UNDERSTANDING RISK IN LINCOLNSHIRE

2020 - 2024

LINCOLNSHIRE FIRE & RESCUE

COMMUNITY RISK PROFILE

Lincolnshire COUNTY COUNCIL
Working for a better future

Contents

Foreword

The Fire and Rescue National Framework for England outlines the requirement for every fire and rescue authority to assess all foreseeable fire and rescue related risks that could affect their communities. It is essential that we have an understanding of both current and future risks and the consequences of those risks for the people, who live, work and visit Lincolnshire.

We will use this understanding to develop frameworks and plans to prevent and mitigate risk to our communities. It is essentially about ensuring we have the right resources in the right place, at the right time to keep our communities safe.

This Community Risk Profile underpins our Integrated Risk Management Plan and provides the foundation on which to develop further detailed plans, as we work towards our vision 'to make our communities safer, healthier and more resilient'.

As a Fire and Rescue Service we have had to change the way we work in order to respond to new and emerging risks including Covid19, and against a background of reduced central funding during this period of austerity. Developing an understanding of risk is essential to ensuring our resources and capabilities remain well placed to meet the needs of our communities. As part of Lincolnshire County Council we will also consider the needs of our partners within wider public protection delivery.

There will undoubtedly be challenges ahead but our focus places improvement, diversity, service to the community and our people at the heart of what we do. It is our commitment to this focus that will ensure we remain concentrated on delivering a professional, risk-led and innovative service to the communities of Lincolnshire.

Les Britzman,
Chief Fire Officer

Introduction

This Community Risk Profile provides the context and background analysis of risk which will inform Lincolnshire Fire and Rescue's Integrated Risk Management Plan (IRMP) which is a statutory requirement for all Fire and Rescue Services (FRS). It provides a comprehensive review of current risks and a forward-looking assessment of future risks to our communities and will help shape service delivery over the next four years.

This document is underpinned by detailed performance data and analytics, which together are used to support our understanding of community risk and help target activities, both strategically and on a day-to-day basis. It enables us to better understand the diverse nature of our communities and to identify, prioritise and plan for both current and foreseeable risks, in accordance with the requirements of the Fire and Rescue National Framework 2018, which states;

"Every Fire and Rescue Authority must assess all foreseeable fire and rescue related risks that could affect their communities, whether they are local, cross-border, multi-authority and/or national in nature from fires to terrorist attacks. Regard must be had to Community Risk Registers produced by Local Resilience Forums and any other local risk analyses as appropriate".

The Community Risk Profile also takes account of information supplied by partners and external influences on our Service at a local and national level. It does not replicate the statutory, multi-agency Community Risk Register managed by the Lincolnshire Local Resilience Forum (LRF).

Risk assessment methodology

Defining Risk

Before we begin profiling risk it is important to understand what we mean by risk, and how we define it. The ISO International Standard 31000:2018 (Risk Management - Guidelines) defines risk as:

"The effect of uncertainty on objectives".

This definition is clarified by a note, stating:

"Risk is usually expressed in terms of risk sources, potential events, their consequences and their likelihood".

Risk and Demand

When thinking about the likelihood of fire and other incidents, it is important to note that 'risk' and 'demand' are not the same thing:

Risk is defined by the geographical locations of high risk communities, people and premises and is connected with social factors in the population, including poverty/deprivation, age, health and lifestyle. Individuals at risk of harm from fire and other accidents are often also at risk of other types of harm. We know both from our routine local analysis and national research that incidents are more likely to happen to some individuals and in some areas, than others.

We routinely make use of data systems including the Lincolnshire Research Observatory and demographic profiling tools (e.g. MOSAIC), both of which provide information to household/business level.

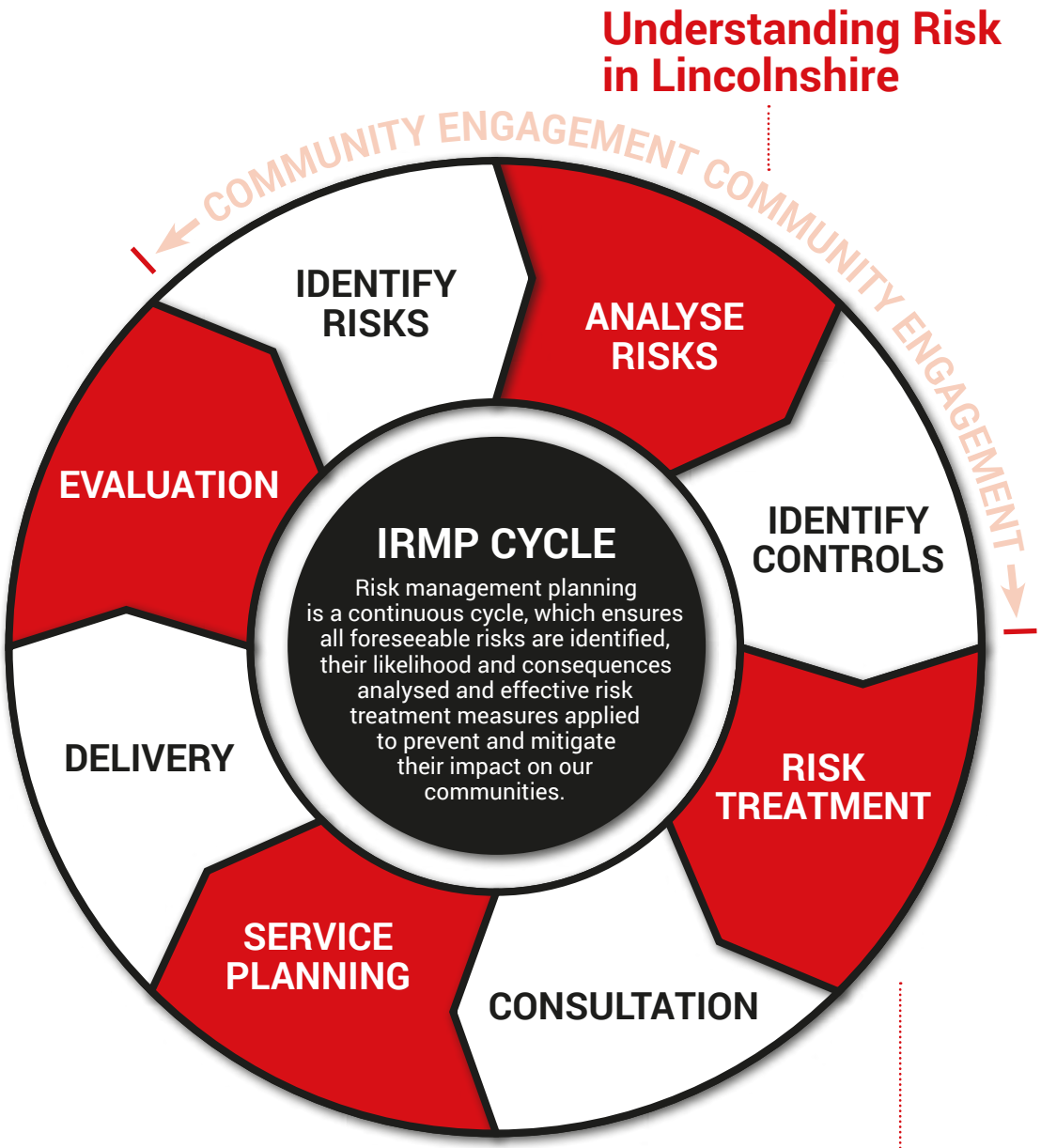
Demand is defined by historic, activity-based data, for example the number/location of incidents attended, the number/location of 'Safe and Well' checks carried out and the number/location of fire safety inspections completed.

This helps us to make the connections between community risk and incident activity and to target the available resources at the areas considered at greatest risk. Our approach to how we mitigate these risks is set out in the IRMP and is delivered through our annual service plan.

Integrated Risk Management Cycle

Risk will continually move with changes to the environment, population and demographics. With it, the demand for our resources and services will change.

Our risk management cycle ensures all foreseeable risks are identified, their likelihood and consequences analysed and effective risk treatment measures are applied to prevent and mitigate their impact on our communities.



Identifying Risk

Lincolnshire's Local Resilience Forum (LRF) Community Risk Register sets out the key community risks for Lincolnshire together with an assessment of how likely they are to happen and the impacts across the county if they do. This process sets the direction for community risks in Lincolnshire and will drive our assessment of the highest risks within our IRMP.

The risks identified by the Lincolnshire community risk register are:

- Pandemic flu
- East coast flooding
- Inland flooding
- Impacts from disease/ contamination
- Severe weather
- Loss of critical infrastructure
- Fuel shortages
- Malicious attacks

We also use a range of datasets to support risk identification, intelligence and the effective targeting of resources. Whilst these datasets will evolve with time (as new information, research and systems are introduced) our broad categories of data are defined below:

Horizon Scanning

Horizon scanning is the process of exploring what the future might look like to gain an understanding of foreseeable uncertainties and risk. The process assists us to analyse whether we are adequately prepared for potential opportunities and threats.

Horizon scanning is an ongoing process, which examines all main external influences upon the county.

Whilst internal performance is monitored and acted upon regularly, there are also a number of issues that influence the decisions and actions of Lincolnshire County Council as the fire authority. LFR will consider a range of external issues covering political, economic, socio-cultural, technological, environmental, legal and organisational (PESTELO) themes at a local, regional and national level:

2020 – 2024 PESTELO THEMES		
≡	Potential impact of Brexit Change of Government, Council political affiliation, Devolution and Boundary changes	
	Impact of changes to LFR budget and the likely impact on resources, both internally and externally Economic impact of Covid19 on supply chain	
	Impact of predicted increase in population Impact of ageing population Impact of migration, particularly in Boston Impact of deprivation	Impact of predicted increase in health issues; obesity, dementia, falls Impact of Covid19 on demographics and cultural behaviours
	Impact of IT outage/cyber attack Impact of power outage Opportunities presented by technology to improve service delivery	
	Impact of climate change Impact of East Coast flooding/inland flooding and improvements to flood defences Impact of severe weather	Impact of changes to the built environment, e.g. housing developments, industrial developments and changes to the road network (GLEP)
	Impact of potential changes in legislation arising from Grenfell Tower Inquiry Impact of changes to FRS National Framework Potential impact of Brexit	
	Impact of key business continuity risks on critical services Impact/opportunities of collaboration Impact of workforce change Impact of RDS review	Impact of Wellbeing Strategy Impact of HMICFRS inspection Impact of review of LFR values Impact of new ways of working as a result of Covid19

Risk Analysis

Our risks are analysed using risk and workload modelling software. This allows us to build a layered picture of risk and drives planning by supporting the effective targeting of resources at those communities, premises and individuals most at risk.

We use an interactive mapping tool to share our risk analysis both internally and with other agencies. By sharing this information, managers are able to view, analyse and manipulate layers of risk within their areas, supporting multi-agency and local level risk-led decision making.

High Risk Communities

We analyse the level of community risk using a methodology called 'FRAM' (Fire Risk Assessment Methodology). FRAM blends five years of incident data and indices of multiple deprivation to generate an independent risk score within a defined Lower Super Output Area (LSOA).

When looking at the demand each LSOA has on the service, we look at how many incidents the service had responded to in each LSOA and convert that to a percentage of the total number of incidents over five years.

We use the Fisher Jenks Natural Breaks methods to distribute the LSOA's population density values into four groups, to assign each group a weighted score. The more densely populated the LSOA, the higher the score.

The FRAM risk score, the population density weighted score and the incident demand percentage are added together to give an overall risk score. The four risk groups are mapped giving four risk levels, high (red), medium (yellow), fairly low (light green) and low (dark green).

FRAM is our base methodology for all LFR predictive risk analysis, against which additional layers are added, including high risk businesses, response drivetimes and demand maps to build up a comprehensive picture of risk.

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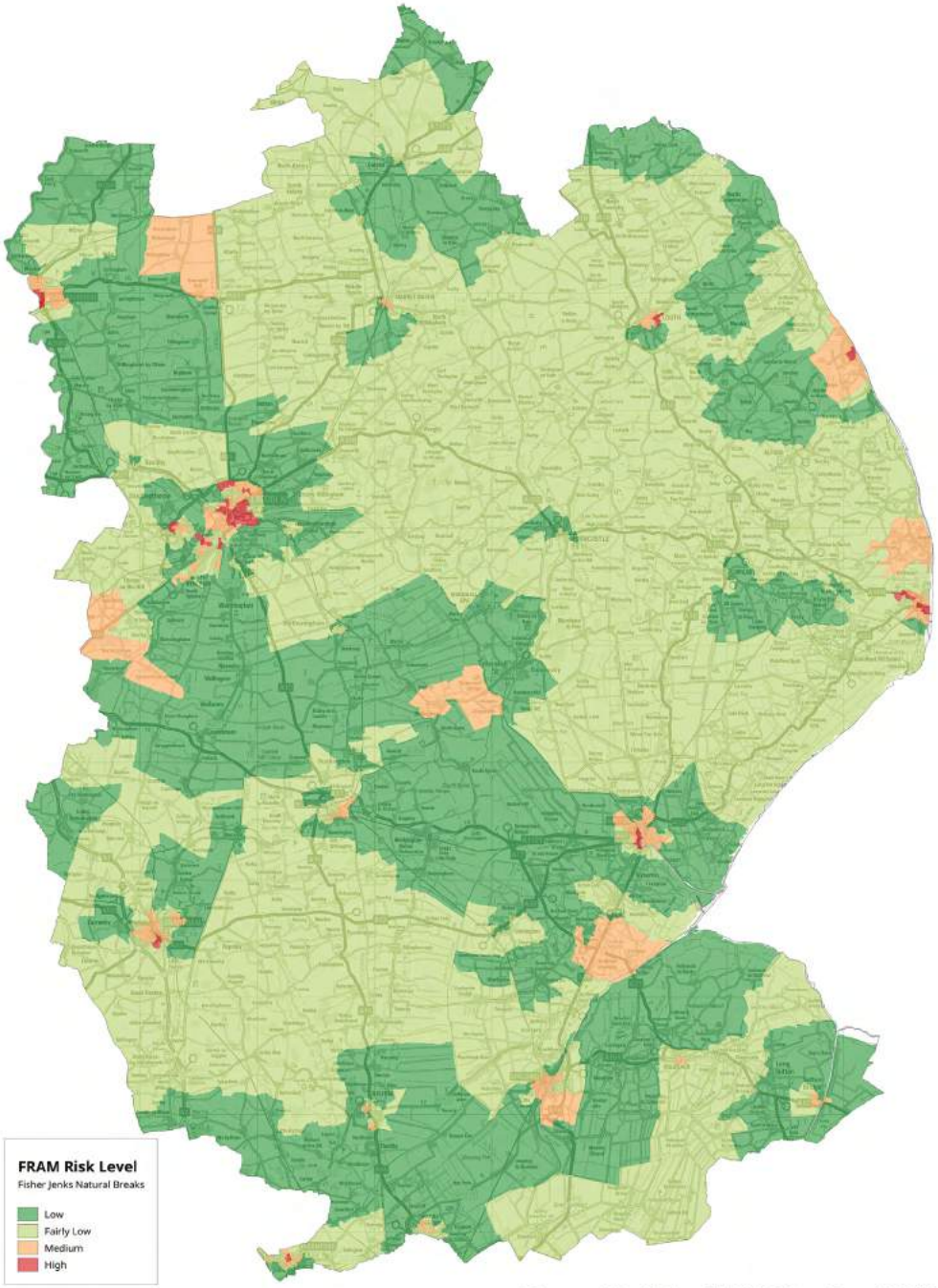


High Risk Buildings

We use Experian's Incident Risk Score model (IRS) to identify high risk premises for both operational risk, and fire safety inspections. This integrated approach provides a level of consistency in the base methodology used by both areas.

Experian's model defines high risk buildings by three common areas of risk in commercial premises:

- The presence of a large number of people.
- The presence of material or stock, which could be flammable.
- Places where food is being cooked.

The model profiles businesses against this risk and assigns a risk percentile score out of 100. The dataset is updated quarterly, which will allow LFR to identify businesses that have newly formed, ceased trading, moved or merged.

The methodology for both fire safety and operational risk is described below:

Risk Based Inspection Programme

We use a Risk Based Inspection Programme (RBIP) to:

- Determine a fire safety inspection programme for non-domestic premises that is based on an assessment of the risk posed by generic types of premises and individual buildings; and
- Ensure that the fire safety inspection programme carried out by both operational and non-operational personnel contributes to Integrated Risk Management Planning (IRMP) and the associated preventative, protective and response arrangements.

The following principles support the risk identification of our RBIP:

- We use Experian data to identify new premises. These are scheduled for inspection and the outcome will ensure they are placed in the appropriate category under the RBIP.
- Premises which present the highest risk will be audited and inspected more frequently.
- The RBIP is a dynamic document which is updated on a weekly basis to ensure all risk is current.

Operational Risk Inspection Programme

Experian's IRS data is used to identify high risk business premises for operational risk inspection. The Experian data is blended with data from a generic Premises Type Risk Register (PTRR), which provides further analysis to define high, medium and low risk premises for operational risk inspection.

The PTRR was developed using the list of property types identified by the Incident Recording System (IRS) together with historical data on incidents attended by LFR and national incident data regarding fatalities and injuries. This information is reviewed to align with our assessment of risk and IRMP, to ensure our identified risks are prioritised effectively for operational risk inspection.

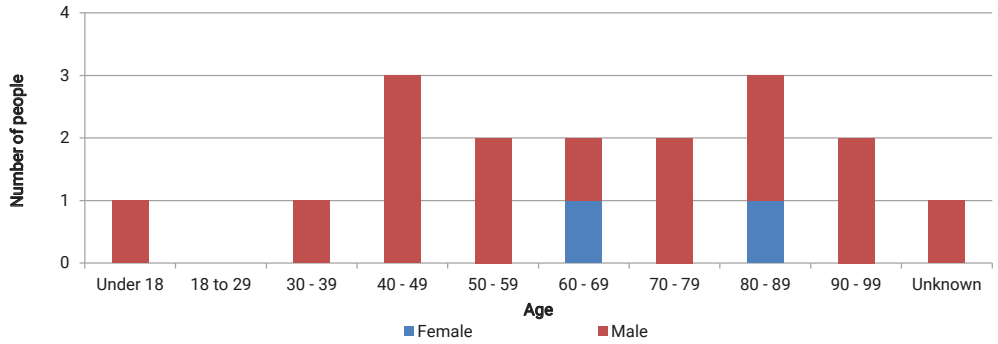
High Risk (Vulnerable) People

We analysed seven years of fire fatalities and the resulting serious case reviews to understand trends relating to fire deaths in Lincolnshire. We compared this analysis with partnership data and national fire fatality data to highlight the common vulnerabilities.

Our data shows that 84% of fire related fatalities occur in domestic dwellings, with 80% of the total number of fatalities being male.

- Full analysis of cause is available on page 60, however, 76% of fire fatalities are attributable to deliberate, smoking, space heating or electrical appliances. Analysis of our data shows that 32% of fire related fatalities are attributed to 'deliberate ignition' causation. Although important, due to the nature of these incidents, these figures are considered in isolation as it is recognised that prevention work will be dependent on partnership working. There will be a need to consider contributing factors of individuals and the nature of the resulting deliberate ignition, e.g. motive, mental health considerations.
- The full fire fatality analysis is available on pages 58-60 of this document, however, for this analysis of vulnerable people we have discounted incidents where deliberate ignition was the cause.

Fire related fatalities by age and gender 2014/15 - 2018/19 excl. deliberate ignition cause



Age and gender – When considering all fire fatalities from accidental causes of fire, 88% of these were male. 18% of fire fatalities being in the age category 40-49, however 41% of fatalities were aged 65 and over which aligns to the national statistics for England for the 2018-19 year, where 42% of fire fatalities in dwellings were aged 65 and over.

Household occupancy – Further interrogation notes an even spread of risk among household occupancy types with no one category being at significant risk, however using national data for England over five years, it is evident that 61% of fire fatalities were one of the lone person categories of household occupancy.

Smoker – In addition to the five fatalities where the cause of fire was carelessly discarded smoking materials, an additional fatality was known to be a smoker making 35% of fire related fatalities being a smoker as a risk factor.

Human factors – Disabled – 18% of our fire fatalities were recorded as disabled compared with national data for England of 6%.

Human factors – Excessive and dangerous storage – 12% of our fire fatalities had recorded a presence of excessive and dangerous storage (hoarding) compared with 2% nationally for England.

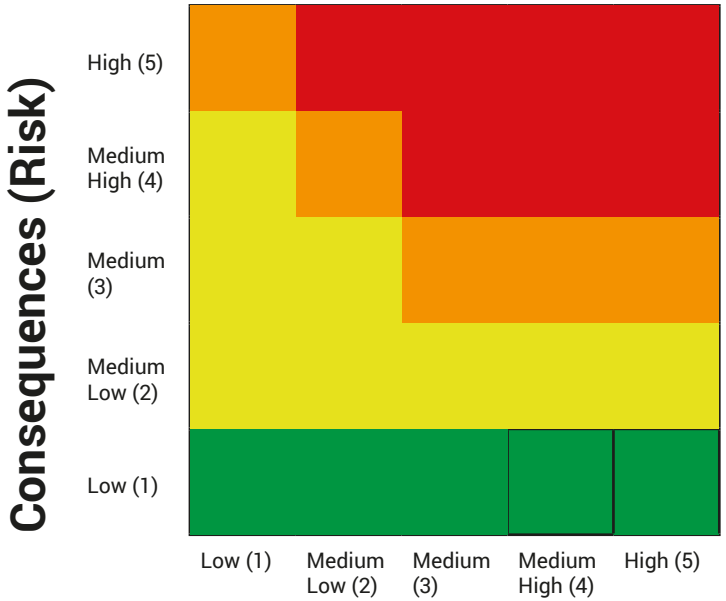
Human factors – Suspected under influence of alcohol/drugs – 35% of our fire fatalities were recorded as alcohol or drugs as an impairment contributing to the fire compared to 18% nationally for England.

It is also important that fire related injuries are analysed. We view this type of incident as preventable and as a consequence develop strategies to prevent fires resulting in injury. Details show that 22% of fire related injuries result in people who live on their own and are over pensionable age. 26% of injuries are as a result of fires involving cooking appliances, with 19% of injuries sustained whilst individuals attempt to tackle the fire.

It is acknowledged that LFR has a small dataset of incidents and resulting injuries and fatalities to review. As a result national statistics are also reviewed to support the identification of trends and emerging issues. Local and national datasets are compared to ensure LFR identifies the correct areas to target and to focus our prevention activities on.

Risk Assessment Matrix

Once our risks have been identified and analysed we use a risk assessment matrix to determine the level of risk. This is based on:



Each identified risk is scored using available intelligence and professional judgement. These risks are then categorised as follows:

VERY HIGH RISK – May have a medium-low likelihood but their potential consequences are high enough to make very high risk.
HIGH RISK – Will be given careful consideration during LFR's strategic planning process.
MEDIUM RISK – Will be monitored to ensure Response, Prevention and Protection resources are in place to mitigate the risk.
LOW RISK – Will be managed during normal planning arrangements.

The outcomes of this process are summarised in the table on page 21 and are then used to drive our IRMP.

Risk Treatment

The IRMP document is our long-term plan which outlines LFR's assessment of key risks and the frameworks we will adopt to mitigate those risks over a four year period. The IRMP enables us to target our resources and develop further detailed plans, such as the annual service plan, effectively, ensuring we can fulfil our mission of 'making our communities safer, healthier and more resilient'.

The IRMP will assess key community and corporate risks and drive the frameworks for how these risks are treated. These frameworks cover the core business of the service. Maintaining the right balance between these frameworks and ensuring our approach to risk reduction is fully integrated is key to the delivery of an effective service.

Evaluation

Our assessment of risk is recorded on corporate and community risk registers. These registers provide assurance that risks are being prioritised and monitored effectively and resources allocated appropriately. Both risk registers are reviewed on a monthly basis at our Service Management Board.

We are committed to the continual improvement of the services we provide to our communities. It is important that all integrated risk activities are evaluated to allow the Service to continually monitor risks, ensure compliance with legal responsibilities, measure the impact and benefits of the work being carried out and evaluate the effectiveness of any changes made as a result of IRMP planning.

Quality assurance of IRMP activities will be delivered through:

- HMICFRS inspections
- Performance Management Board
- Internal department and policy audits
- Continual team monitoring, team development and sharing of best practice
- Staff appraisals

Engagement on risk

Throughout the development of the IRMP, we frequently use data and analysis to understand risk. It is equally important that we engage with staff, communities, partner agencies, representative bodies and key stakeholders to seek their views on risk in Lincolnshire and consider this as part of the planning process.

We work closely with Lincolnshire County Council's (LCC) engagement team to build an engagement plan, which helps us to target communities, organisations and individuals for feedback. For example, as we felt heritage was a risk, we engaged with Heritage Lincolnshire, English Heritage and the National Trust to improve our understanding of this risk.

The formal engagement period ran for a total of 14 weeks, during which our plans were made available online with a link to a snap survey. Copies were circulated widely through email and hard copies made available on request. A series of briefing sessions were held for both staff and members of the public.

The engagement process invited respondents to feedback on three key areas:

1) Do you agree with our assessment of risk?
2) Do you agree with our plans to mitigate this risk?
3) Is there anything else you think we should consider?

We also carried out a peer review of our IRMP with colleagues from Nottinghamshire FRS.

In total we received 172 responses to the survey, a large proportion of which came from the 46-60 age bracket (56%) compared with 35% from the 26-45 age group. This is an area we will evaluate going forwards to improve future uptake from all age groups.

Outcomes

The results were very positive with the majority of respondents (83%) agreeing with our assessment of risk and 74% agreeing with our measures for reducing risk. Areas we have improved or added as a result of feedback received are:

- Due to the impact of the Covid19 pandemic, Covid19 is now referenced specifically with appropriate mitigation.
- Water risks were reviewed to reflect the large network of rivers and drains in Lincolnshire.
- Clearer reference to response standards within the Response Framework.
- A new dataset on heritage risk was shared by Heritage Lincolnshire. This significantly improved our understanding of this risk and was used to model heritage risk across the county.

We know Lincolnshire

We collect lots of data about incidents we attend and about risks in our county. We know a lot about Lincolnshire and the risks within the area. This section explains those risks in more detail.

Context

Lincolnshire is the fourth largest county in England covering 5,921 square kilometres. The county is classified as one the most rural in England by the Department for Environment, Food and Rural Affairs (DEFRA).

Lincolnshire's population is around 750,000 and is growing, ageing and changing; the impact of this is covered in more detail later. The county comprises seven districts; East Lindsey, West Lindsey, North Kesteven, South Kesteven, South Holland, the Borough of Boston and the City of Lincoln.

Lincolnshire has over 50 miles of coastline stretching from The Humber in the north to The Wash in the south with many of its beaches awarded blue flag status.

The Lincolnshire Wolds is a range of hills designated as an area of outstanding natural beauty and covering an area of 560 square kilometres.

There are 18 rivers running through the county, the two largest being the Witham and the Trent. It is also home to the Foss Dyke canal, one of England's oldest canal systems still in use today.

The western edge of Lincolnshire is connected to the UK's strategic road network by the A1 and also has part of the East Coast Main Line running through it, providing excellent rail links to London and Scotland.

Lincolnshire has no commercial airports however it does have a number of active RAF bases, a number of small local airfields and Humberside airport is just across the border in North Lincolnshire.

The port of Boston has regular container services operating to and from Norway, Sweden and Spain with overall some 750 vessels and 1.5 million tonnes of cargo being handled through the port each year. Imports include animal feeds, paper, steel and timber. In addition up to half a million tonnes of grain is exported from the port of Boston every year.

Lincolnshire is an agricultural area, growing large amounts of wheat, barley, sugar beet and oilseed rape. Workers from the European Union comprise a large component of the seasonal agricultural workforce, particularly in the south of the county.

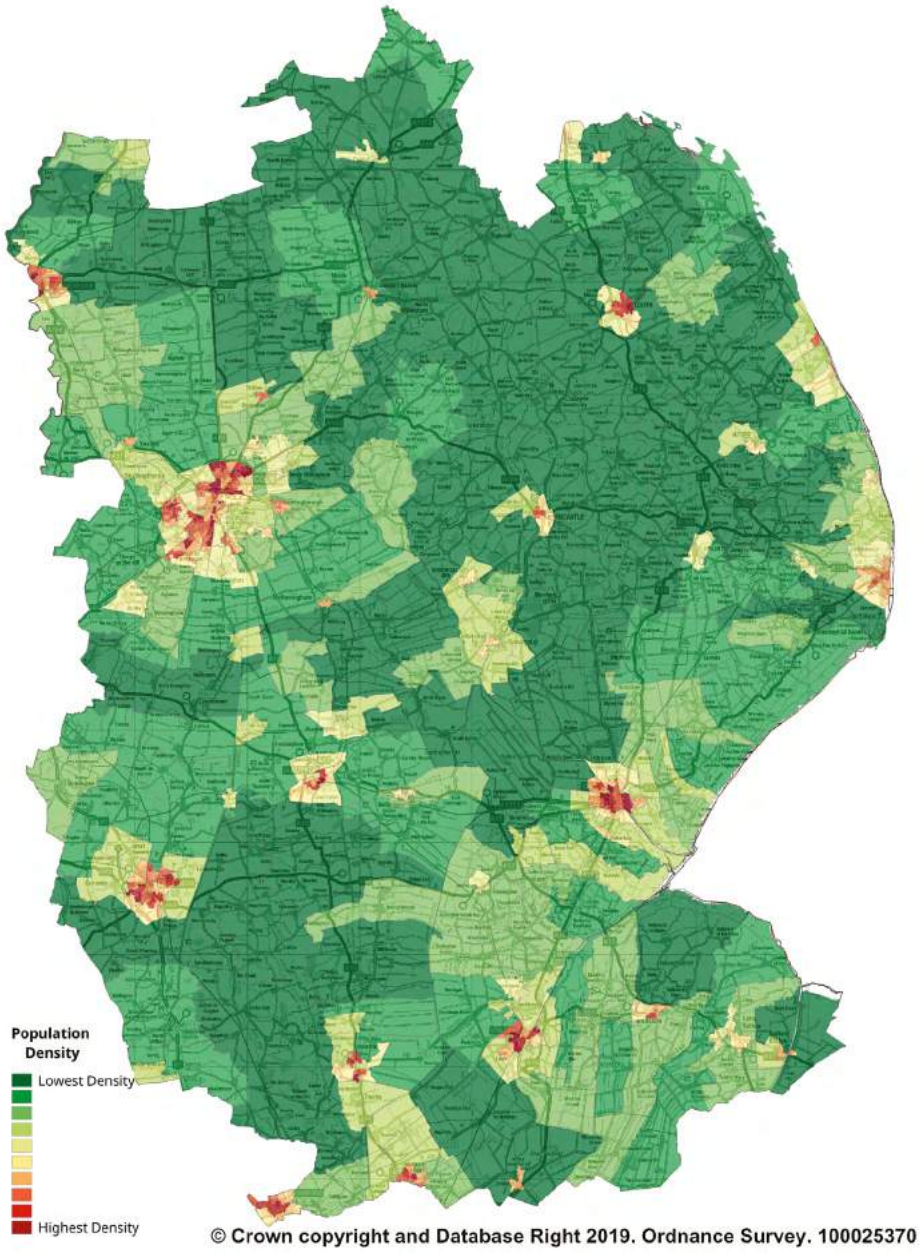
Population

Knowing both the population size and demography of an area, and understanding how it is changing, are both important factors for understanding our communities and the risks within them.

Lincolnshire's current population is estimated at 751,200. This is expected to rise to 802,000 by 2031, an overall increase of 8% in line with the national prediction over this period. (Source; Lincolnshire Research Observatory)

Lincolnshire	744,800	766,300	802,000	824,400	3	8	11
East Lindsey	138,700	140,700	144,900	147,700	1	4	6
North Kesteven	113,600	117,400	123,200	126,900	3	8	12
South Kesteven	140,900	146,500	155,500	161,400	4	10	15
East Midlands	4,725,400	4,874,100	5,127,100	5,311,400	3	9	12

The map demonstrates Lincolnshire's more densely populated areas, highlighted in red through to lowest density in dark green.



Migration Levels

Net migration (the balance between immigration – those entering the UK for a year or more, and emigration – those leaving the UK for a year or more) affects some areas of Lincolnshire more than others.

The Office for National Statistics data (2016) estimates Lincolnshire as having a 7.3% proportion of non-British population, compared with a National proportion of 9.3%.

However, the proportion of non-British nationals in Boston Borough (27%) and South Holland (13%) is significantly higher, as demonstrated in the map below;

(Source: Office for national statistics)

Boston Borough has the highest proportion of non-British nationals outside of London. Immigrant workers, mainly from the European Union, comprise a large component of the seasonal agricultural workforce, particularly in both Boston and South Holland.

Of the 25 fire related fatalities during the last five financial years, four were recorded as being 'Other White' ethnicity group. This equates to 16% of fire related fatalities. There were four fire related fatalities in the South Holland area, 75% (three fatalities) recorded as 'Other White' and in the Boston area, five fire related fatalities with one of the individuals being 'Other White', therefore relating to 20% of the fatalities in this area. This data indicates that a higher percentage of the non-British national population of South Holland were fatally injured by fire than the resident population of the area.

Ageing population

Lincolnshire has a declining younger population and a growing older population with many people moving to the county in order to retire. Lincoln as a city has a higher percentage of people aged 20-64 compared with other districts, due to the influence of universities and higher education.

The trend towards an ageing population profile will continue, with the proportion of people over 75 years projected to increase by 88% between 2016 and 2041.

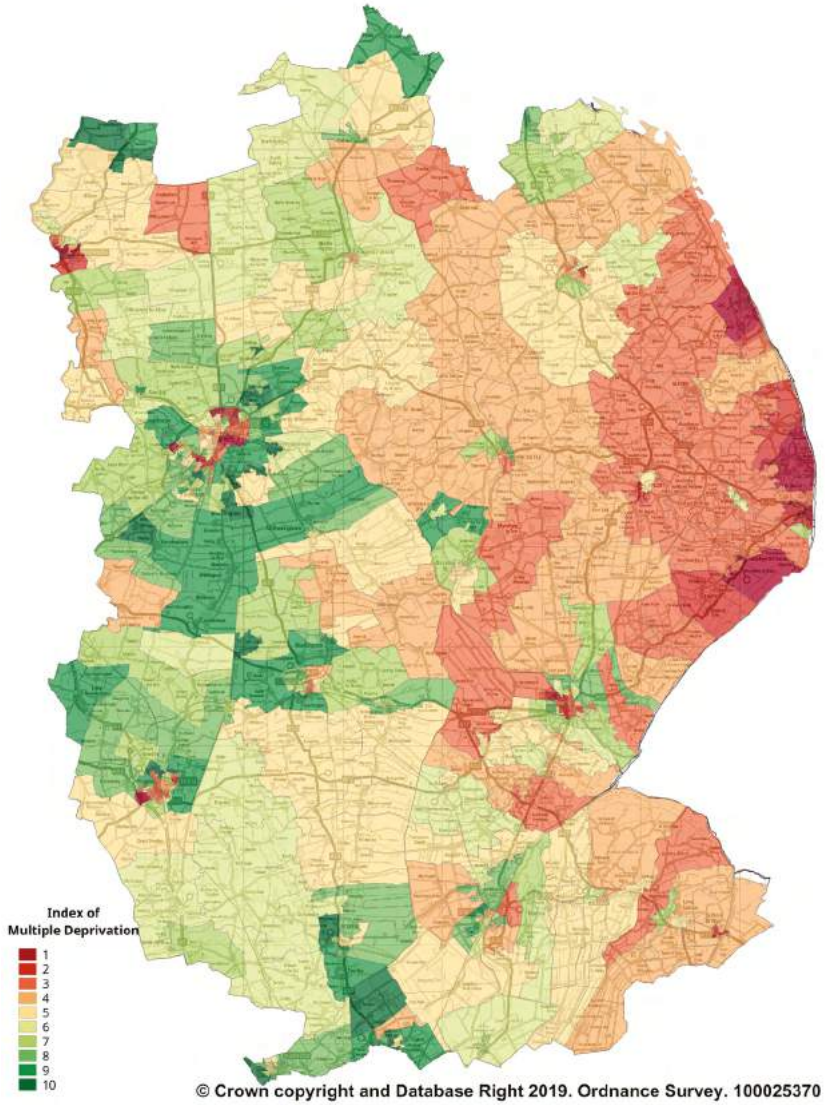
The proportion of young people in Lincolnshire (aged 0-19) fell from approximately 23% of the total population in 2007 to 22% in 2017. In the same period the population of those aged 65+ has increased by 3% to approximately 23%. The two factors together highlight a declining younger population and a growing older population in the county. (Source; Lincolnshire Research Observatory)

The table shows changes in population by broad age group.

Lincolnshire	23	22	58	55	20	23
East Lindsey	21	19	56	52	24	29
North Kesteven	23	22	58	55	19	23
South Kesteven	24	23	58	55	18	22
East Midlands	24	23	60	58	16	19

Deprivation

In the Index of Multiple Deprivation (IMD) showing overall deprivation, the 2015 data shows Lincolnshire ranked 90th out of 152 upper tier local authorities in England, where 1st is the most deprived. The map demonstrates Lincolnshire's more densely populated areas, with those most deprived highlighted in red through to the lowest deprived in dark green.



Health

Understanding ill health and its distribution is the first step to planning effective interventions to improve health and to prevent ill health.

Life expectancy from birth for Lincolnshire residents is comparable to national estimates and has remained static since 2010. Healthy life expectancy from birth in Lincolnshire is slightly lower than national estimates and has decreased since 2010.

70% of adults in the county are overweight or obese. National estimates of levels of morbid obesity suggest that there may be 11,500 adults with a BMI over 40 and nearly 800 with a BMI over 50 in Lincolnshire.

It was estimated that 11,688 people aged 65 and over were living with dementia in Lincolnshire in 2017. This accounted for 6.7% of all adults aged 65 and over. It is estimated that more than 15,000 individuals in Lincolnshire have a learning disability.

The number of people aged 65+ admitted to hospital as a result of falls is projected to increase from 3,309 in 2014 to 5,188 in 2030.

Lincolnshire's Joint Strategic Needs Assessment provides further evidence and analysis around health in the county.

