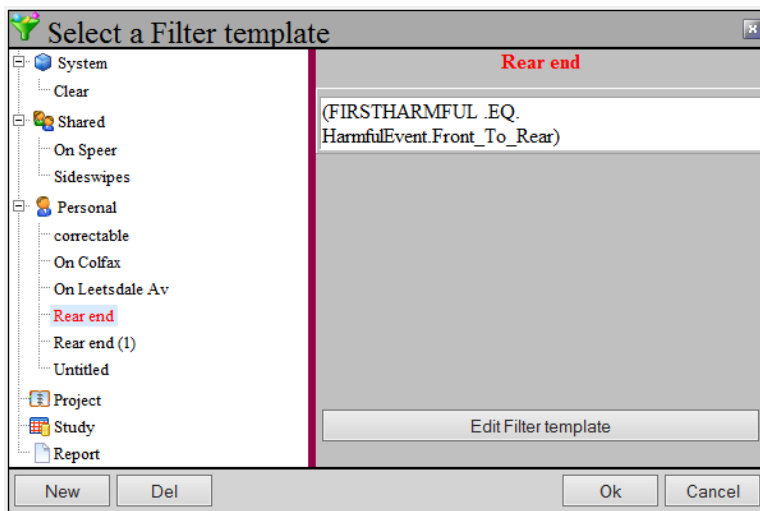


**this dialog box will be updated to the new standard shortly*

 Template load. Then the same user can apply the same template to another report by selecting the report to apply the template to and clicking on the load template button

