

Evaluating trends in fire fatalities for Scotland Professor Niamh Nic Daeid

This summary report presents the findings of an evaluation of the trends emerging across the period 2010 to 2014 using data provided for the West of Scotland region of the Scottish Fire and Rescue Service (SFRS) and the previous Strathclyde Fire and Rescue Service region. The data summarises incidents of fire fatalities and situations where fire casualties could have become fatalities without the intervention of the fire and rescue service. This work was funded by the Scottish Institute of Policing Research (SIPR) and undertaken with the kind assistance of the Scottish Fire and Rescue Service (SFRS).

The data was analysed for trends relating to specific characteristics of the individuals (sex, age, health and well being) and their living arrangements and the data was mapped onto the Scottish Index of Multiple Deprivation (SIMD) obtained from Scottish Government. The resultant data is presented as a series of graphs and illustrations from which certain observations and conclusions can be drawn.

Data acquisition and limitations

Fire Investigation data from Strathclyde Fire and Rescue services (2010-2013) and the West of Scotland region of the Scottish Fire and Rescue Service (SFRS) (2013/2014) were used to analyse the trends of fire fatalities and fire casualties. The Incident logs for these four years were merged into a single spread sheet and the various data available evaluated using excel and SPSS. Fatal fire reports were scrutinised and used to validate data entry.

The Scottish Index of Multiple Deprivation (SIMD) for each incident was obtained through the Scottish Government's SIMD Postcode Lookup. The SIMD quintile (1/5) and decile (1/10) data were used where SIMD 2009 was used for the 2010/2011 and 2011/2012 fire data, and SIMD 2012 was used for the 2012/2013 and 2013/2014 data.

Overall summary

The total number of fire fatalities and non fatal incidents resulting in injury in the West of Scottish region (2010-2014) are presented by local authority area in table 1. The data is presented, normalised per 100,000 of the relevant population, within each local authority region in Figures 1 and 2.

Table 1	Non-fatal	Fatal
Argyll & Bute	22	7
Dumfries and Galloway*	9	1
East Ayrshire	14	6
East Dunbartonshire	14	2
East Renfrewshire	15	0
Glasgow City	173	30
Inverclyde	12	3
North Ayrshire	24	2
North Lanarkshire	82	6
Renfrewshire	39	3
South Ayrshire	24	6
South Lanarkshire	64	10
West Dunbartonshire	39	6
Total	522	82

*Data for Dumfries and Galloway are only available for the year 13/14.

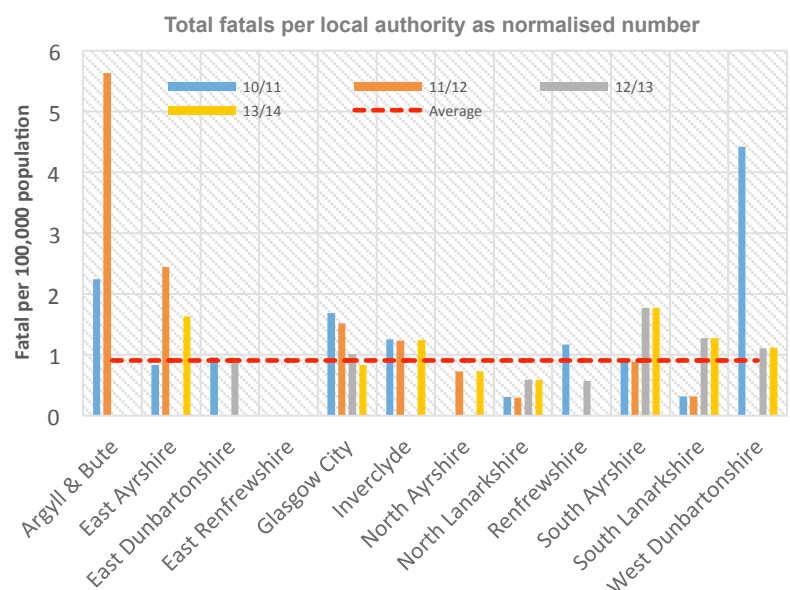


Figure 1

It is clear from this data that there is a general downward trend year on year in both the numbers of actual and potential fire fatalities in most regions. The overall numbers of fatalities remains low.

