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Improvement

Customer led transformation programme

Case study – Merseyside Fire and Rescue Service

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The Customer Led Transformation Programme

Merseyside Fire and Rescue Service's work has been funded under the customer led transformation programme. The fund aims to embed the use of customer insight and social media tools and techniques as strategic management capabilities across the public sector family in order to support place-based working.

The customer led transformation programme is overseen by the Local Government Delivery Council (supported by the Local Government Association).

The fund was established specifically to support collaborative working between local authorities and their partners focused on using customer insight and social media tools and techniques to improve service outcomes. These approaches offer public services bodies the opportunity to engage customers and gather insight into their preferences and needs, and thereby provide the evidence and intelligence needed to redesign services to be more targeted, effective and efficient.



About Merseyside

Merseyside is a metropolitan county in the north west of England, which straddles the Mersey Estuary and includes the metropolitan districts of Knowsley, Liverpool, Sefton, St Helens and Wirral.

Merseyside spans 249 square miles (645 km²) of land containing a mix of high density urban areas, suburbs, semi-rural and rural locations, but overwhelmingly the land use is urban. It has a focused central business district, formed by Liverpool City Centre, but Merseyside is also a polycentric county with five metropolitan districts, each of which has at least one major town centre and outlying suburbs.

Merseyside has a population of approximately 1.4 million residents but this is changing over time. Between 2001 and 2011 the overall population has increased by 1 per cent (13,400 people in real terms) but the Asian/Asian British ethnic group has seen an 82.61 per cent increase between 2001 and 2007.

As is the case in many areas, throughout Merseyside there is a trend towards an ageing population, with older age groups increasing in numbers (age groups over 75 years) and the younger age groups (5-9, 10-14 and 15-19 age groups) reducing in numbers from 2001 to 2011.

However, in 2001, the age group that accounted for the highest proportion of the population of Merseyside was 35-39 year olds, whereas in 2011 the age group that accounted for the highest proportion was 20-24 year olds.

There are some areas of affluence, for example in West Wirral and North Sefton, but large areas of Merseyside fall within the highest ratings of social deprivation. There remain large pockets of deprivation with high levels of social exclusion and crime.

The indices of multiple deprivation indicate that 40 per cent of the wards in Merseyside are ranked in the top 5 per cent of the most deprived wards in England. In addition, all the local authorities in Merseyside are within the top 20 per cent of the most income-deprived in England

Merseyside Fire and Rescue Authority (MFRA) is a local authority created by the Local Government Act 1985. It is made up of elected representatives appointed by the constituent local authorities. Merseyside Fire and Rescue Service (MFRS) has the operational responsibility for providing emergency response service for fires and other incidents (eg road traffic accidents) and fire prevention and protection services across the county.

Approximately 1,600 staff are employed at a number of administrative centres and at 26 Community Fire Stations and a Water Rescue station.



Background

Over recent years the role of fire services in the UK has changed considerably. In particular, in addition to providing a speedy and efficient response once a fire has been reported, there has been a much greater emphasis on the prevention of fires. To support this change of emphasis, Merseyside Fire and Rescue Service (MFRS) provided many thousands of Home Fire Safety Checks (HFSC) and then central government provided considerable funding to enable fire services to undertake a blanket approach to HFSC delivery.