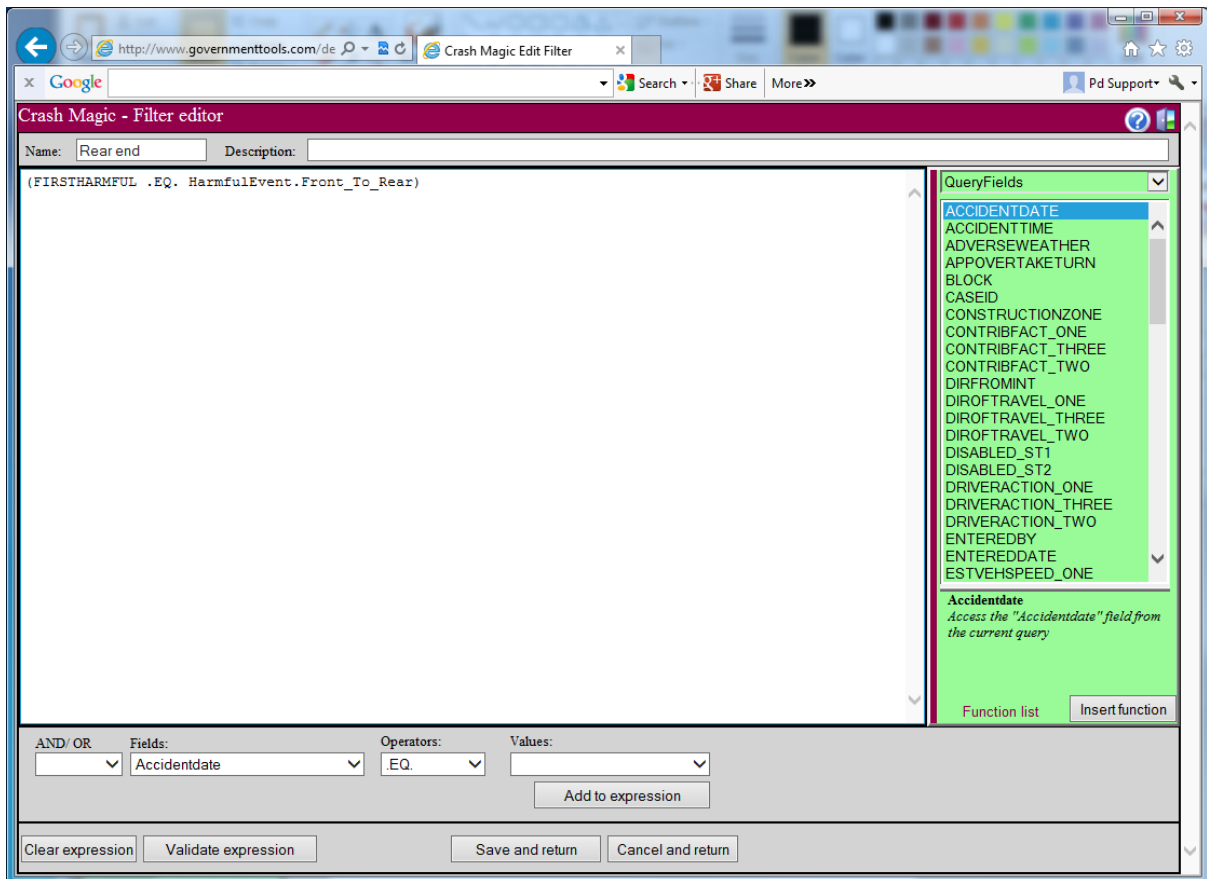


7.2 Filter selection

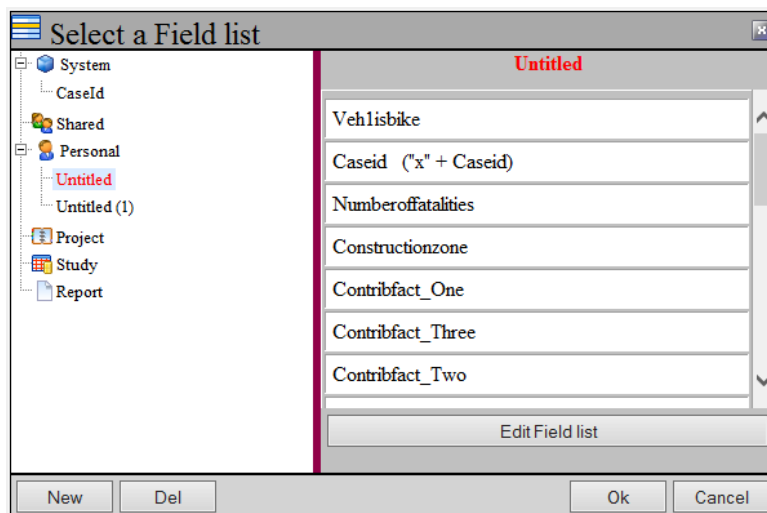


7.2.1 Filter editor

The filter editor, also used as the expression editor, is available for any study and a number of other locations in the program.