The numbers of potentially fatal events (Figure 2) remain above the average in Glasgow city, West Dunbartonshire, Renfrewshire, North Lanarkshire and South Ayrshire and specific attention may need to be paid to these areas to introduce awareness strategies.

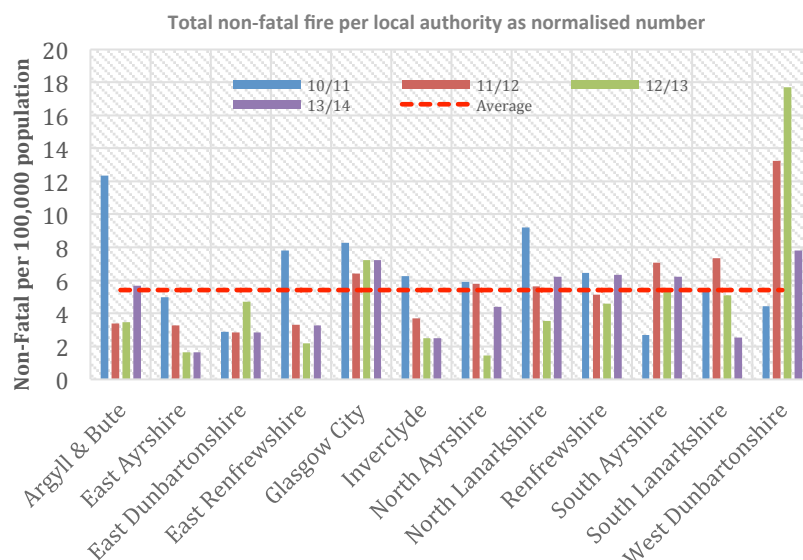


Figure 2

Main findings

1. Sex and age

Because of low sample numbers the data was pooled across all years for evaluation and normalised to the relevant population groups.

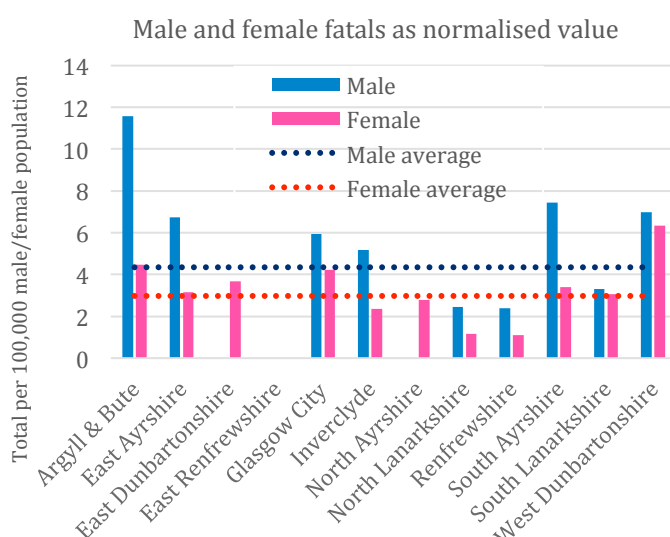


Figure 3

Males were 1.4 times more at risk than females to die in fires across all local authority regions. Of note was the considerably higher than average rate of male fatalities in Argyll and Bute and in South Ayrshire and the higher than average rate of female fatalities in West Dunbartonshire (Figure 3).

Those aged 60 years and over were 3 times more likely to die in a fire than younger individuals with particularly high ratios of older people per 100,000 dying in fires in East Ayrshire, Renfrewshire, Inverclyde, Glasgow City, North and South Lanarkshire and West Dunbartonshire (Figure 4).

A number of these older individuals had increased vulnerability. They tended to live alone in their own homes (76% of fire fatalities within owner occupied homes were older people) and/or had impaired mobility.

Many were also known to the social services of community care services providing a potential for awareness raising opportunities to fire risk.

