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Fire Statistics Online Tool User's Manual

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Jabashvili, D.

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Fire Statistics Online Tool

User's Manual

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      Institute for Research in Construction
      National Research Council Canada

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FIRE STATISTICS ONLINE TOOL – USER'S MANUAL
BY AVTANDIL DAVID JABASHVILI

1   INTRODUCTION

The primary objective of the Fire Statistics Online tool is to provide public access to a database of Canadian fire incident data in a form that permits the user to select, compile and display their own statistical summaries from the database. The ultimate purpose it serves is to promote awareness and potentially enhance fire safety across the country. The tool is bilingual and operates in both English and French. The browsers, such as Mozilla Firefox, Opera, Safari and Microsoft Internet Explorer, will work with this tool.

At this stage the tool is designed to provide access to the data and to permit the user to select subsets of the data in the database to produce graphs and statistical summaries. At the present time there are no means available to upload new records to the database or to edit the existing ones. In the future, such functionality will be provided for a selected category of users.

2   DATABASES

The database model supported by the Database Management System (DBMS) and utilized by the tool is MySQL. All of the information associated with each incident is provided in terms of the Canadian Code Structure (CCS) on Fire Loss Statistics. There are two back-end databases, which store the actual data:

    a. The General Fire Statistics database stores data reflecting all kinds of fire incidents. The CCS items associated with each incident are: Act or Omission, Assembly Occupancy, Institutional Occupancy, Jurisdiction, Property Classification, Residential Occupancy, Source of Ignition, and Special Properties Occupancy.

    b. The Residential Fire Statistics database stores data related to residential structure fires and reflects the conditions and circumstances specific to the residential structures. Residential structures include one - and two - family dwellings (including manufactured homes), apartments, hotels, motels, college dormitories, boarding houses, etc. The CCS items associated with each incident are: Area of Origin, Condition of Casualty, Igniting Object, Level of Origin, and Material First Ignited.

3   USER INTERFACE

3.1   GENERAL CONSIDERATIONS

The objective of this tool is to provide users with a web-based interface that would allow querying and viewing the resulting data in table view mode as well as in a graphical mode. The tool provides a bilingual interface and the front page of the tool (Fig. 1.) offers the user the choice between two languages - *English* and *French*. The URL of the tool is www.ccfmfc.ca/dj.

This tool has been developed by the Fire Research Program at NRC Institute for Research in Construction (NRC-IRC).

These pages provide access to statistical data on fire incidents, which have occurred in Canada and thus promote awareness and enhance safety across the country. The pages are bilingual and data can be viewed either in [French] or English.

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Related Stuff

▸ Council of Canadian Fire Marshals and Fire Commissioners
▸ National Fire Code of Canada
▸ Canadian Code Structure on Fire Loss Statistics

These pages are best viewed in Microsoft Internet Explorer or Mozilla Firefox set to check for newer versions of stored pages every visit to the page.

Internet Explorer users in the Tools menu choose the 'Internet Options ...' item and then click the 'Settings' button and set the 'Check for newer versions of stored pages' option to the 'Every visit to the page'.

Mozilla Firefox users in the browser address bar, type: 'about:config'. In the Preference Name list locate 'browser.cache.check_doc_frequency'.

Update the value based on the following options:

1 = every time I view the page
0 = once per session
2 = never
3 = when the page is out of date (default)

Choose the first option and don't forget to close and restart FF.

[Enter]

Fig. 1. Front page

After the selection of the language is made the user is taken to the main page described in the following subsection.

3.2   QUERY THE DATA

Fig.2 shows the main page of the tool. The *Home* button can take the user back to the front page. Initially the user is prompted to choose between the two databases, *General Fire Statistics* and *Residential Fire Statistics*, by checking the respective checkbox (Fig. 2.).

There are two major categories of statistical data on fire incidents - General Fire Statistics and Residential Fire Statistics. In each category you select you can retrieve such data as: the number of injuries, deaths and material losses caused by fire incidents, which occurred during the interval of time specified.

The resulting report will also indicate other factors associated with each incident such as cause of fire, source of ignition, description of damaged property, etc.

There are four styles of reports available:
    - Complete: which shows the fire incident data for each year, and
    - Total, Average and Percentage: which respectively show the total, average and percentage of numbers of fires, injuries, etc. for each sub-catergory.

Please note, that certain list boxes allow for multiple selections. To make a multiple selection, hold down the left mouse button and drag the mouse pointer over the items to be selected, or hold down the 'Shift' key and use the 'Up' and 'Down' keys to select the items.

Choose one of the categories of statistical data to continue or see Help for further details

☐ General Fire Statistics
☐ Residential Fire Statistics

Fig. 2. Main page

The user may change his/her mind in regards to the language of the data presentation. By default it's English. Clicking the *French* button will cause instantaneous switching to French (Fig. 2.).