The Joint Health and Wellbeing Strategy for Lincolnshire sets out the following Health priorities for the county:

- Mental Health and Emotional Wellbeing (Children and Young people)
- Mental Health (Adults)
- Carers
- Physical Activity
- Housing and Health
- Obesity
- Dementia

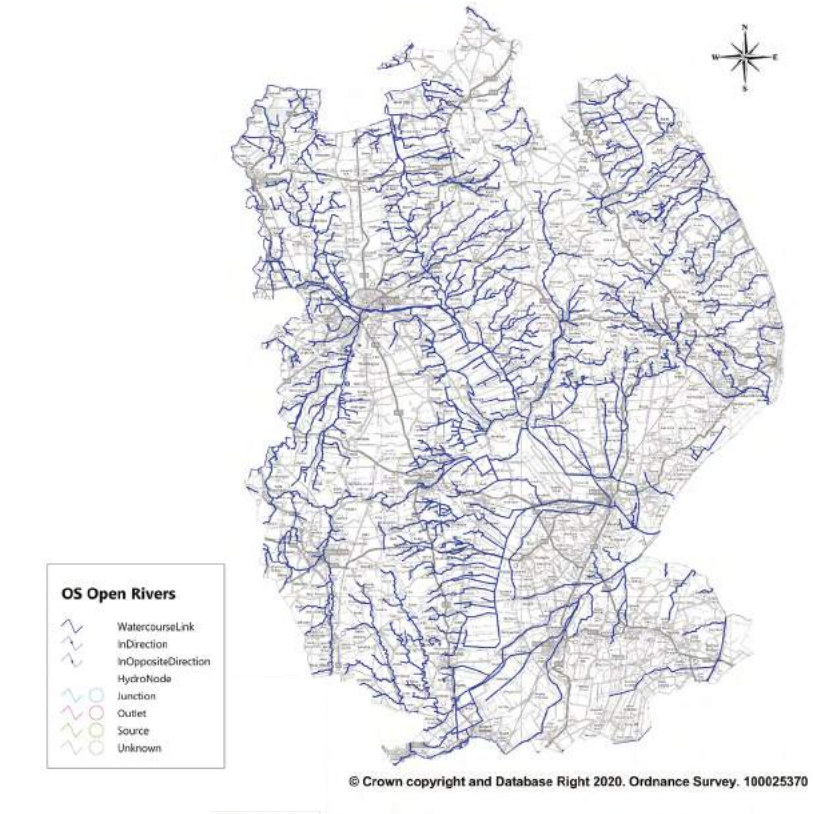
Delivery of the objectives identified for each of these priorities will be through Lincolnshire's Health and Wellbeing Board.

Environment

Lincolnshire is a largely rural county with a coastline of more than 50 miles, hosting seaside resorts that attract thousands of visitors each year. It is also home to a diverse range of wildlife including the grey seal. Large areas of land along the coastline are below sea level and are protected from flooding by sea walls and defences.

There are a number of internationally and nationally important nature conservation sites along the coast, including the Wash, which is classified as a Site of Special Scientific Interest.

There are 18 rivers running through the county, the two largest being the Witham and the Trent. It is also home to the Foss Dyke canal, one of England's oldest canal systems still in use today.



Ordnance Survey Open Rivers in Lincolnshire

Understanding flood risk is an important factor in understanding the level and weight of resources required to respond to flood events, be it inland flooding, east coast flooding or surface water flooding following a severe weather event.

In 2013 Boston experienced a devastating tidal surge affecting approximately 600 homes and businesses in the town. It was the worst flooding seen in Lincolnshire in 60 years. The 'Boston Barrier' is a partnership between the Environment Agency, Lincolnshire County Council, Boston Borough Council and Black Sluice Internal Drainage Board, who are all working together to reduce the risk of tidal flooding in Boston. This tidal flood defence system will provide protection for 14,300 properties in the area. When the barrier is built and the banks immediately downstream are raised, Boston will be protected from a tidal surge with a 0.3% annual probability (or 1 in 300 chance of happening in any one year).

We have worked closely with the University of Lincoln (UOL) geography department to help improve our understanding of future flood risk in Lincolnshire. A report by UOL aims to highlight the flooding risk in Lincolnshire, whilst spatially analysing the extent of Lincolnshire Fire and Rescue's dispersal and resourcing models.

This academic study used a wide variety of flood data and LFR drivetime modelling to describe:

- Lincolnshire's low lying land places it at high risk from rising sea levels and storm surges.
- An estimated 220,000 people live in Lincolnshire's coastal zone thus exposing them to catastrophic flooding impacts from the sea.
- Identifies all high, medium and low risk areas.
- Areas of greatest risk are in Boston and Skegness.
- All medium and high risk areas of flood risk are covered by LFR's current 10 minute response times.
- Identifies stations at Boston, Mablethorpe and Skegness which are at risk themselves and suggests business continuity measures.
- Looks at impact of future flood defences e.g. Boston barrier.
- Recommends LFR considers greater community involvement to ensure the at risk population are equipped to deal with a flooding event.

Artists impression of the Boston Barrier

Access to the Environment Agency's flood risk maps allows us to analyse the risk and ensure we are adequately prepared.

Transient Population

Areas of Lincolnshire, particularly the East Coast, attract tourists and holiday makers from both inside and outside the county. This causes seasonal variations in population, particularly within tourism hotspots such as Mablethorpe and Skegness. Changes in population mean changes in the assessment of a number of our community risks in these areas, including fires and floods. Caravan sites throughout the East Coast pose a unique risk with dense populations, and limited protection from fire or flood.

The response arrangements to any potential flooding in these areas is assessed with the Service's East Coast Inundation Plan. The risk of fires and their consequences in these areas are mitigated within divisional and prevention team plans.

Economy

Agriculture, commercial, industrial, finance, transport, energy, public services and leisure and tourism make up the county's economy.

The county's coastal resorts attract around 20 million visitors per year, many during the summer months.

Lincoln City has the fourth highest proportion of students in the East Midlands with around 10,000 students at the University of Lincoln. Lincolnshire's long-standing reliance on traditional industries such as agriculture remains high.

The Greater Lincolnshire Local Enterprise Partnership (LEP) has developed a number of priorities and plans to meet economic development objectives. These plans provide a window into what Lincolnshire might look like in the future and allow us to predict and prepare for associated risk.

The main priority growth areas are:

Student Population

The county has several institutions of higher education including the University of Lincoln, Bishop Grosseteste University, Lincoln College, Grantham College and Boston College. These institutions attract students from all around the country and cause seasonal variations in population, and subsequently risk.

To better understand these population changes and what it means to risk, we have scoped out a research project with the University of Lincoln. The findings will be used to assist targeted prevention activity during the lifespan of Our Community Plan.

Business

We use Experian's Incident Risk Score model (IRS) to identify high risk business premises for operational risk inspection.

Experian's analysis of historic fire incidents reveals that 80% of fires occur in the top 20% of highest risk businesses and identified three common areas of risk in commercial premises:

- The presence of a large number of people
- The presence of material or stock which could be flammable
- Places where food is being cooked

Experian's IRS data is blended with a number of other sources of empirical and dynamic data to drive our operational risk-based inspection programmes.

This information is not shared publically because of GDPR regulations.

Infrastructure

The rural nature of the county means that many people have to travel greater distances to work compared to the national average, with people in the west of the county generally making longer journeys than those in the east.

The western edge of Lincolnshire is connected to the UK's strategic road network by the A1 and also has part of the East Coast Main Line running through it, providing excellent rail links to London and Scotland.

Several major projects are underway to improve Lincolnshire's road network, including the Lincoln Eastern Bypass, which will be part of a wider concept to create a ring road around Lincoln city. LFR is engaged with this project and others to understand potential impacts on road traffic collisions and FRS response times.

Lincolnshire has no commercial airports however it does have a number of active RAF bases, a number of small local airfields and Humberside airport is just across the border in North Lincolnshire.

The port of Boston has regular container services operating to and from Norway, Sweden and Spain with overall some 750 vessels per year being handled through the port. Imports include animal feeds, paper, steel and timber. In addition up to half a million tonnes of grain is exported from the port of Boston every year. The port handles approximately 1.5 million tonnes of cargo per year.

Port Sutton Bridge is a modern dry cargo port and warehouse complex that has grown over recent years.

Many communities within Lincolnshire are on the periphery of the supply networks for utilities such as water, gas and electricity, which means they are more exposed to single points of failure within the supply chain. Due to the sparse nature of the population, there are many homes within the county that are not on the main supply route for basic utilities. These homes rely on septic tanks, and oil and gas storage for hot water and heating. These homes are more resilient in times of widespread utilities disruption, but are more vulnerable to shortages or disruptions within their own system.

Industrial (COMAH)

Lincolnshire has a relatively low number of sites registered under the Control of Major Accident Hazards (COMAH) regulations 1999. However, by their nature they pose more significant risk to the local community than other industrial sites.

LRF's Community Risk Register indicates mitigating actions for risk related to COMAH sites, including on and off site emergency plans for top tier sites and onsite procedures for other sites. These sites are not detailed in this document for reasons of security.

Regular multi agency exercising of plans is carried out with full participation from LFR. Familiarisation with these sites is also part of firefighter training.

Our community risks

Having analysed all available data on both current and foreseeable future risks, and following an extensive engagement period with staff, communities and key stakeholders, we have produced the following priority community risks for the period 2020–2024:

1	**Dwelling Fires**	**20**
2	**Road Traffic Collisions**	**20**
3	**Health and Wellbeing**	**20**
4	**Flooding and Severe Weather**	**20**
5	**Pandemic**	**20**
6	**Non-Domestic Fires**	**12**
7	**Water Risks**	**12**
8	**Residential High Rise**	**10**
9	**Malicious Attacks**	**10**
10	**Heritage**	**9**
11	**Deliberate Fires**	**9**

These risks will inform and drive Lincolnshire Fire and Rescue's Integrated Risk Management Plan (IRMP) and will help shape service delivery over the next four years, ensuring our resources and the strategies we use to mitigate risk are targeted at the areas where they can make the most difference.

These risks are explained in more detail in the following pages.

Dwelling fires

Dwelling fires are fires that occur within a residential property.

Level of risk: High

Why is it a risk?

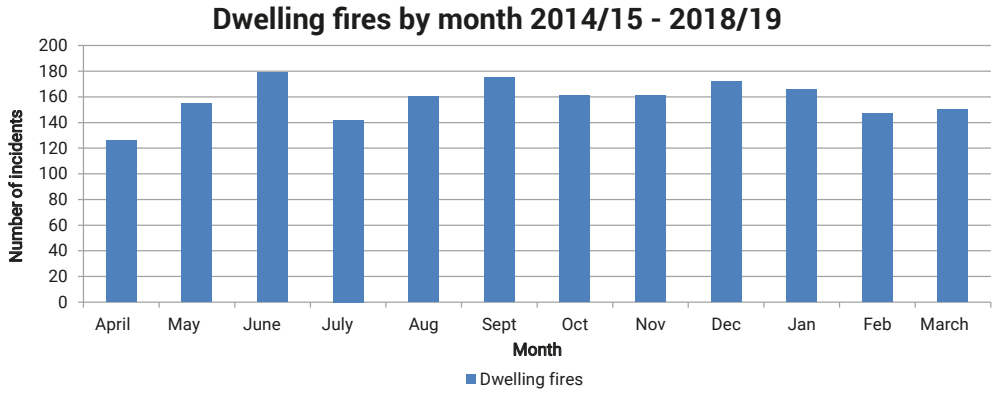
Lincolnshire has a total of 338,700 households across the county (VOA, 2017) with over 52,000 of those privately rented. Our historic demand data shows a gradual increase in fires over the last five years, with domestic fires making up 35% of our fire incidents. Almost half (48%) of those were caused by cooking. 84% (21) of fire fatalities occurred in dwelling fires.

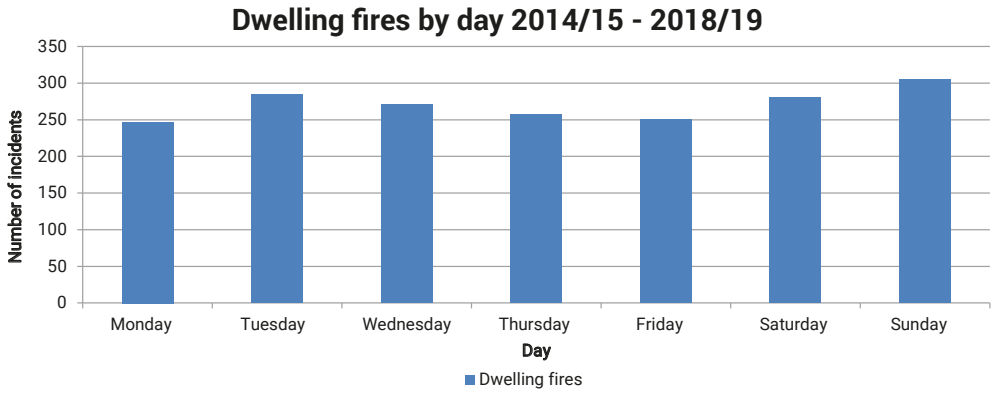
Consequences

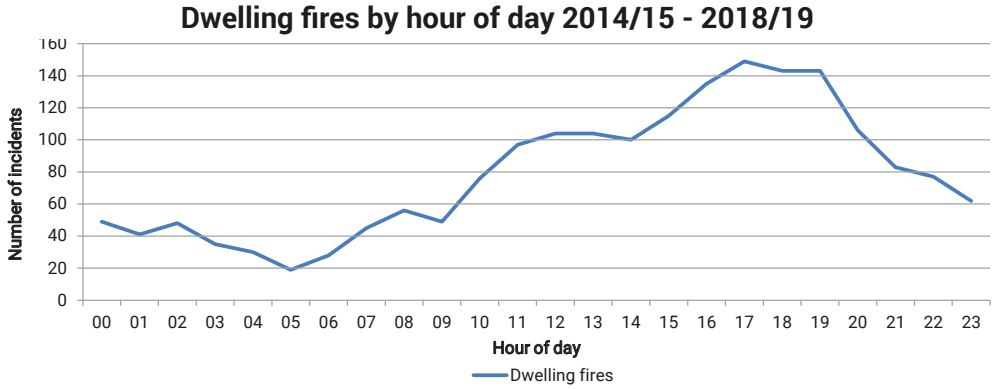
- Risk to life
- Physical injury
- Damage to property
- Damage to local environment
- Short term loss of accommodation
- Economic impact resulting from property loss/damage

Historical demand

Dwelling Fires - When

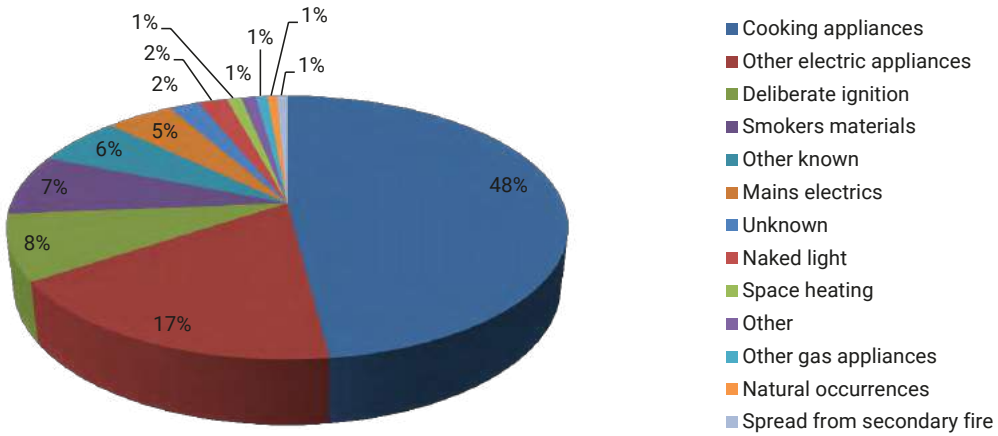






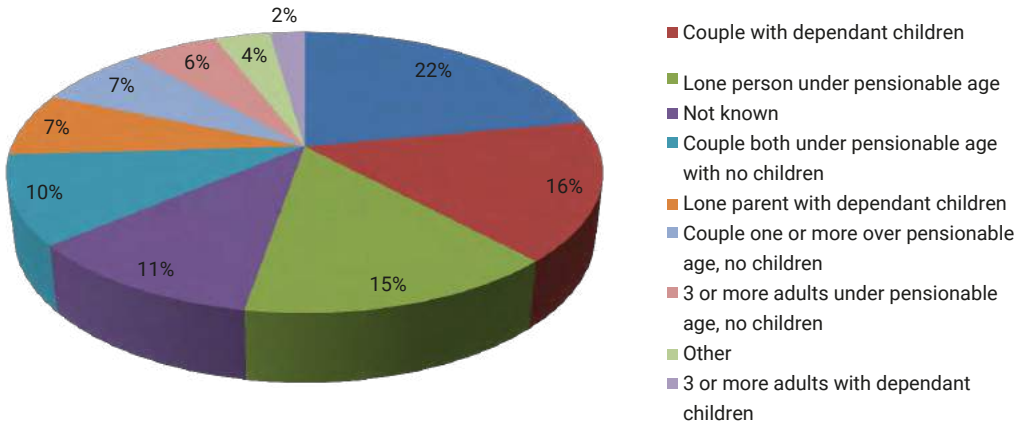
Dwelling Fires - Causes

Dwelling fire causes 2014/15 - 2018/19

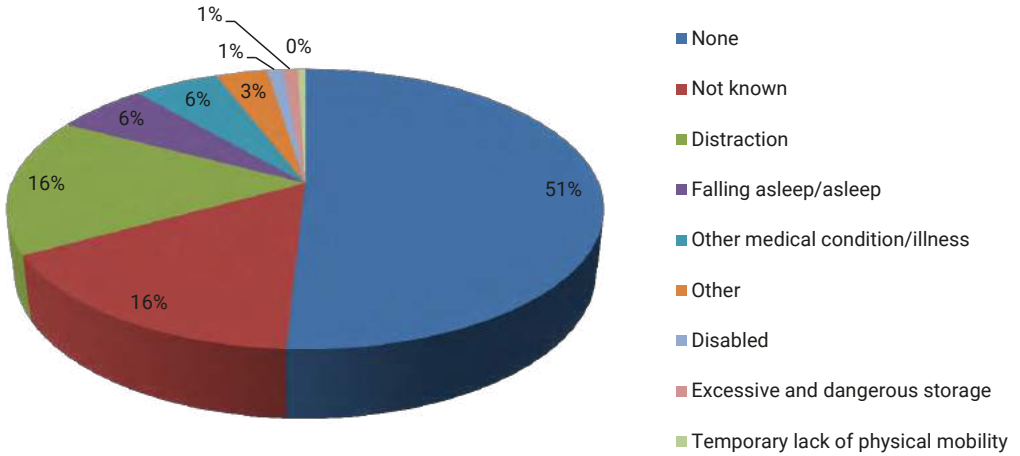


Dwelling Fires – Who

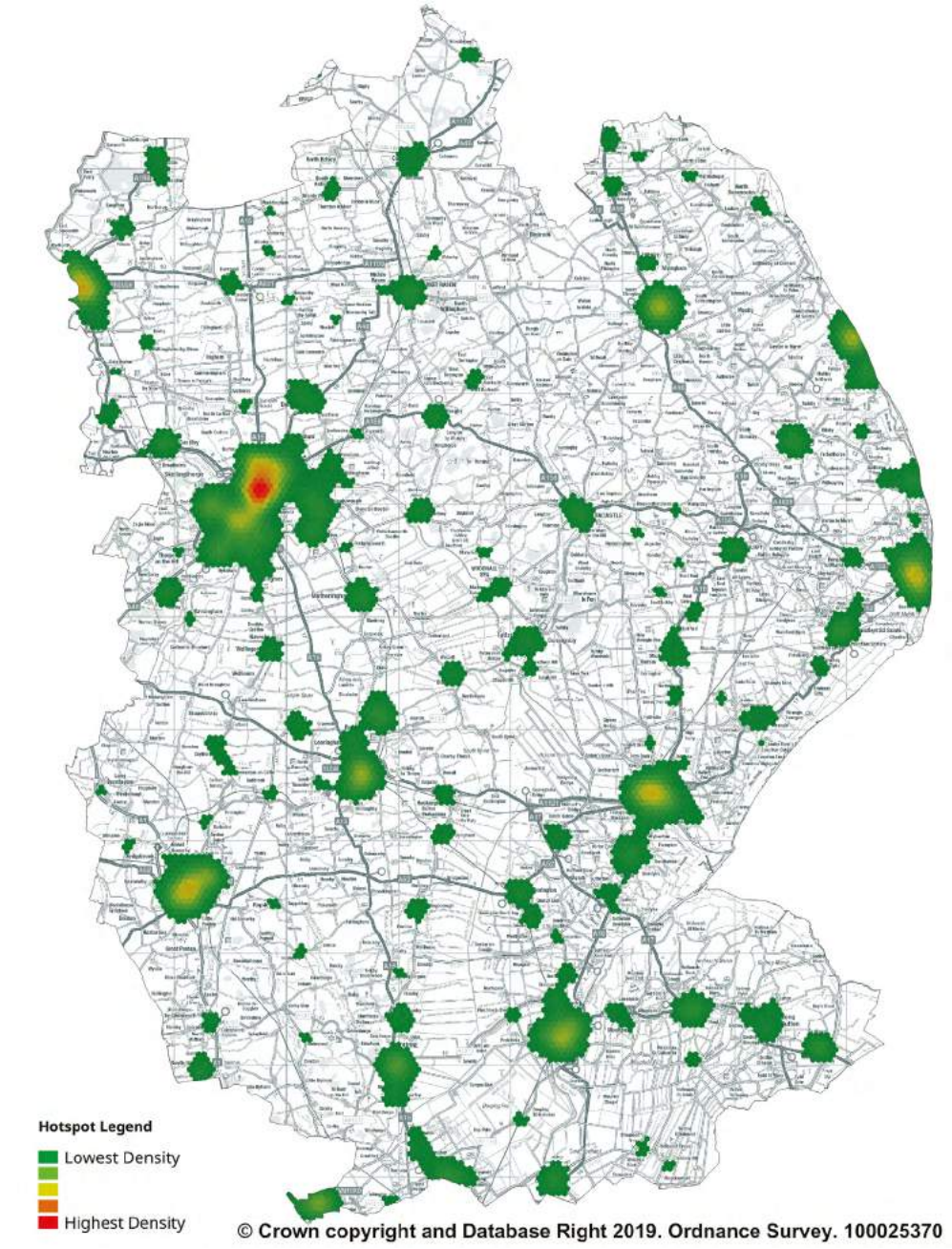
Dwelling fire household occupancy 2014/15 - 2018/19



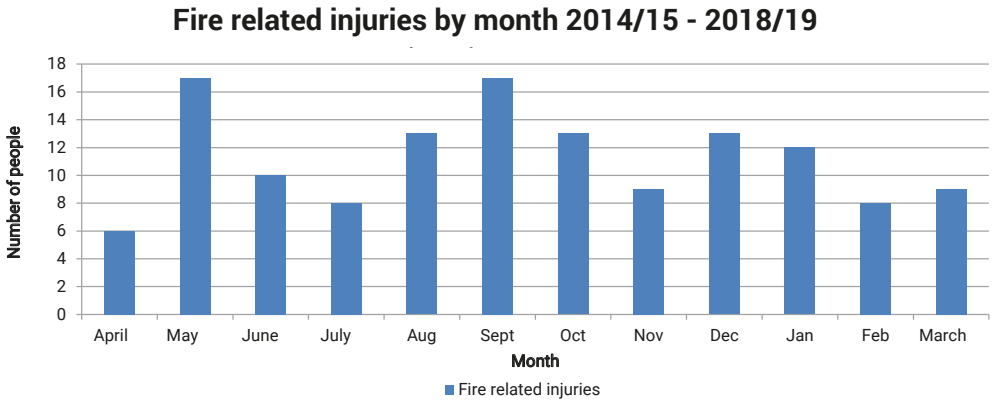
Dwelling fire human factors contributing to fire 2014/15 - 2018/19

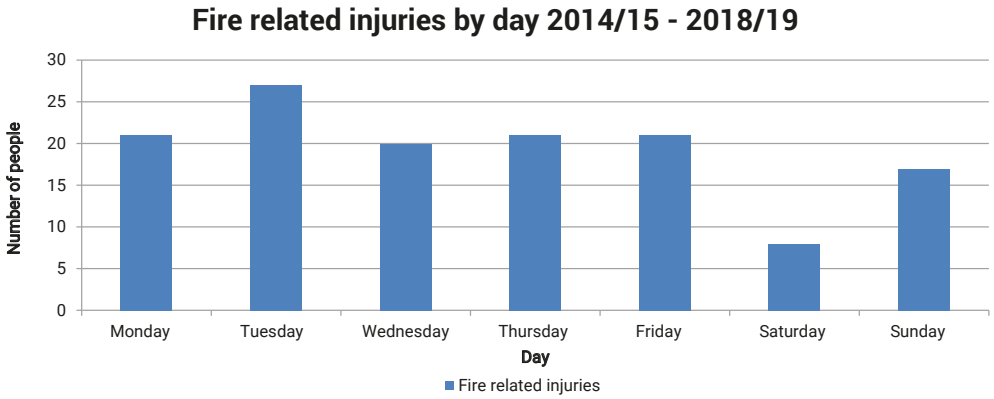


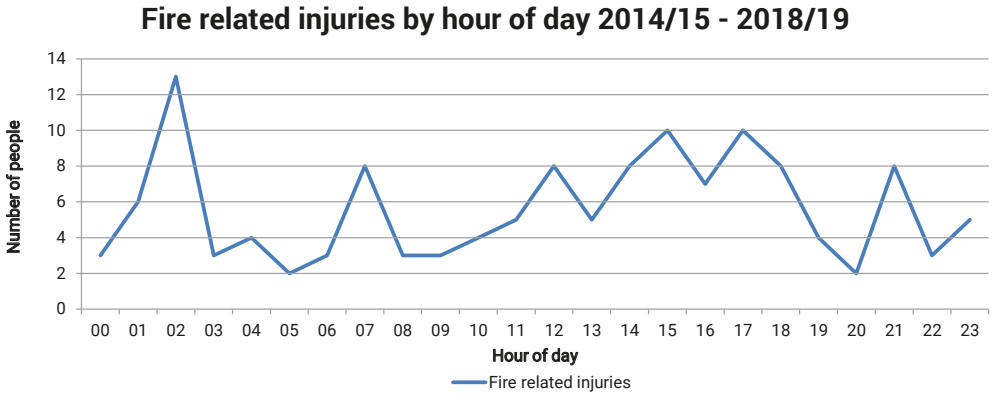
Dwelling Fires - Where



Fire Injuries – When

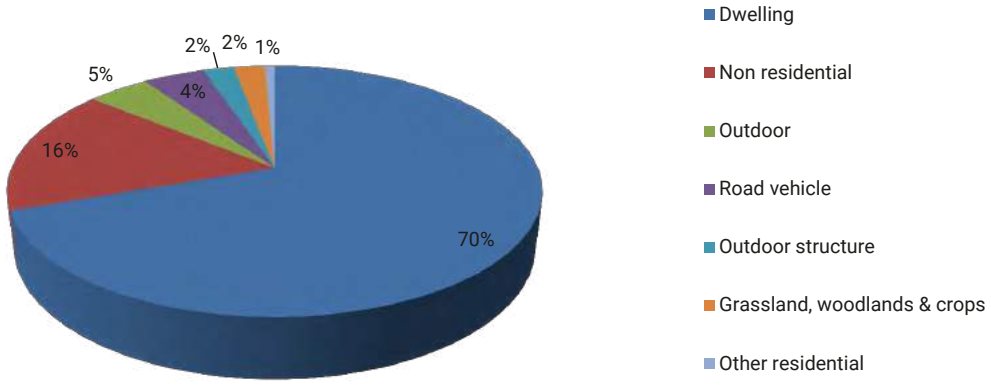




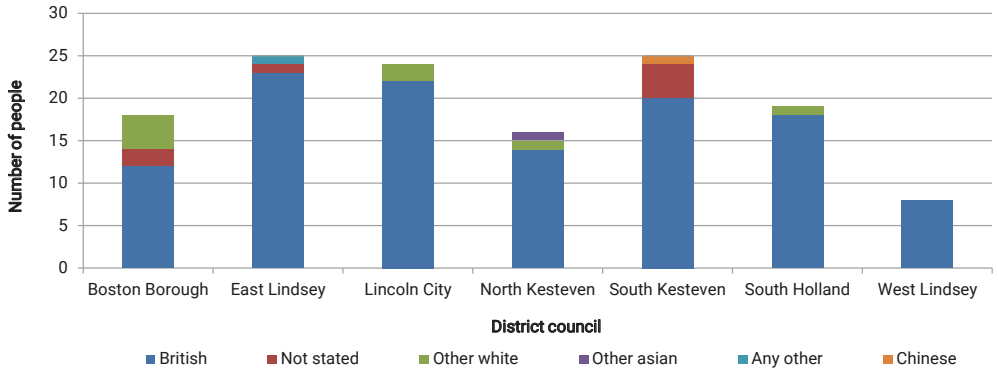


Fire Related Injuries – What and Who

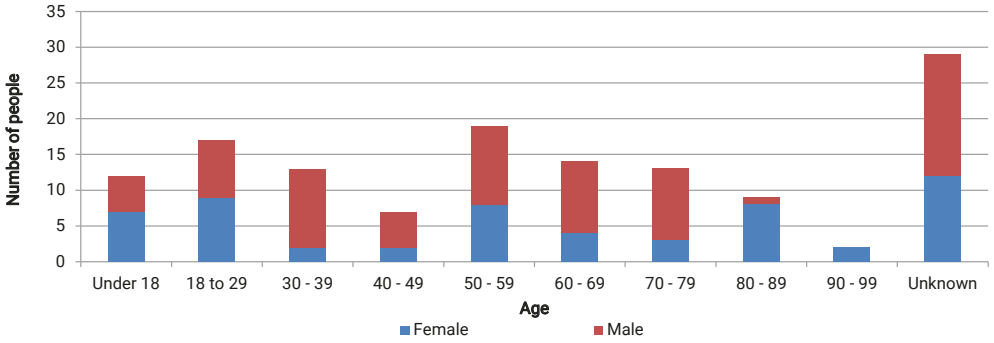
Fire related injuries by property category 2014/15 - 2018/19



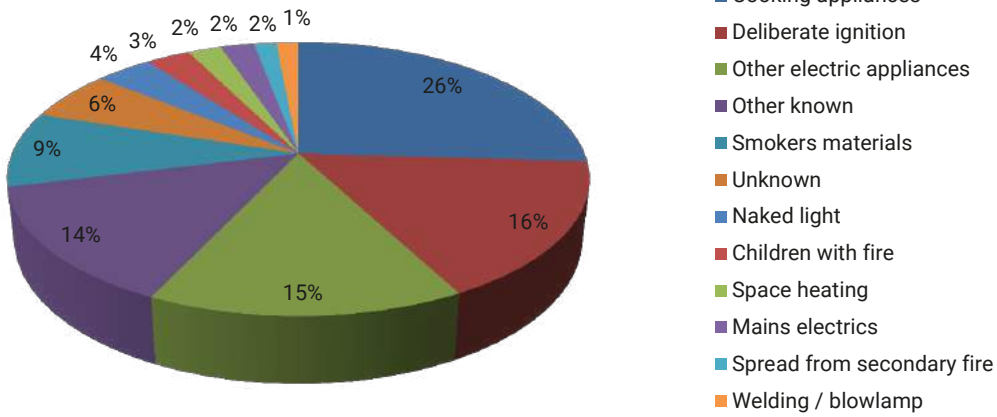
Fire related injuries by ethnicity by district council 2014/15 - 2018/19



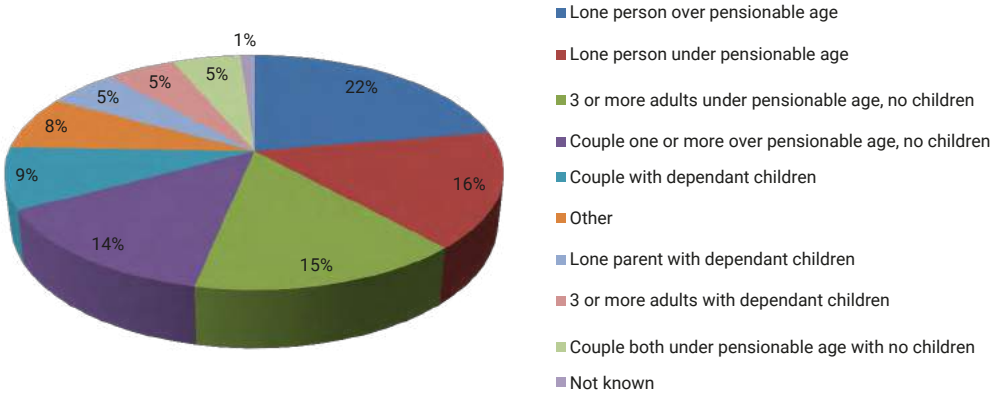
Fire related injuries by age and gender 2014/15 - 2018/19



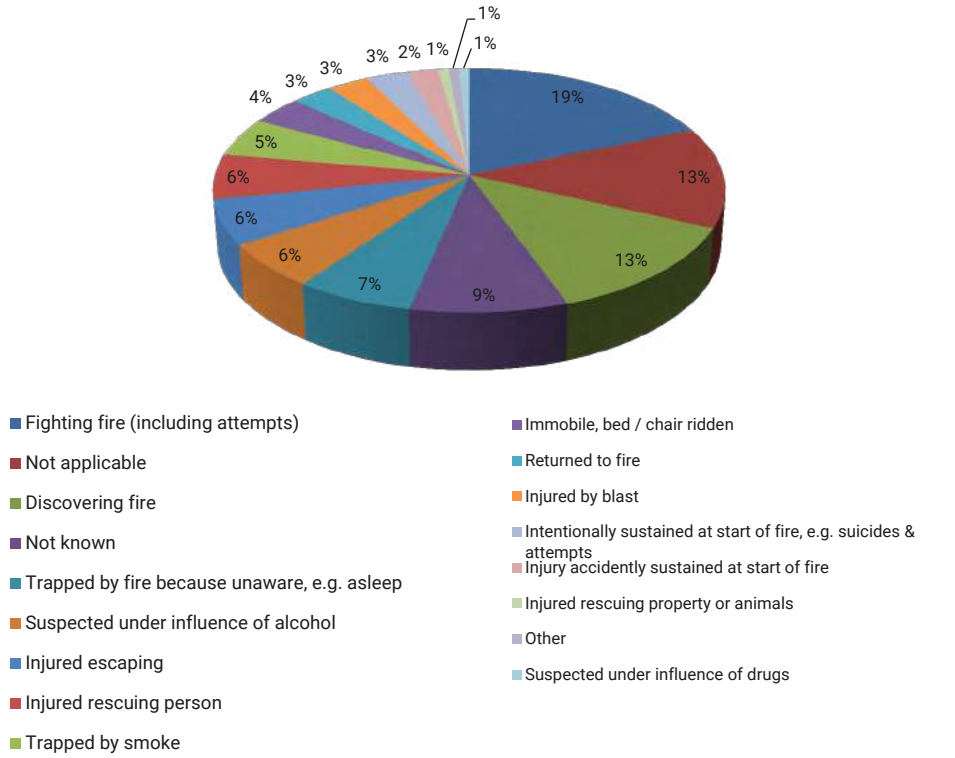
Fire related injuries by cause of fire 2014/15 - 2018/19



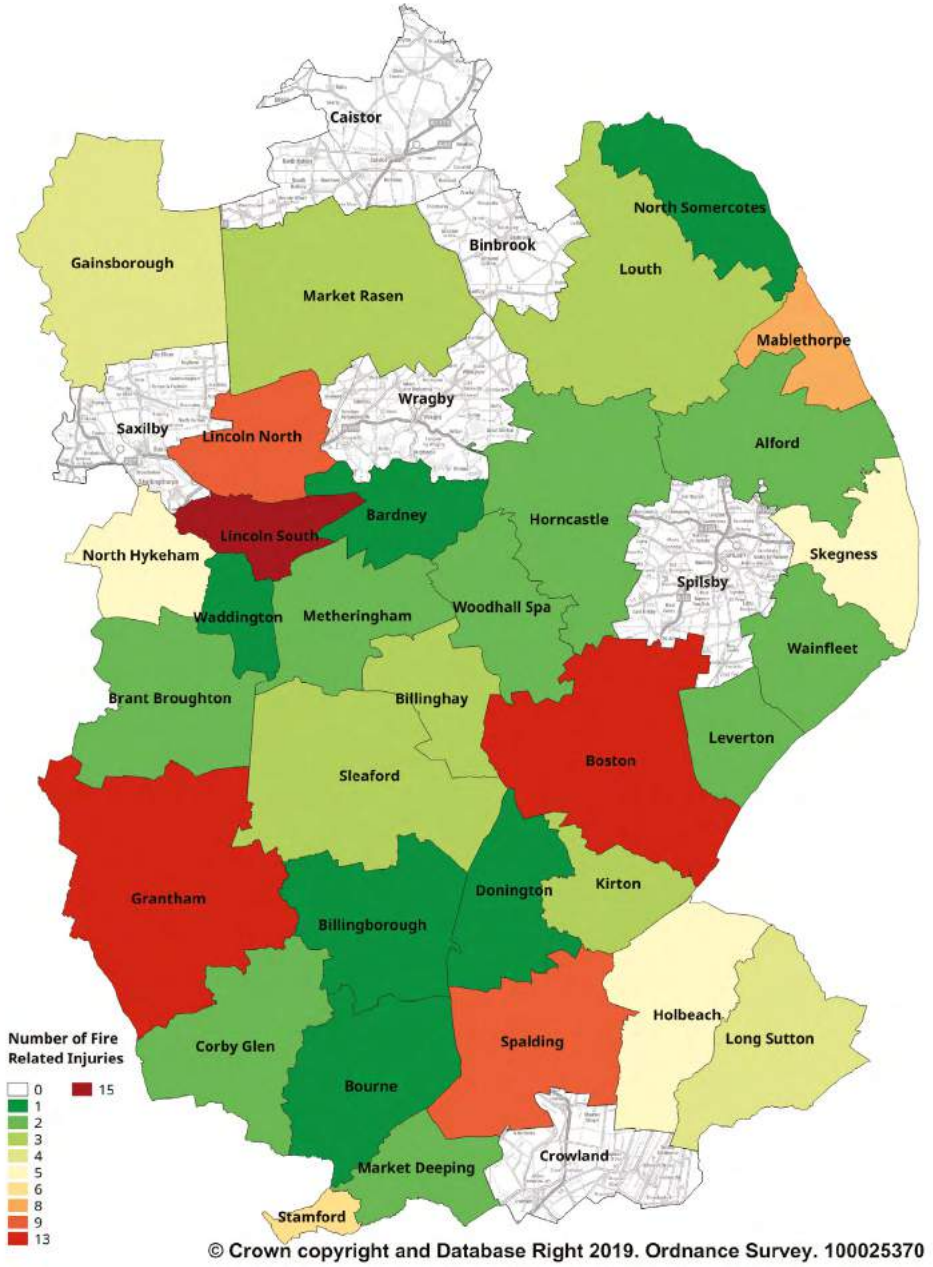
Fire related injuries household occupancy (dwellings only) 2014/15 - 2018/19



Fire related injuries circumstances leading to injury 2014/15 - 2018/19



Fire Injuries – Where



What's on the horizon?