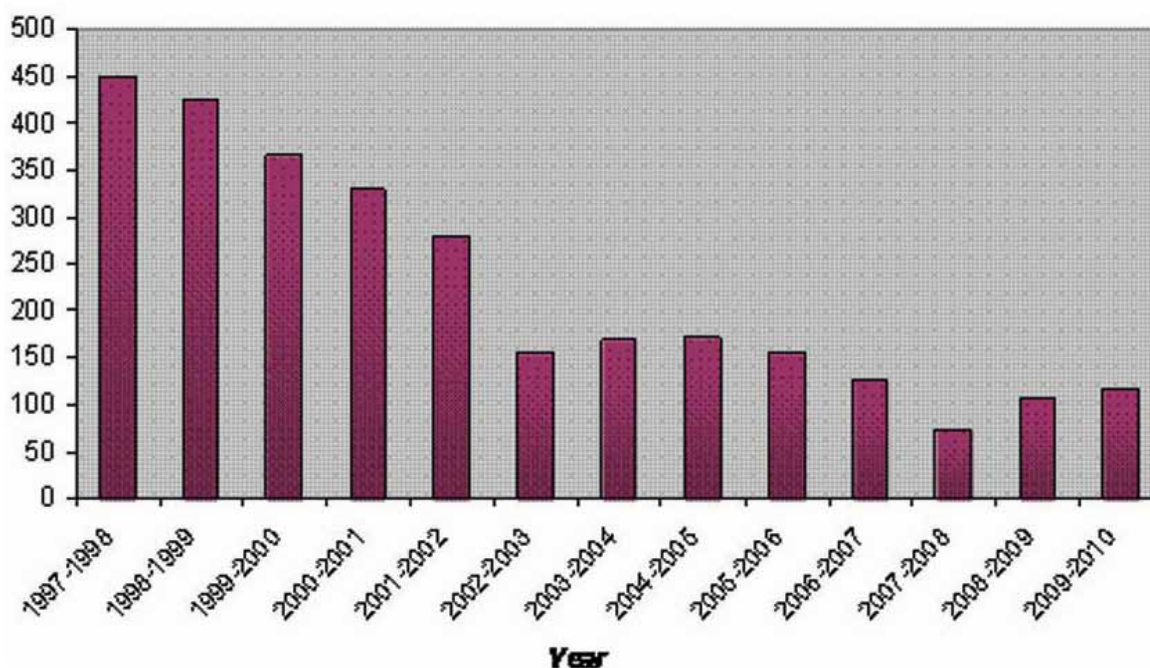
During the period between 1999 and 2010, MFRS completed approximately 650,000 HFSCs and provided advice and guidance to homeowners and fitted 1,007,000 free smoke alarms.

The results of this work have been impressive, with the number of injuries resulting from Accidental Dwelling Fires (ADFs) reducing year after year:

However, the funding for this blanket approach to fire prevention has now come to an end because of central Government grant cuts. In addition, it appears that the reduction in incidents has now reached a plateau. Consequently, in order to continue the improvement, or at least to maintain the current levels of performance, MFRS will need to “work smarter” and focus their reducing resources where the greatest benefit can be achieved – ie where the potential for accidental dwelling fires is greatest.

This may seem obvious, but actually identifying the potential hazard points can be tricky. In common with many Fire and Rescue Services, MFRS started by utilising the standard Mosaic classifications and census data to identify locations that displayed numerous risk factors (eg areas where large numbers of elderly people lived, where there were many houses in multiple occupation etc). Prevention teams were then able to focus their efforts on these localities.

Accidental Dwelling Fire Injuries in Merseyside



Over time, however, it became clear that this approach was not sufficiently granular – ie it did not provide an accurate enough picture of the variations within a locality. Consequently, MFRS sought to utilise an approach based on more detailed customer insight.

Objective

The aim of this project was to improve the quality of life of those adults identified as being at risk of accidental dwelling fires by working in partnership with councils and other relevant public service partners to develop a customer insight led delivery of targeted preventative initiatives.

This links with one of MFRS' corporate objectives to deliver excellent prevention activities by working with partners and the community to protect the most vulnerable.

The main objectives of this project, to be delivered within one-year of project closure, was to:

1. Reduce the number of accidental dwelling fires and related injuries and fatalities. Fewer fires will improve the quality of life for individuals living in the area by increasing the levels of safety within the community, and it increases the perception of feeling safer. It will also improve the quality of life for others living close by. Fewer fires will result in an environment that is perceived as more pleasant to live in, which will improve the sense of place and wellbeing felt by the community.
2. Develop a full understanding of community risks and needs through customer segmentation by using a combination of freely available open data, partner's customer insight data and data held internally by MFRS. Formalised data sharing agreements have been put in place (and are available via Knowledge Hub – <https://knowledgehub.local.gov.uk/>) to ensure the timely sharing of data. This allows community safety teams to plan and target preventative measures such as advocacy (including promoting services offered by other authorities, in particular Adult Social Services), the Fire Support Network (who provide initiatives that can be used to improve community cohesion and build on Community Involvement) and the Home Fire Safety Check, which could be targeted towards "at risk" groups.
3. Increase the number of citizens giving up smoking through smoking cessation services. A reduction in the number of smokers will also lead to a reduction of the number of smoking related illnesses, such as lung cancer, in adults and second hand smoke illnesses, such as asthma, in children. As a result, this will help increase life expectancy.
4. Improve signposting to early intervention services enabling people to live independently in their own homes, providing them with choice and control. With these agencies working together, intelligence can be used to proactively engage with citizens to promote their health and wellbeing. For example, working in partnership with the Wirral "Healthy Homes" initiative, officers will be able to earlier identify and refer citizens whose homes cause risk of illness and injury through trip hazards, damp and excessive cold.