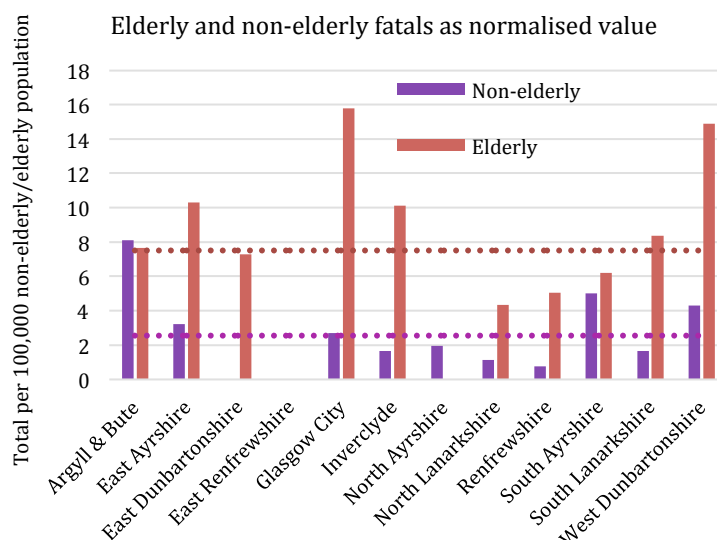


Figure 4

2. Health, wellbeing and correlation with Scottish Index of Multiple deprivation (SIMD)

Medication: Over 60% of fatal fires in the West of Scotland region had taken prescribed medication at the time of their death and 60% of these individuals had also consumed alcohol immediately prior to their death. The majority of medication was prescribed for either pain management or to address mental health issues such as depression.

Smoking: Smoking materials were found in over 70% of cases where fire fatalities had occurred.

Living arrangements: Incidents of fire fatalities were viewed across the SIMD quintiles where each quintile represents 20% of the data with the most deprived areas represented by the earlier quintiles (Figure5).

It can be seen that most fire fatalities occur across the most deprived 40% of society (MD40 grouping). Within this grouping approximately 60% of fatal fires occur in housing association or local authority properties. This drops dramatically across the SIMD quintiles as the population groups move towards owner occupied properties.

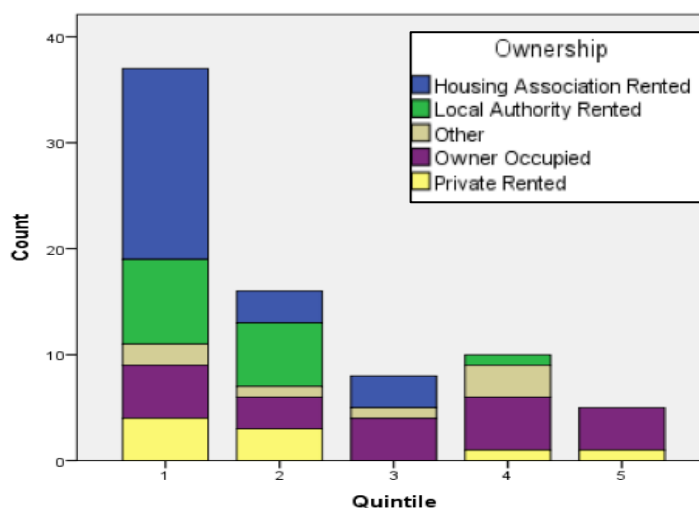


Figure 5

Scottish Index of Multiple deprivation (SIMD) : The shifting trends across the SIMD when viewed as decile information is also revealing. This allows for an increased exploration of the data where each decile represents 10% of the data with the most deprived areas represented by the earlier deciles (Figure 6).

Exploring this data year on year reveals a reduction in the number of fatalities amongst the most deprived 10% of the population from 2010 through to 2014.