A national shortage of housing has led to a steep rise in housing demand across the UK. The government aims to meet this demand by building up to 300,000 houses per year over the next few years (Homes England strategic plan 2018/19 – 2022/23)

Here in Lincolnshire, District Councils produce their own strategies to address housing needs within the local authority area. As an example, the Central Lincolnshire Local Plan sets out how Central Lincolnshire alone will grow by 36,960 new homes between 2012 and 2036.

As a result we expect housing stock in Lincolnshire to rise sharply over the next few years, resulting in a potential increase in dwelling fire risk. This has been assessed as one of our highest risks for 2020-24.

Road traffic collisions

A Road Traffic Collision (RTC) is a collision involving a vehicle on a road or in a public area that has caused damage or injury to a person, animal, another vehicle or property.

Level of risk: High

Why is it a risk?

Lincolnshire has a vast network of A, B and rural roads. The numbers of road traffic collisions (RTCs) where people were killed or seriously injured on Lincolnshire's roads has increased from 375 in 2013 to 507 in 2017 (Lincolnshire Road Safety Partnership).

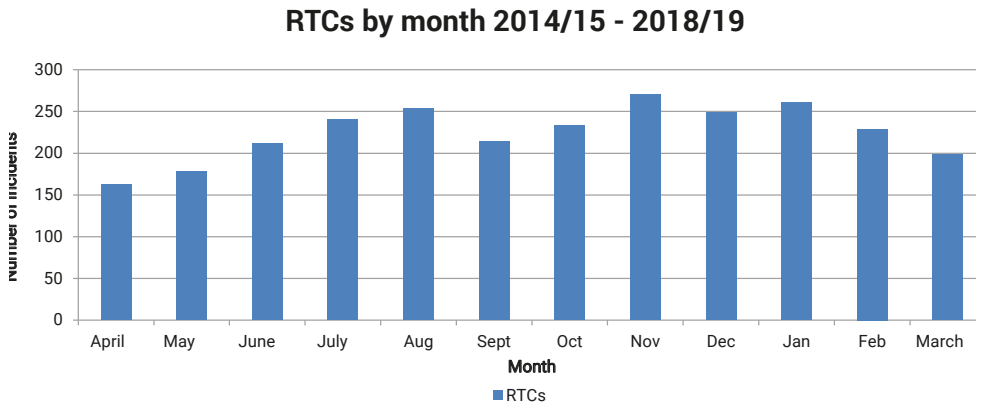
5% of Lincolnshire Fire and Rescue (LFR) calls during this period were to RTCs. Our analysis shows that most of these collisions happen during the daytime and at peak travelling times.

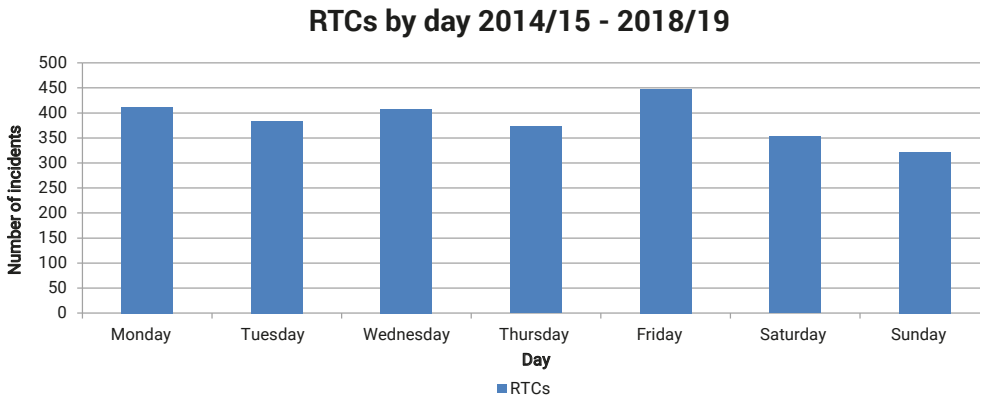
Consequences

- Risk to life
- Physical injury
- Damage to property
- Damage to local environment
- Economic impact resulting from prolonged road closures
- Economic cost of fatalities and injuries

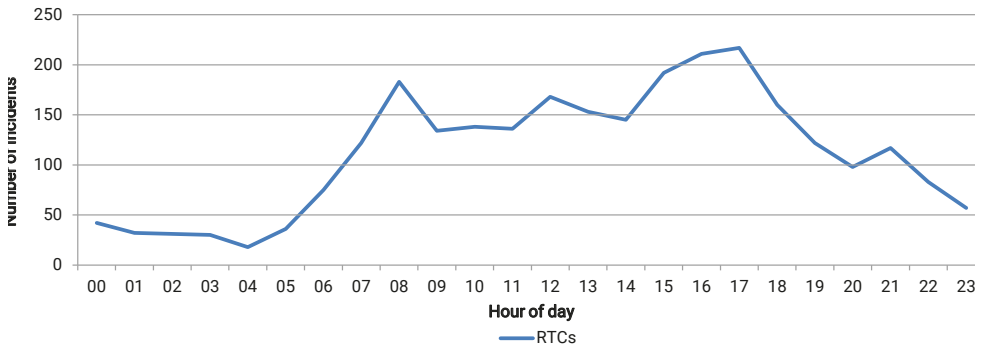
Historical demand

Special Service – Road Traffic Collision (RTC) - When

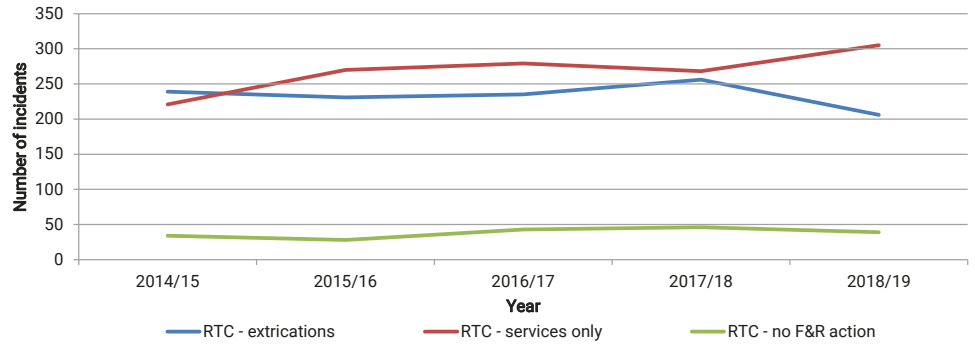




RTCs by hour of day 2014/15 - 2018/19



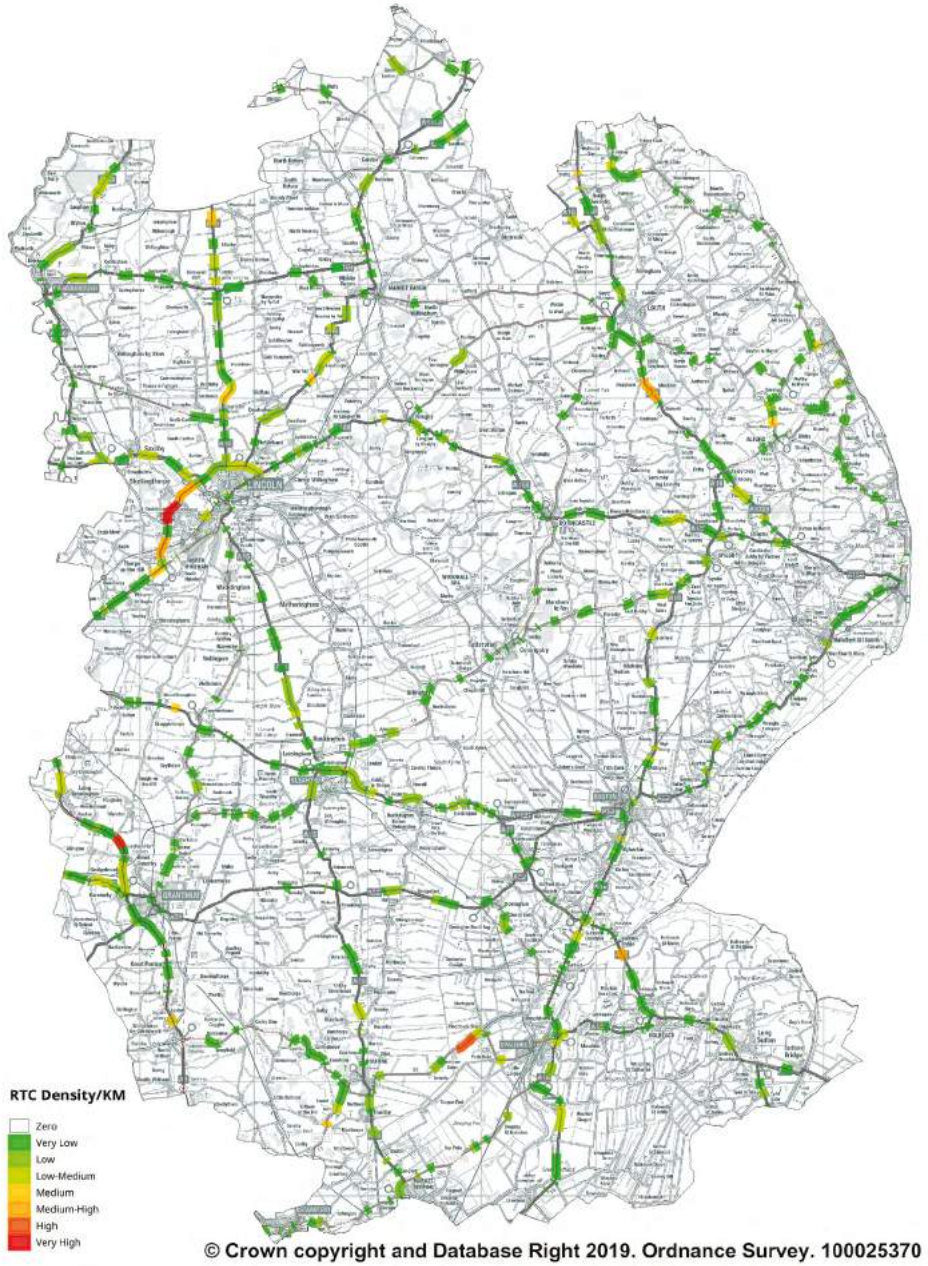
RTCs by type of action 2014/15 - 2018/19



What's on the horizon?

Several major projects are underway to improve Lincolnshire's road network, including the Lincoln Eastern Bypass, which will be part of a wider concept to create a ring road around Lincoln city. These projects will improve the road network and traffic flow around the county. Further work will be required to understand any consequent impact on road risk and/or response times.

Special Service – Road Traffic Collision (RTC) - Where



Health and wellbeing

A health risk is an adverse event or negative health consequence due to a specific event, disease, or condition.

Level of risk: High

Why is it a risk?

Health and Wellbeing remains a high risk for the county. Lincolnshire has a growing older population with many people moving to the county in order to retire. 70% of adults in Lincolnshire are overweight or obese. It was estimated that 11,688 people aged 65 and over were living with dementia in Lincolnshire in 2017.

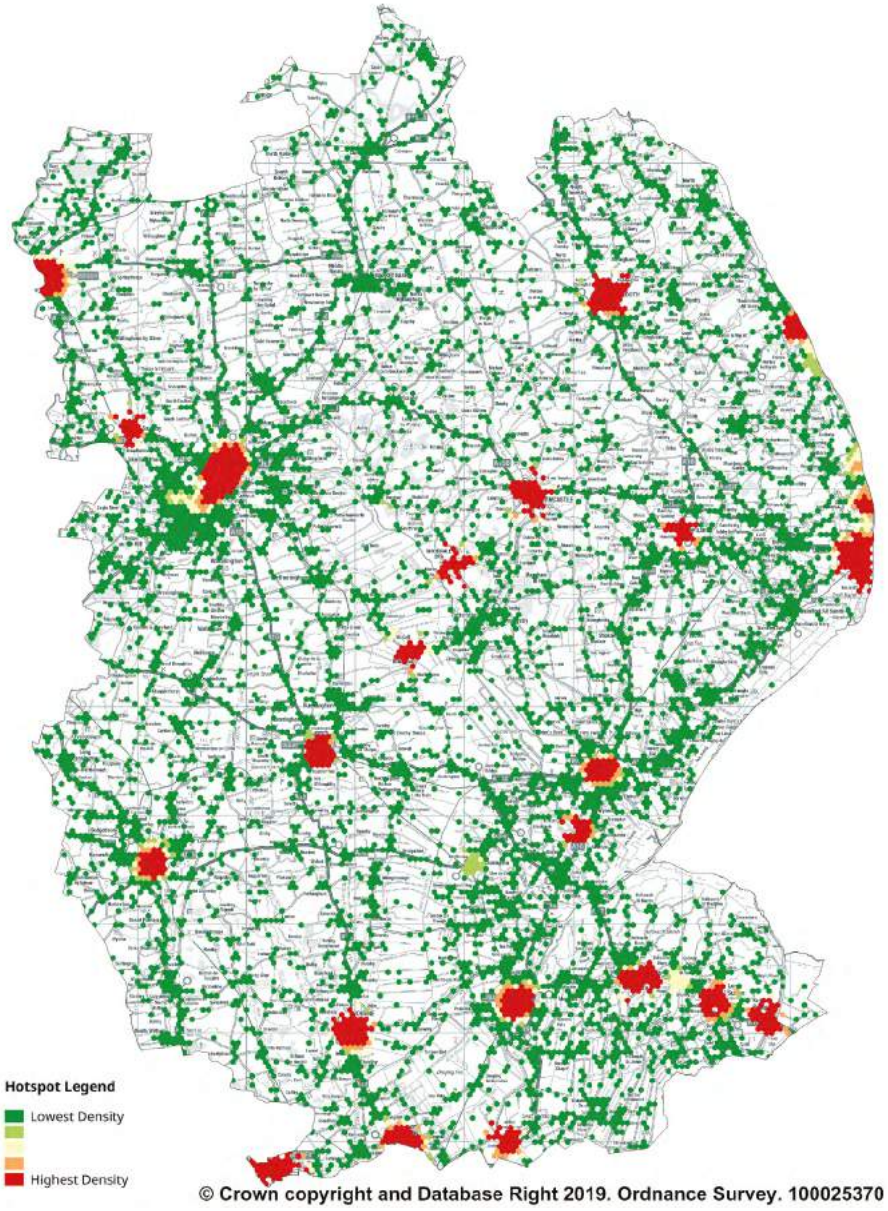
Almost half of our calls are to co-responder incidents, with 92% of those resulting in some form of medical intervention by our crews.

Consequences

- Risk to life
- Risk to physical and mental health
- Impact on levels of emergency cover
- Impact on local and national economy
- Increased demand on NHS
- Vulnerable people exposed to lower levels of care
- Staff absence due to reduced training capacity

Historical demand

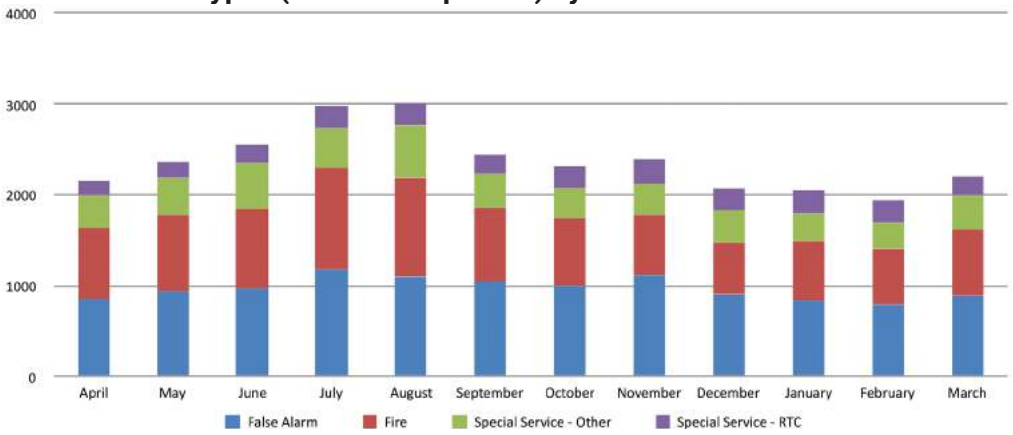
Heat map of All Attended Incidents



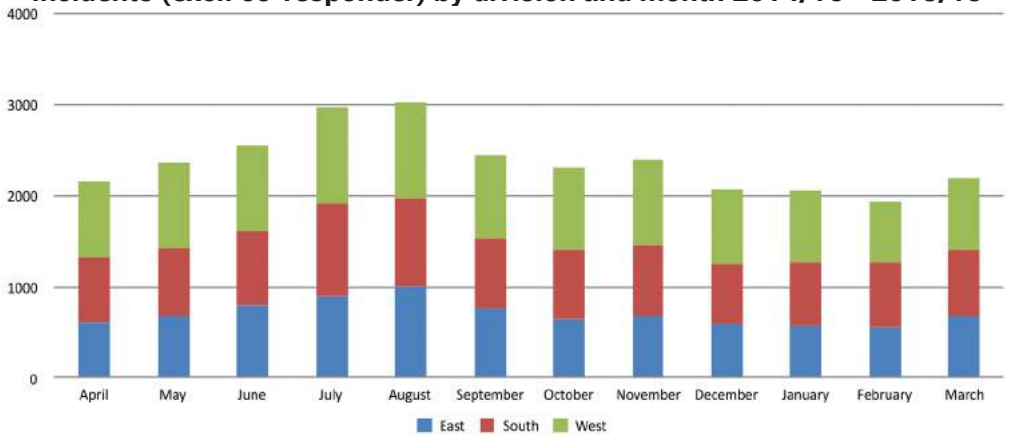
Seasonal demand variation

Our analysis of seasonal variation in incident demand has been broken down into service, division and station level with a peak in incident activity taking place in the summer months of July/August:

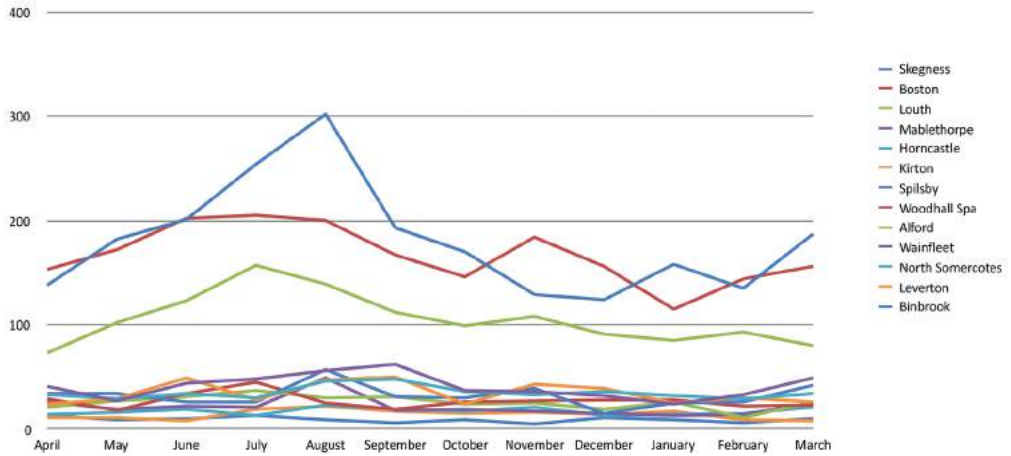
Incident Types (excl. co-responder) by month 2014/15 - 2018/19



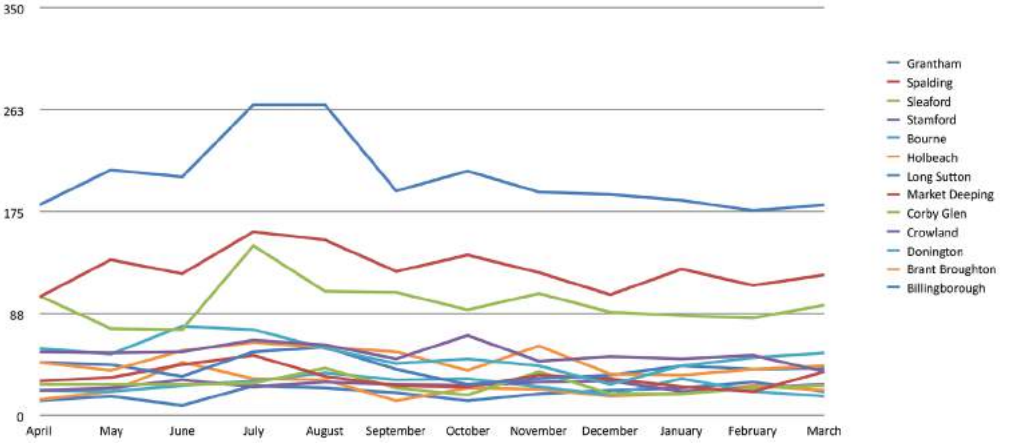
Incidents (excl. co-responder) by division and month 2014/15 - 2018/19



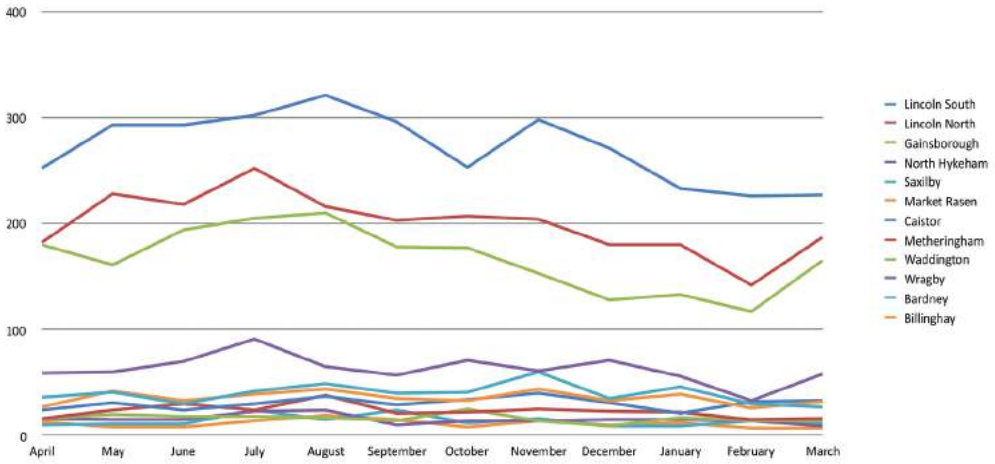
East Division Incidents (excl. co-responder) by station and month 2014/15 - 2018/19



South Division Incidents (excl. co-responder) by station and month 2014/15 - 2018/19



West Division Incidents (excl. co-responder) by station and month 2014/15 - 2018/19



Coastal stations such as Skegness, Wainfleet and Mablethorpe show the most dramatic increase in incident activity during the summer months. This can be attributed to the increase in tourist population, with Lincolnshire's coastal resorts attracting around 20 million visitors per year. Analysis of types of incident during this period shows the majority are fires in grassland/refuse.

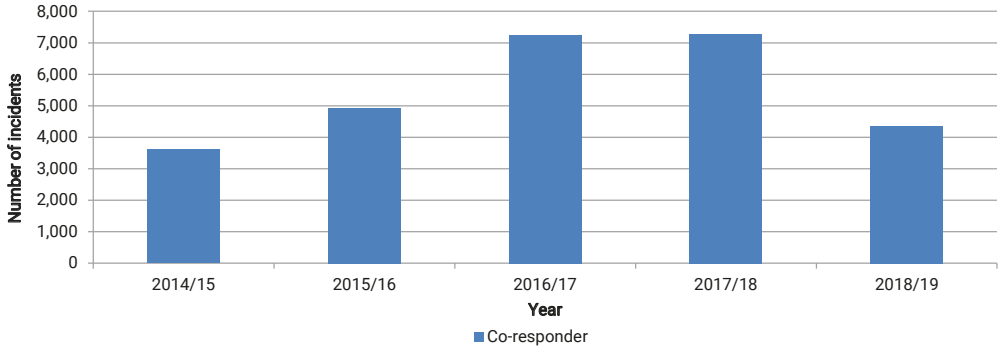
What's on the horizon?

The trend towards an ageing population profile will continue, with the proportion of people over 75 years projected to increase by 88% between 2016 and 2041.

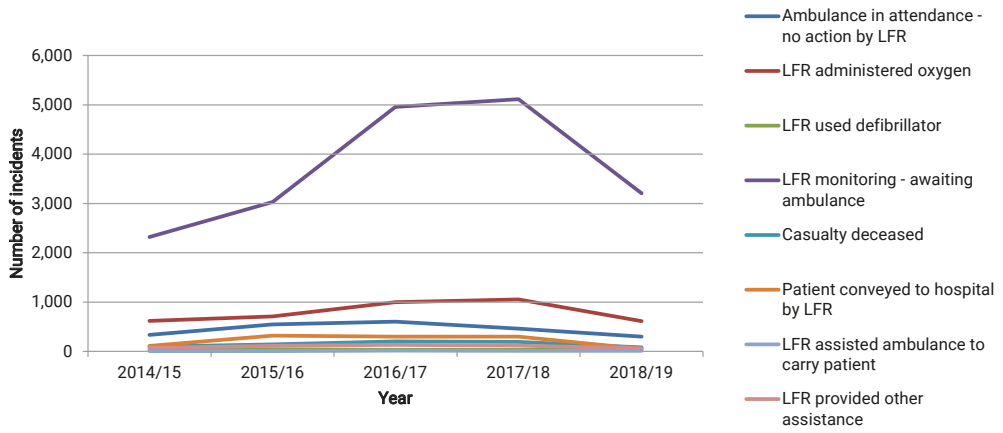
The number of people aged 65+ admitted to hospital as a result of falls is projected to increase from 3,309 in 2014 to 5,188 in 2030.

Special Service – Co-responder – When

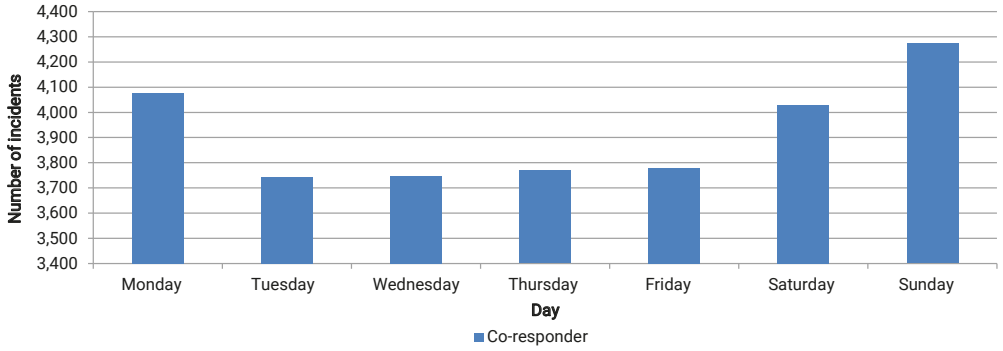
Co-responder by year 2014/15 - 2018/19



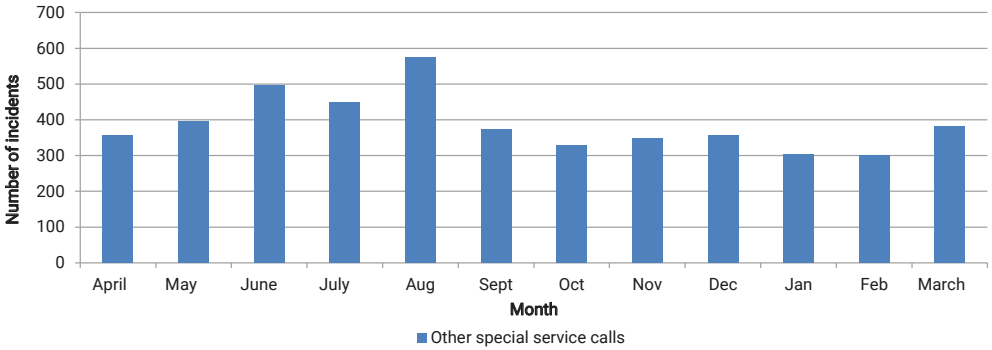
Co-responder by type of action 2014/15 - 2018/19



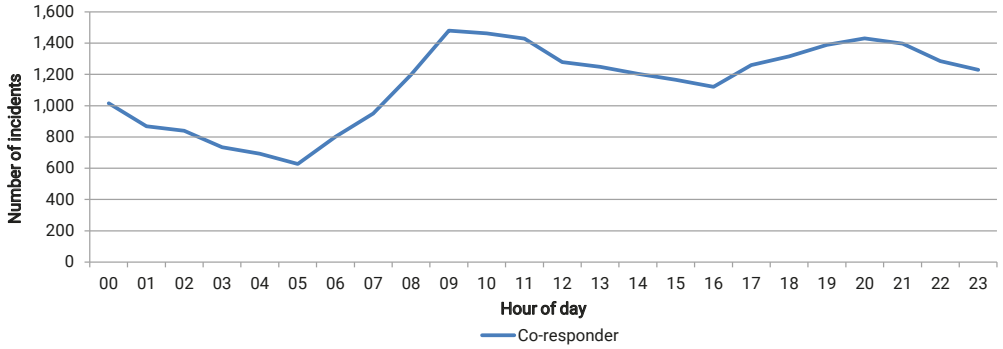
Co-responder by day 2014/15 - 2018/19



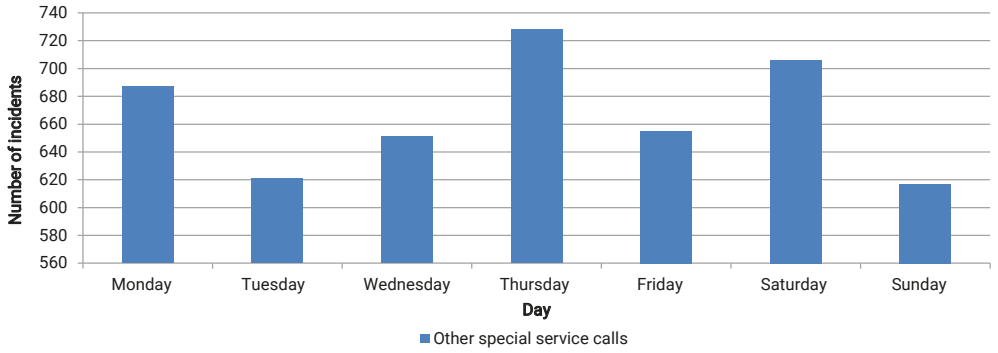
Other special service calls by month 2014/15 - 2018/19



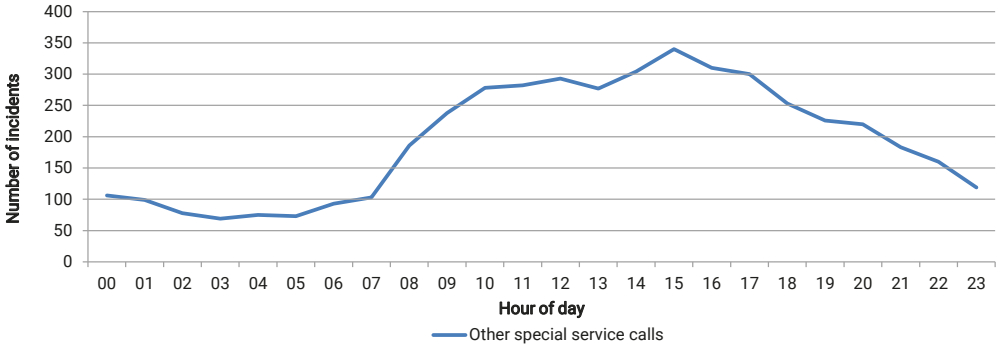
Co-responder by hour of day 2014/15 - 2018/19



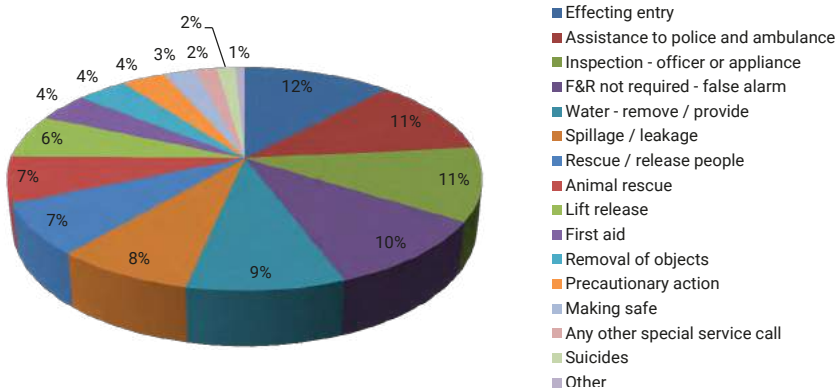
Other special service calls by day 2014/15 - 2018/19



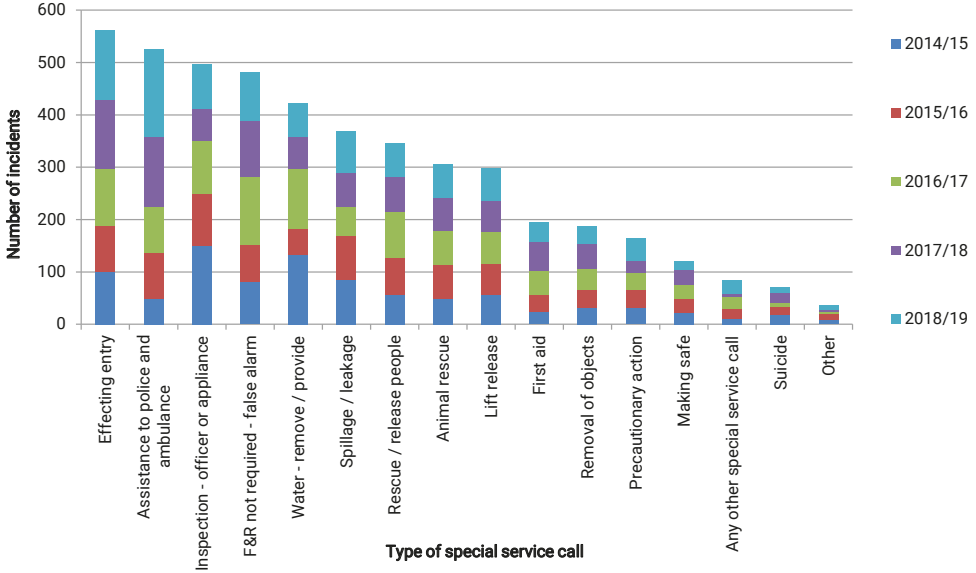
Other special service calls by hour of day 2014/15 - 2018/19



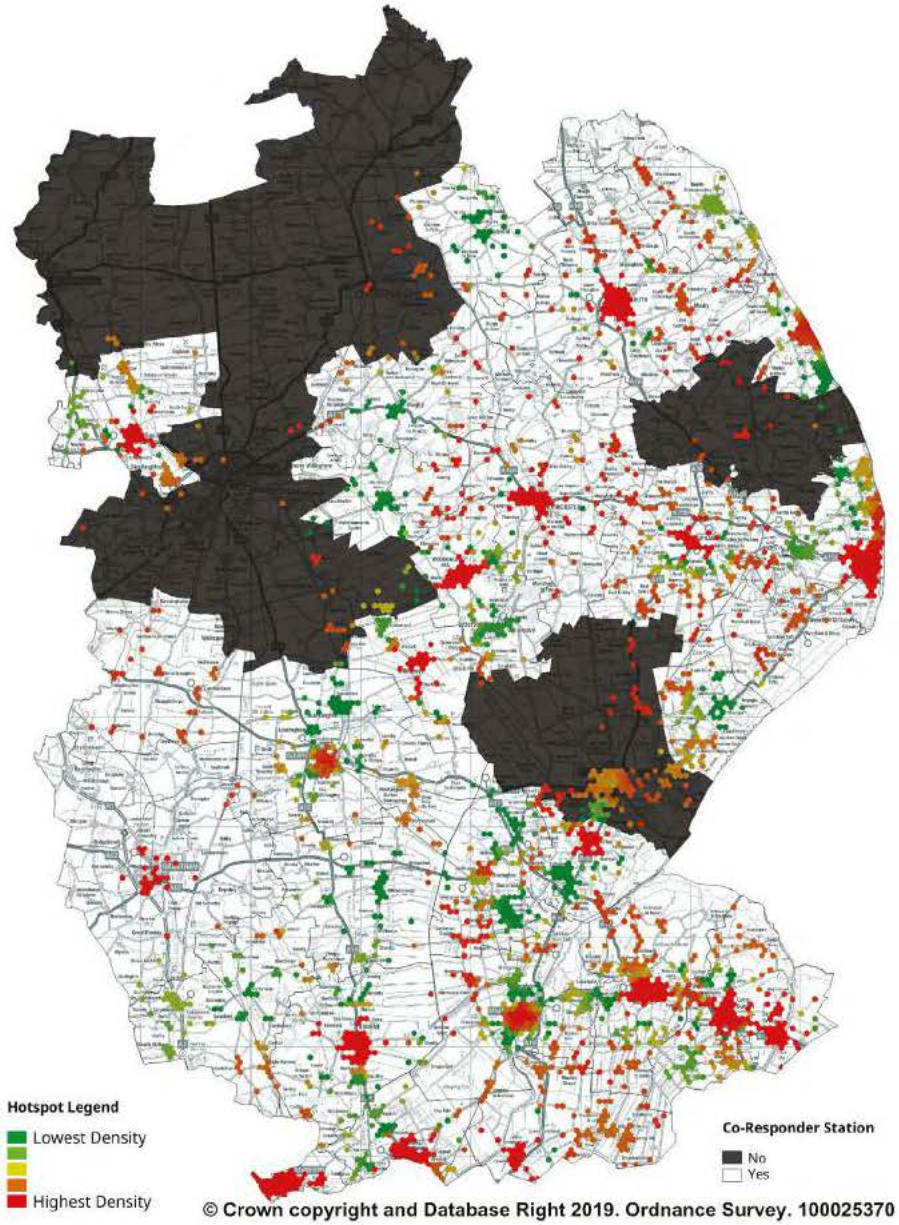
Other special service calls by type of action 2014/15 - 2018/19



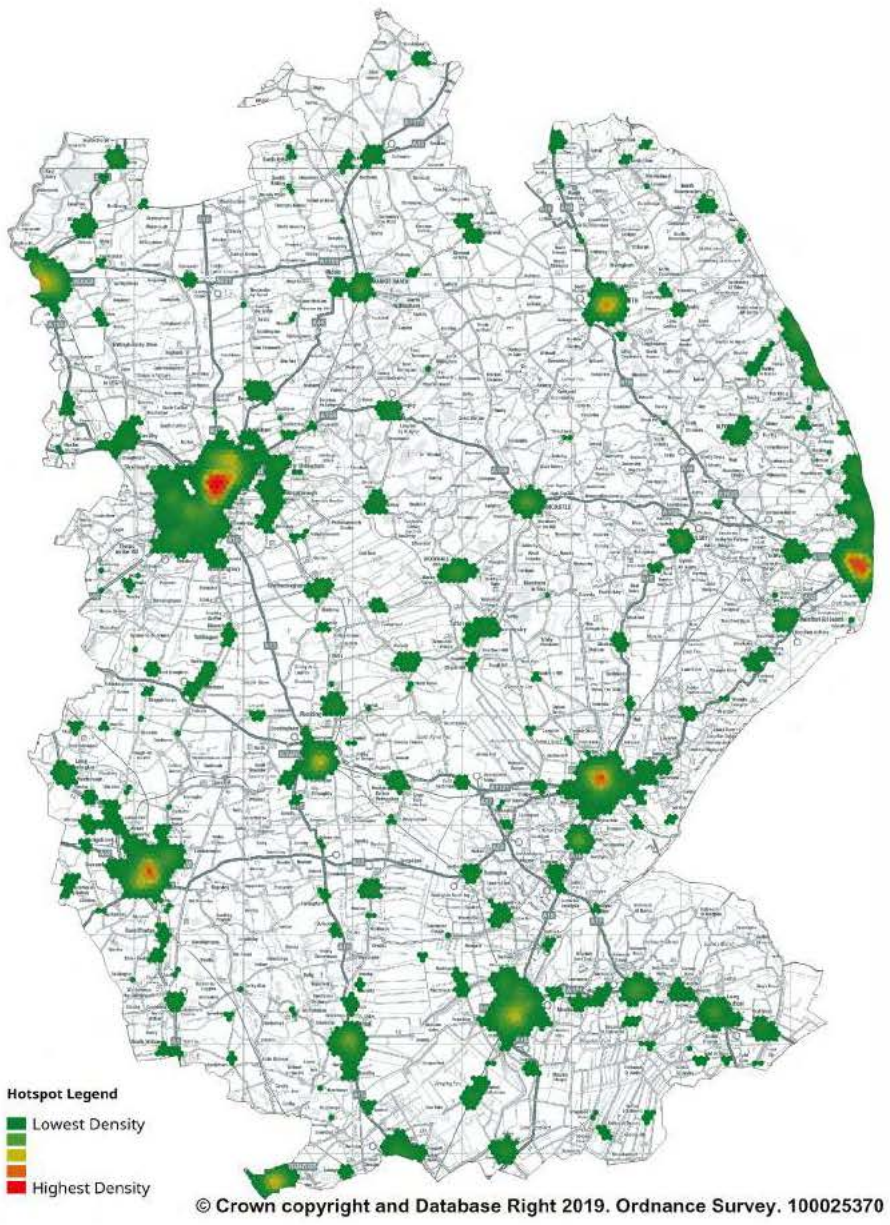
Other special service calls by type and year 2014/15 - 2018/19



Special Service – Co-responder – Where



Special Service – Other – When



Flooding and severe weather

There are three types of flooding; Coastal (where high tides and storm surges combine to cause the sea to flood inland), Rivers and streams, known as 'fluvial flooding' (where waterways overflow their banks into surrounding water areas) and Surface water (where rainfall overwhelms the drainage systems)

There are four main types of severe weather; Storms and gales, Low (sub-zero) temperatures and heavy snow, Heatwaves and Drought.

