Northumberland Fire and Rescue Service

Assessment of Risk

KEY BENEFITS

- Identified characteristics for targeted prevention and protection
- Quantified and evidenced risk
- Aligned planning for response, prevention and protection

Identifying and quantifying risk

KEY FACTS

Population = 315,000

Area Covered = 5,000 km²

Fire Stations = 16

Annual Incidents = 3,250

ABOUT NFRS

NFRS is a predominantly rural fire service covering a large geographical area with varied demographics and risks. One of the key priorities for all FRSs in England, as per The Fire and Rescue National Framework for England, is to: "Identify and assess the full range of foreseeable fire and rescue related risks their areas face, make provision for prevention and protection activities and respond to incidents appropriately".

THE CHALLENGE

NFRS wished to quantify risk at a granular level and identify the factors that align to risk. For the purposes of allocating resources to risk, NFRS sought a more consistent approach to defining risk across the three functions of response, prevention and protection.

ORH'S APPROACH

ORH worked with NFRS to identify the main categories of risk that NFRS needs to plan for, including a wide range of incident categories. We then applied analytical and machine learning processes to understand the current profile of NFRS and the relationships between potential risk factors and historical incidents. Some of the risk factors included:

- Population statistics and demographics
- Building and housing data
- Information on the road network

Using these datasets we applied advanced statistical modelling techniques to identify the characteristics with the strongest relationship to the historical incident patterns, and to rank these factors for each incident type. We evaluated these relationships county-wide and at a granular level to give a fuller understanding of risk in Northumberland.

RESULTS

We provided NFRS with ranked lists for how risk factors aligned to different types of incidents. These results are now being used by NFRS for strategic planning purposes and in the allocation of resources and targeted prevention and protection strategies.

Prior to this review, there was anecdotal understanding that demographic and deprivation factors aligned to the risk of an area. Our findings supported this view and, crucially, added a detailed evidence base and quantified the relationship in much greater detail.

> ***ORH has access to a wealth of data sources, and has provided robust analysis and statistical modelling, ensuring a level of objectivity to support the service allocation of its resources in the discharge of its statutory duties.***
>
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About ORH
PLAN. PREPARE. PERFORM.

ORH helps emergency services around the world to optimise resource use and respond in the most effective and efficient way.

We have set the benchmark for emergency service planning, with a proven approach combining rigorous scientific analysis with experienced, insightful consultancy. Our expert team uses sophisticated modelling techniques to identify opportunities for improvement and uncover hidden capacity. Simulating future scenarios ensures that solutions are objective, evidence-based and quantified.

Every organisation faces a unique set of challenges, so remaining independent and flexible allows us to deliver an appropriate solution every time. The outputs of our work enable clients to make robust, data-driven decisions and explain them clearly to stakeholders.

ORH's approach is always tailored to the needs of the client. Above all, we are committed to getting it right, for the good of our clients and the people who rely on their services.

ORH WORKS WITH FIRE AND RESCUE SERVICES TO:

- **Optimise the locations of vehicles and stations**
- **Support decision making**
- **Deliver efficiency savings**
- **Assess alternative duty systems and service delivery options**
- **Develop contingency plans**
- **Evaluate the potential for co-responding**

For control rooms, ORH provides its DCT software to support dynamic decision making and enable effective and efficient resource use.

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