Approach

The project applied a range of different customer insight tools and techniques to better understand and engage with the target customer group. MFRS applied these during a number of distinct but related phases.

Phase 1: Customer segmentation

Having recognised that the segmentation provided by the standard Mosaic model was not meeting the needs of MFRS, they decided to develop their own, completely bespoke segmentation, based on local datasets to fully understand the needs and risks of individuals in Merseyside.

To do this it was necessary to understand what relevant data was available and in a usable form. To achieve this task MFRS worked in partnership with Liverpool John Moores University and Wirral Council.

The task included a period of desk research on existing segmentation methodologies followed by an investigation of the available data sources. This resulted in the creation of a data dictionary which identified that over 90 aggregated datasets were available covering 130 different aggregated data variables. Further information about the data dictionary is included as Appendix 3.

To ensure that the data collected was fit for purpose and that future analyses were based on the most dependable variables, a process of data cleansing and testing was carried out. This consisted of statistical tests covering standard deviation, skewness, kurtosis and covariance and resulted in the rejection of the majority of the variables, leaving a set of 20 that were considered acceptable for further statistical analysis.

The 20 identified variables were then used in a cluster analysis to create the segmentation. This process grouped the data into a number of similar categories or segments based on patterns and trends within and between the datasets. After the creation of the segmentation model, the variables that were initially rejected were matched back to the segmentation model to ensure all data identified was fully utilised. This resulted in the production of 10 Community Profiles (see Findings) covering factors such as demographics, health, deprivation etc.

A factor analysis was then undertaken to identify which of the 20 variables used were the best at identifying members of the relevant profile and it was discovered that the six most influential variables were:

- percentage aged 0 – 15
- percentage aged 50 – 64
- combined health, deprivation and disability score
- pension claimants aged 80+
- adult social care users
- council tax and housing benefit claimants.

The results of the factor analysis were important as they indicate which variables are most influential for the development of the profiles, therefore informing which variables should be a priority for future data collection activities

Phase 2: Community profile mapping

After creating the local segmentation model, the developed segments were then utilised to produce a Community Profile Map, mapped to Output Area level, where each output area covers approximately 300 residents.

The purpose of the map is to illustrate the segmentation model graphically, giving users the ability to see, for example, dominant segments within their station area. This gives an indication of the risks, needs and priorities of the people living within the area, which will indicate what types of initiatives, may be required, or how MFRS can communicate most effectively with this community.

In addition, displaying the Community Profiles on a map allows users to see if there are other areas within Merseyside with similar demographics, providing the opportunity for stations and districts to share knowledge about successful programs or initiatives that can be promoted in other locations.

MFRS have integrated the risk map into their corporate GIS system, MapInfo. This was done by using the programming module MapBasic. This bespoke functionality allows users to interrogate the community profile map, select which profile groups to map (ie to see where in Merseyside particular groups of people live) and to access the Community Profile descriptions easily. The benefit of this is it promotes accessibility to the product, allowing users to utilise it in an easy, user friendly way.

The map reflects the best local information about each area and hence reflects the most accurate information, for example age demographics, fire risk and deprivation, available to target MFRS' area based approach to prevention. For an example, see Findings.

Phase 3: Vulnerability index

Having built a segmentation model suitable to the needs of MFRS, the resulting community profile map could be compared with actual historical data showing accidental dwelling fires and the consequent deaths and injuries. However, this comparison showed that not all fires occurred in high risk areas. In fact it identified, for example, a number of "out of context" fatalities – ie people who died in house fires in areas considered to be at low risk.

Consideration of this analysis led MFRS to recognise that vulnerable individuals could live in any area. For example, an elderly person living on their own in a large house might be property rich but can still be cash poor, disabled, poorly sighted etc – ie they can be high risk despite living in a desirable area.

To identify these at risk properties and individuals, MFRS decided that focussing on areas was insufficient and so they moved towards the idea of composing a vulnerability index that considered data at a household level.

To achieve this MFRS focussed on their Customer Relationship Management (CRM) System which is called Goldmine. This includes records for all properties within Merseyside and MFRS records all information about interactions on this database.