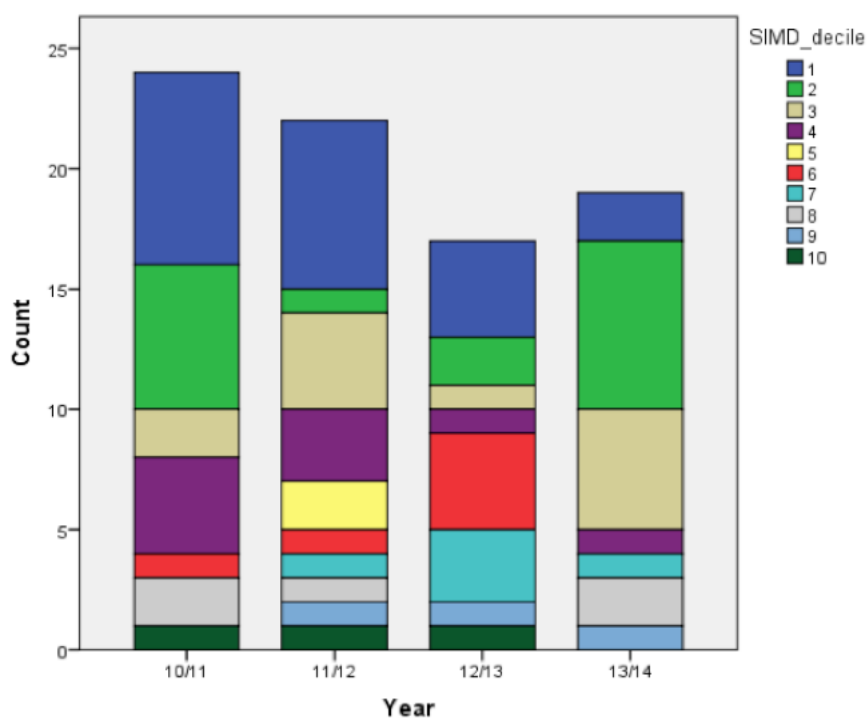


Figure 6

However, an increase in the number of fatalities across the next two deciles (2 and 3) from 2012/13 onwards is also noted and this may be an early warning suggesting that resources may need to be deployed into these areas to increase awareness of fire risk.

When the data is normalised per 100,000 of the relevant population this trend is even more apparent (Figure7).

This data is mirrored across trends in fire casualties where a fatality has been avoided because of the intervention of the emergency services.

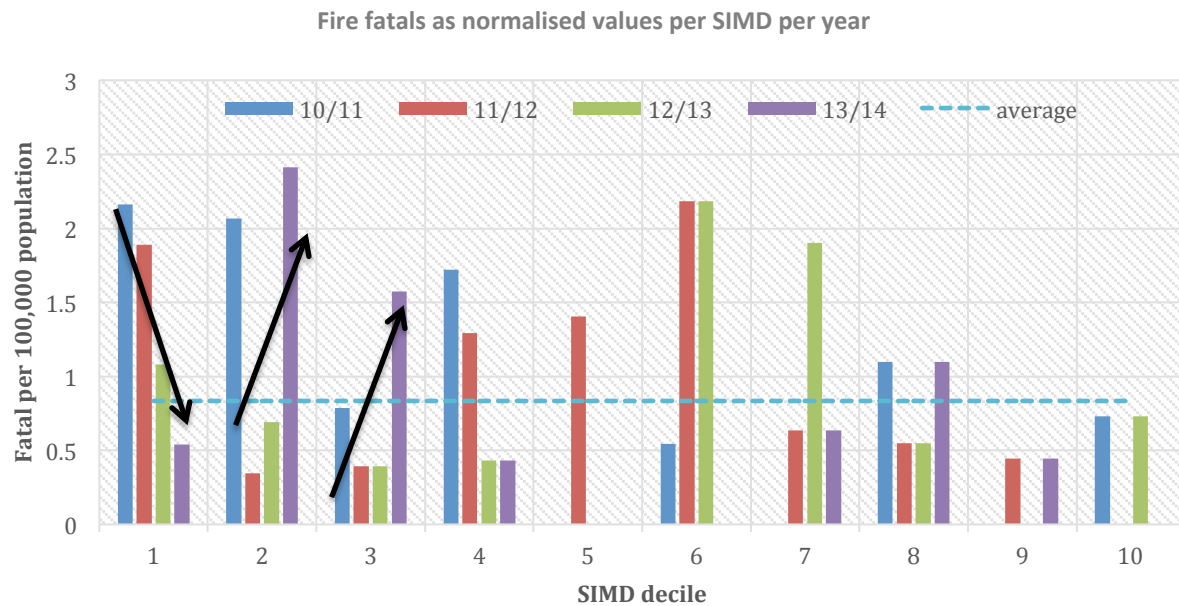


Figure 7

A more in depth observation in Glasgow city was undertaken, mapping the fire fatality and fire casualty data against the SIMD data to prepare two visual maps of the city. (Figure 8 and 9).