Level of risk: High

Why is it a risk?

Much has been done to protect the Lincolnshire coastline since the floods of 1953, particularly in the construction of flood defences. However, sea levels are rising and because of the national and local impacts of a serious flood event, the risk is something which must be taken seriously.

Recent significant flooding events such as the 2013 tidal surge in Boston and the Wainfleet floods of 2019 underlined this risk. Both required a multi-agency response and national FRS assistance.

Flooding and severe weather is considered a high risk in the LRF community risk register. As a result this is assessed as a high risk for 2020-24.

Consequences

- Risk to life and health
- Physical injury
- Damage to property, businesses and agricultural land
- Pollution and contamination to local environment
- Long term damage to tourism, business and agriculture
- Risk to life of livestock
- Damage to critical infrastructure
- Disruption to utilities
- Widespread structural damage
- Short, medium and long term loss of accommodation

What's on the horizon?

We have worked closely with the University of Lincoln (UOL) geography department to help improve our understanding of future flood risk in Lincolnshire. A report by UOL aims to highlight the flooding risk in Lincolnshire, whilst spatially analysing the extent of Lincolnshire Fire and Rescue's dispersal and resourcing models.

This academic study used a wide variety of flood data and LFR drivetime modelling to describe:

- Lincolnshire's low lying land which places it at high risk from rising sea levels and storm surges.
- An estimated 220,000 people live in Lincolnshire's coastal zone thus exposing them to catastrophic flooding impacts from the sea.
- Identifies all high, medium and low risk areas.
- Areas of greatest risk are in Boston and Skegness.
- All medium and high risk areas of flood risk are covered by LFR's current 10 minute response times.
- Identifies stations at Boston, Mablethorpe and Skegness which are at risk themselves and suggests business continuity measures.
- Looks at impact of future flood defences e.g. Boston barrier.
- Recommends LFR considers greater community involvement to ensure the at risk population are equipped to deal with a flooding event.

Pandemic

Pandemics are natural events that happen when a unique virus evolves that few people (if any) are immune to. More commonly this relates to seasonal influenza, however, in 2020 we saw the emergence of the Covid19 pandemic.

Why is it a risk?

A pandemic could cause up to 50% of the UK population to experience symptoms, potentially leading to between 20,000 and 750,000 fatalities and high levels of absence from work. This in turn has the potential to impact on LFR's corporate risks, resulting in staff shortages, impact on the supply chain and reduced levels of fire cover. Pandemic flu remains a high risk on the national and local risk registers.

Pandemic remains a high risk on the national and local risk registers.

The Covid19 emergency created a new element to this risk group. Public services including Fire and Rescue had to stop or restrict certain key and statutory services. However this was not caused by staff shortage as per planning assumptions, but by heavy restrictions on normal operations caused by prudent Government guidance as part of 'lockdown'.

Consequences

- Risk to life – particularly among elderly and other vulnerable groups
- Risk to physical and mental health
- Impact on levels of emergency cover
- Impact on local and national economy
- Increased demand on NHS
- Vulnerable people exposed to lower levels of care
- Staff absence due to reduced training capacity
- Restricted ways of working and impact on service delivery of key and statutory functions

What's on the horizon?

Pandemic remains a high risk on both the national and local risk registers. As we write this risk profile the recovery effort from Covid19 is underway and will continue for some time, with lasting effects on the economy and potential impacts on the way we deliver our services in future.

Potential 'second waves' of the virus are likely, but when and where they will occur are unpredictable. Meanwhile, seasonal flu, such as influenza will remain a risk.

Non-domestic fires

Non-domestic fires include all business, commercial, industrial, schools and hospitals, offices, shops, factories, warehouses, restaurants, cinemas, public buildings, religious buildings, agricultural buildings, railway stations, sheds etc.

Level of risk: High

Why is it a risk?

Non-residential fires made up 17% of our fire incidents over the last five years with the majority caused by electrical appliances (31%) and deliberate ignition (21%). Fires within non-domestic premises can result in the loss of significant community resources, such as public buildings, schools, community centres and entertainment venues. Fires in business premises will have a significant, sometimes unrecoverable, impact on the local economy. As a result this is assessed as a high risk for 2020-24.

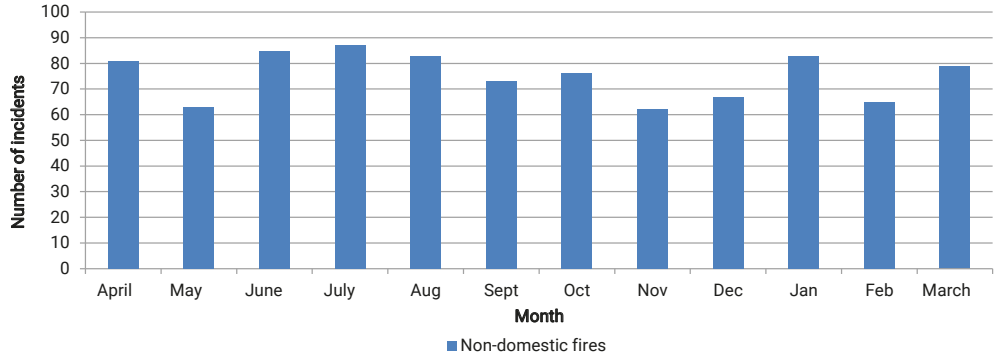
Consequences

- Risk to life
- Physical injury
- Damage to property
- Damage to local environment
- Economic impact of loss of business
- Loss of local community resources

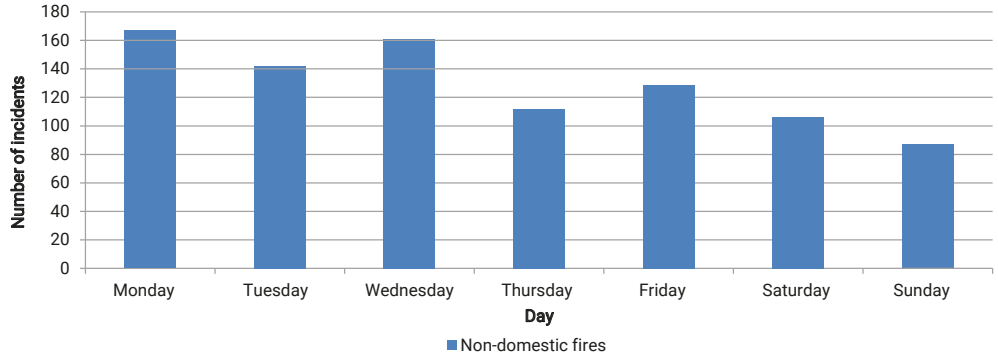
Historical demand

Non-Domestic Primary Fires - When

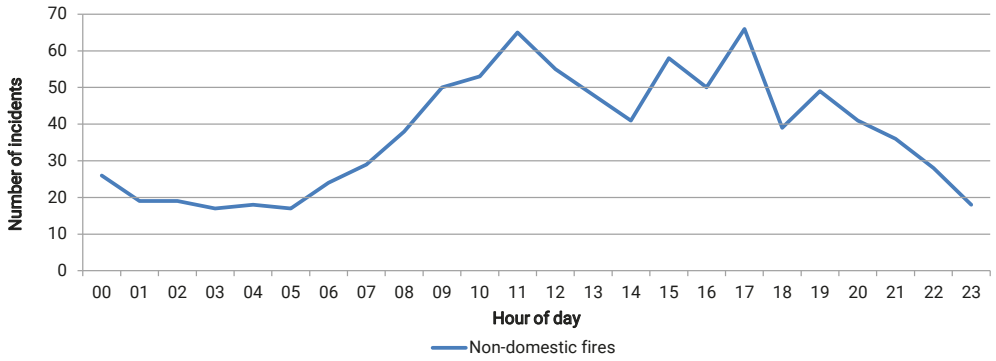
Non-domestic fires by month 2014/15 - 2018/19



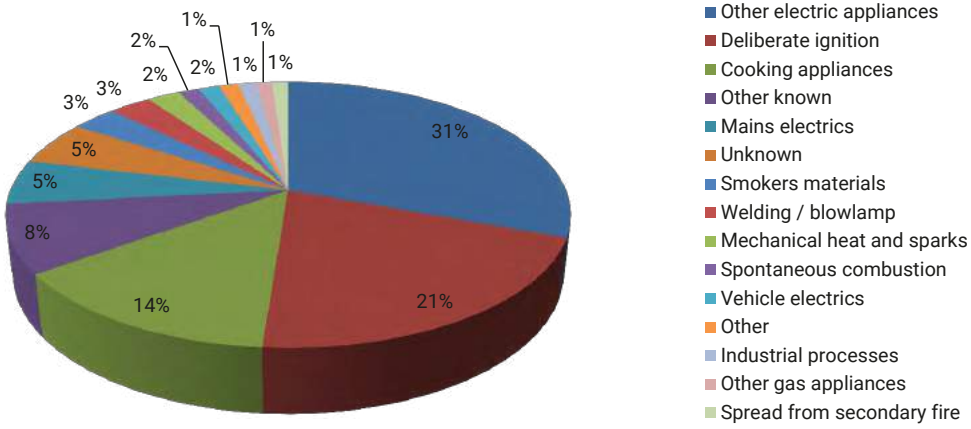
Non-domestic fires by day 2014/15 - 2018/19



Non-domestic fires by hour of day 2014/15 - 2018/19



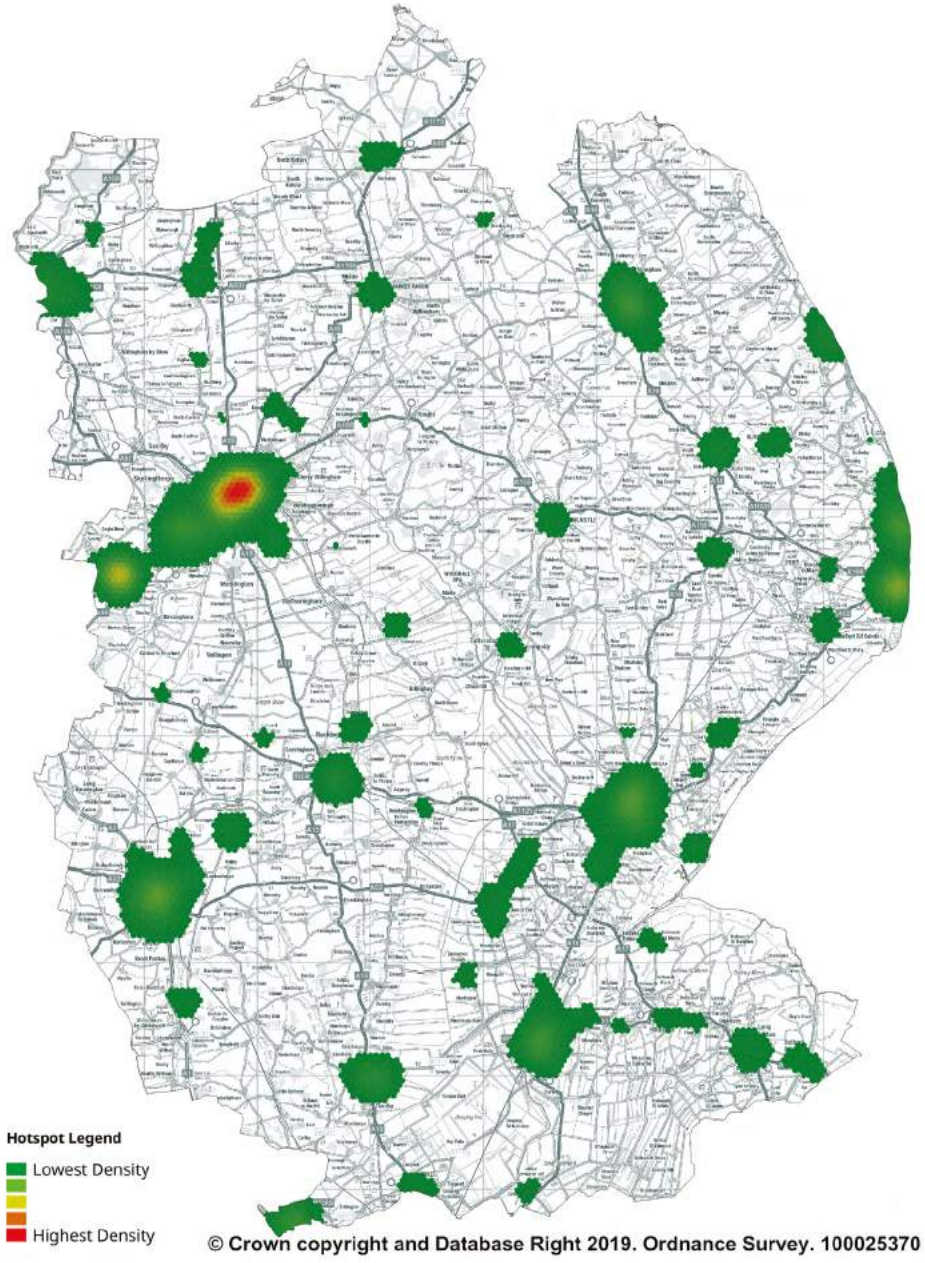
Non-domestic fire causes 2014/15 - 2018/19



What's on the horizon?

The Greater Lincolnshire Local Enterprise Partnership (LEP) sets out a number of development objectives including improvements to Lincolnshire's infrastructure and economy, which will see an increase in non-domestic premises in the future.

Non-Domestic Primary Fires - Where



Water risks

Water risks are those events occurring in, on or around bodies of water, including rivers, drains, reservoirs, lakes and pools.

Level of risk: High

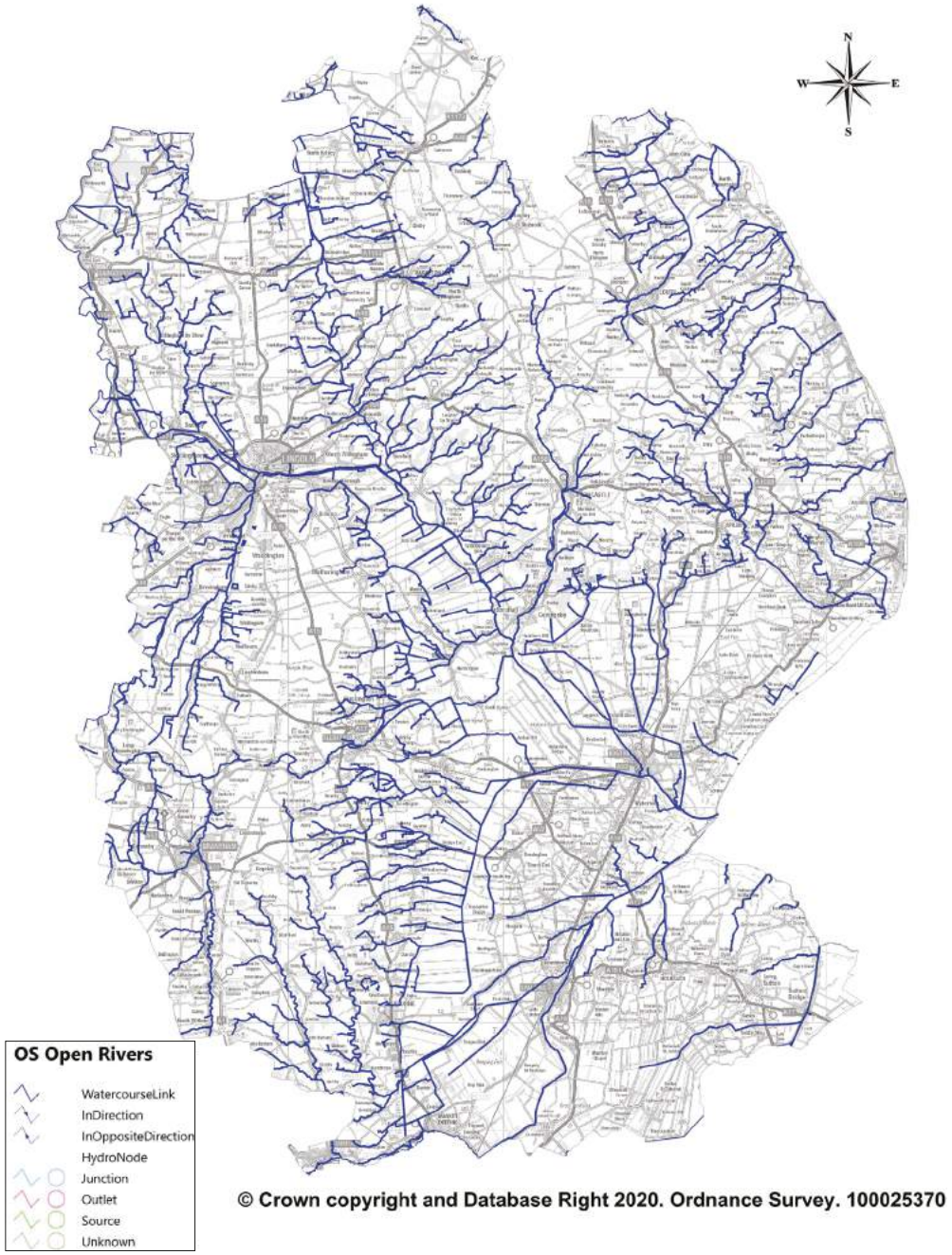
Why is it a risk?

Lincolnshire has a large network of waterways, consisting of rivers, drains and canals. There are 18 rivers running through the county, the two largest being the Witham and the Trent. It is also home to the Foss Dyke canal, one of England's oldest canal systems still in use today. Our waterways are important, supporting wildlife, providing drinking water and controlling flooding.

However they also present a risk to life with an average of 12 water rescue incidents attended in our waterways per year over the last five years (not including RTCs and floods)

Consequences

- Risk to life
- Physical injury
- Damage to local environment



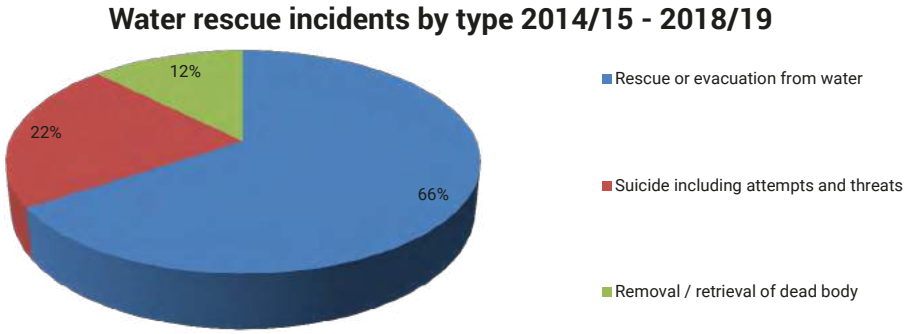
Ordnance Survey Open Rivers in Lincolnshire

Historical demand

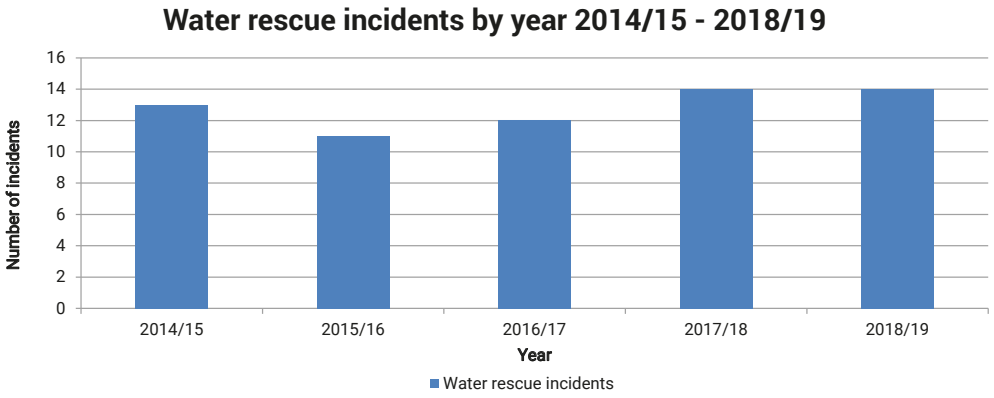
Special Service - Water Rescues

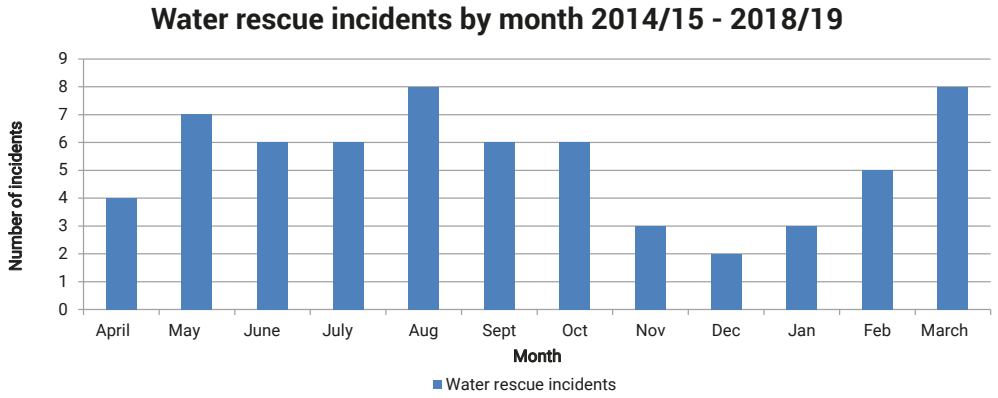
Over the last five years the number of water rescue incidents involving people has remained consistent at 13 incidents per year. Incidents in this analysis includes where the type of incident was recorded as being 'rescue or evacuation from water', along with suicide attempts or threats, and recovery of a deceased body from a property type being waterway related. Due to the way the data is recorded, this analysis does not include road traffic collisions which involved a vehicle entering water.

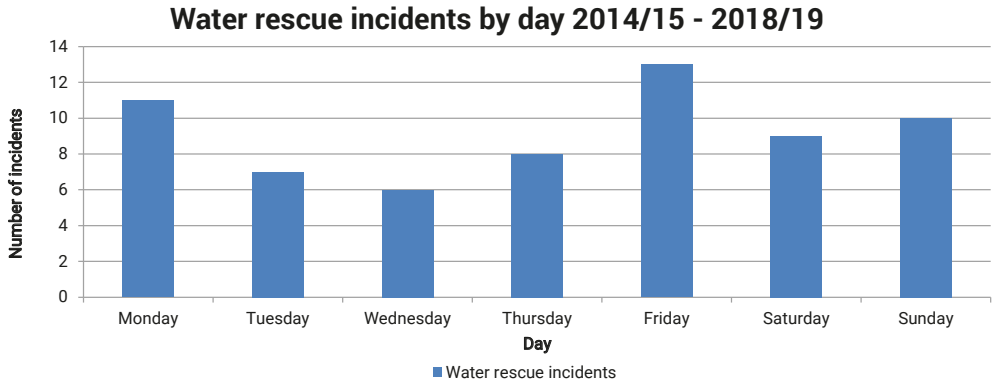
Water risk - What

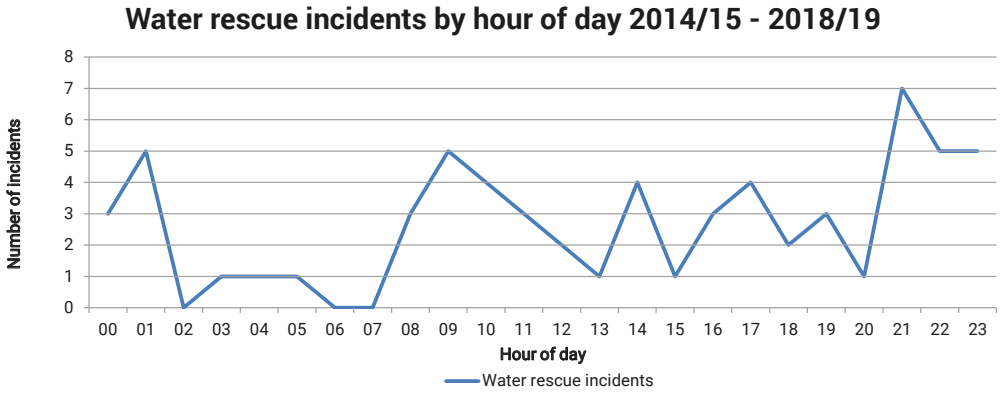


Water risk - When

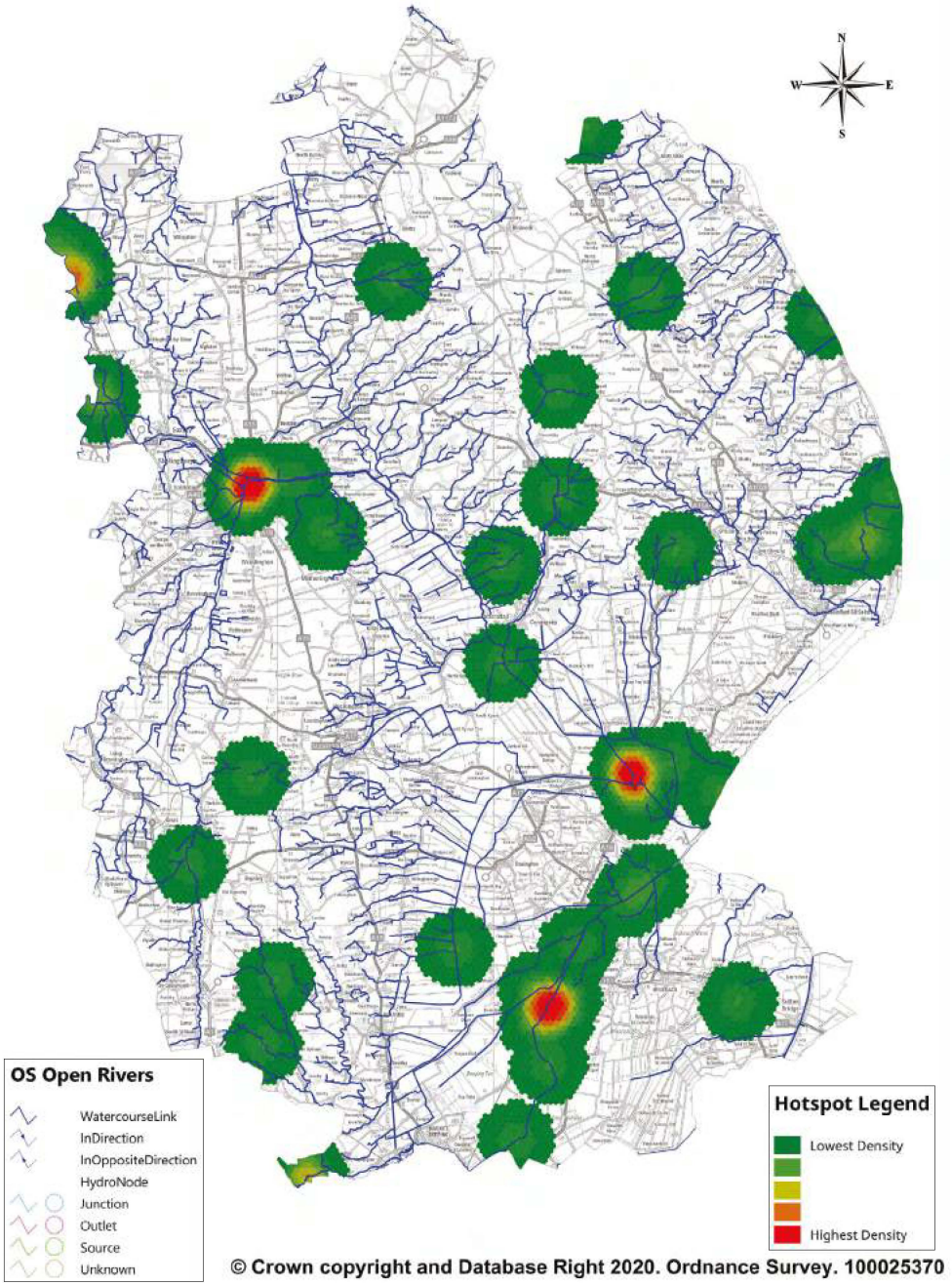








Water risk - Where



Residential high-rise

High-rise buildings are defined as those over 18 metres (5 storeys).

Level of risk: High

Why is it a risk?

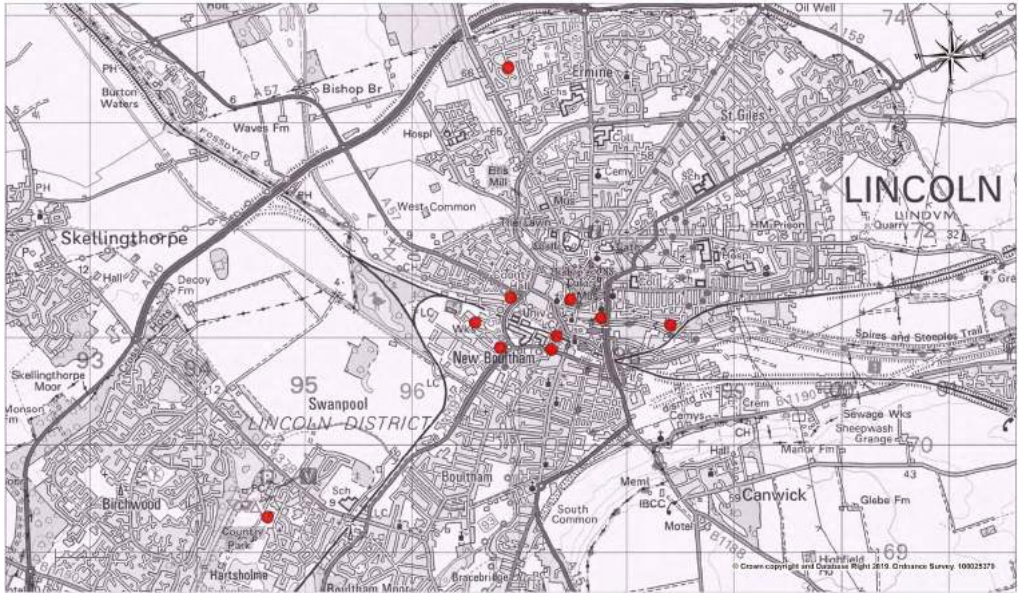
Fires in high-rise buildings present a significant risk to firefighters and the public. High-rise buildings are defined as those over 18 metres (five storeys) of which Lincolnshire has 41, including hospitals and commercial premises. In total there are 20 residential high-rise buildings in Lincolnshire, most of which are located in the City of Lincoln. Over the last five years, there were 12 recorded fire incidents in six of the residential high rise buildings within Lincoln.

The tallest high-rise buildings in Lincolnshire are Shuttleworth House (17 floors), Jarvis House (15 floors), and Trent View (15 floors).

Whilst the likelihood of residential high-rise fires occurring in Lincolnshire is low, the consequences of such an incident remain high. As a result this has been assessed as a high risk for 2020-24.

Consequences

- Risk to life
- Physical injury
- Damage to property
- Damage to local environment
- Short term loss of accommodation
- Economic impact resulting from property loss/damage

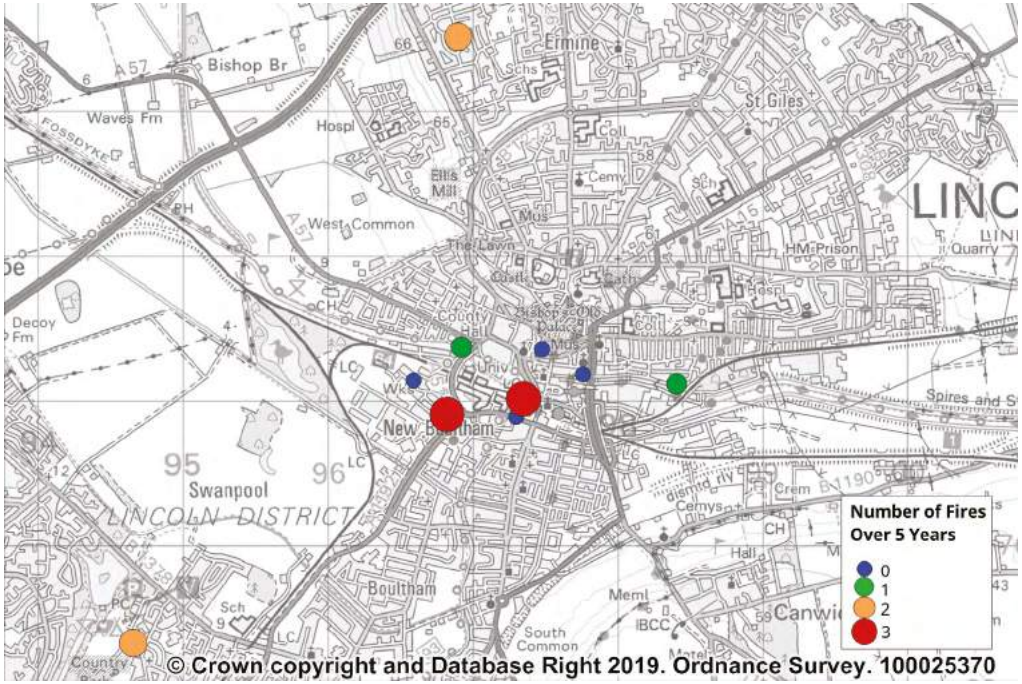


The tallest high-rise buildings in Lincolnshire are Shuttleworth House (17 floors), Jarvis House (15 floors), and Trent View (15 floors).

