Improving fire prevention through big data

12 July 2019, by Sean Barton

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New research, led by Dr. Dermot Breslin from the University of Sheffield's Management School, claims that domestic fires can be reduced through targeted home visits. The research is already being put into practice by South Yorkshire Fire and Rescue Service.

South Yorkshire Fire and Rescue Service has been working with researchers on the multiyear "premonition" project. The project aims to develop new ways of keeping vulnerable communities safe from fire at a time when fire services are under increasing financial pressure.

Along with co-authors Dr. Stephen Dobson, University of Leeds, and Nicola Smith, South Yorkshire Fire and Rescue Service, Dr. Dermot Breslin explains that they developed a simulation model to analyze historical fire data and compare this with community interventions such as home safety checks in the Sheffield area.

"The premonition project demonstrates the power of using big data to better understand changing household risk behavior."

He added: "These tools enable services to predict future patterns of change, and optimize fire prevention strategies with a view to protecting the most vulnerable in our community."

The analysis showed how interventions by fire services and the influence of community networks change individual behavior and fire risk. The best long-term results were observed when the fire services carried out targeted visits to high-risk, connected households and repeated these home safety visits over a period of time. This combination saw a sustained reduction in risky behaviors (e.g. the use of chip pans) through better education and social influence from peers. Following this, targeted policy could further reduce fire risk factors within the wider community.

The simulation results are now being validated in the real world through pilot studies. However, the research is already having an impact on how fire services operate. South Yorkshire Fire and Rescue Service has already responded to the research by implementing targeted home visit checks to connected households.

Nicola Smith, South Yorkshire Fire and Rescue Service commented: "The project has furthered our understanding of fire risk and behavior, and provides us with the insight and tools to inform how we target our services at those most at risk of fire in the home."

The research has been published in the *International Journal of Emergency Services*.

More information: Dermot Breslin et al. Improving the effectiveness of fire prevention using the "premonition" agent-based model of domestic fire risk behaviours, *International Journal of Emergency Services* (2019). DOI: 10.1108/IJES-05-2018-0031

Provided by University of Sheffield

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