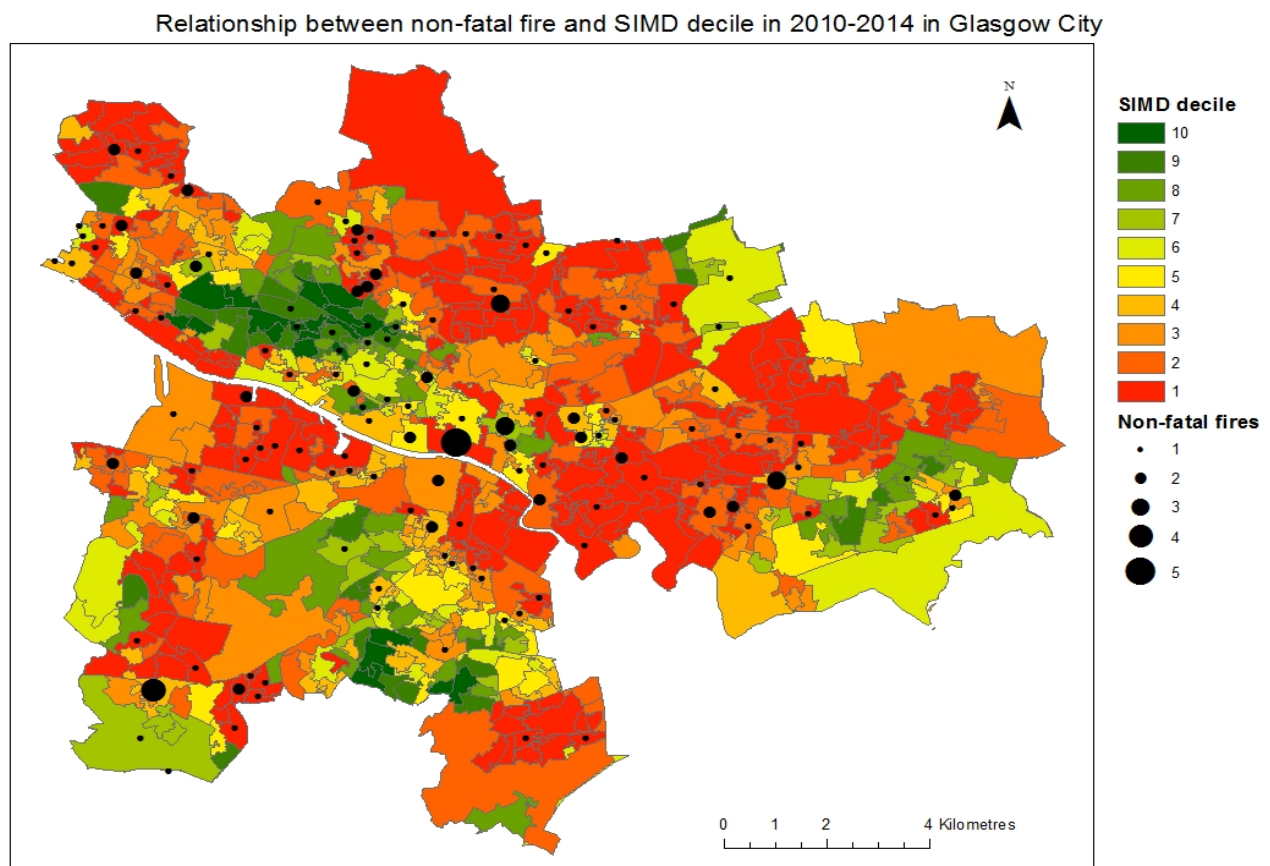


Figure 8

Relationship between fatal fire and SIMD decile in 2010-2014 in Glasgow City

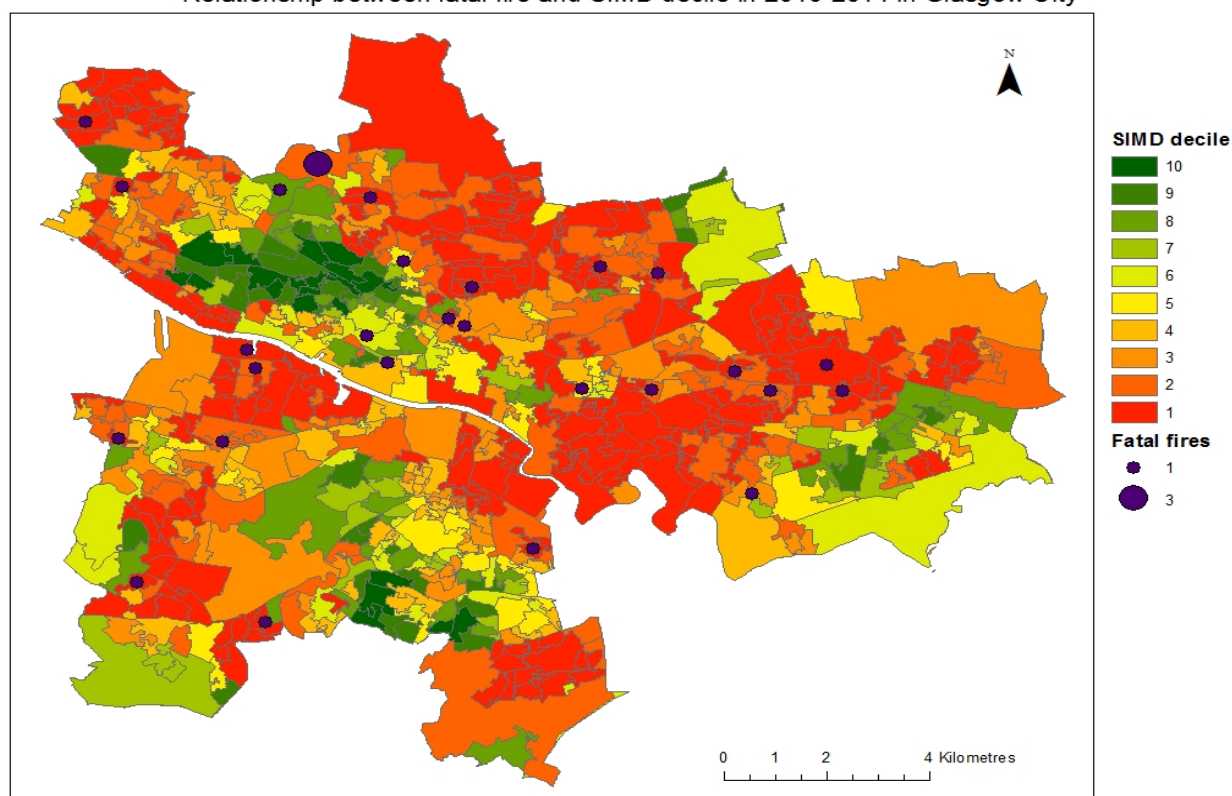


Figure 9

These maps indicate a concentration of fire fatalities in the North side of the city spread relatively evenly from East to West. Fire casualties reveal a greater number occurring in less deprived areas with a slight concentration towards the centre of the city.

Conclusions and at risk groups:

This work has demonstrated that there are a range of specific factors which appear to highlight a higher risk in relation to fire fatalities. A greater risk of fatal fires occur in the following circumstances:

1. Elderly people, living alone who may take medication and/or have mobility impairment. These individuals are often known to social services and community care workers who may be able to undertake fire risk assessments and/or alert the fire and rescue services to undertake appropriate fire preventative action.
2. Over 60% of fire fatalities occur with individuals who had taken medication at the time of the fire and of these approximately 60% had also consumed alcohol.
3. Smoking materials were found at over 70% of fatal fires incidents.
4. Most fatal fires occur within housing authority and local authority housing across the MD40 grouping (40% most deprived areas in Scotland)
5. The number of fatal fires occurring in the 10% of the most deprived areas in Scotland are decreasing.
6. The number of fatal fire incidents and incidents involving fire casualties in the next 20-30% most deprived areas in Scotland have show an increasing trend since 2012/13 which may suggest that a concentration of intervention strategies and awareness raising could be targeted in these areas.