Historical demand

Dwelling Fires occurring in High-Rise Buildings

Over the five year period, there has been 12 recorded fire incidents in six of the residential high rise buildings within Lincoln.



What's on the horizon?

The 2017 Grenfell Tower tragedy in London involved a 24 storey residential high-rise building. The fire caused 72 deaths and 70 injuries. The subsequent Grenfell Tower Inquiry (Phase 1 report) was published in October 2019 and identified significant learning for fire and rescue services. Changes in legislation arising from the Grenfell Inquiry will impact on how we deliver our protection work in the future.

Malicious attacks

Malicious attacks relate to terrorism and the use or threat of action designed to influence any international government organisation or to intimidate the public.

Level of risk: High

Why is it a risk?

The UK faces a serious and sustained threat from terrorism, including from international groups, domestic extremists and Northern Ireland related groups. As of November 2019 the current UK threat level for international terrorism is 'substantial' which means an attack is likely.

Whilst there is no direct and specific threat to Lincolnshire, we continue to work with partner agencies to tackle extremism and provide resources, at both local and national level to respond to malicious attacks.

Due to the continued national threat, this has been assessed as a high risk for 2020-24.

Consequences

- Risk to life
- Physical injury
- Damage to property
- Damage to infastructure
- Damage to local environment
- Social – community cohesion impact
- Economic impact

Heritage

Cultural heritage includes a wide range of features resulting from human intervention and activity or development. For the purpose of this risk profile, heritage risk is defined as built heritage including; historic places and listed buildings.

Level of risk: Medium

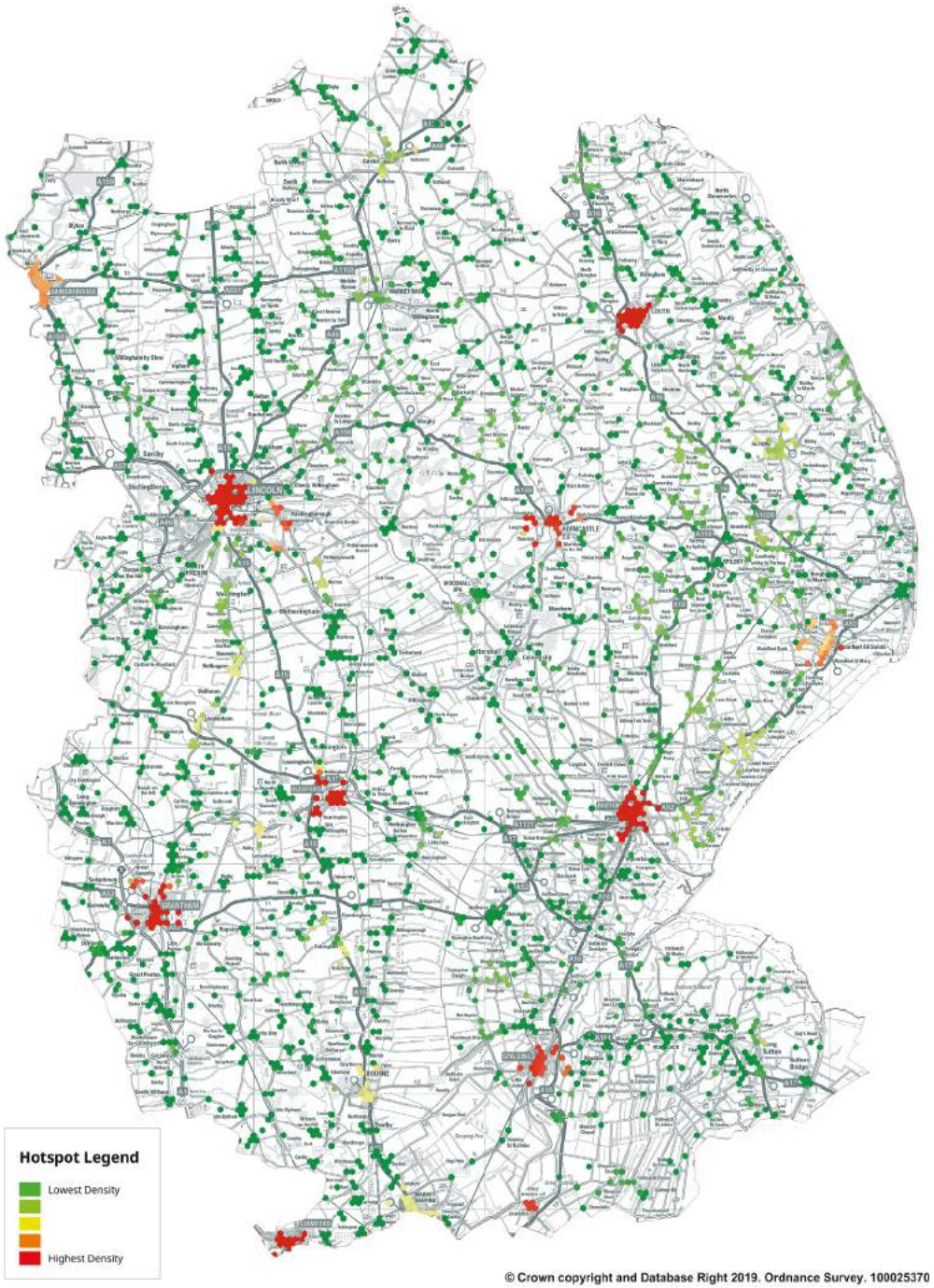
Why is it a risk?

The historic environment matters to all of us. It tells us about who we are and where we have come from. It gives identity to our villages, towns and cities. It has shaped the distinctive character of our countryside. Lincolnshire is a county rich in cultural and physical heritage with many historic sites across the county, including the magnificent Lincoln Cathedral, Lincoln Castle, St Boltophs Church ('Boston stump'), Gainsborough Old Hall, one of the best preserved medieval manor houses in England, Tattershall Castle and Harlaxton Manor to name a few. Lincolnshire boasts many Grade I listed buildings and is home to several windmills.

Whilst the risk to life is relatively low, heritage buildings, due to their age are often constructed of combustible materials; their original features and contents often irreplaceable. It is therefore important that these historic properties are protected and as a result this has been assessed as a medium risk for 2020-24.

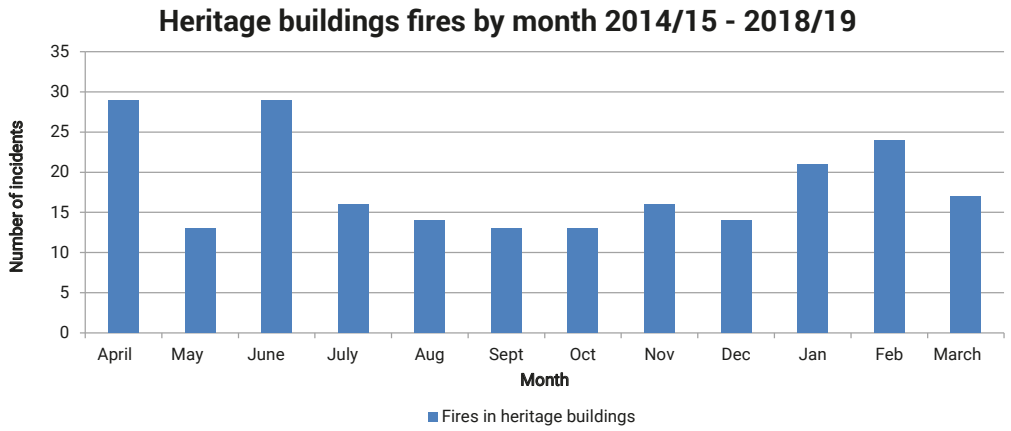
Consequences

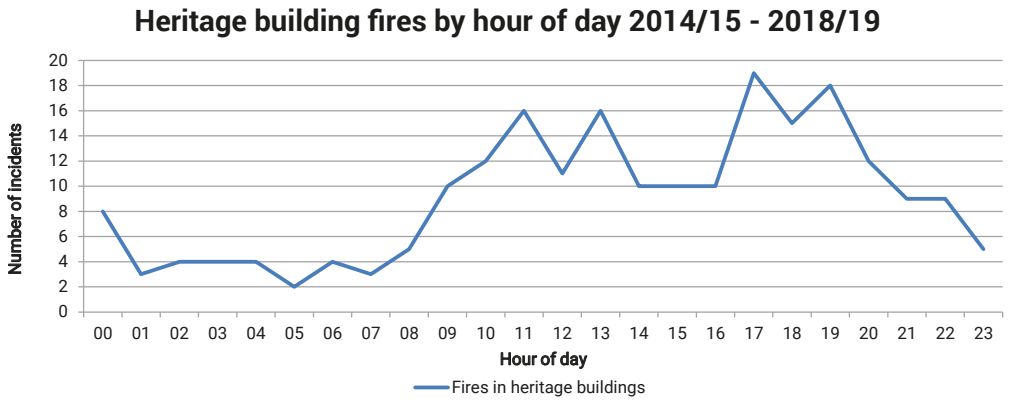
- Risk to life
- Physical injury
- Unrecoverable damage to historic property and irreplaceable artifacts
- Damage to local environment
- Economic impact resulting from loss of tourism
- Impact on local business



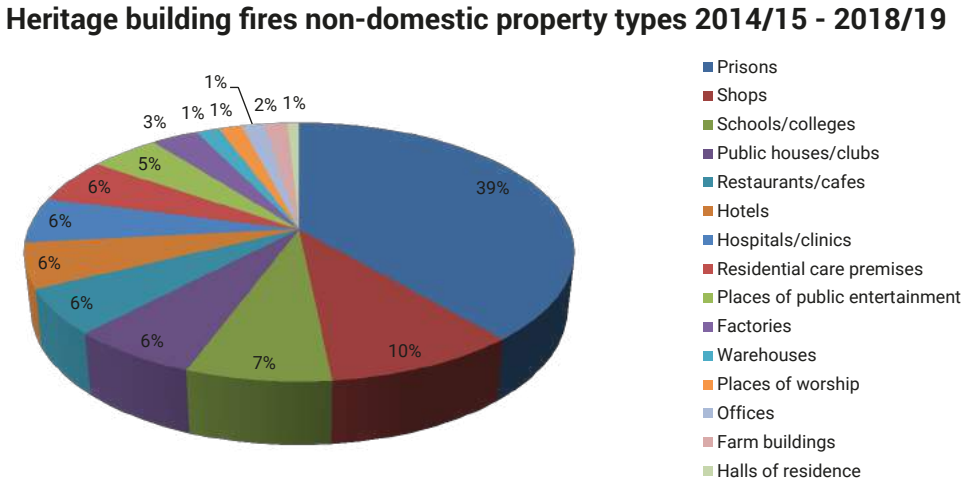
Historical demand

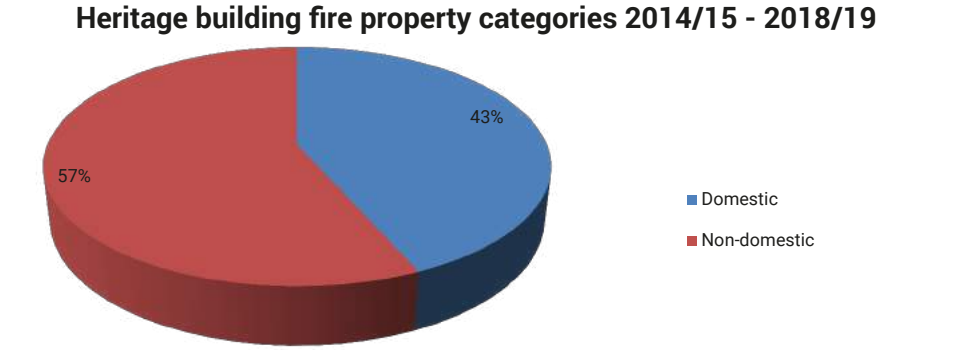
Heritage Building Fires – When



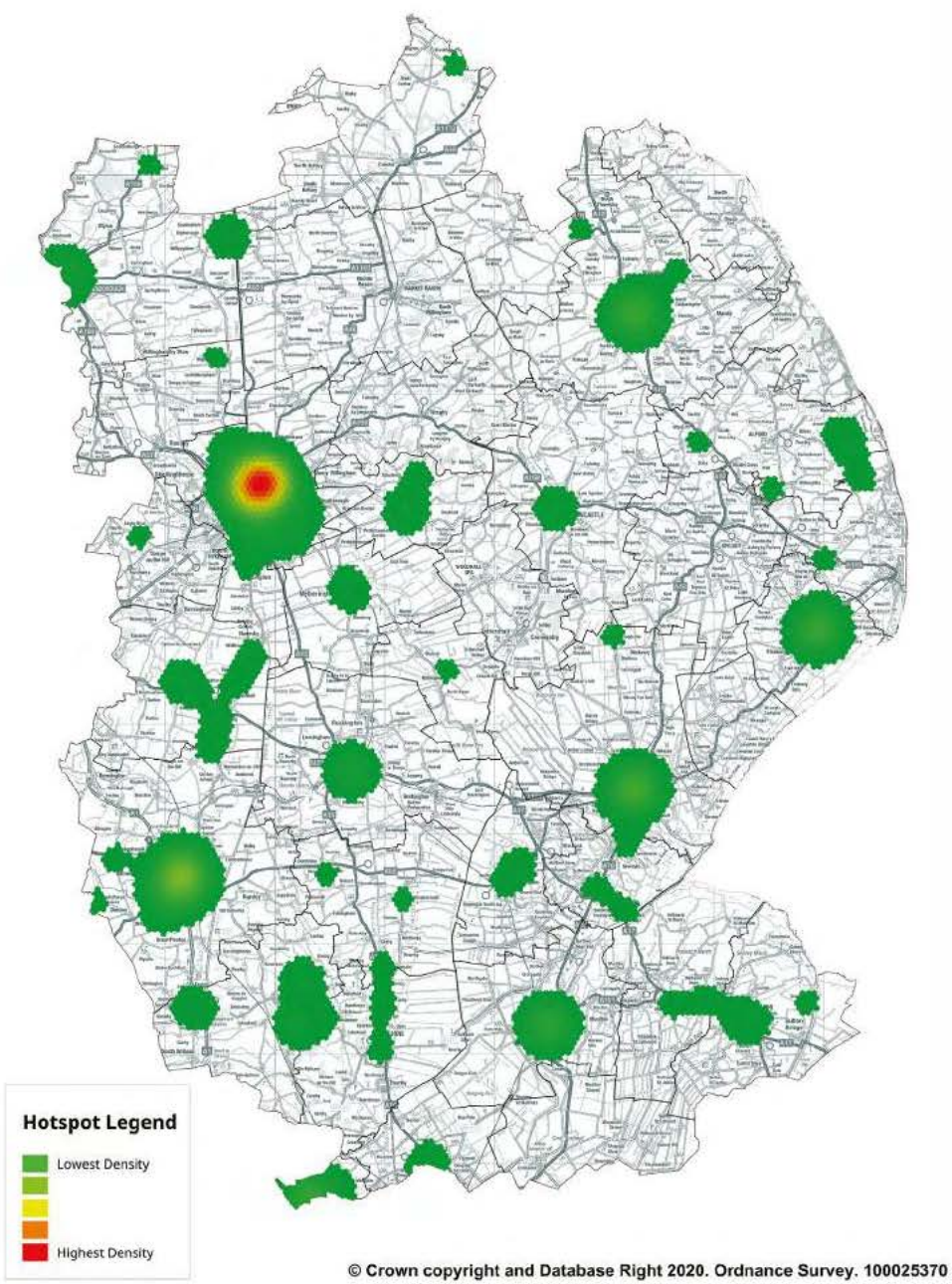


Heritage Building Fires – What





Heritage Building Fires – Where



Deliberate fires

Deliberate fires include those where the motive for the fire was 'thought to be' or 'suspected to be' deliberate. This includes fires on an individual's own property, others' property or property of an unknown owner

Level of risk: Medium

Why is it a risk?

Arson accounted for 50.5% of all fires attended in 2017/18 by Fire & Rescue Services in the whole of the UK (213,782 fires attended; 108,024 deliberate). This is the largest, single cause of fire attended by FRSs.

Here in Lincolnshire we have experienced an average of around 450 deliberate fires per year over the last five years. Most of these occur in vehicles or non-residential premises, with a peak during the dry summer months.

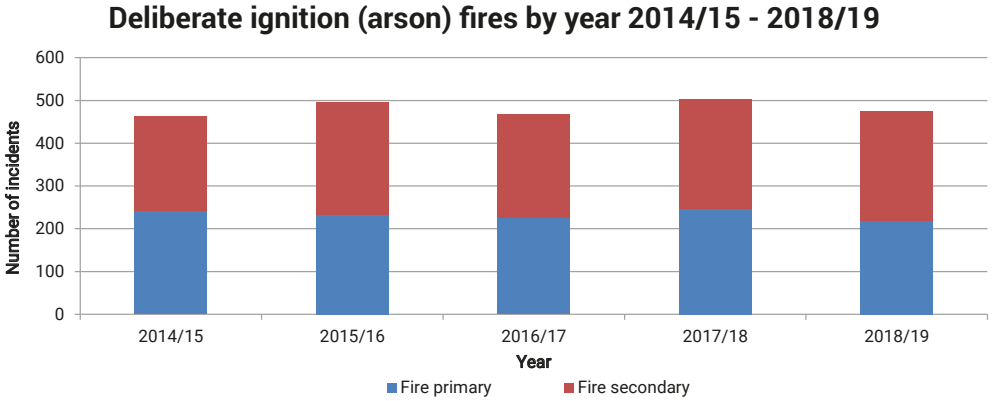
The estimated economic cost attributed to arson from UK statistics in 2017-18 was £1.49bn.

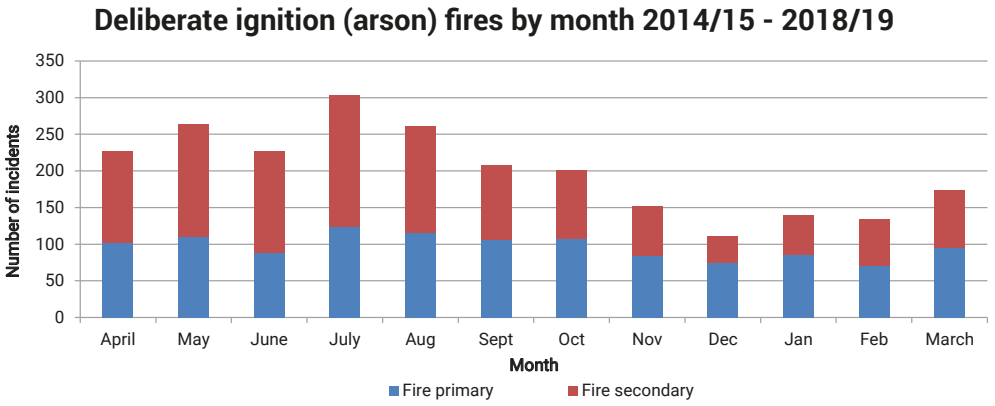
Consequences

- Risk to life
- Physical injury
- Damage to property
- Damage to local environment
- Economic impact resulting from property loss/damage and business impact

Historical demand

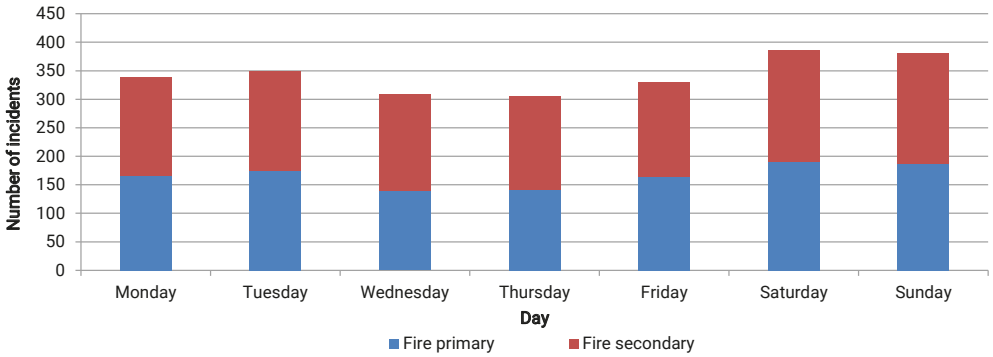
Deliberate Ignition Fires – When



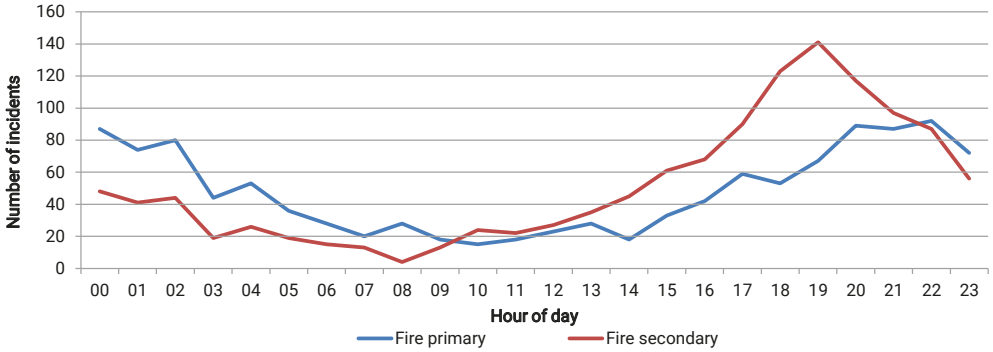


Deliberate Ignition Fires – What

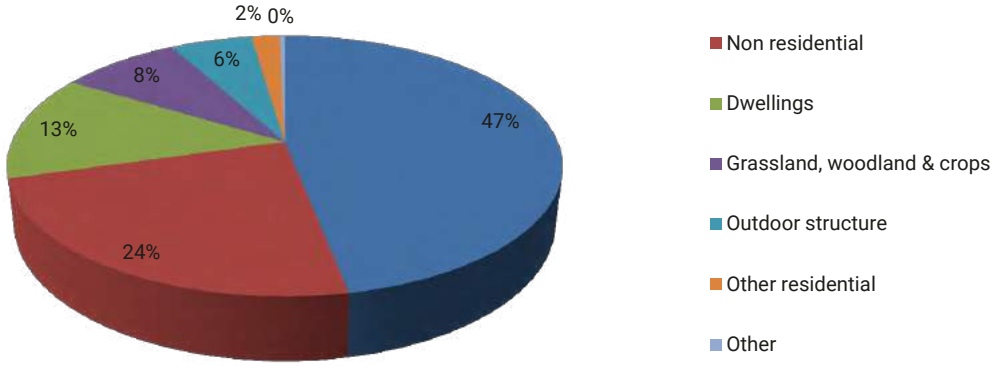
Deliberate ignition (arson) fires by day 2014/15 - 2018/19



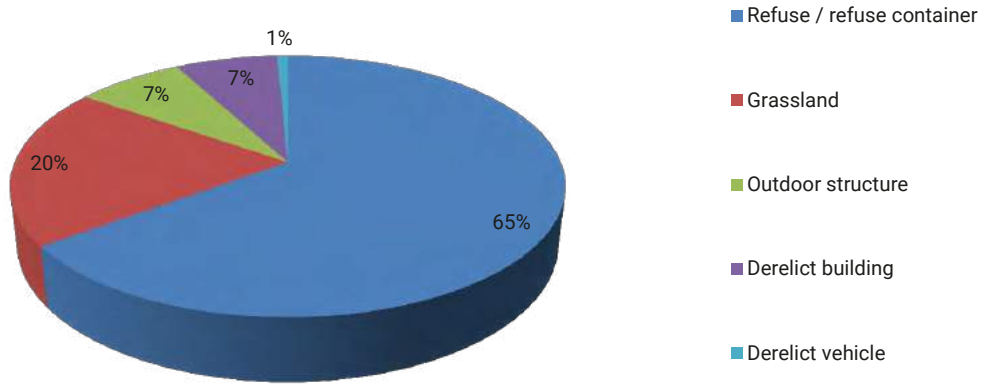
Deliberate ignition (arson) fires by hour of day 2014/15 - 2018/19



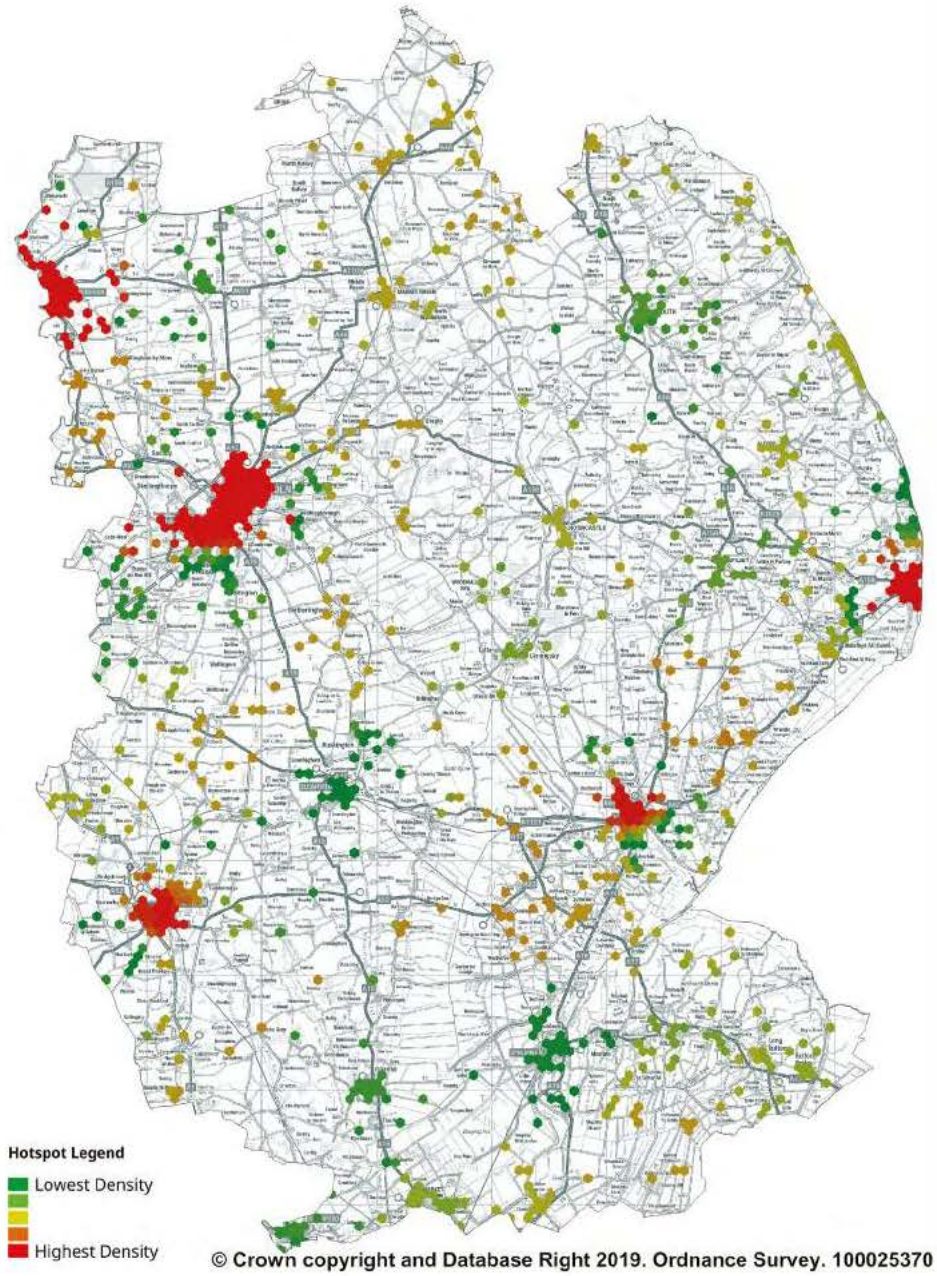
Deliberate ignition (arson) primary fires by property category 2014/15 - 2018/19



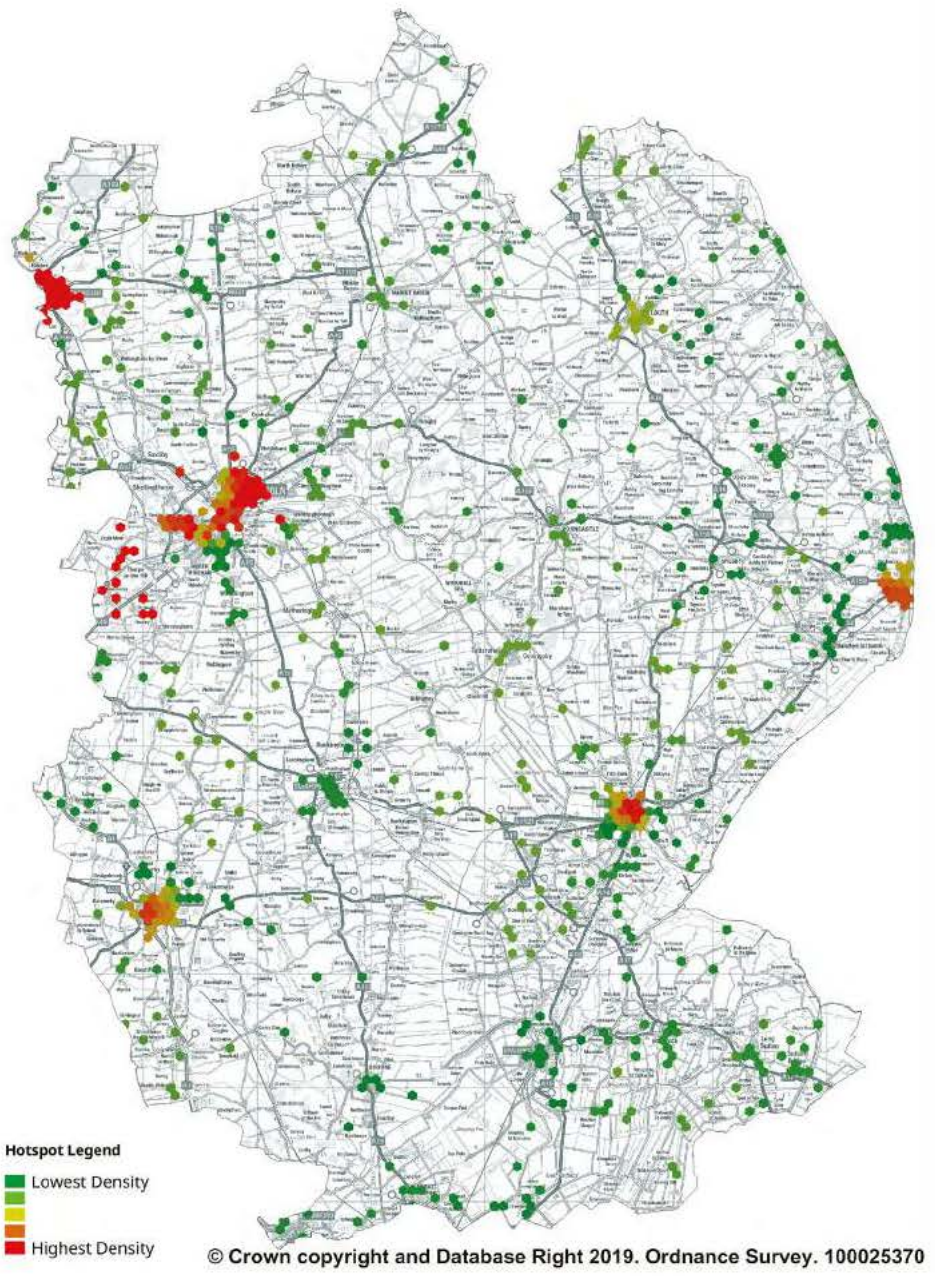
Deliberate ignition (arson) secondary fires by property type 2014/15 - 2018/19



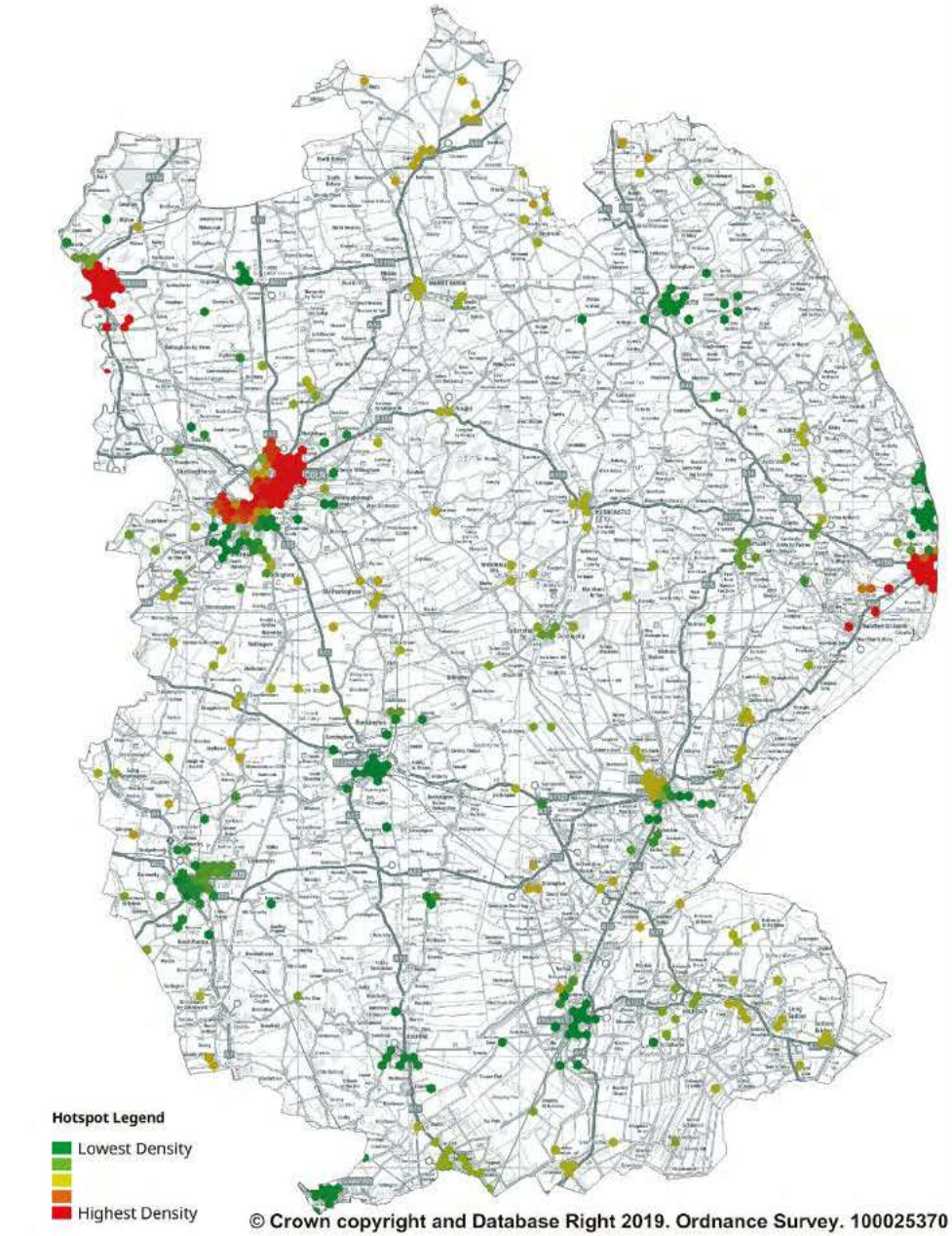
Deliberate Ignition Fires – Where



Deliberate Ignition Primary Fires – Where



Deliberate Ignition Secondary Fires – Where



Our corporate risks

We define our corporate risks as those risks which have the potential to impact on the service internally, preventing us from conducting our business effectively. LFR analyses and reviews our corporate risks on a continuous basis by identifying in advance, potential sources of disruption and the impact it may have on delivery of our critical services. This is informed by a number of prevailing factors, both national and local, and is linked to both Lincolnshire County Council's Strategic Risk Register and the Lincolnshire Community Risk Register.

Corporate risk management is monitored routinely, recorded on our Corporate Risk Register and reported on at Service Management Board (SMB). A lead officer is responsible for each corporate risk ensuring appropriate control measures are in place. This ensures our risks are properly prioritised and resources allocated appropriately.

We build our resilience to corporate risks through effective governance and business continuity management (BCM). Our approach to BCM is aligned with that of LCC's emergency planning business continuity team, thus improving consistency and resilience across LCC and the wider LRF.

BCM involves identifying critical business activities and carrying out a business impact analysis for each area. Critical activities are deemed to be those which have to be performed in order to enable LFR to meet its most important and time-sensitive objectives, e.g. receiving 999 calls, responding to emergency incidents, fire investigation, supplying welfare to staff at critical incidents and managing vehicle defects etc.

LFR maintains a set of business continuity plans in readiness for use when an incident occurs. These plans are regularly tested through exercises to ensure we can continue to deliver our critical services throughout any major disruption.

The following risks are assessed as our highest corporate risks for 2020–24:

Risk 1 Failure to maintain and develop the competencies and skills of the workforce.

Failure to maintain adequate equality and diversity policies.

Failure to maintain an appropriately structured workforce.

Failure to ensure effective financial and performance management in the planning and delivery of service activities.

Failure to ensure appropriate safeguarding procedures are in place.

Failure to respond to a major disruption of service.

Failure to manage and discharge health and safety responsibilities.

Failure to communicate and consult with all internal and external stakeholders.

Failure to identify and engage with partners, both locally and nationally, to deliver efficiencies and ensure effective inter-service and inter-agency operations.