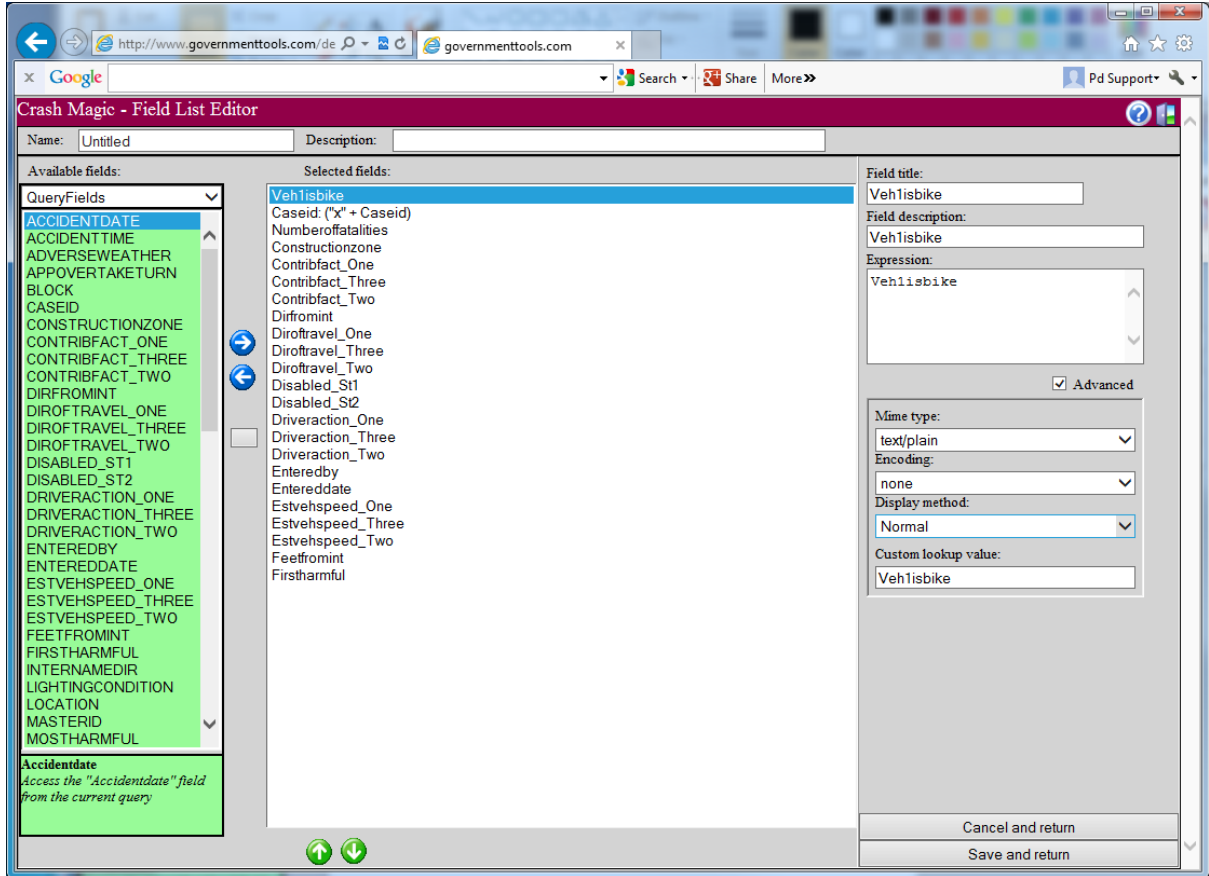
7.3 Field list selection



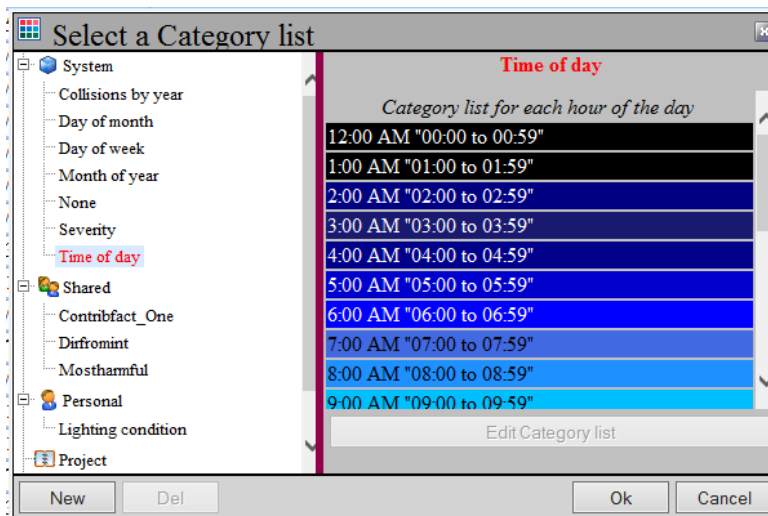
7.3.1 Field list editor

Field lists contain a list of fields, field titles and lookup information.

Field lists are used for crash listings, click-on reports and labels.