In any case, as soon as the database is selected the following interface elements become available to the user (Fig. 3.):

  a. The database tables named in accordance with the respective CCS sections.
  b. The list of fields of the selected database table. Ordinarily these are the number of fires, injuries or deaths of men, women and children, firefighters, material losses in Canadian dollars incurred by fires, etc.

Sources:

Council of Canadian Fire Marshals and Commissioners

_____

[Home]   [French]

☑ General Fire Statistics
☐ Residential Fire Statistics

Tables (Single Selection)	Variables (Multiple Selection)
Act or Omission	Fires
Assembly Occupancy	Losses
Institutional Occupancy	Firefighter Injuries
Jurisdiction	Men Injuries
Property Classification	Women Injuries

Report Styles   from   through
Complete   ▾   1971 ▾   2004 ▾

[Submit]

Fig. 3. Major elements of user interface for General Fire Statistics

It should be noted, that individual statistical records are annual. On the other hand the user may want to see the original records as they are saved in the database or only the totals, averages or percentages of the numbers. In order to make the selection of respective report style one of the items in a drop-down list box, which contains all these styles can be selected (Fig. 4).

Sources:

Council of Canadian Fire Marshals and Commissioners

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[Home] [French]

☑ General Fire Statistics
☐ Residential Fire Statistics

Tables (Single Selection)   Variables (Multiple Selection)

Act or Omission	Fires
Assembly Occupancy	Losses
Institutional Occupancy	Firefighter Injuries
Jurisdiction	Men Injuries
Property Classification	Women Injuries

Report Styles   from   through

| Complete | 1971 | 2004 |

Complete
Total
Average
Percentage

Fig. 4. Report styles for General Fire Statistics

The user may also wish to see the results pertaining to a particular time interval. Choosing the end-points of the desired interval from the respective drop-down list boxes - *from* and *through*, to make the selection. To select a particular time interval, choose the year from the *from* list. As a result the *through* list is repopulated only with those years recorded in the database, which follow the selected start year (Fig. 5).

Fig. 5. Selecting a time - interval for General Fire Statistics

To illustrate, let's consider the case where the user wants to see the total number of fires and firefighter injuries that occurred between the years 1991 and 1993 caused by factors listed in the section *Act or Omission* of the CCS. Fig. 5 shows what selections the user is required to make in order to get the relevant data. To retrieve the data, the user must press the *Submit* button. The result of the query is shown in Fig. 6.

Tables (Single Selection)

| Act or Omission |
| Assembly Occupancy |
| Institutional Occupancy |
| Jurisdiction |
| Property Classification |

Variables (Multiple Selection)

| Fires |
| Losses |
| Firefighter Injuries |
| Men Injuries |
| Women Injuries |

Report Styles: Total   from 1991   through 2004

Chart View 📊   Print 🖨

Act or Omission:
Totals of Fires, Firefighter Injuries Over the Period of Time from 1991 through 2004

Act or Omission	Fires	Firefighter Injuries
Arson/ suspected arson	41,676	1,078
Asleep	846	11
Child playing	10,720	261
Construction, design or installation deficiency	21,150	319
Mechanical, electrical failure, malfunction	121,073	1,248
Miscellaneous	161,357	2,688
Miscellaneous human failing	46,561	583
Misuse of equipment	7,017	94
Misuse of material ignited	22,397	367
Other set fires	58,008	966
Smoker's material	9,389	191
Suspected impairment by alcohol, drugs	1,038	26
Unclassified	47,575	828
Vehicle accident	4,548	36
Welding, cutting, thawing	6,586	221

Fig. 6. Table view

Each cell of the first column shows a specific factor that caused the fires and the corresponding cell of the second column shows the total number of fires that occurred all over the country and caused by that specific factor. The last column shows the number of firefighter injuries.

As already mentioned, the list box listing the database tables is populated with titles of the CCS sections. There are a few exceptions though. One of them is the last item from the list of tables. The item is named *Summary*, which appears if the General Fire Statistics is selected as the current database. If the user selects this item, and also selects the *Complete* as the report style and chooses to look at the number of fires, the resulting data will represent the annual totals of fires regardless of their causes or other circumstances (Fig. 7.).

Year	Fires
1977	74,043
1978	75,292
1979	83,107

Fig. 7. Annual summary of fires in table view for the General Fire Statistics

In this case the list box *Report Styles* is disabled. Another exception to the rule is the *Time of Day* item from the list box listing the *Residential Fire Statistics* tables. In this case the result will be the total number of fires (if the user wishes to look at the total number of fires only) occurred at particular times of day. A fragment of the resulting page for this case is shown in Fig. 8.