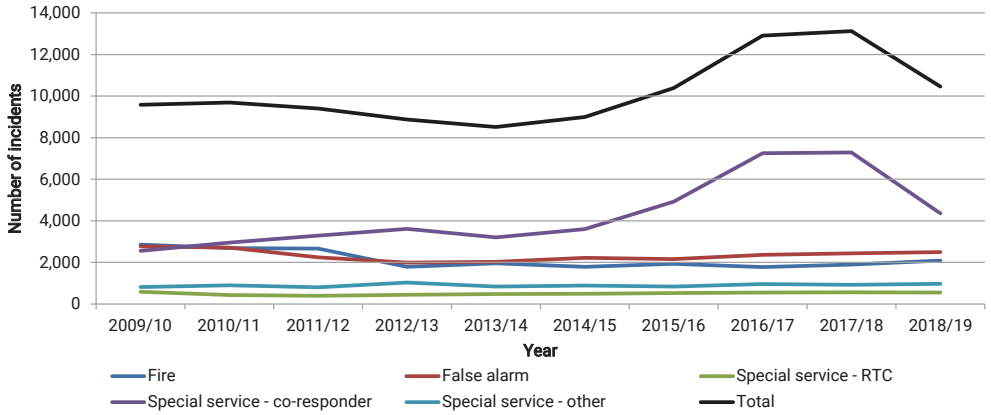
Historical incident demand 2014/15 – 2018/19

Historical Incident Demand - All Incidents

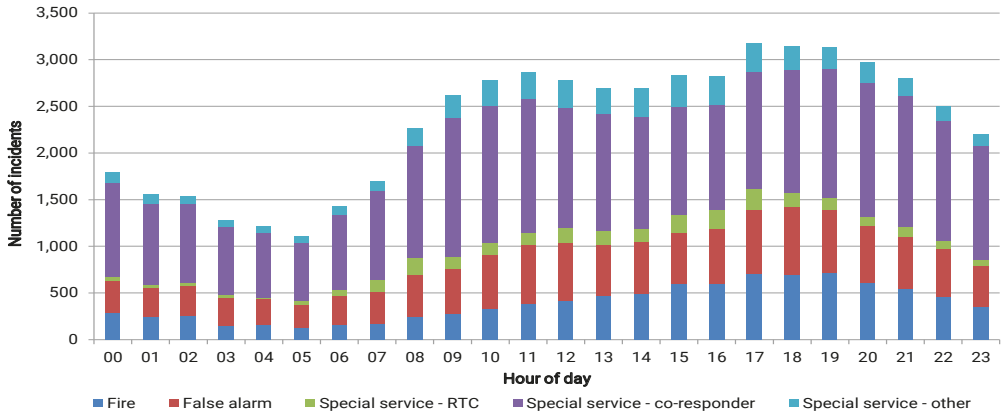
Incident demand over time is largely on the increase, mainly attributable to the increase in medical response. Over recent years additional stations have taken up co-responding duties which is linked to the increase in calls. However, changes within mobilising protocols within the NHS along with the availability of LFR crews, saw the number of attended calls decrease in 2018/19.

The number of fires attended is slowly on the increase, but this is subject to increase during prolonged periods of hot and dry summer weather, which is reflected in the number of incidents in 2018/19. Conversely, the number of 'other special service' incidents, which would include flooding attendances, will increase during times of exceptional rainfall. This will be the case during the 2019/20 year due to the flooding event of June 2019.

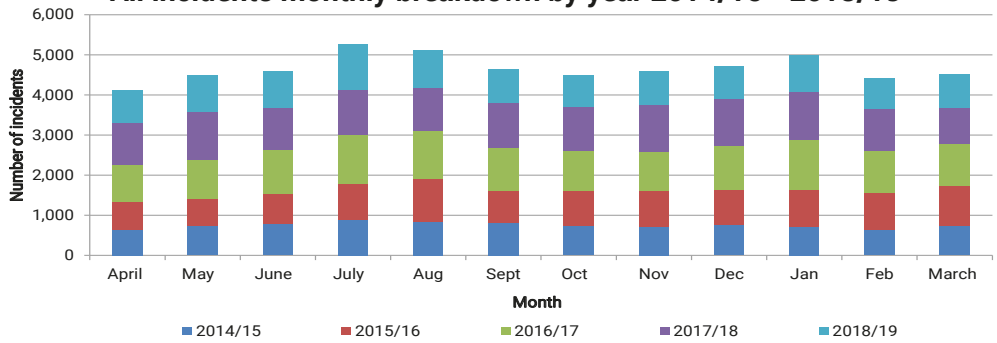
All incidents attended by LFR 2009/10 - 2018/19



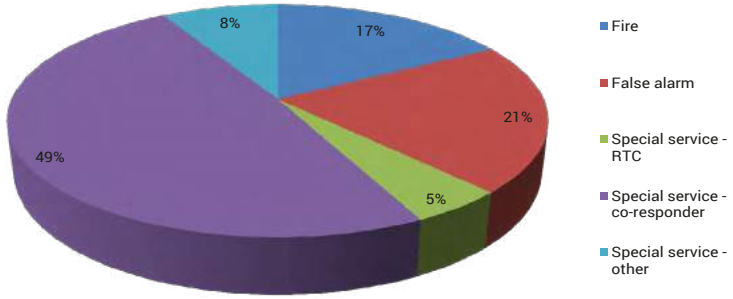
Number of incidents by type and hour of day 2014/15 - 2018/19



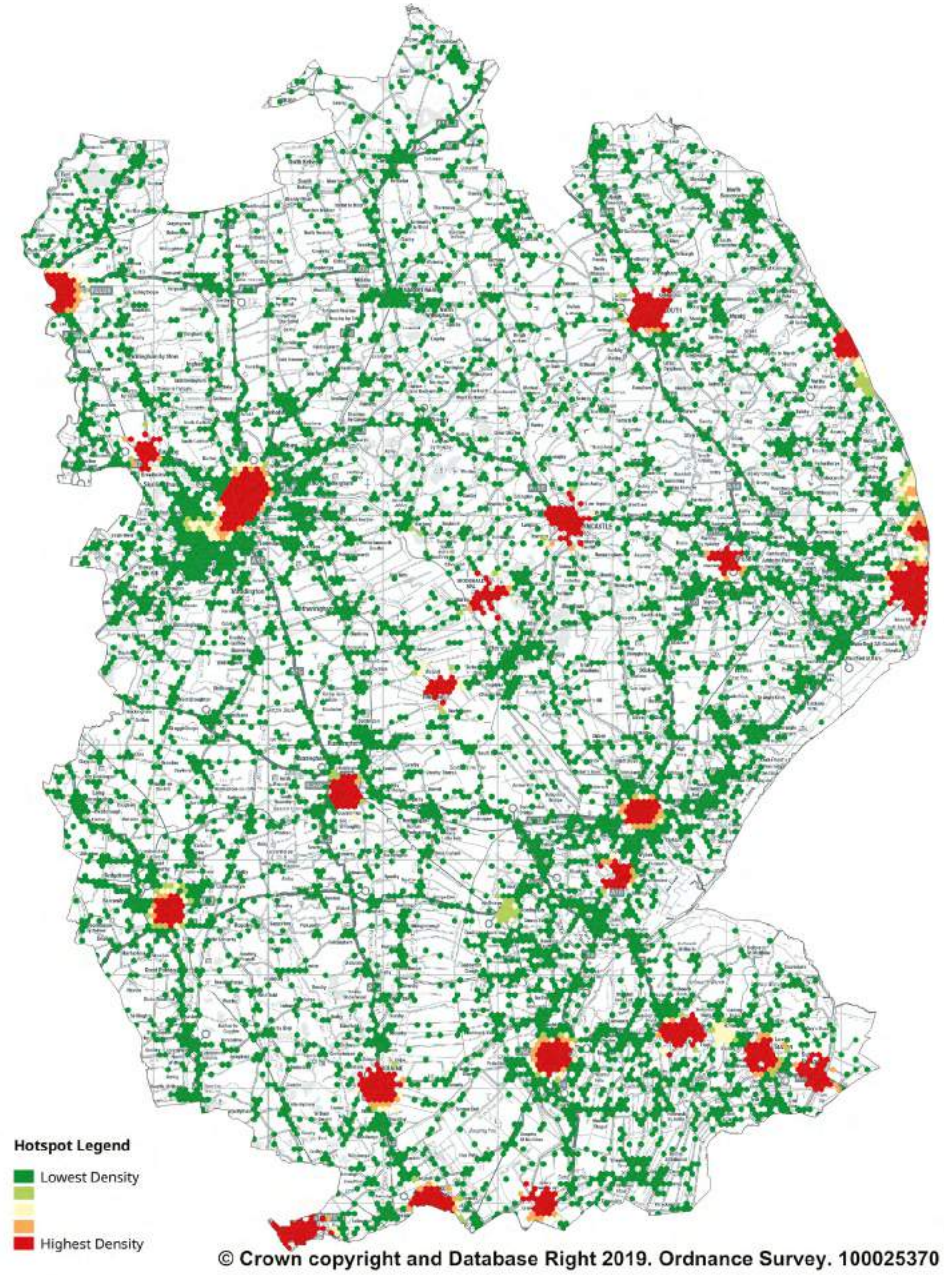
All incidents monthly breakdown by year 2014/15 - 2018/19



Incident breakdown by type 2014/15 - 2018/19



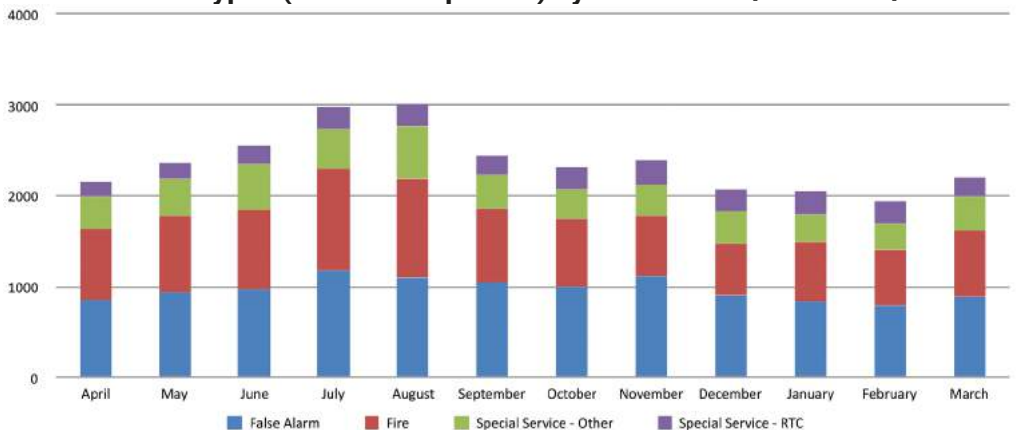
Heat map of All Attended Incidents



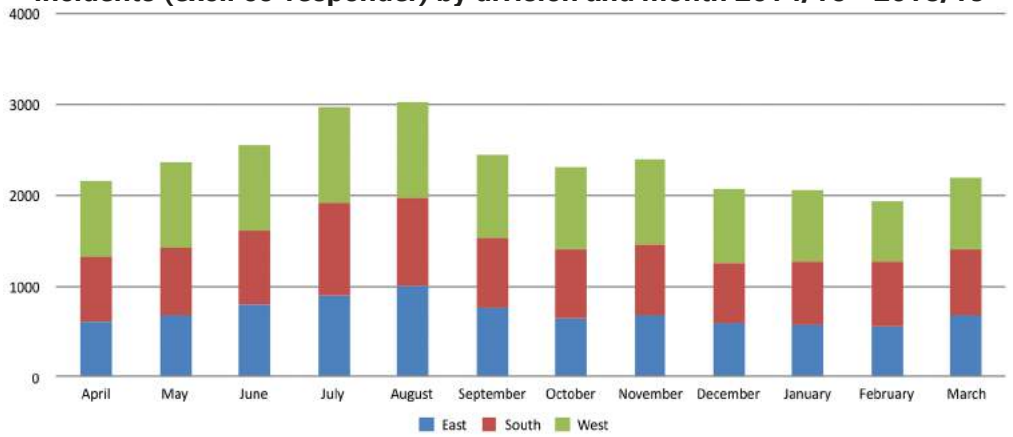
Seasonal demand variation

Our analysis of seasonal variation in incident demand has been broken down into service, division and station level with a peak in incident activity taking place in the summer months of July/August:

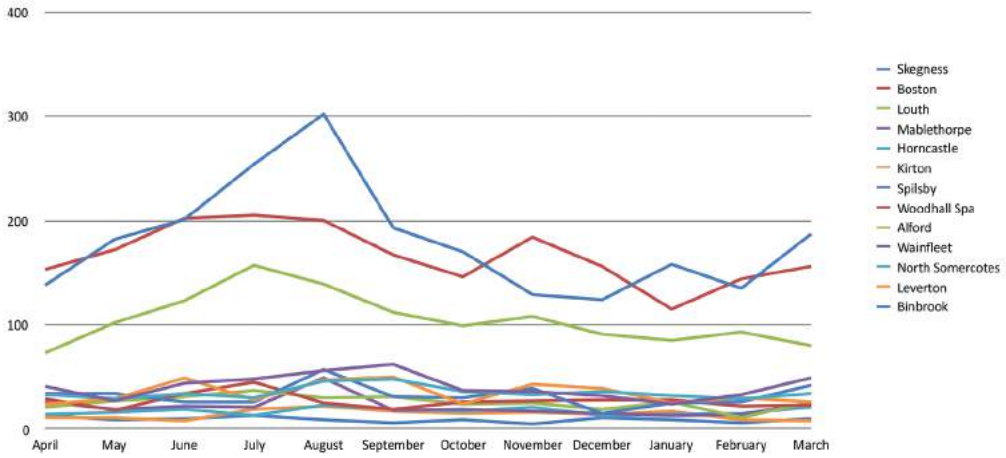
Incident Types (excl. co-responder) by month 2014/15 - 2018/19



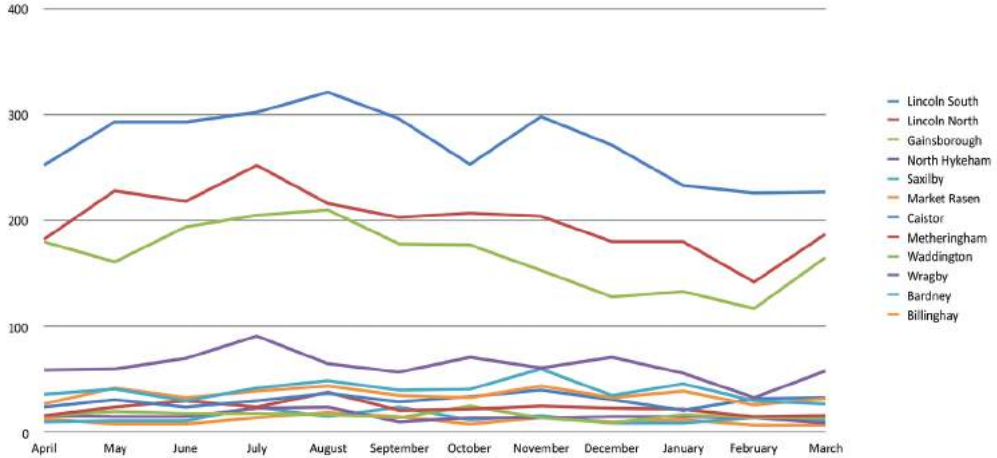
Incidents (excl. co-responder) by division and month 2014/15 - 2018/19



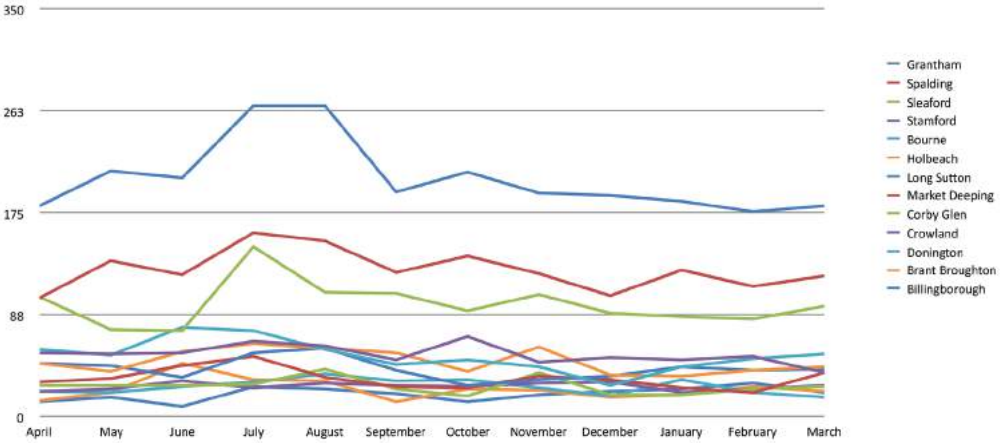
East Division Incidents (excl. co-responder) by station and month 2014/15 - 2018/19



West Division Incidents (excl. co-responder) by station and month 2014/15 - 2018/19



South Division Incidents (excl. co-responder) by station and month 2014/15 - 2018/19



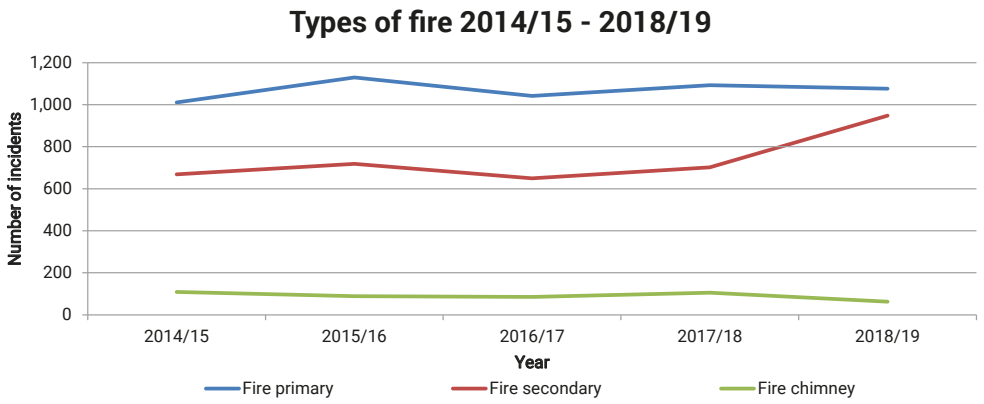
Coastal stations such as Skegness, Wainfleet and Mablethorpe show the most dramatic increase in incident activity during the summer months. This can be attributed to the increase in tourist population with Lincolnshire's coastal resorts attracting around 20 million visitors per year. Analysis of types of incident during this period shows the majority are fires in grassland/refuse.

Fire Incidents Attended 2014/15 – 2018/19

Over the last five years the number of fires attended is slowly on the increase. In the most recent year this was largely due to the prolonged hot summer of 2018.

Types of fire are grouped into three categories:

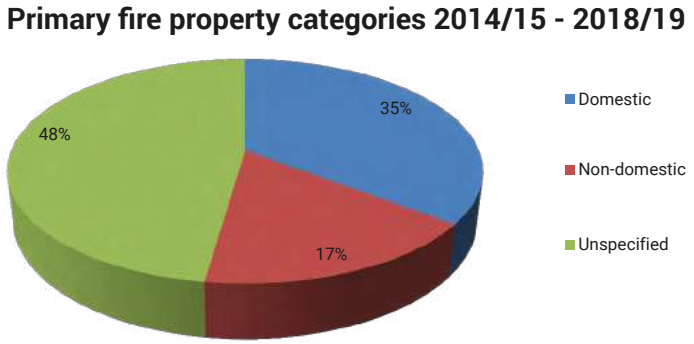
1) Fire Primary, 2) Fire Secondary and 3) Fire Chimney.

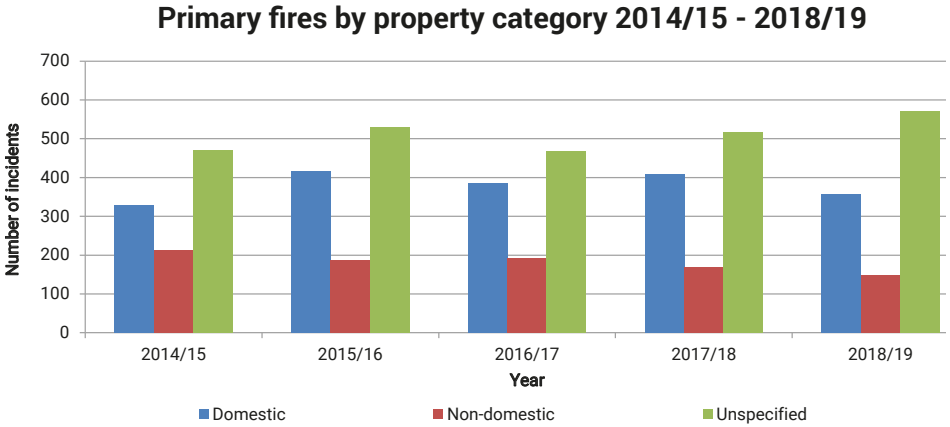


Primary Fire Incidents 2014/15 – 2018/19

Primary fire incidents are categorised by property group and type, the main distinctions are:

1) Domestic, 2) Non-Domestic and 3) Unspecified.





Over the last five years 35% of primary fires occurred in domestic (dwellings).

Analysis of fire deaths/injuries

Fire Injuries and Fatalities Overview

The number of people involved in fire is recorded within the Incident Recording System by different categories:

1) Fatality.

2) Injured (which includes where a person was rescued with an injury).

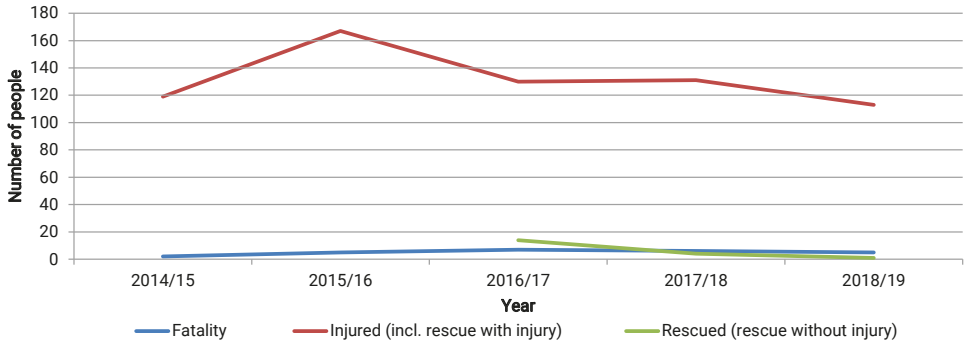
3) Rescued (without injury).

The following line chart illustrates the number of people involved where their death or injury is recorded as being related to the fire. This chart also shows all people who were injured as a result of the fire, regardless of their severity of injury, explained in more detail below.

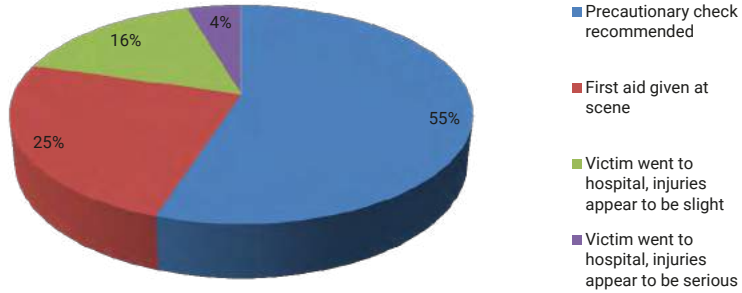
(Note: in 2014/15 there were two recorded rescues from fires and in 2015/16 there was zero.)

20% of fire related injuries are recorded where the severity of injury was such that treatment in hospital was required (135 people over five years). Therefore 80% of fire related injuries, 525 people, were either recommended to seek a precautionary check, or were given first aid at the scene. Severity codes where treatment was required in hospital are counted and reported against National Indicator 49 (iii) for internal reporting.

People involved in fires (fire related injuries) 2014/15 - 2018/19

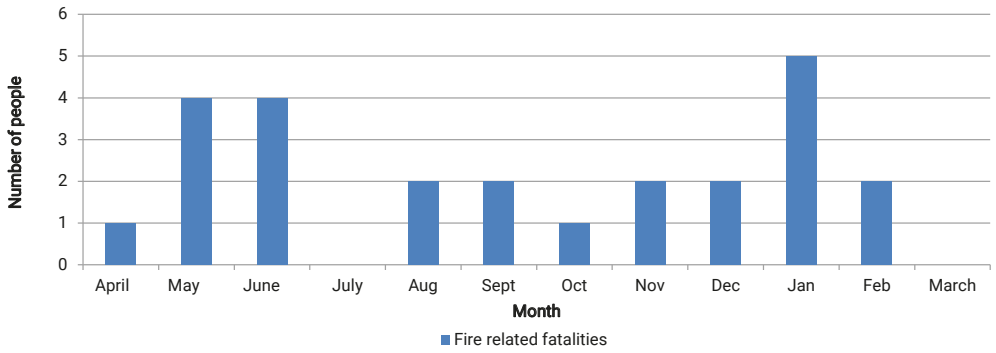


Fire related injuries severity of injury 2014/15 - 2018/19

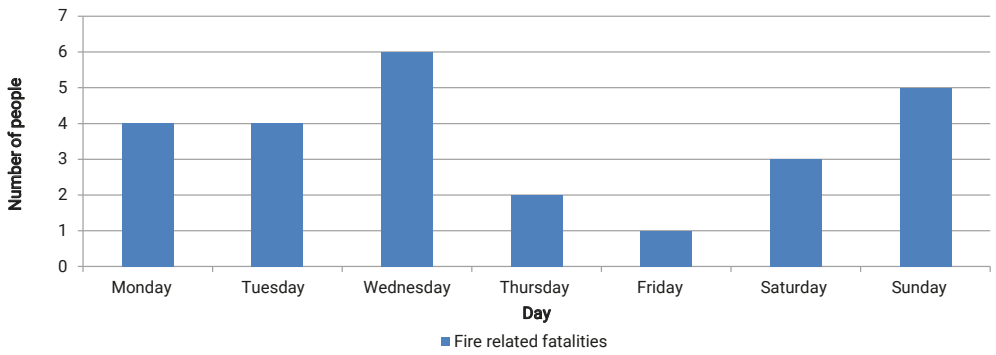


Fire Fatalities – When

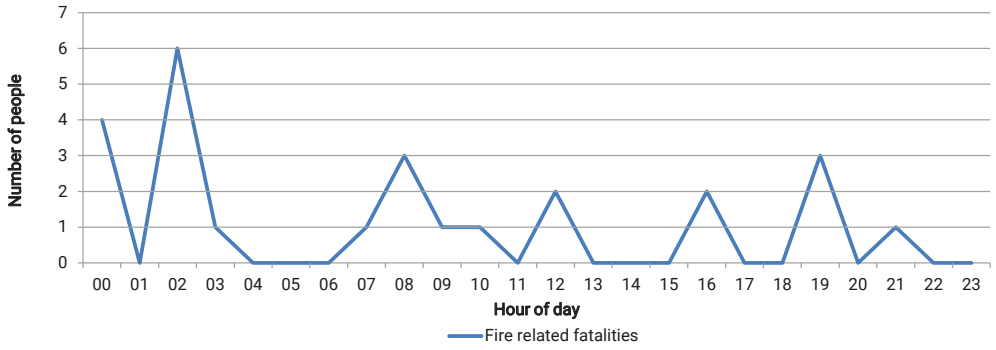
Fire related fatalities by month 2014/15 - 2018/19



Fire related fatalities by day 2014/15 - 2018/19

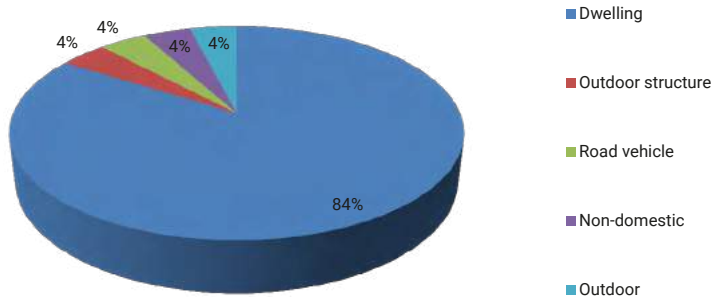


Fire related fatalities by hour of day 2014/15 - 2018/19

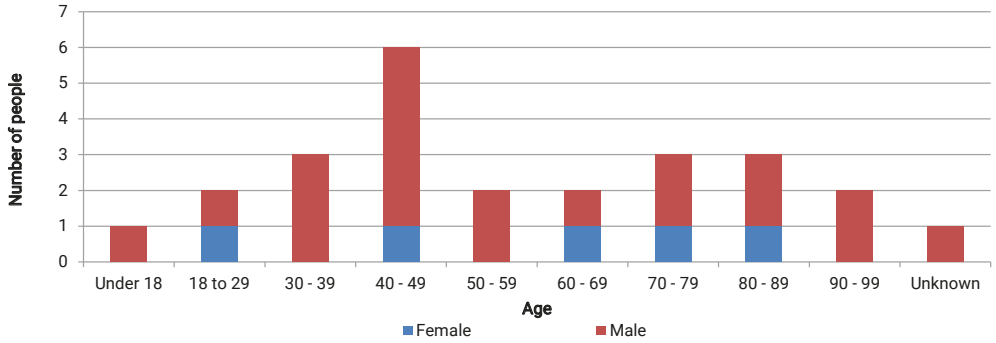


Fire Fatalities – Who and What

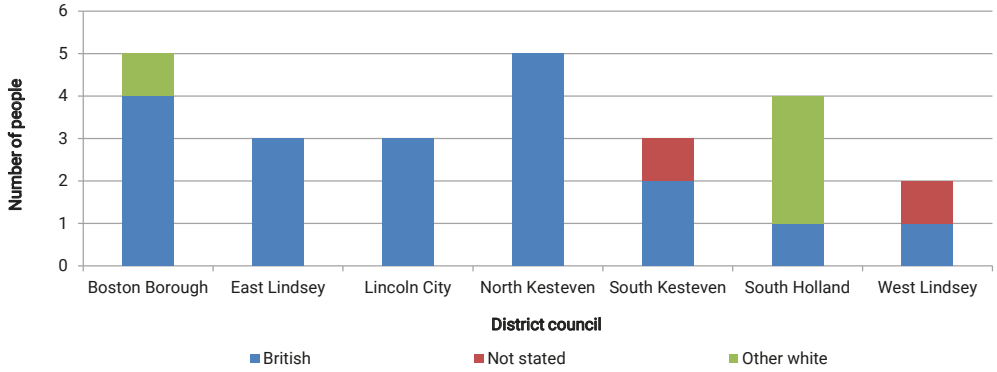
Fire related fatalities by property category 2014/15 - 2018/19



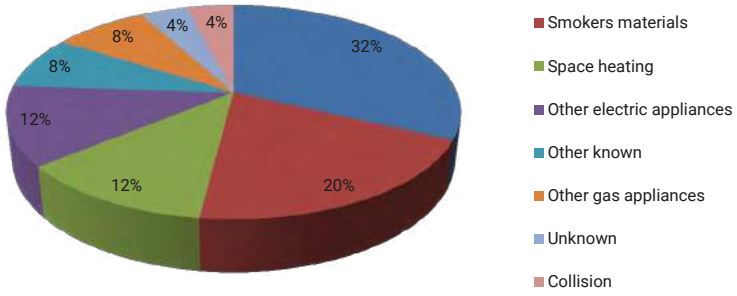
Fire related fatalities by age and gender 2014/15 - 2018/19



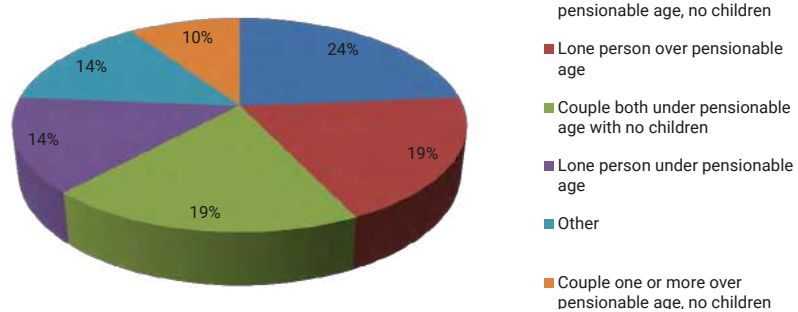
Fire related fatalities ethnicity by district council 2014/15 - 2018/19



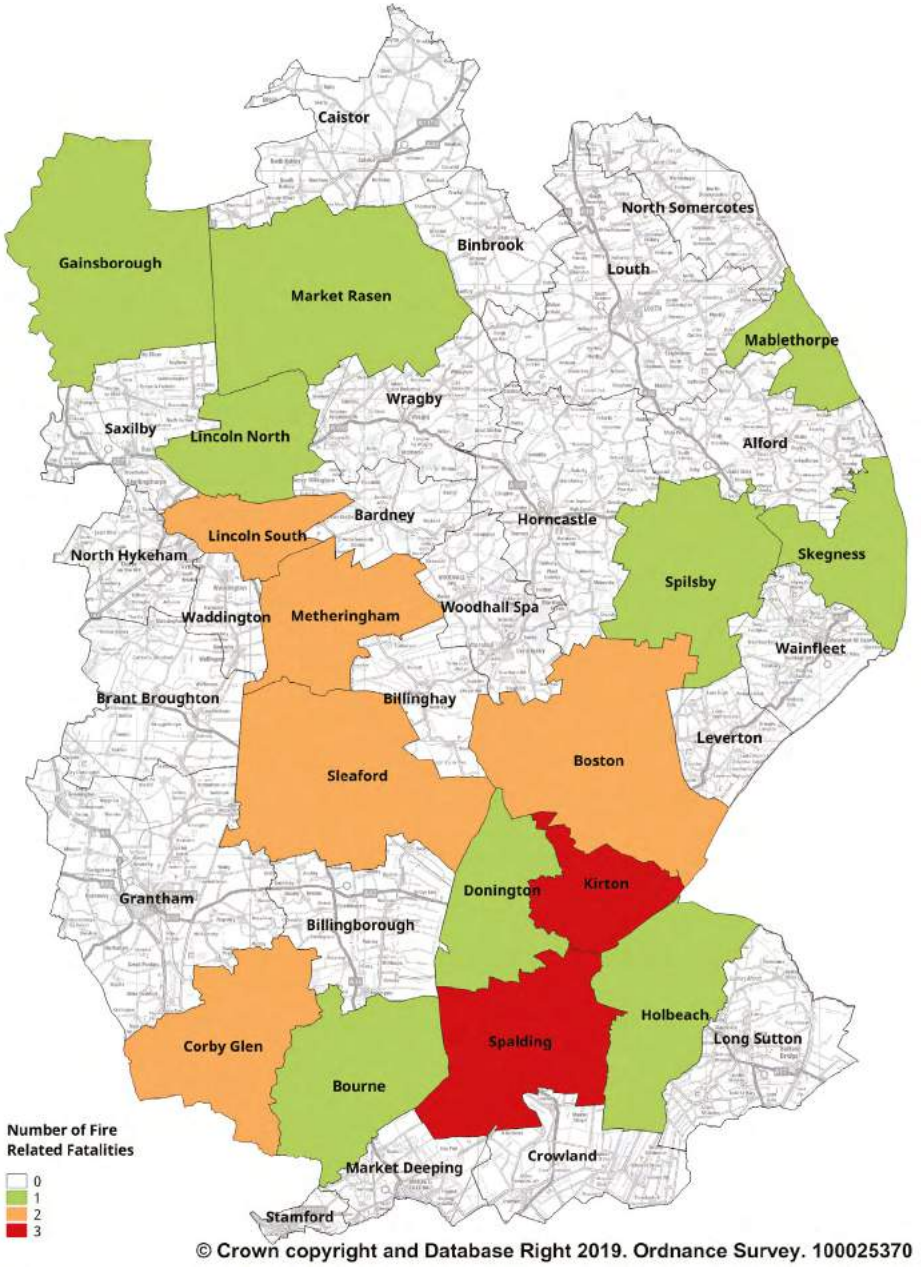
Fire related fatalities by cause of fire 2014/15 - 2018/19



Fire related fatalities household occupancy (dwellings only) 2014/15 - 2018/19

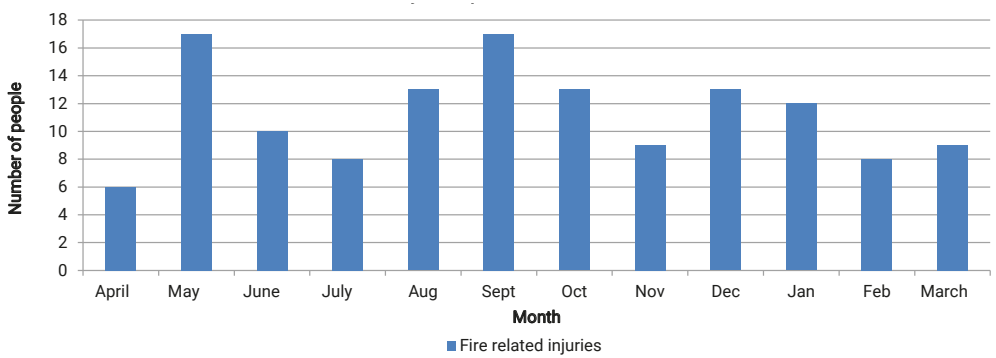


Fire Fatalities – Where

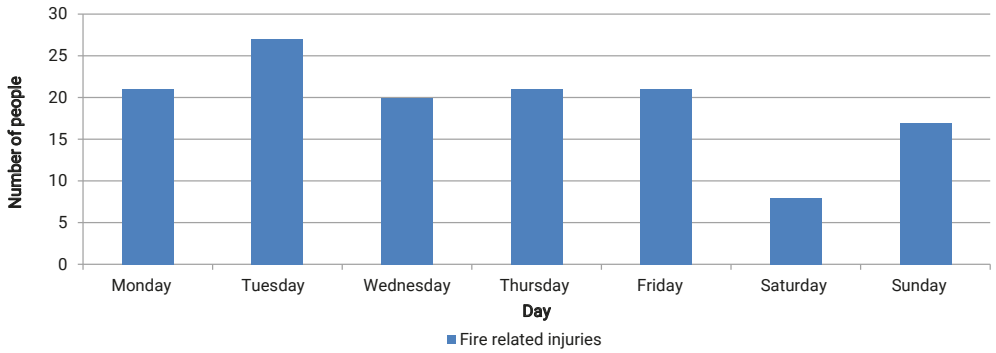


Fire Injuries - When

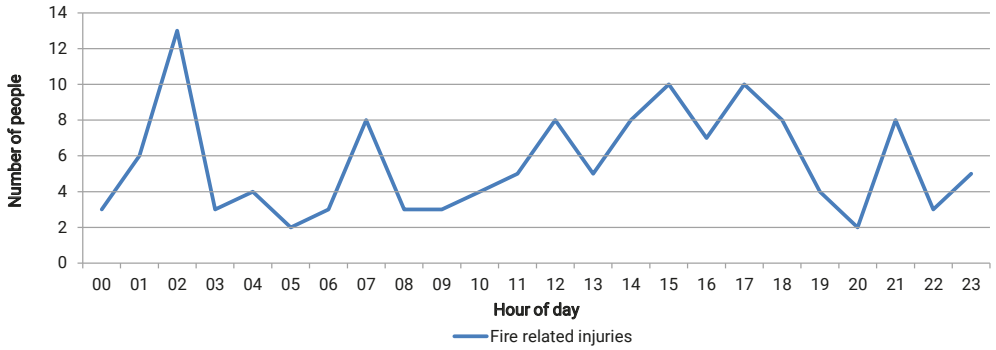
Fire related injuries by month 2014/15 - 2018/19