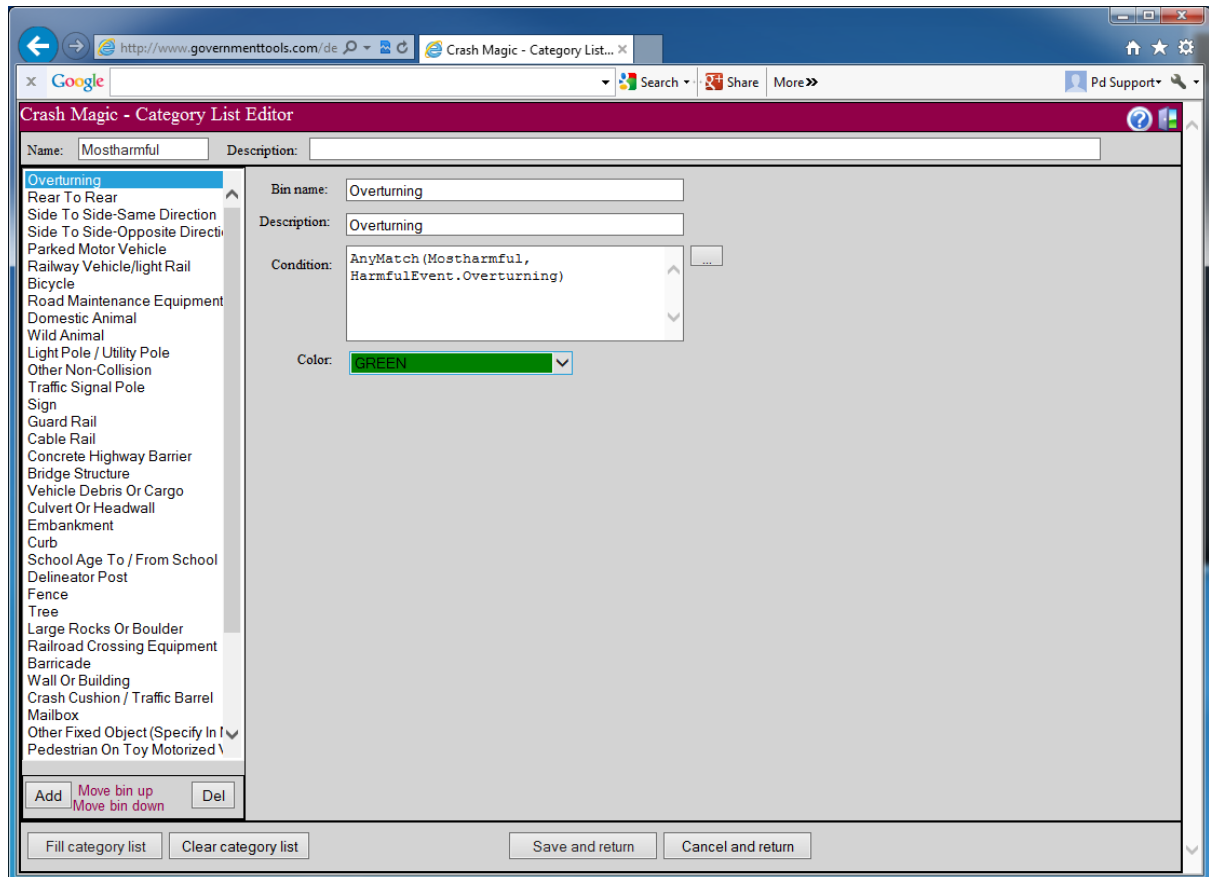


7.4 Category list selection

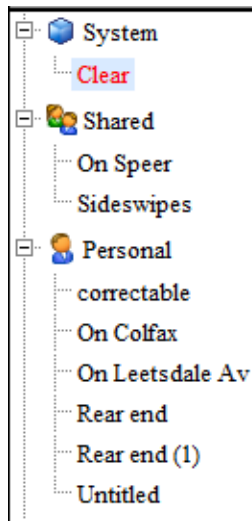


7.4.1 Category list editor

Category lists are used for highlighting, charts and cross-tabs. This editor enables the user to create category lists for any field type.



7.5 Resource inheritance



When a resource is requested by the user, the system looks for it in several places.

- First, the current user's account is checked.
- Second, the user group's "shared" account is checked.
- Finally, the built-in "master" "shared" account is checked.

When a user saves a resource, that resource is stored in the user's account. Group administrators may copy or move that resource to the group "shared" account for others to use as well.