MFRS used data sharing protocols to facilitate sharing of information with partners. The protocols outline what data should be shared, how often and what mechanisms should be used. MFRS use the AVCO Anycomms system to ensure data is shared securely between partners. A copy of the protocol is available via the Knowledge Hub at <https://knowledgehub.local.gov.uk/>

To enrich the information available from the fire service, MFRS analysed a selection of the databases (eg adult social services, benefits, houses in multiple occupation, etc) shared by one of the councils (Wirral) and linked this to Goldmine.

MFRS then used Crystal Reports software to indicate properties that had multiple risk indicators to produce a Vulnerability Index at a household level for the area served by that council.

Currently, the level of risk is related to the number of databases the individual appears on. For example, an individual who appears on all five databases (ie has five risk factors present) would be a greater priority than an individual who has fewer risk factors present. Further work will be undertaken to enhance this methodology (see Next steps).

Phase 4: Pilot

The next step for this project was to test the accuracy and reliability of the Vulnerability Index by testing the data within a small pilot.

To do this MFRS focussed on two wards within Wirral. Wirral was selected because of the differing demographics across the District (ie it provided the opportunity to test the methodology in very different areas). Two wards that had quite different profiles were selected for the pilot:

- Birkenhead and Tranmere – an old industrial area on the Mersey that was once famous for ship building and has many Victorian terraces.
- Heswall – a relatively affluent area on the edge of Merseyside and bordering Cheshire.

The Vulnerability Index was used to identify 42 “at risk” households within these wards. This information was passed to the Community Fire Safety Advocates for Wirral District who attempted to contact them.

The role of the Community Fire Safety Advocate for this pilot was to visit the list of addresses identified as ‘vulnerable’ by the Vulnerability Index. The Community Fire Safety Advocates were then required to complete their duties in their normal way, which is to provide a HFSC, fire safety advice and signpost to other agencies, if required. The Community Fire Safety Advocates were well placed to deliver the pilot as they were already trained to deal with the most vulnerable residents within the community.

The advocates normally work with individuals or households that have been referred to them by other MFRS staff. For example, if during a routine HFSC, the officer thinks an individual or family might need extra assistance then they are referred to the advocate who schedules a longer and more detailed visit to assess the needs of the household. This may include further prevention activity from MFRS but may also involve signposting to other services (eg health, or adult social care).

The advocates provided their normal service to those that they contacted for this project but also assessed how well the Vulnerability Index had performed in identifying at risk individuals and households.

Phase 5: Evaluation

In order to obtain an independent view regarding the success, or otherwise, of this work, MFRS commissioned Opinion Research Services (ORS) to undertake an evaluation of the pilot and its ability to identify at risk or potentially at risk households so that they could be the subject of targeted fire safety initiatives. To do this ORS interviewed:

- project staff
- advocates
- managers
- members of the public who had received HFSCs.

ORS then provided MFRS with a formal evaluation report which is referenced below.



Findings

This section explains the findings from the research element of the project. In particular, how the creation of a localised segmentation model enabled MFRS to better identify groups that were particularly vulnerable to accidental fires and then how the analysis of local data enabled the identification of individual households that were at risk.

Profiles

As a result of the segmentation work undertaken during this project MFRS defined a set of 10 community profiles that covered the whole population of Merseyside. These are:

1. wealthy over 50 population living in semi-rural locations
2. older retirees
3. middle income residents living in privately owned properties
4. average income older residents
5. students living in city centre locations
6. young families
7. young families with high benefit need
8. residents living in social housing with high need for benefits
9. transient population living in poor quality housing
10. younger, urban population living in high levels of deprivation.

For each of these segments a detailed profile was produced and an example follows.

Wealthy over 50, population living in semi-rural locations.

Key information about profile group 1:

1. Wealthy, older population, in particular larger 75+ population.
2. Privately owned, high value detached properties
3. High life expectancy.
4. Good levels of general health, with low obesity rates and low rates of emergency admissions to hospital.
5. Low levels of health inequalities.
6. Generally low benefit need, however there may be a need for disability related benefits.
7. Low crime levels within the local area.
8. Low numbers of accidental fires and related fatalities.
9. Less likely to participate in sport, however activities such as golf and bowls appeal. Improving access to facilities is likely to increase participation.
10. Generally low levels of fuel poverty and low levels of poor quality housing.
11. May be willing to volunteer within their local community.