Fire related injuries by day 2014/15 - 2018/19

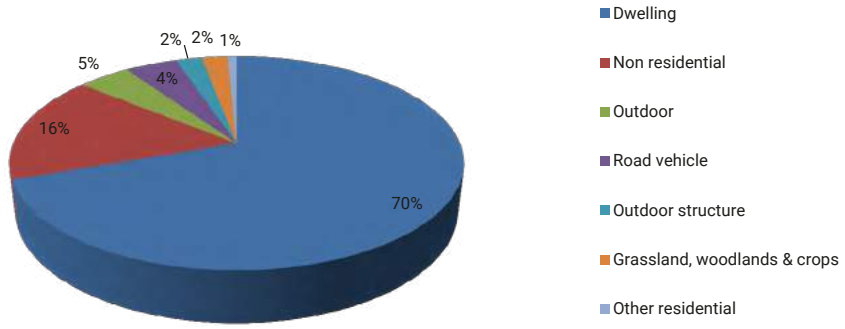


Fire related injuries by hour of day 2014/15 - 2018/19

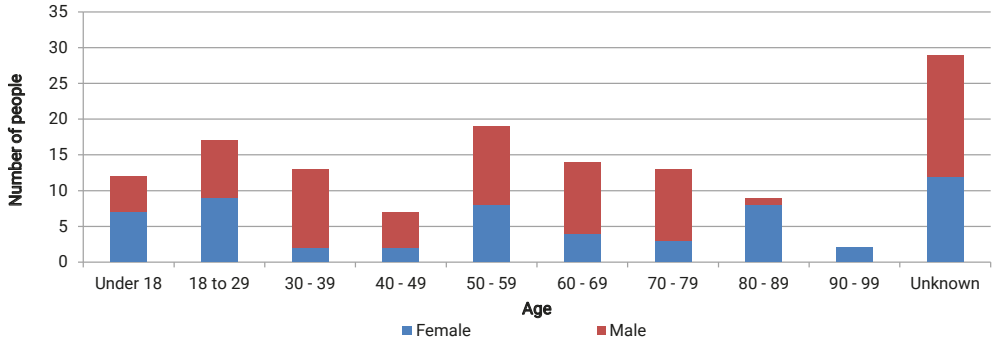


Fire Related Injuries – What and Who

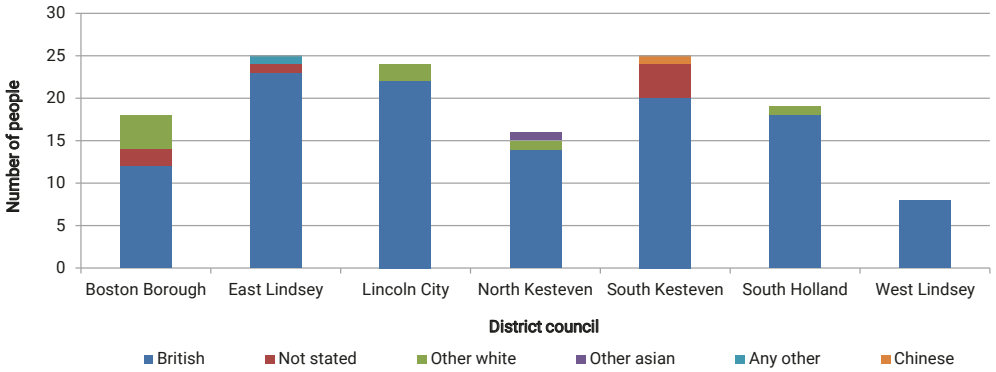
Fire related injuries by property category 2014/15 - 2018/19



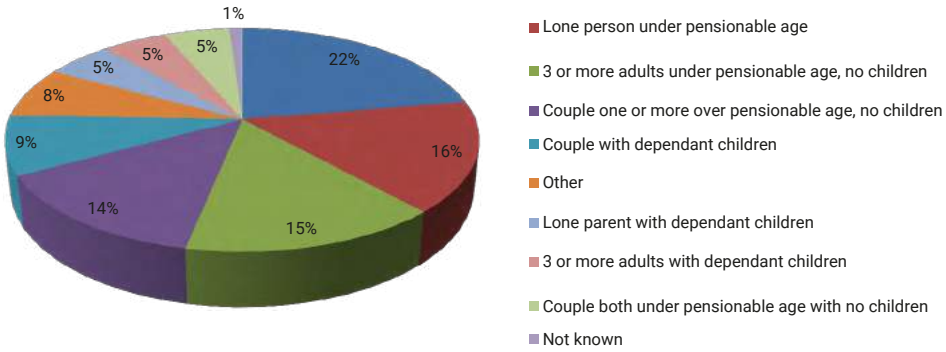
Fire related injuries by age and gender 2014/15 - 2018/19



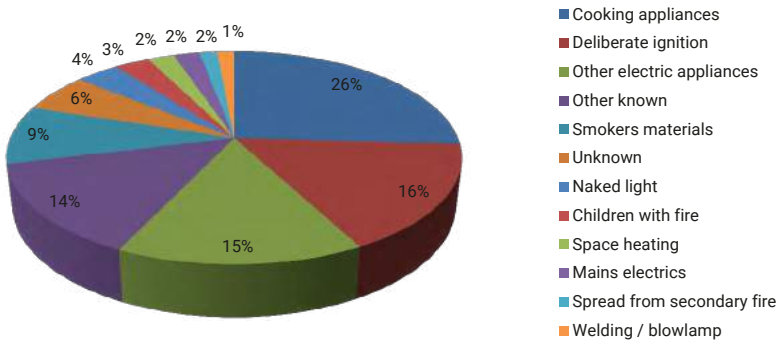
Fire related injuries by ethnicity by district council 2014/15 - 2018/19



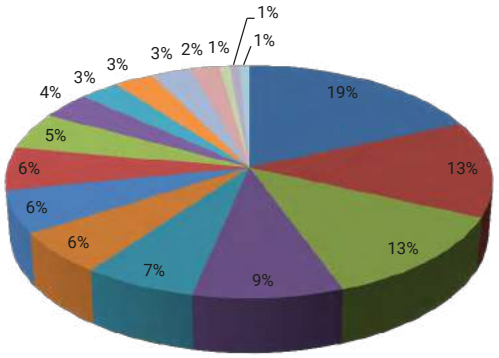
Fire related injuries household occupancy (dwellings only) 2014/15 - 2018/19



Fire related injuries by cause of fire 2014/15 - 2018/19



Fire related injuries circumstances leading to injury 2014/15 - 2018/19



- Fighting fire (including attempts)
- Not applicable
- Discovering fire
- Not known
- Trapped by fire because unaware, e.g. asleep
- Suspected under influence of alcohol
- Injured escaping
- Injured rescuing person
- Trapped by smoke
- Immobile, bed / chair ridden
- Returned to fire
- Injured by blast
- Intentionally sustained at start of fire, e.g. suicides & attempts
- Injury accidently sustained at start of fire
- Injured rescuing property or animals
- Other
- Suspected under influence of drugs

False alarms

False Alarms – Types

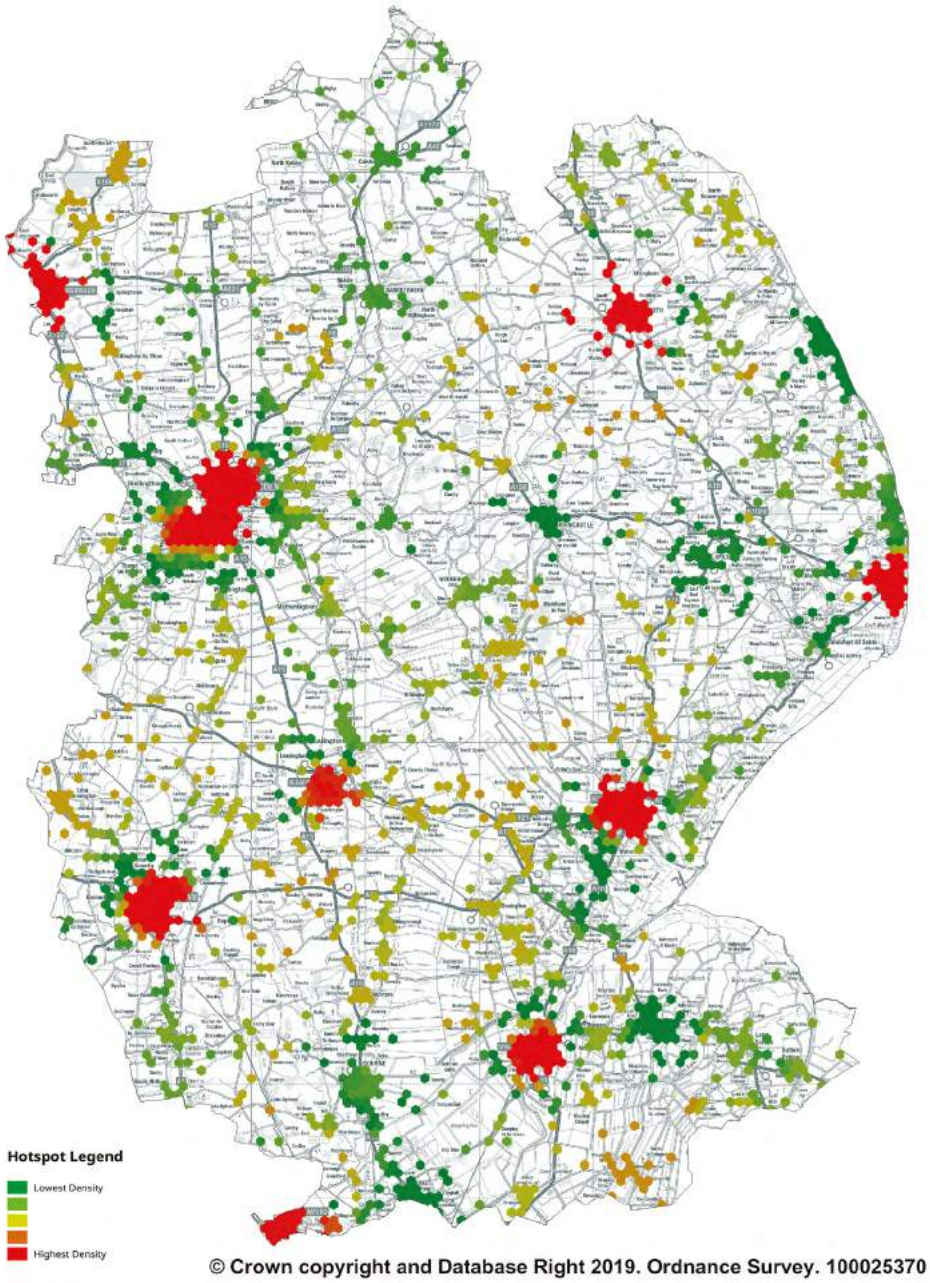
False alarms are defined as 'where the FRS attends a location believing there to be a fire situation but on arrival discovers no such incidents exists or existed' and are broken into three categories:

1) False Alarm AFA – Calls initiated by fire alarm or firefighting equipment operating.

2) False Alarm Good Intent – Calls made in good faith in the belief that FRS attendance to an incident is required.

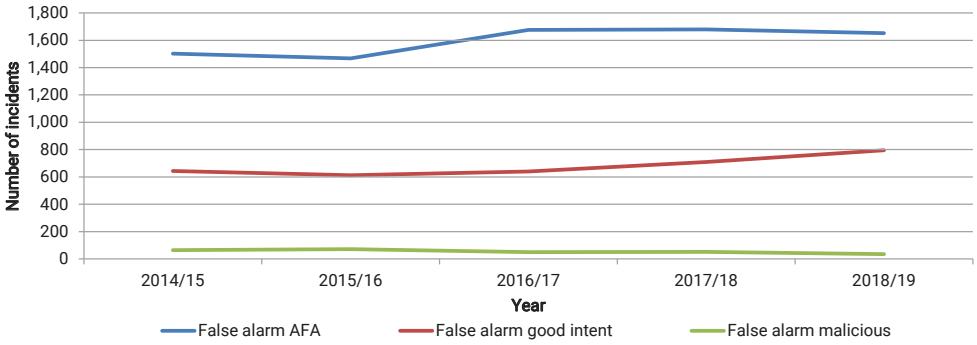
3) False Alarm Malicious – Calls made with the intention of getting FRS to attend a non-existent incident, including deliberate/malicious and hoax intentions.

Locations of all False Alarms shown below:



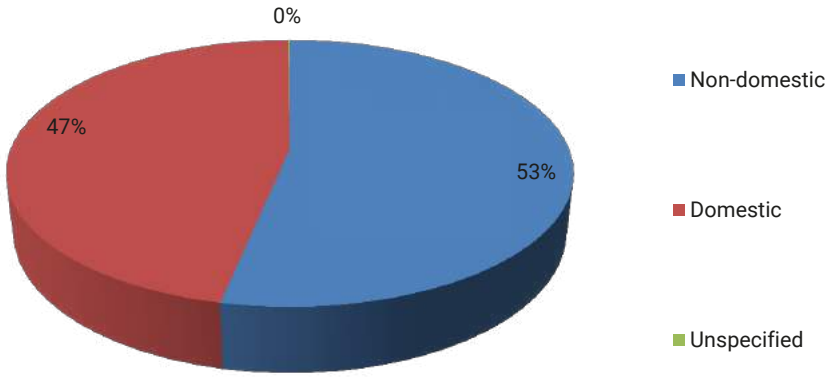
The breakdown of attendances to these types of false alarms over the five year period 2014/15 - 2018/19 is shown below.

Types of false alarms attended 2014/15 - 2018/19



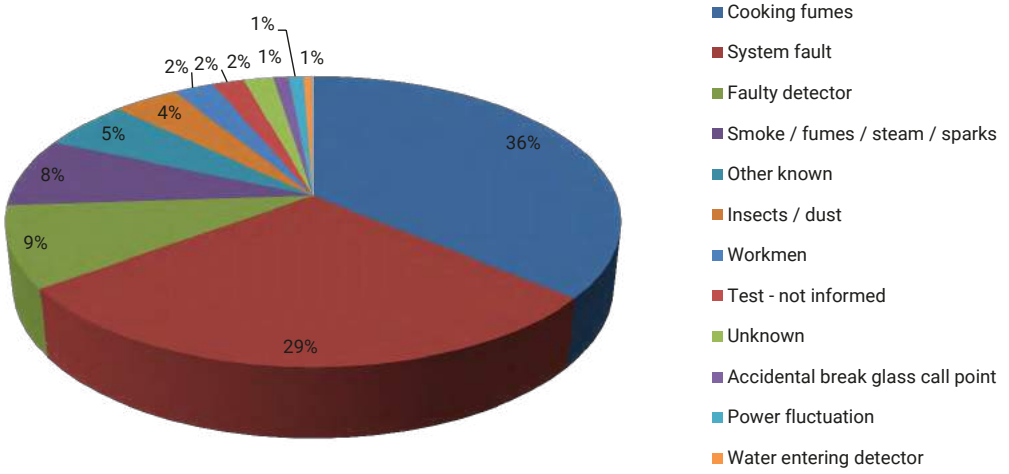
False Alarm AFA incidents broadly fall into two distinct groups, occurring in domestic and non-domestic properties.

False alarm AFA by property category 2014/15 - 2018/19

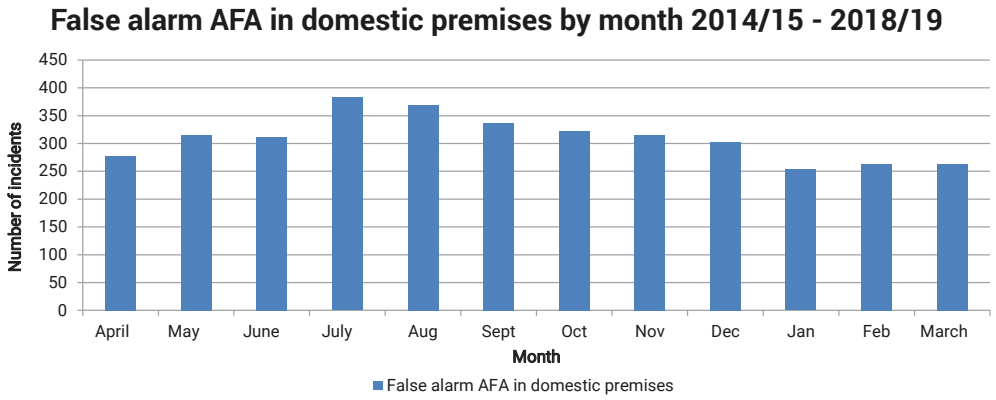


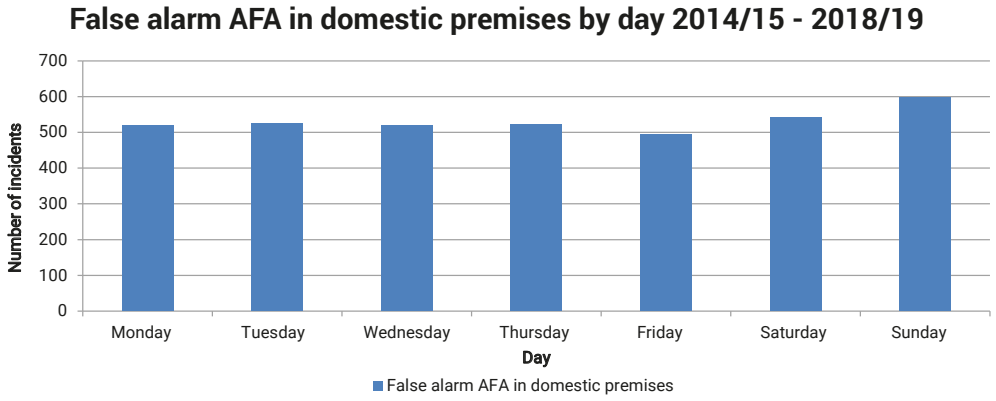
False Alarm AFA – Domestic – What

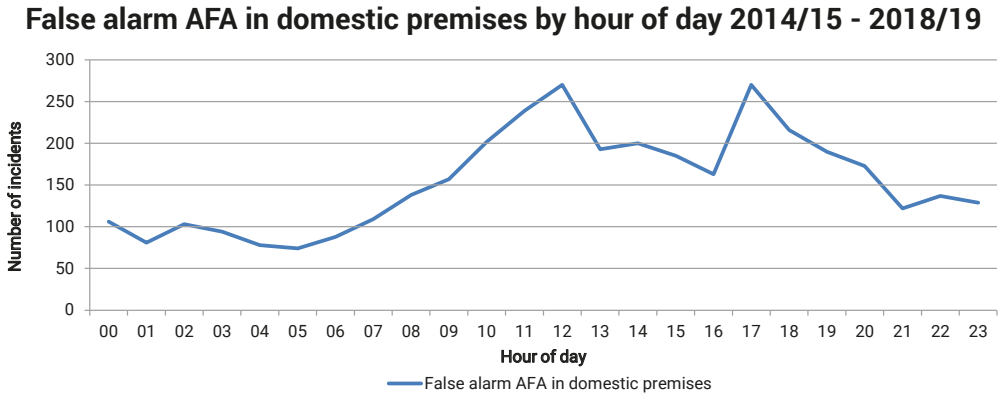
Cause of false alarm AFA incidents in domestic premises 2014/15 - 2018/19



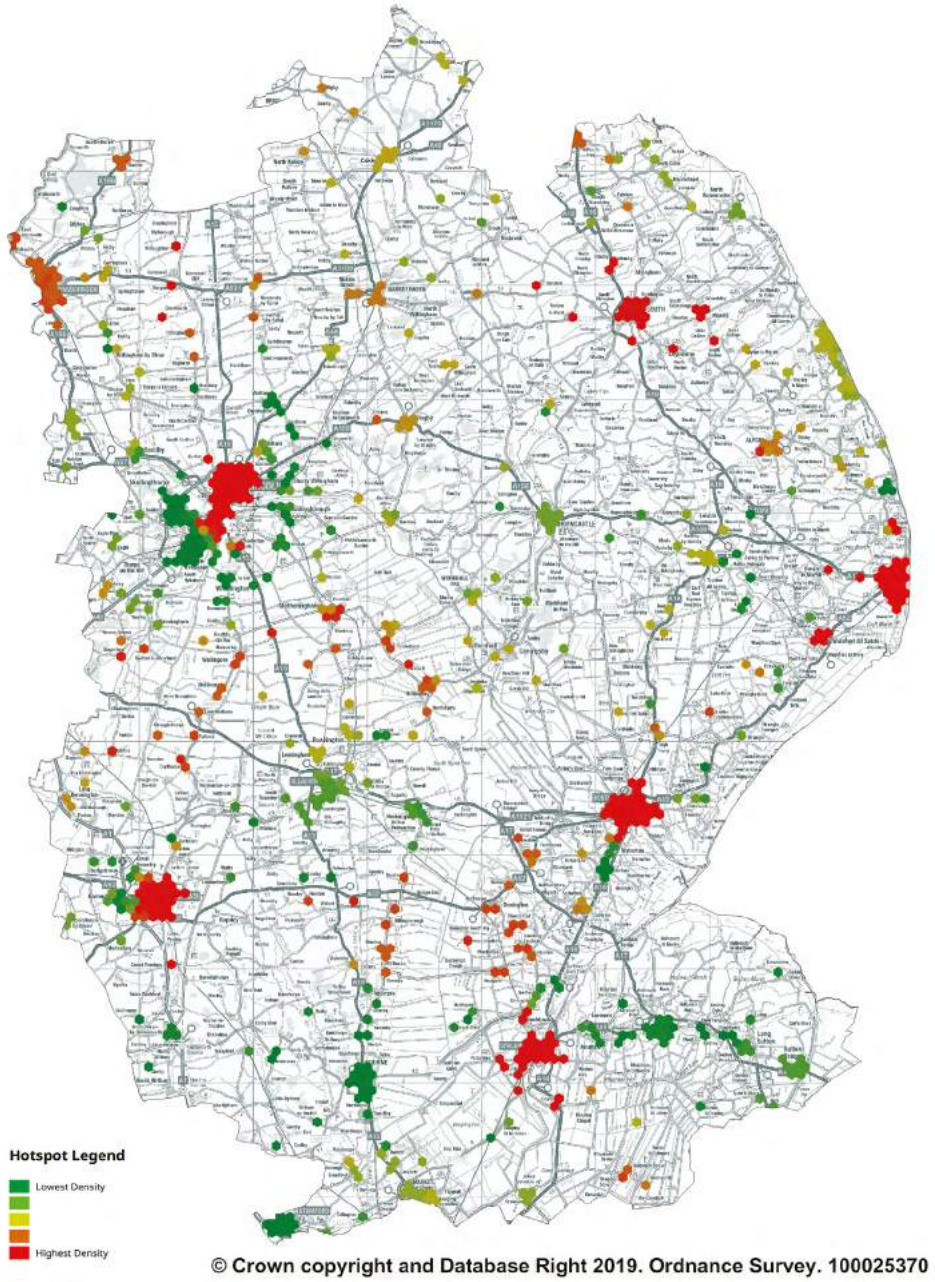
False Alarm AFA – Domestic - When





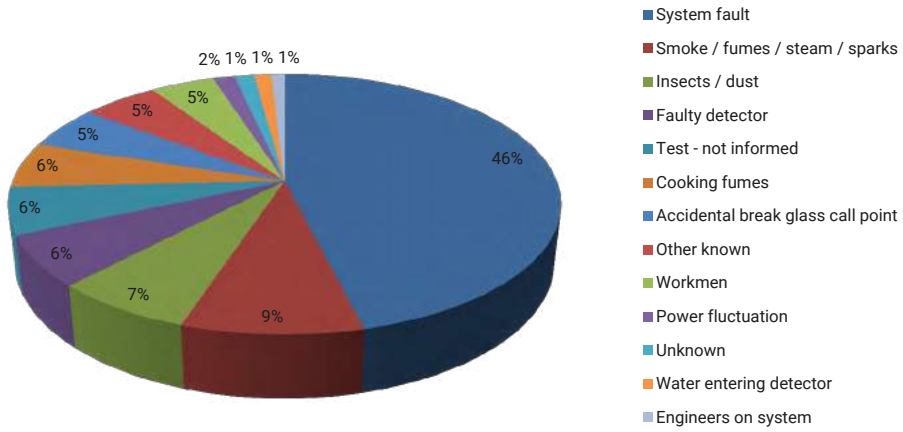


False Alarm AFA – Domestic - Where

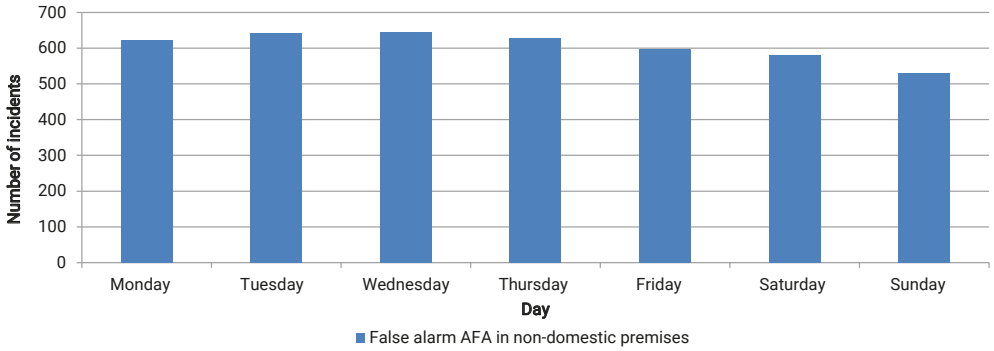


False Alarm AFA – Non-Domestic – What

Cause of false alarm AFA incidents in non-domestic premises 2014/15 - 2018/19

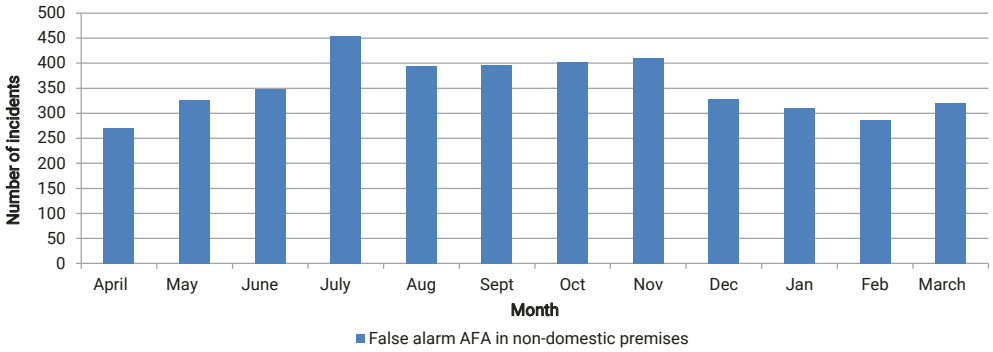


False alarm AFA in non-domestic premises by day 2014/15 - 2018/19

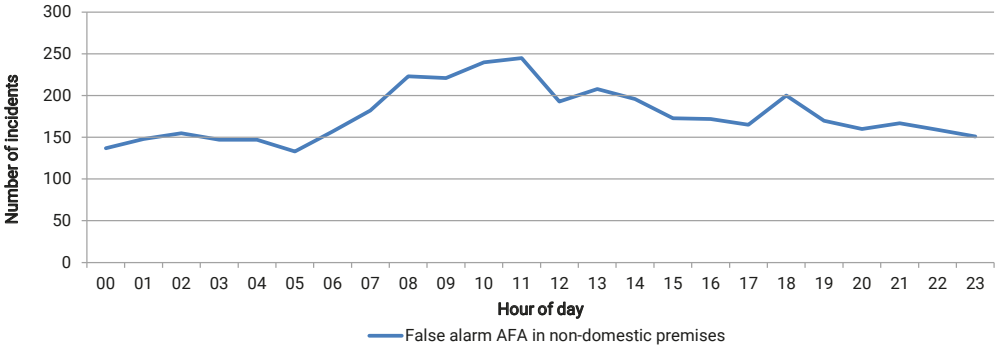


False Alarm AFA – Non-Domestic - When

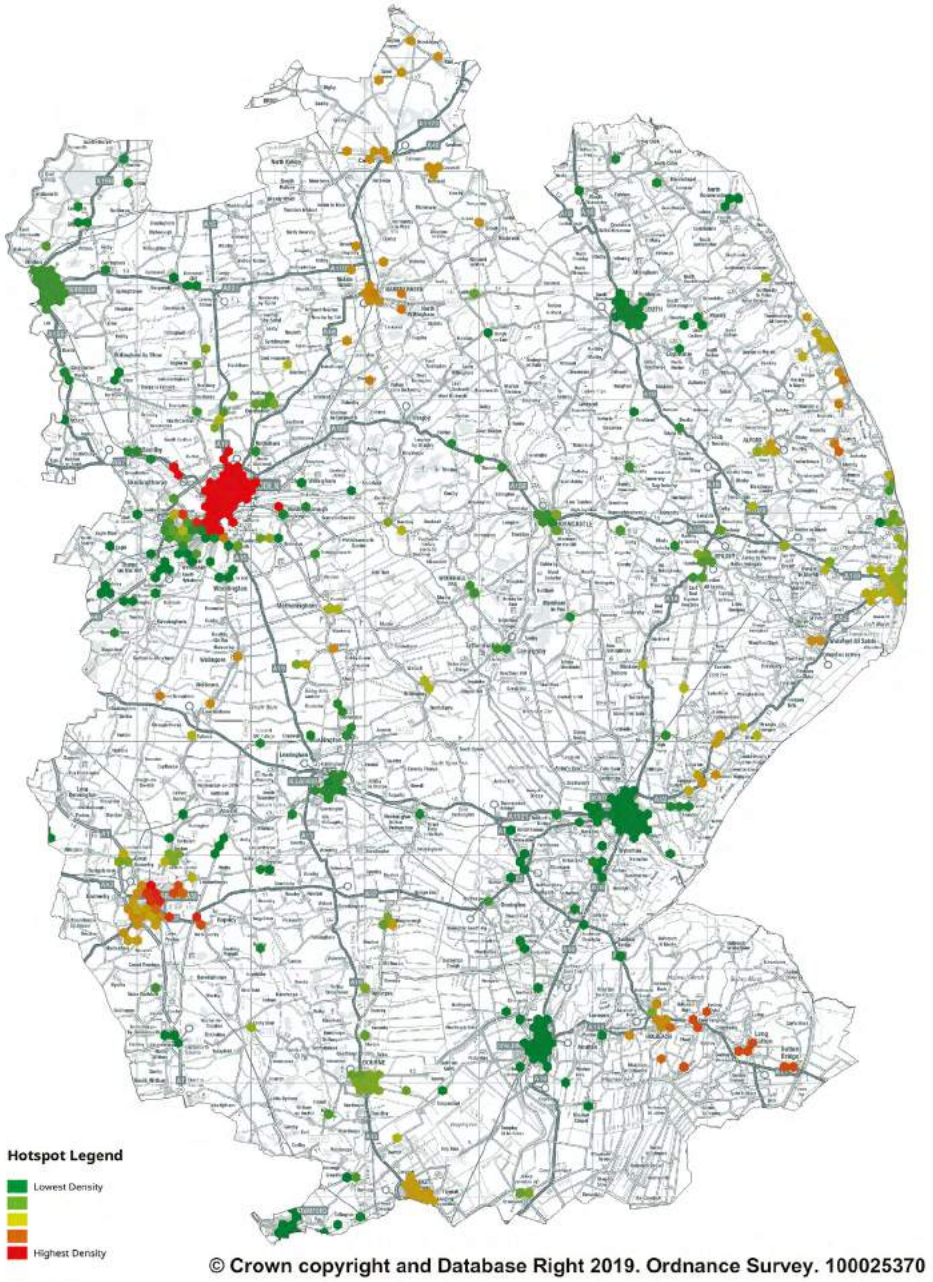
False alarm AFA in non-domestic premises by month 2014/15 - 2018/19



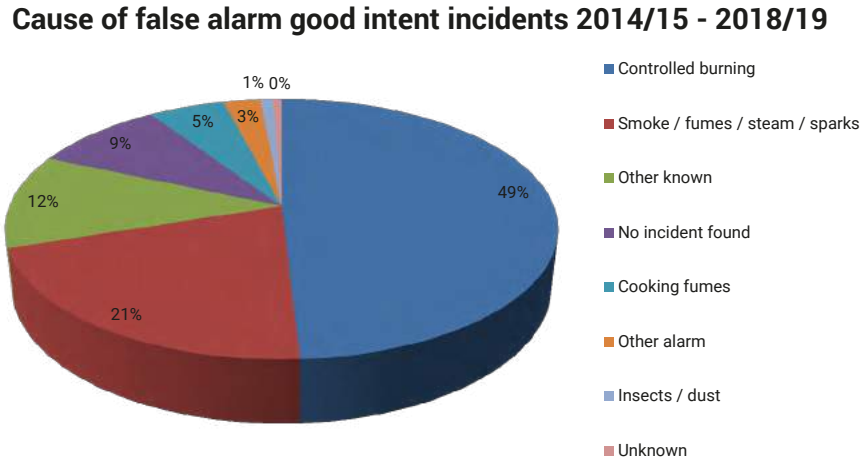
False alarm AFA in non-domestic premises by hour of day 2014/15 - 2018/19