☐ General Fire Statistics
☑ Residential Fire Statistics

Tables (Single Selection)	Variables (Multiple Selection)	Provinces
Condition of Casualty	Injuries	Alberta
Igniting Object	Deaths	British Columbia
Level of Origin	Loss	Ontario
Material First Ignited	Fires	All
Time of Day		

Report Styles — Total

from 1994   through 1994

Chart View   Print

Time of Day:
Totals of Fires Over the Period of Time from 1994 through 1994 in Alberta

Description	Fires
0:00	351
1:00	63
2:00	55
3:00	52
4:00	48
5:00	43
6:00	27
7:00	40

Fig. 8. Table view of hourly summary of fires occurred in Alberta

The *Residential Fire Statistics* database has one more set of options not present in the *General Fire Statistics* case – user can specify a province or territory where the incidents occurred (Fig. 9).

Fig. 9. Selecting a location by province for Residential Fire Statistics

Both the General Fire Statistics and Residential Fire Statistics databases work similarly. That's why we have shown mainly the fields related to the General Fire Statistics database.

3.3   TABLE VIEW MODE

As has already been mentioned, there are two modes of viewing the data - the Table and Chart. Up to this point we have been concerned with the first mode, which is the default mode. Let us note, that the list box with database tables does not allow for multiple selections, while the one with fields does. Now let us consider an example (Fig. 10):

☑ General Fire Statistics
☐ Residential Fire Statistics

Tables (Single Selection)   Variables (Multiple Selection)

Institutional Occupancy	^		Fires
Jurisdiction	≡		Injuries
Property Classification			Deaths
Residential Occupancy			Loss
Source of Ignition	∨		

Report Styles   from   through

| Percentage | ∨ | | 1980 | ∨ | | 1990 | ∨ |

Chart View 📊   Print 🖨

Institutional Occupancy:
Percentages of Fires, Injuries, Deaths Over the Period of Time from 1980 through 1990

Institutional Occupancy	Fires	Injuries	Deaths
Child care	2.53	1.87	9.52
Home for the aged	27.33	30.67	76.19
Hospital, sanatorium, clinic	42.15	42.14	7.14
Miscellaneous	8.17	6.48	0.00
Prison, jail, reformatory	19.81	18.83	7.14

Fig. 10 Table view with a multiple selection of fields for General Fire Statistics

As the figure shows, initially the records are arranged in accordance with the values of the *Institutional Occupancy* column. If the user wants to rearrange the records in accordance with the values of the *Fires* column for example, then the user;

    a. Moves the mouse pointer over the header of the column. As a result, the background color of the header turns red and the label changes to *Sort* (Fig 11).

Institutional Occupancy	Sort	Injuries	Deaths
Child care	2.53	1.87	9.52
Home for the aged	27.33	30.67	76.19
Hospital, sanatorium, clinic	42.15	42.14	7.14
Miscellaneous	8.17	6.48	0.00
Prison, jail, reformatory	19.81	18.83	7.14

Fig. 11 The highlighted field (*Fires)* is about to be rearranged

b. Clicks on the header and while the records are being rearranged the caption of the header reads *Please Wait*.
c. The records have been rearranged in accordance with growing the values of the *Fires* column (Fig 12). If the user clicks the header once more, the records will rearrange in accordance with a decreasing of the values. If the number of records is large and /or a large number of fields has been selected i.e. the table is large, the rearrangement process may take a while, and the user has to be patient.

Institutional Occupancy	Fires	Injuries	Deaths
Hospital, sanatorium, clinic	42.15	42.14	7.14
Home for the aged	27.33	30.67	76.19
Prison, jail, reformatory	19.81	18.83	7.14
Miscellaneous	8.17	6.48	0.00
Child care	2.53	1.87	9.52

Fig. 12 The records are rearranged in accordance with values of the *Fires* field

3.4   CHARTING MODE

The charting mode is implemented by means of a Flash Player plug-in built into the browsers mentioned in the Introduction and written and distributed by Adobe. The charting mode is not

the default mode and in order to switch to it, the user has to click on a small icon , which is a link leading to the charting mode of the data presentation. In this mode the user interface looks quite different from that of the table mode (Fig. 13).

Sources:

Council of Canadian Fire Marshals and Commissioners

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This page allows plotting the data and
customizing the way the data is plotted
by selecting one of the variables and
the chart types below.