Communication preferences:

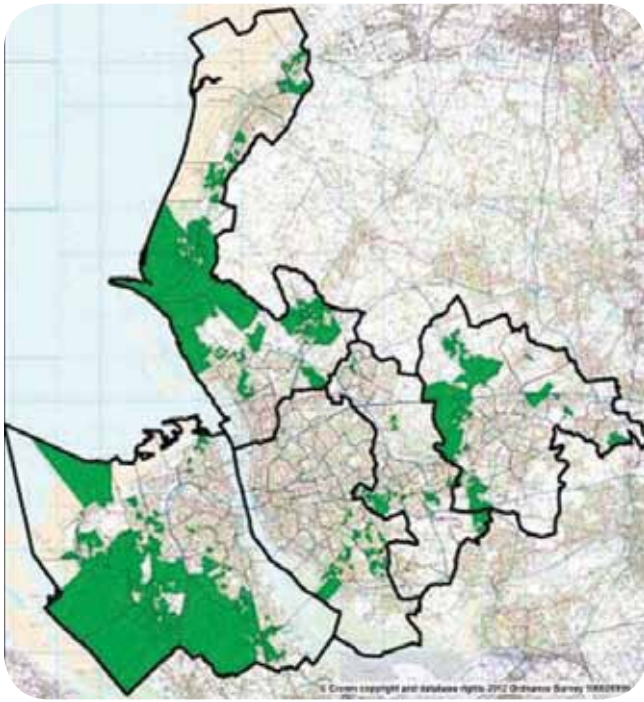
Almost 89 per cent of residents within this group have a landline telephone. In addition, approximately 80 per cent have a mobile telephone. However, nearly 35 per cent of residents do not have internet access at home.

Approximately 76,325 households within Merseyside fell into this category.

A copy of a profile is attached as Appendix 1 and includes sections on:

- demographics
- health
- deprivation and benefit need
- community safety
- sporting activity
- housing
- sense of community.





Data analysis

The actual data for one year (2010/2011) was analysed according to these profiles and showed that some groups had particularly high incidences of ADFs and resulting injuries and deaths.

Three groups (3, 7 and 10) accounted for nearly 50 per cent of the ADFs, over 50 per cent of the injuries and all the deaths. Using this information MFRS were able to use the community maps to focus on these high risk groups.

The analysis of local data based on this segmentation was imported into the MFRS mapping system and community profiles were produced. An example for Group 1 follows:

Profile group	ADFs	%	Injuries	%	Deaths	%
1. Wealthy over 50 rural	84	7.0	9	6.9		
2. Older retirees	60	5.0	10	7.6		
3. Middle income, private property	152	12.7	19	14.5	2	40.0
4. Average income, older residents	105	8.8	11	8.4		
5. Students in city centre	39	3.3	6	4.6		
6. Young families	118	9.9	8	6.1		
7. Young families, benefits	198	16.6	22	16.8	1	20.0
8. Social housing, benefits	126	10.5	11	8.4		
9. Transients	79	6.6	9	6.9		
10. Young, urban, deprivation	234	19.6	26	19.8	2	40.0
Total	1195	100.0	131	100.0	5	100.0

Outcomes

The Vulnerability Index identified 42 households within the pilot areas that were potentially at risk and these were referred to the Prevention and Protection Advocates with the following results.

Prevention and Protection Advocates attempted to make 42 visits during the eight week pilot period. 23 (55 per cent) successful visits were completed, and 19 (45 per cent) households were either non-contactable after three visits, or refused a visit. This response rate reflects the advocate's normal experience.

Many of the residents visited (78 per cent) had needs or issues, such as ill health related to poor quality housing or inappropriate housing which met the Vulnerability Index criteria. Of the 23 visits, 12 (52 per cent) occupants were signposted or referred onto a service offered by a partner agency:

- six residents (50 per cent) were signposted or referred onto multiple partner organisations. This suggests that some residents had more complex risks or needs present.
- three residents (25 per cent) were signposted to NHS Smoking Cessation Services and
- 10 residents (83 per cent) were signposted or referred onto housing services/Healthy Homes for problems related to poor quality housing or hazards in the home.
- In addition, five residents (42 per cent) were signposted or referred onto another service outlined in the list below.
 - POPIN (Promoting Older People's Independence Network)¹

- Age UK
- Energy Projects Plus²
- Housing Services/Healthy Homes
- Merseyside Police
- Smoking Cessation Services
- Homestart³

The services offered might be ones that the resident was not aware of, did not know how to contact or did not realise they were eligible for.