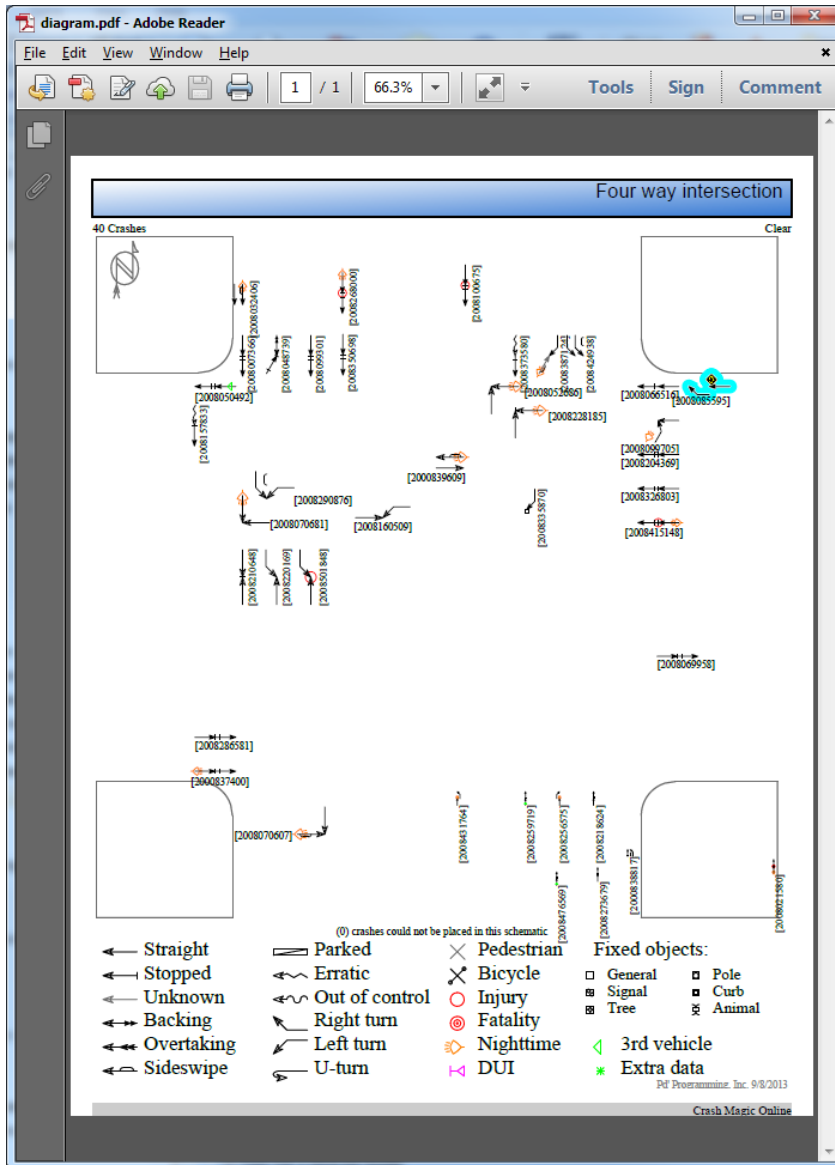
This "inheritance" mechanism provides the following benefits:

- One user's changes do not affect the other users on the system.
- Each user may name and organize their templates as desired.
- It is safe for a user to experiment with different settings and resources. Returning to the default configuration is simply a matter of deleting the undesired resource.
- For administrators, repairing a broken account is as simple as deleting a user's customized resources.

Note, for administrators and power users, the inheritance mechanism also applies to all the configuration attributes. This makes it possible, and even easy, to provide a specific user with their own connection, query or other configuration attribute that will then override the one provided to the rest of the group in the "shared" account.

7.6 Printing


Adobe Acrobat (pdf) output



8 Miscellaneous

This section will cover additional items that will increase your productivity in Crash Magic.

8.1 Help

The help button  will open Crash Magic's Help Navigator.



The help content is detailed, indexed and cross-referenced.

Crash Magic Online

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- Automation and interoperability

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Diagram report tab [Top](#) [Previous](#) [Next](#)

The diagram report panel displays a collision diagram and (optionally) data from a single clicked-on crash graphic. The [settings panel](#) provides access to the diagram's display options.

Clicking on the field list icon at the top of the panel opens the [field list editor](#). The field list editor allows users to change the fields displayed. Clients that store images in their database can open the drop down menu to select the ClickOnImages fields.

Along with the [common function buttons](#) at the bottom of the panel the following buttons can be found.

- Add annotations to the diagram.
- Delete the current diagram, and move to the study.

8.2 Copy/Paste

The copy button allows the user to copy an item in his tree to the clip board.

Then using the paste button the user can paste the item from his clip board to another location in his tree.

9 Future Development

This section contains items that are currently under development at Pd Programming. For the most up to date information see our web site at <http://www.pdmagic.com/prodmatrix.cfm>.

9.1 Crash Magic Online

In development:

Quarter 2, 2014

- Use of client ESRI ArcGIS Server instead of ESRI ArcGISOnline service (completed)
- Colorized pin-maps (completed)
- Layouts based on templates (completed)

For Quarter 3, 2014

- Geocoding using distance and direction from intersection (in progress)
- GIS map support in layouts (in progress)
- Intersection corridor studies

For Quarter 4, 2014

- Community repositories for shared reports
- Route-milepost sliding spot reports
- Crash Modification Factors
- Comparison of locations with similar asset attributes

For Quarter 1, 2015

- HTML 5 based output
- Discontinue use of Microsoft Silverlight technology

Future

- Dynamic sharing of projects and studies
- Messaging between users

Back Cover