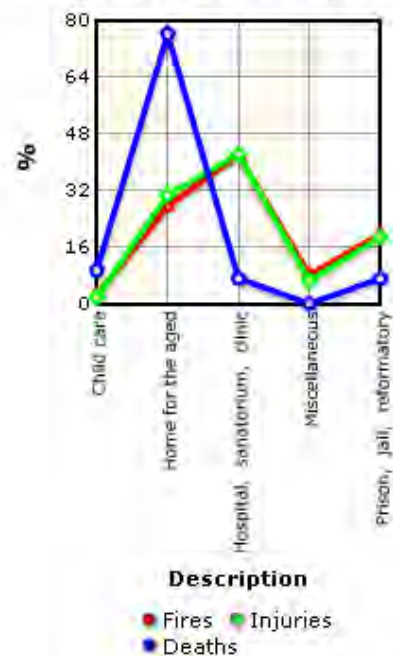Chart Types (Single Selection)

Line
2d bar
3D Pie
Bars 2D
Bars 3D

Print 🖨

Table View ▦

Variables (Single Selection)

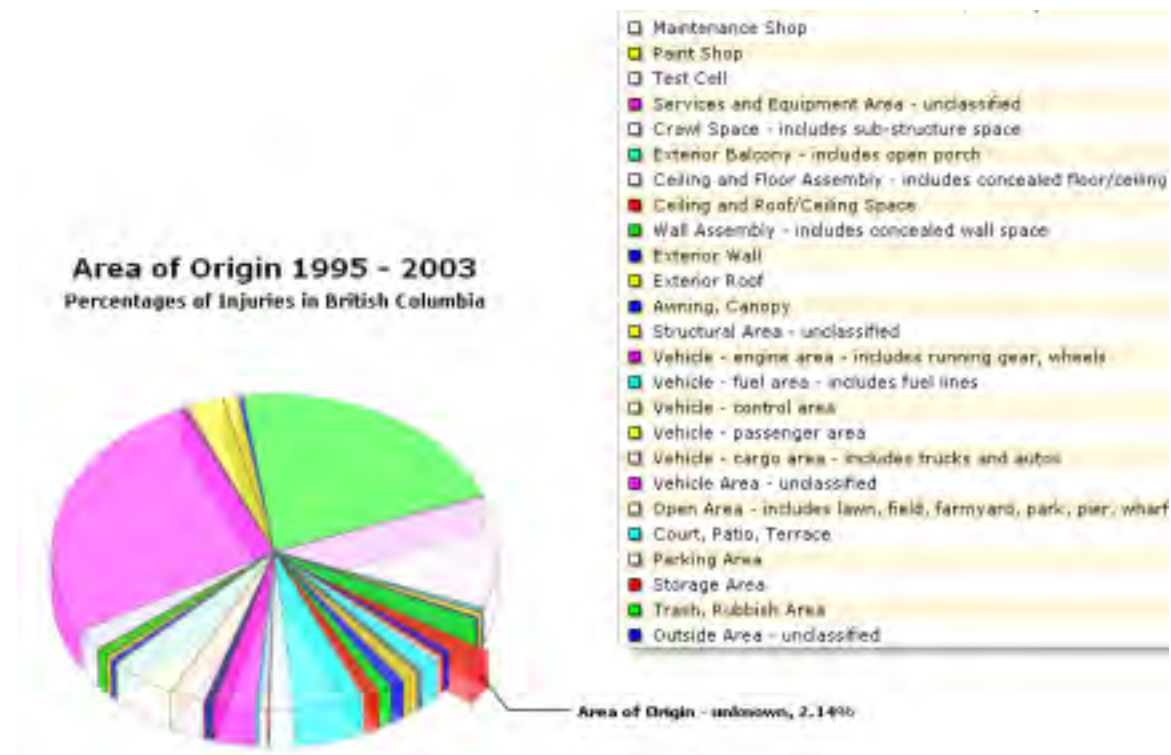| All |
|---|
| Fires |
| Injuries |
| Deaths |

French

Institutional Occupancy 1980 - 1990

Fig. 13. Charting mode with default charting style *Line*

Here the user can choose between different styles of chart. The default style is the one called *Line*. The *Line* chart of the data is shown as soon as the user switches from the table view to the chart view. If in table mode the user has chosen more then one field to view, the *Line* chart shows all the fields at once, as default, charting them in different colors (Fig. 13). In this style the user also can choose an individual field from the Variables list to be plotted separately. The styles *Bars 2D (Multi-series)*, Stacked *Bars 2D*, and *Stacked Bars 3D* are showing all the selected fields at once. The remaining charting styles show the values of one field at a time. In the case of these styles the *Variables* list box allows instantaneous switching from one field to another.

Any charting style is available for any report style except the interactive *3D Pie*. This charting style is available only for the report style *Percentage* (Fig. 14).

Fig. 14. Percentage of cases where Area of Origin of the fires is unknown

In Fig. 14 above the *Area of Origin* slice of the pie is the current one. To choose a different slice, click on that slice and the pie will turn, and the slice of choice will protrude and reveal more details as it becomes current.

4   ADDITIONAL FEATURES

One of the most important features of the tool is its bilingualism – the user can switch the data presentation language in both modes at any point during the session, instantaneously, by clicking one of the two buttons – *English* or *French*.

In addition the user can also print a report by clicking the respective link represented by the icon 🖨.

Finally, the user can instantaneously switch from charting mode to the table mode by clicking the respective link represented by the icon .