None of the residents visited were classified as high risk of fire (as calculated from the Home Fire Safety Check form), however a significant number of residents (78 per cent) visited had some risk factors present (ie health, age, smoking etc.).

A sample of the cases that were helped includes:

- Single parent, health problems (some caused by damp in property), advice given on stop smoking services. ASB around the property reported to Merseyside Police. Problems with property (including damp, loose tiles on roof, security problems with front door) referred to housing services.
- Property very poor condition referred to Homestart. 2 young children. Partner has Chronic Obstructive Pulmonary Disease (COPD) and on oxygen. Trip hazards and cluttered, untidy house. Concerns from advocate about whether the occupant can cope with pressures of looking after an ill partner, two young children and looking after a household.
- Accommodation Unsuitable for Occupier, Referred to POPIN, Age UK, Energy Projects Plus and Housing Services. ASB problems reported.

¹ <http://www.wirral.gov.uk/my-services/social-care-and-health/support-stay-home/popin>

² <http://www.epplus.org.uk/>

³ <http://www.homestartwirral.co.uk/>

- No smoke alarms. Two smokers, property poor condition, liaised with Wirral Partnership Homes. Tripping hazards in upstairs hallway. Advised of NHS Stop Smoking Scheme. Resident with mobility problems.
- Single, elderly resident. Occupier has mobility difficulties, managing well. Damp in property. Referral to Housing Services.

Lisa Hogan, Supervisory Advocate:

“Although the resident may not be classified as high risk at the moment, they could have the potential to become high risk based on their circumstances. This demonstrates the need for a methodology that can identify risks earlier.”

Benefits

Overall this has been a very successful project. It not only delivered benefits directly to the individuals involved in the pilot but also resulted in improved service delivery and generated real savings for the public sector.

The evaluation carried out by ORS found that:

As an approach that attempts to target resources at the more vulnerable groups, the Customer Insight Model is potentially very valuable.

Benefits for citizens

Customer Insight has enabled MFRS to take proactive preventative action for the 23 individuals involved in the pilot, much earlier than was previously possible. The ability to identify and then reach these citizens before they become seriously at risk, delivers direct benefits to these individuals and also helps their families and neighbours.

Although the pilot only covered a relatively small number of individuals the benefits for these are demonstrated by the following stories plus those in the Outcomes section. Whilst it cannot be demonstrated as yet, it is believed that, over a period of time, this approach will result in a reduction in the number of Accidental Domestic Fires from the 1195 per annum reported in the table on page 12.

The success of this approach is illustrated in the following:

“The customer insight data led us to people who did not have smoke alarms, they were lower risk of fire at the moment, but probably would not have made contact and requested a Home Fire Safety Check themselves”

Julie Mates, Community Fire Safety Advocate

Lisa Hogan, Supervisory Advocate, related the following story:

A Home Fire safety Check was completed using the Customer Insight Data.

The lady lived with her son; she worked full time but had various ongoing health issues. The lady took medication that made her drowsy. She used a chip pan and there were trailing wires throughout the property which presented a tripping hazard and a fire safety hazard.

We were able to give appropriate advice and educate them about home fire safety including night time routines and fire escape plans.

Furthermore, the property had damp throughout and the occupier was experiencing anti social behaviour in her local area. This was having a negative impact of her quality of life. Due to our position of trust in the community this was brought to our attention during the HFSC visit we were able to signpost on to the relevant partner organizations to request assistance with these non fire related issues.

There were certainly potential risk factors within the property that could contribute to an accidental dwelling fire but we were able to intervene early and offer appropriate advice.

Financial

The financial benefits of this project result from a variety of factors.

1. The savings from moving from universal to targeted provision

One of the driving factors in the initiation of this project was the need to continue to deliver the benefits of the prevention work (ie reduced numbers of fires and associated injuries and deaths) provided by the blanket provision of HFSCs without access to the levels of funding (£685,000 per annum) provided in earlier years.

To achieve this MFRS has utilised customer insight to target the work of their existing advocates. Consequently, this project aims to provide the same outcomes with a saving of £685,000 per annum when compared with the earlier model.

An MFRS Advocate home visit costs approximately £50. During such a visit the advocate will spend up to 90 minutes with the resident discussing their needs. They can offer direct help from MFRS and also signpost the resident onto relevant partner organisations who may be able to provide additional help and support.

Whilst it is difficult to identify exactly the cost savings generated by a specific visit, the following can be estimated based on wider research.