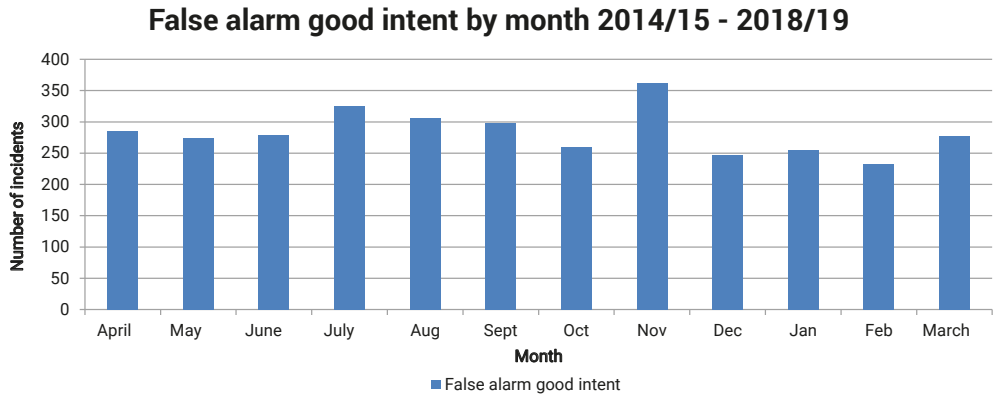
False Alarm AFA – Non-Domestic - Where

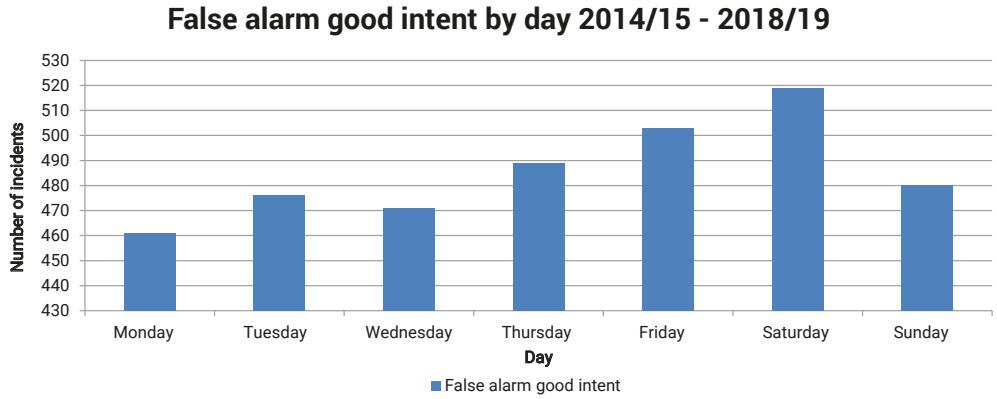


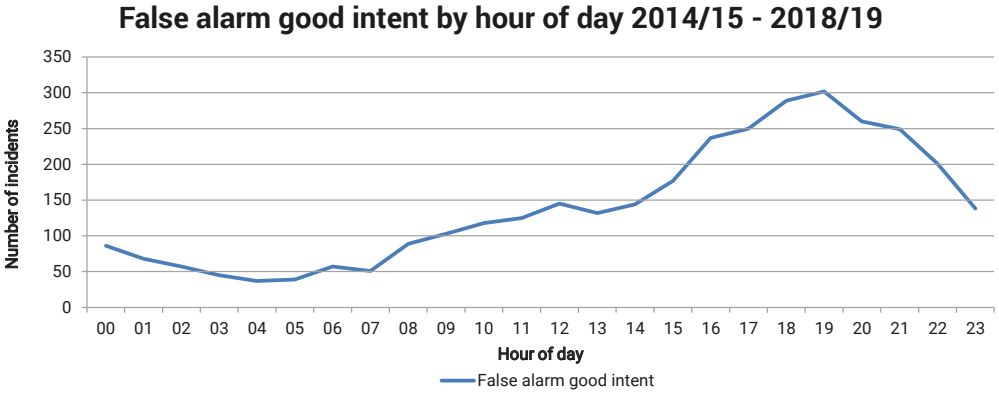
False Alarm Good Intent – What



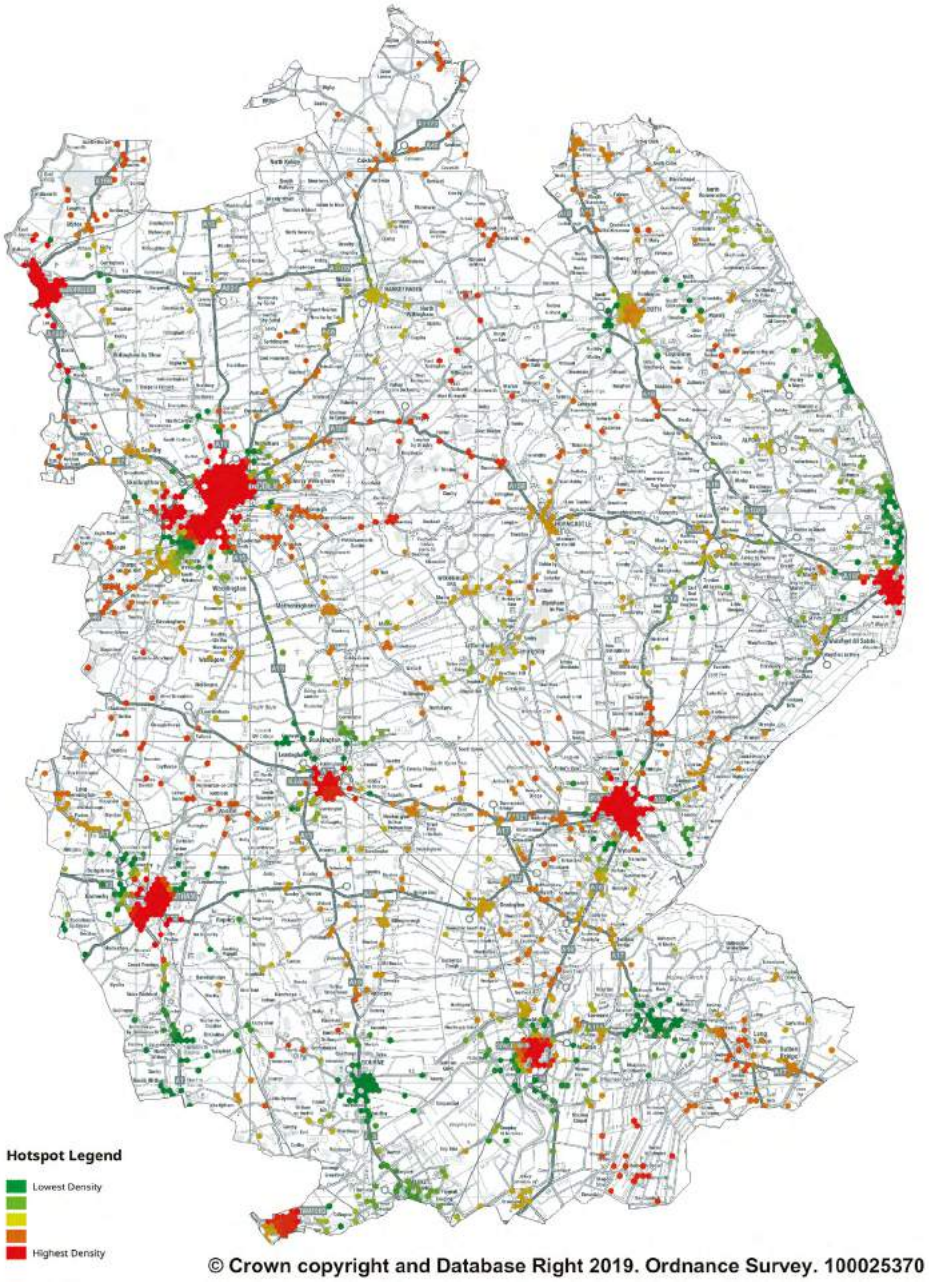
False Alarm Good Intent - When



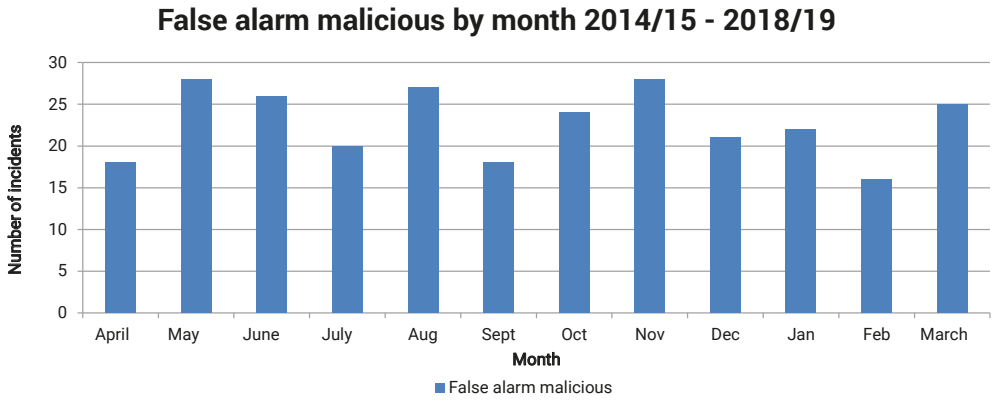


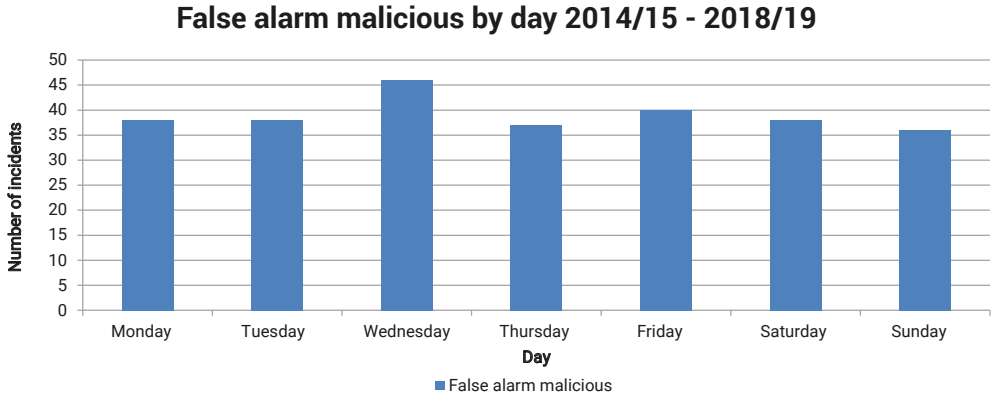


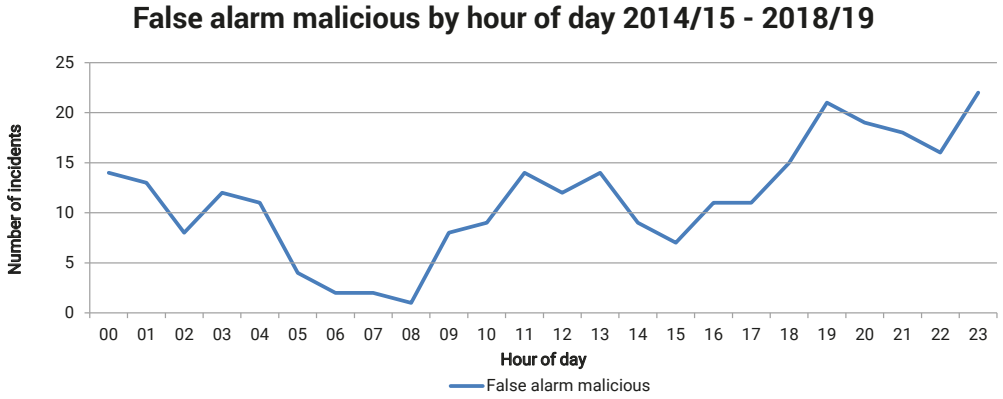
False Alarm Good Intent - Where



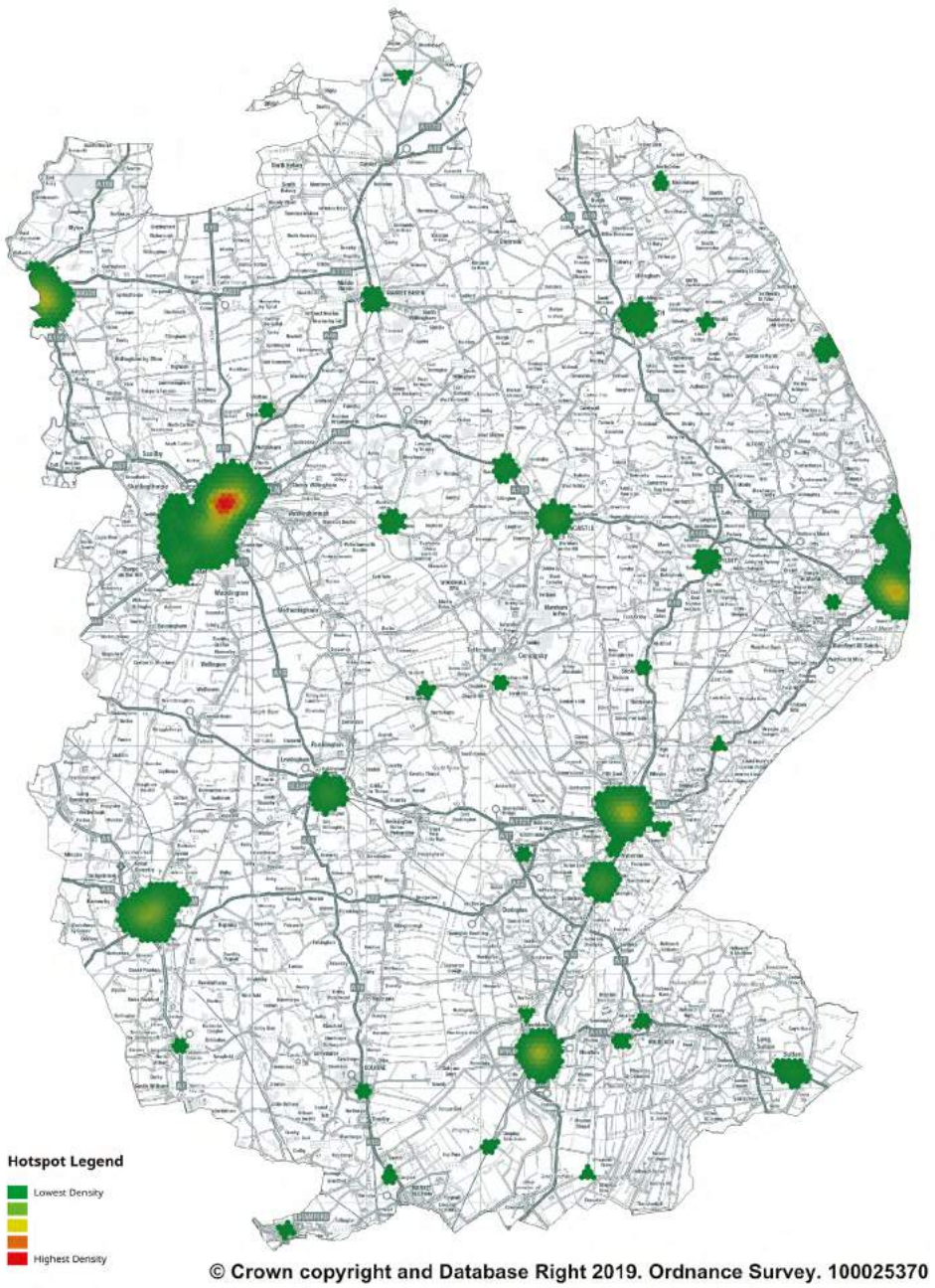
False Alarm Malicious - When







False Alarm Malicious - Where



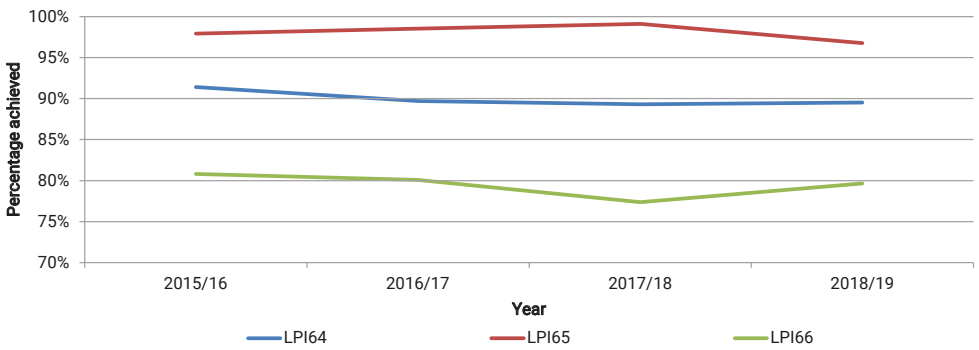
Response Times

Response to incidents is calculated using a drive time methodology from each Lincolnshire fire station, including control call handling time. This factors in an allowance for the pumping appliance to respond from the station, added to a drive time footprint from the station. Our response strategy is for the following:

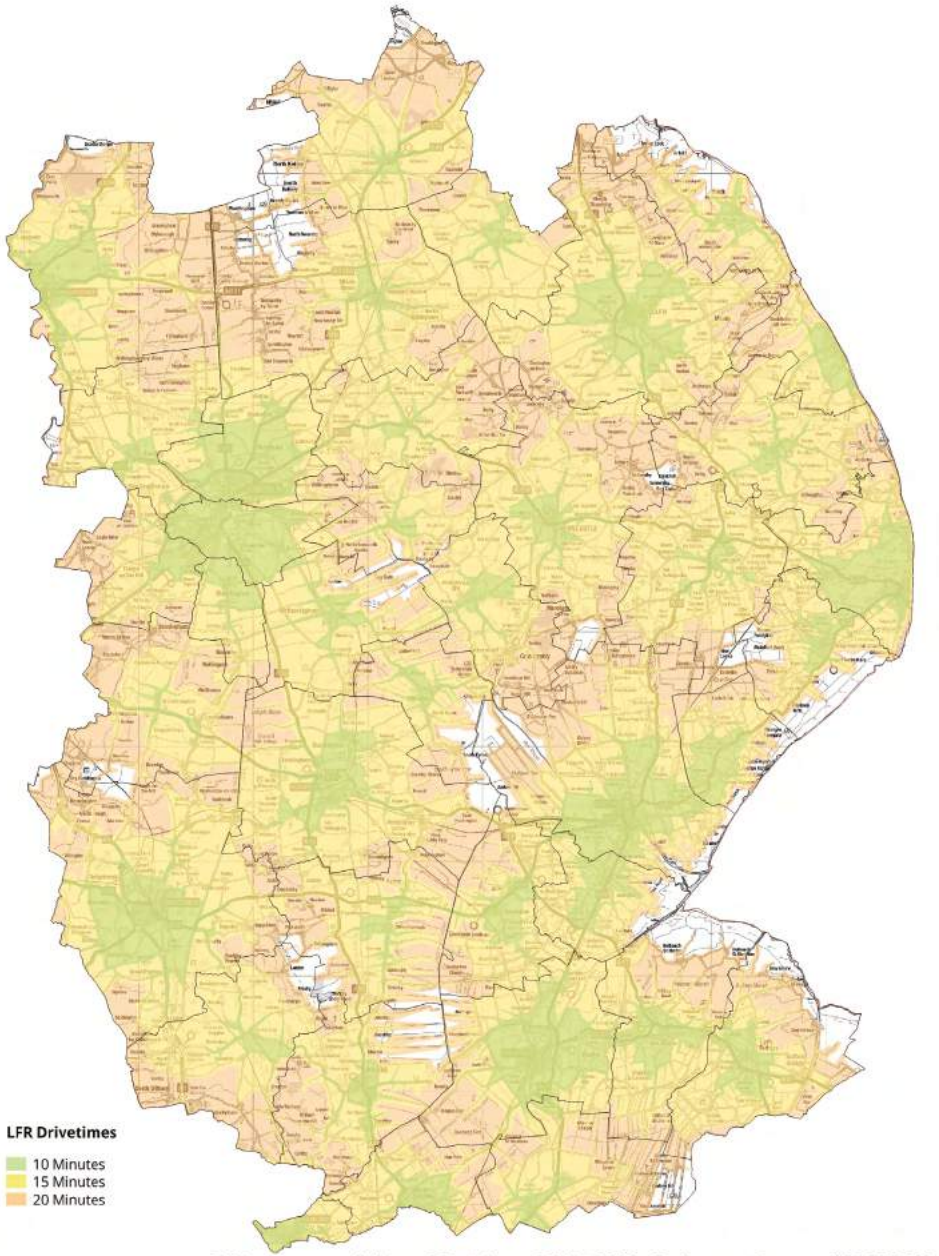
- First appliance to arrive at dwelling fires within the expected timeframe on 100% of occasions, with a 10% tolerance allowed. (Measured as Indicator LPI 64.)
- Second appliance to arrive at dwelling fires within 25 minutes on 100% of occasions, with a 10% tolerance allowed. (Measured as Indicator LPI 65.)
- First appliance to arrive at road traffic collisions within the expected timeframe on 100% of occasions, with a 10% tolerance allowed. (Measured as Indicator LPI 66.)

These response standards have been measured in this way for the four financial year periods commencing 2015/16 and the percentages achieved for each indicator is shown below.

Response standards performance 2015/16 - 2018/19



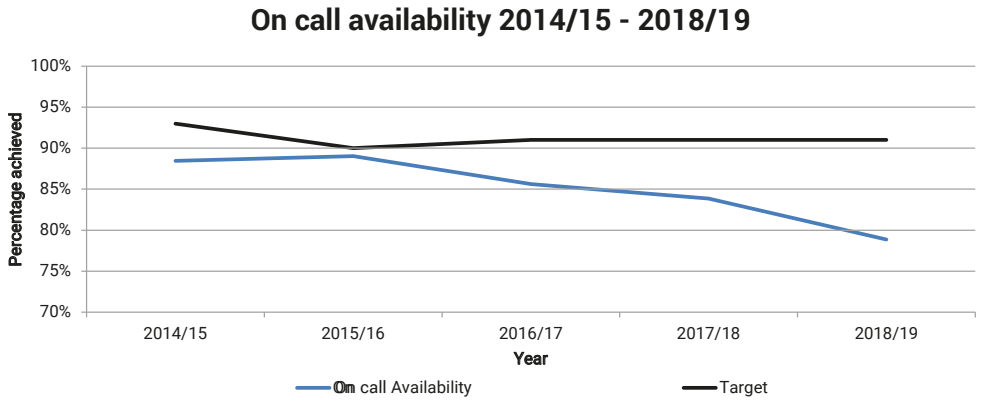
The 10, 15 and 20 minute response times can be seen below from each Lincolnshire Fire Station.



On call availability

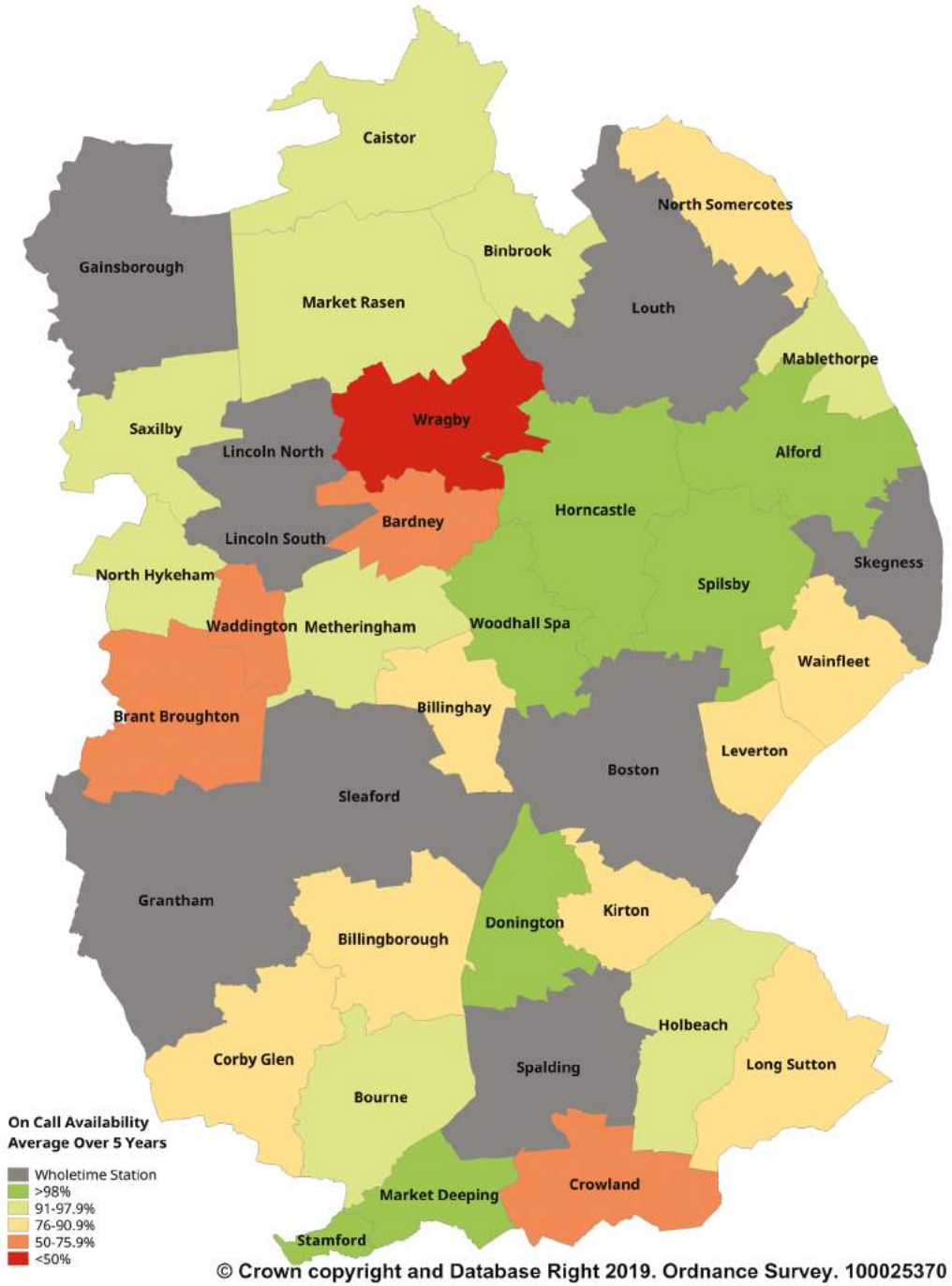
The availability of our on call appliances has continuously dropped over the last five years, to its lowest point (below 80%) in 2018/19. This has had a direct impact upon our ability to meet our response times and impacts on our corporate risk in terms of our ability to maintain an appropriately structured workforce.

There are well-documented challenges around on call availability and the long-term sustainability of the current on call model. Changes to demographics, lifestyle choices, availability of employment in local communities and financial reward are all factors behind this decrease.



On Call Availability – 5 Year Average Percentage

The following thematic map shows the average on call availability percentage over five years. The Wholetime/Lincolnshire Crewed stations have been removed from this cover map, and for Stamford, the percentage availability of the first appliance is shown.

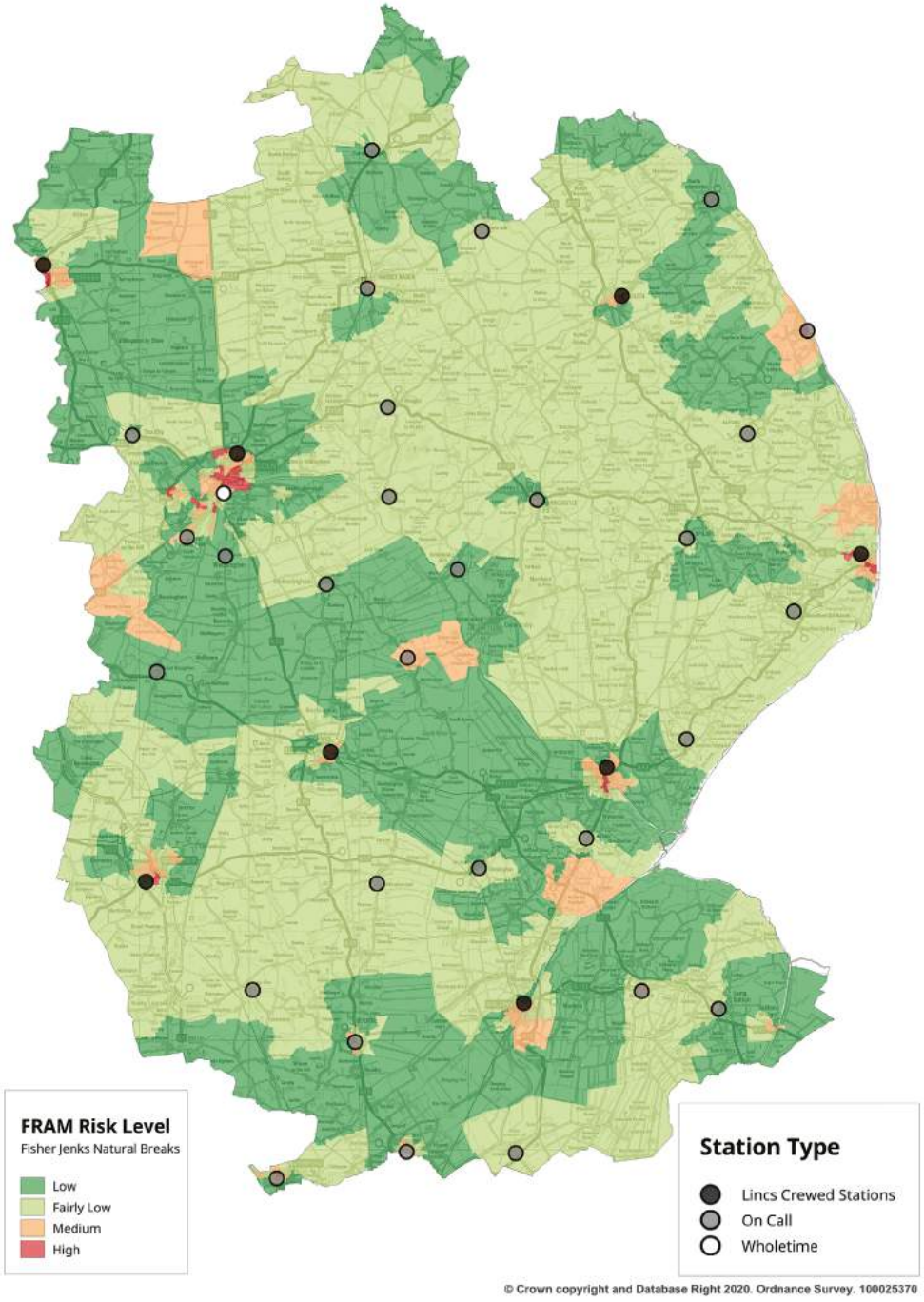


Fire cover

Our fire cover is regularly reviewed to ensure we resource our response assets to risk. Using the FRAM mapping tools we are able to overlay our fire stations and duty systems to ensure we match fire cover to areas of highest risk. When laying our response assets over our risk mapping, there is clear correlation between high risk areas and heightened levels of fire cover.

Drive time boundaries are also mapped as part of our fire cover reviews to ensure timescales for intervention of response activity can be factored in to our judgment of risk. LFR will continue to develop its use of software and additional data sets to ensure we are effectively resourcing and locating our response assets. We use multiple performance indicators to ensure our interventions are timely and effective.

A comprehensive fire cover review is planned to take place during the lifespan of Our Community Plan 2020-24. The Service is committed to regularly reviewing fire cover to ensure it is both matched to risk and cost effective.

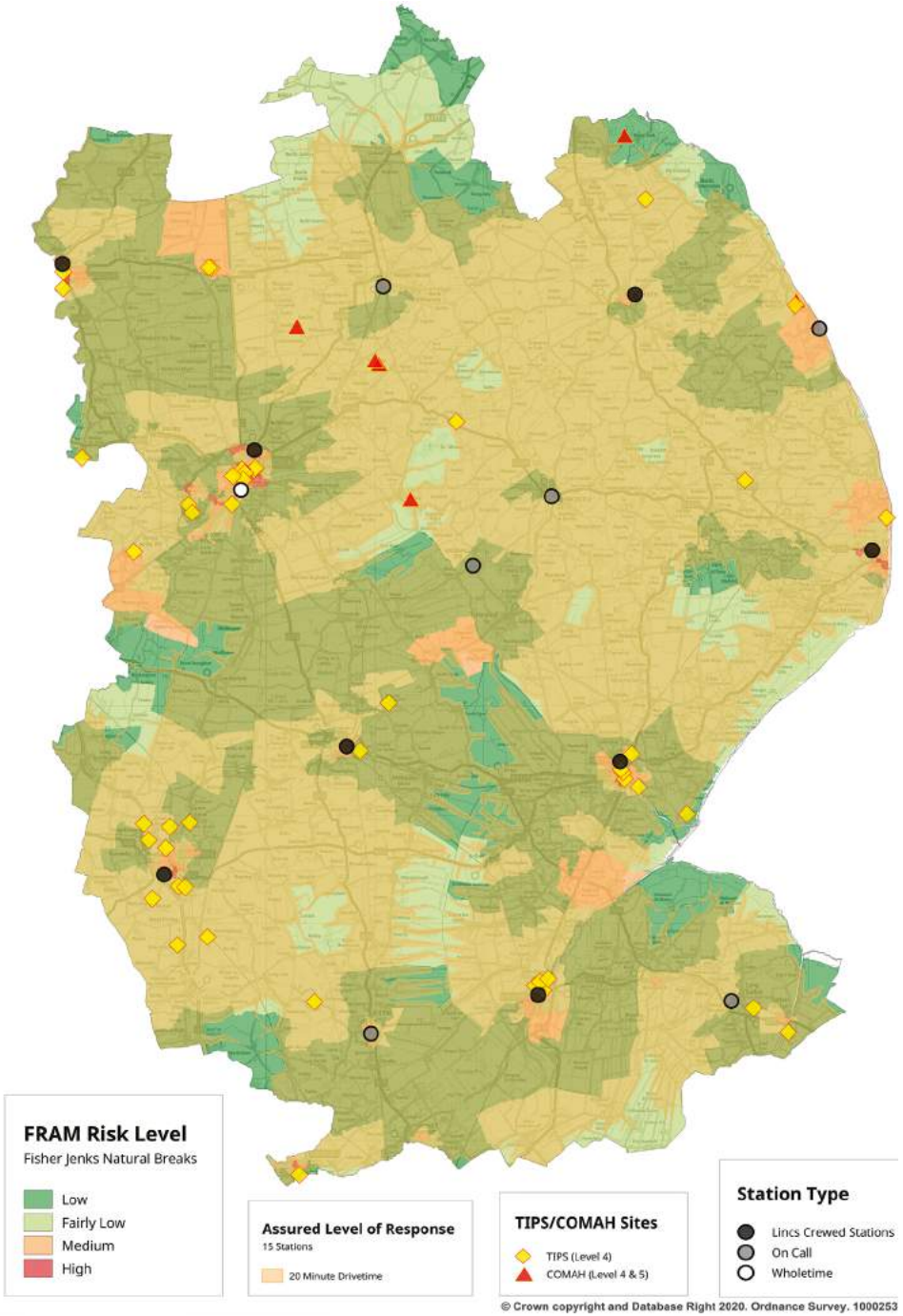


Assured level of response

Our planning suggests the most effective way to provide response to emergencies across the County and be able to further resource rapidly escalating or major incidents, is to provide 38 fire stations (48 fire engines). These are geographically based to enable catchment of staff for our on call system which remains the backbone of Lincolnshire's operational response. This forms the basis of our 'offer' to the communities of Lincolnshire and it remains a key ambition to work towards providing availability from all the stations 100% of the time. Inevitably, there are periods in which staff whose primary role is not fire and rescue are unavailable to provide cover. we manage this picture on a daily basis to reduce the impact of any gaps in fire cover.

Using risk mapping and drive time data, we are able to identify a number of key stations that will allow us to provide a minimum assured level of response. The strategic placing of our full time stations, along with six additional on-call stations provides a response to all of our high risk areas and 99% of our medium risk areas, within a timeframe of 20 minutes. Locations outside of these identified areas are further profiled and supported by our Prevention and Protection Framework.

The minimum number of fire engines needed to manage foreseeable concurrent incidents, blended with the strategic locations identified to provide the minimum 20 minute response, provides the basis of our 'Assured Level of Response'. Further detail can be found in the Response Framework.



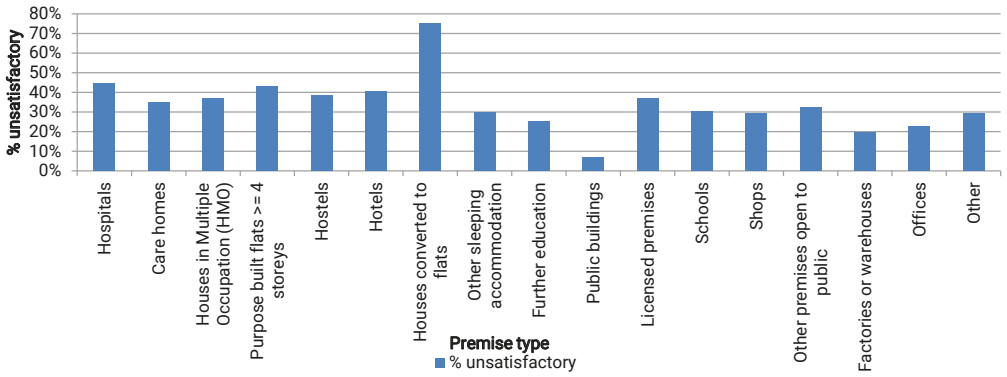
Fire safety audits

During the previous IRMP lifespan, the Community Fire Protection (CFP) team has made significant improvements in the way we target premises for fire safety audits. A refresh of the methodology to identify risk for non-domestic premises has led to an increase in the number of audits determining unsatisfactory outcomes against the Regulatory Reform Order (Fire Safety) 2005 (RRO).

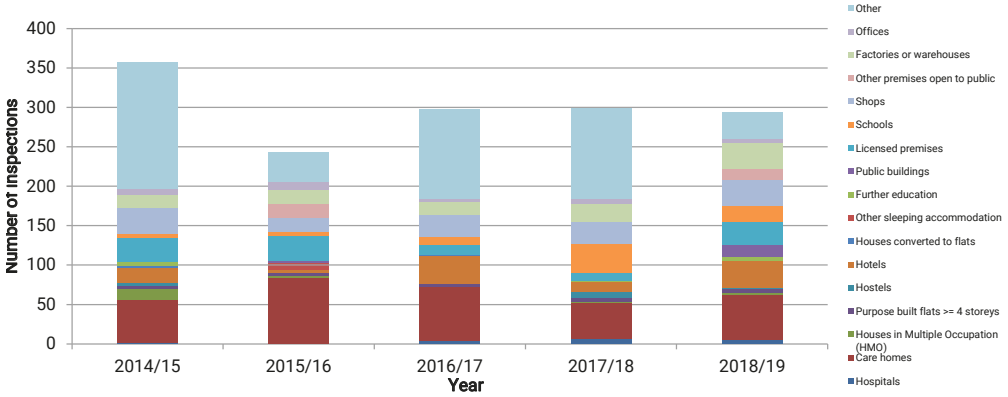
The CFP department has increased its use of data and tools to improve the Risk Based Inspection Programme (RBIP), and has led to a greater understanding of high risk premises.

The improvements in the RBIP allow the Service to better identify trends in which premises type are less likely to be compliant with the RRO. This makes our audits more targeted and allows us to allocate our resources to risk more effectively. The increased effectiveness of the RBIP has also led to an increase in enforcement activity.

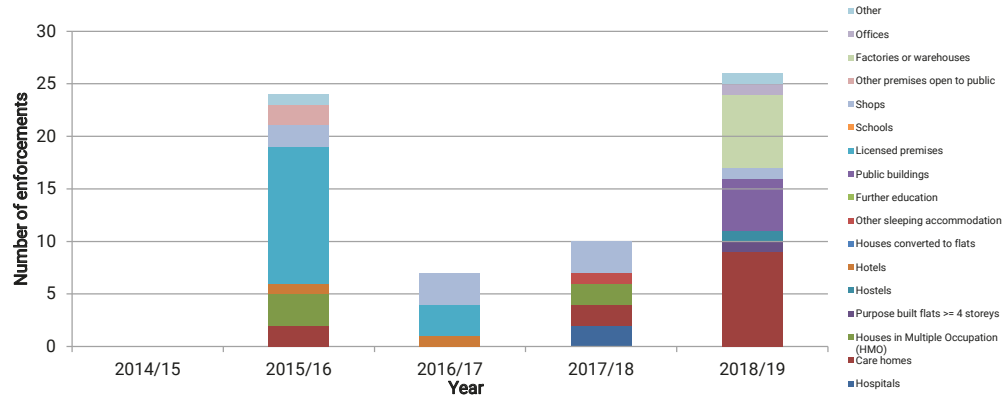
Percentage unsatisfactory audits by premise type 2014/15 - 2018/19



Number of premises inspected 2014/15 - 2018/19



Enforcement activity by premise type 2014/15 - 2018/19



References

- Lincolnshire Research Observatory
- Lincolnshire Road Safety Partnership
- Greater Lincolnshire Local Enterprise Partnership
- Central Lincolnshire Local Plan
- Lincolnshire Fire and Rescue Incident Recording System
- Experian Incident Risk Score Model
- Experian Mosaic
- Homes England strategic plan 2018/19 - 2022/23
- Lincolnshire Joint Strategic Needs Assessment
- Joint Health and Wellbeing Strategy for Lincolnshire 2018
- Lincolnshire LRF Community Risk Register
- Environment Agency - Draft National Flood and Coastal Erosion Risk Management Strategy for England
- Global Heritage Fire – White paper
- Grenfell Tower Inquiry – Phase 1 report
- Nottingham Trent University national review of community risk methodology across the UK Fire and Rescue Service

UNDERSTANDING RISK IN LINCOLNSHIRE

2020 - 2024

LINCOLNSHIRE FIRE & RESCUE

COMMUNITY RISK PROFILE

Lincolnshire COUNTY COUNCIL

Working for a better future