

Fire Severity Matrix

Calculating Severity of Accidental Fires in Dwellings

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Performance Reporting – Fire Incidents per 10,000 Population





Problem

- Need to quantify the severity of <u>accidental fires in</u> <u>dwellings</u>
- A severe house fire cannot be compared to a frying pan extinguished prior to arrival......





....yet both are classed as 'house/dwelling fires' for stats purposes



Answer

A methodology has therefore been developed in order to determine the severity of such fires





Methodology

Three categories:

- People
- Property
- Resources
- several key fields identified within each
- all information derived from easily accessible <u>quality assured</u> IRS data downloads
- sample data used 1st April 2009 to Oct 2011



People

- Were there any fatalities
- Did casualty require to go to hospital (serious injuries)?
- Did casualty require to go to hospital (slight injuries)?
- Was only a precautionary check required
- Was first aid administered at the scene?
- Were any rescues carried out?



People – Scoring Table

People	1	2	3	4	5	>5
Fatalities	5	5	5	5	5	5
Hospital - Serious Injuries	3	3	4	4	4	4
Hospital – Slight Injuries	2	2	2	2	3	3
First Aid at Scene	1	1	1	1	2	3
Precautionary Check	1	1	1	1	2	2
Rescues	1	1	2	2	3	3





Property

- Extent of damage
 - Limited to the source of ignition
 - Limited to the room of origin
 - Limited to the floor of origin
 - Affecting two or more floors
 - Affecting roof space only
 - Affecting roof space and other floor(s)
 - Affecting whole roof
 - Affecting whole building



Property – Scoring Table

Property	Item 1st Ignited	Room of Origin	Roof space	Roof space and floor(s)	Whole roof	Floor of Origin	2 or more floors	Whole building
Damage	1	2	2	3	3	3	3	4

Lowest score possible is 1

Ensures that the overall rating can only ever be as low as 1

- but only when no people have been involved.





Resources

- Was fire fighting done prior to arrival
- Time at the scene
 - Up to 20 minutes
 - 20 to 60 minutes
 - 61 minutes to 140 minutes
 - 141 minutes to 300 minutes
 - Over 300 minutes
- Number of resources deployed -
 - Up to and including 4
 - 5
 - 6 or more
- Method of extinguishing -
 - None
 - Removal from heat source/disconnect fuel supply
 - Other means
 - CO2/Dry powder/Foam
 - Burned out
 - Hose reel
 - Monitors/main branch jet



Resources – Scoring Tables

Resources (1)	None/No Fire fighting	Other means	Removal from heat source	Disc. Fuel supply	CO2/ Dry Powder /Foam	Burned out	Hose reel	Monitor / branch Jet
Action Prior to Arrival	2	1						
Fire fighting Action	0		1	1	2	0	3	4

Resources (2)											
	Up to 20 minutes	21 to 60 minutes	61 to 140 minutes	141 to 300 minutes	Over 300 minutes	1	2	3	4	5	>5
Number of Resources						1	1	1	1	2	3
Time at Scene	1	2	3	4	5						



Distinction in Types of Severity

Material Severity

Societal Severity



Material Severity

- extent of property damage
- uses the categories of Property and Resources in order to prescribe a rating
- scale of 1 to 5 colour rating corresponding to the figures
 - (best) • Green
 - 1 2 3 4 • Blue
 - Yellow
 - Amber
 - 5 (worst) • Red





Societal Severity

- refers to the life risk element involved in an incident
- based purely on the People category
- scale of 1 to 5, forming one half of the total severity rating.
- incidents rated with a combination of colours and numbers, i.e. Blue2, Red3
- 25 possible combinations.



Severity Matrix

	1	2	3	4	5
Red	D	D	E	E	E
Amber	С	С	D	D	E
Yellow	В	В	С	С	D
Blue	Α	В	В	С	С
Green	Α	Α	Α	В	В

These bandings were derived after substantial testing of historical incidents in order to ascertain the severity



Simplified Matrix



In order to simplify the rating and facilitate mathematical calculations on the distribution and frequency of the incident occurrence it was decided that a numerical rating would be advantageous



Distribution of Incidents





Overall Distribution





94% of all incidents fell into the 'Slight' or 'Moderate' categories



Severity by 1000 Domestic Properties in Area (3 year period)

What Next?

Looking at Community Fire Safety (CFS) activity

- Link with CFS and a reduction in fires
- Link with CFS and a reduction in severity
- Did any CFS intervention occur before the incident?
- Smoke detector analysis did alarm alert occupier, etc?

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