2. Savings from preventing falls.

An elderly person falling at home will cost the NHS approximately £2,500. Remedial work (eg fitting hand rails, removing trip hazards, etc) carried out at the home of an elderly person, as a result of a £50 visit by an advocate, will cost approximately £400. This results in a potential avoided cost of £2,050 per person. There are approximately 5000 elderly falls in Merseyside each year. If CI can be used to identify these individuals in advance so that this preventative activity can be undertaken then there are significant potential savings. In addition the resident will feel safer and more independent in their own home.

The calculation of preventative savings is always difficult as it is impossible to know how many of these individuals would have fallen if the preventative action hadn't been taken. However, the Department of Health report "Making a strategic shift towards prevention and early intervention" estimated that early intervention will result in a mean net cost reduction of £410 per person. This is attributed to:

- statistically significant reductions in hospital overnight stays (from a mean of eight prior to intervention to 6.4 post)
- slight increases in GP appointments and contacts with practice nurses
- reductions in home care, but increases in community meals, social workers and community nurse contact

Based on the 23 visits undertaken by this project a saving of £9430 was delivered, but if the 5000 at risk of falling could be visited then a saving of over £2m per annum would be generated.

3. Savings resulting from individuals staying in their own home.

The cost of residential care is, on average, £22,000 per annum. If individuals can remain in their own home through the provision of a service such as Meals on Wheels (which costs £4,800 per person per annum) then over £17,000 per person can be saved each year. During the small pilot two individuals were referred to services for older people, giving a possible saving of £34,000 per annum.

4. Savings resulting from smoking cessation.

The cost of one person undergoing treatment for smoking related cancer is approximately £15,000. Smoking cessation services (including on going support and nicotine replacement therapy) costs £160 and has a 55 per cent success rate. This indicates a saving of over £8,000 (£15,000 – £160 – £50 * 55 per cent) per person visited. Although the pilot was small, with only three individuals being referred for smoking cessation programmes, this equates to a saving of £24,000 generated by the pilot.

5. Savings related to cold weather

Problems relating to excess cold cost £3.2m per local authority, whereas remedial work is estimated to cost less than £1m, giving a significant saving if the vulnerable people can be identified. During the pilot three individuals were referred to Energy Project Plus. This project installs free insulation and estimates annual savings per household of up to £310 per annum. So this project delivered an annual saving of almost £1000.

6. The economic cost of fire

In the “Economic Cost of Fire” report issued by the Office of the Deputy Prime Minister in 2006, the average cost of a domestic fire was estimated at £24,900, of which approximately £14,600 is accounted for by the economic cost of injuries and fatalities and £7,300 is due to property damage.

As a direct result of this project four new smoke alarms were fitted and 19 were checked. Although it is impossible to know in advance which alarms will be activated it is hoped that these will help to reduce the possibility of serious fires in these households.

Clearly, if the number of fires can be reduced by successful prevention work from fire and rescue services then significant savings will accrue for these households and the public sector. If the number of ADFs in 2010/2011 (1195) were to be reduced by just one per cent then a saving of nearly £300,000 (1195 x 24,900 x 1 per cent) would accrue.

Improved service provision

In addition the move from response to prevention is a key strategic objective of fire and rescue services and is reflected in the following comments from officers of MFRS:

Phil Garrigan, Deputy Chief Fire Officer:

“This work is pivotal to our future strategy and is at the core of our work”

Deb Appleton, Director of Strategy and Planning:

“Customer Insight forms the cornerstone of the prevention agenda”

“This approach forms a major part of the Community Safety Strategic Plan”

Myles Platt, Area Manager, Prevention and Protection Directorate:

“We need to maximise the potential of this model”

Mark Jones, Watch Manager, Community Fire Prevention:

“This gives us a business led approach to targeting the most vulnerable people in our communities”

Lisa Hogan, Supervisory Advocate

“I personally found that Customer insight led us to people who had potential to have a fire in the future but at the time we had contact with them they were managing well. We were able to offer early advice and support and this is prevention in its truest form”

The move towards a more targeted delivery of prevention is becoming ever more important because of an increasing pressure on the fire and rescue service financial budget.

Until recently, MFRS set a target of completing 100,000 HFSCs annually, and had an annual budget of £685,000 for delivering these. This has become unsustainable due to the budget situation.

The outputs from this customer insight project are vital to the organisation as they indicate how HFSCs can better identify and targeted the most at risk or vulnerable members of the community. Using this approach, MFRS will now focus on the quality of HFSC (ie visiting high risk or vulnerable people) as opposed to the volume of visits completed.

Partnership working

This project demonstrated that the sharing of customer insight information and intelligence between partner organisations facilitated the identification of high risk individuals living in low risk areas. This enabled MFRS to better target their resources to make early interventions avoiding possible accidental domestic fires.

However, the individuals identified are also at risk for other reasons (eg falls at home) and therefore are of interest to other public service providers. This demonstrates the advantages of partnership working and shared services more generally.

Many of these causal factors are similar to those that are of interest to other partner organisations. For example, three individuals were referred to smoking cessation programmes – this reduces the risk of fire but the health services are also interested in this action.

In addition, two residents identified by this approach were referred to services for the elderly and since elderly residents are more at risk of fire this is clearly important for MFRS. However, health and social care services may also be interested in these vulnerable individuals. Therefore developing and utilising the vulnerability index, as a result of partnership working means that all parties involved will benefit from earlier identification of risks and needs.

Some academic research was published jointly by Merseyside Fire and Rescue Service and Liverpool John Moores University in 2011 that explores fire causal factors. This is titled “An exploration of causal factors in unintentional dwelling fires” and can be accessed at:
<http://www.palgrave-journals.com/rm/journal/v14/n2/abs/rm20119a.html>

Data sharing can sometimes be problematic but in this case it was facilitated by the development of data sharing protocols with partner agencies. MFRS have developed a standard template for data sharing protocols that partners can use to make the process easier (a copy is available via the Knowledge Hub at <https://knowledgehub.local.gov.uk/>).

Partner organisations were also invited to a workshop at an early stage of the project so they could find out about the proposed work and provide input to help shape the end product.

Liverpool John Moores University

The University were an important partner in this project and they also benefitted from the exercise. Not only were they able to produce a number of academic reports (eg a paper entitled 'Managing risk via customer insight' has been submitted to the Journal of Risk Research and should be published shortly) but also to use the project as a teaching case study.

The papers published to date include:

- Higgins, E., Taylor, M., Jones, M., Lisboa, P. J., (2012) Understanding Community Fire Risk – A Spatial Model for Targeting Fire Prevention Activities (Submitted 29/06/2012).
- Higgins, E., Taylor, M., Francis, H. (2012) A systemic approach to fire prevention support, Systemic Practice and Action Research (accepted 07/02/2012) DOI: 10.1007/s11213-012-9229-9
- Taylor, M., Higgins, E., Lisboa, P. J., Francis, M. (2012) Testing geographical information systems: a case study in a fire prevention support system, Journal of Systems and Information Technology (accepted 02/03/2012)
- Higgins, E., Taylor, M., Developing a statistical methodology for improved identification of geographical areas at risk of accidental dwelling fires, accepted for publication in GISRUK 2012, Lancaster University (26/01/12), in Proceedings of Geographical Information Science Research UK Conference, Lancaster University, Lancaster, UK, 11 – 13 April, 2012.
- Taylor, M., Francis, M., Francis, H., Higgins, E. (2011) A multi paradigm approach to developing policy for the location of recreational facilities, Systems Research and Behavioural Science (accepted 24/05/11) DOI: 10.1002/sres.1100
- Taylor, M., Lisboa, P. J., Kwasnica, V., Higgins, E. (2011) An exploration of causal factors in unintentional dwelling fires, Risk Management, (accepted 1/9/2011)
- Taylor, M., Higgins, E., Francis, M., Lisboa, P. J. (2011) Managing unintentional dwelling fire risk, Journal of Risk Research, 14, 10, 1207-1218, ISSN 1366-9877
- Higgins, E. (2010) Making communities safer, Geoconnexion, April/May 2010, 24-25, http://www.geoconnexion.com/uploads/safercommunities_ukv8i2.pdf

The working relationship between MFRS and the University supports the 'World of Work' programme, which helps provide students with the skills and work related learning they need to make them more employable.

Governance

The project was managed using Prince II methodology by a qualified Prince II Practitioner. A project manager was identified (Emma Higgins) to be responsible for the delivery of the key milestones. The project sponsor (John L Curtis – Director of Knowledge and Information Management, then later Deb Appleton – Director of Strategic Planning) from MFRS chaired the steering group, which consisted of the following partners:

- MFRS
- Wirral Council
- Wirral NHS Primary Care Trust
- Liverpool John Moores University School of Computing and Mathematical Sciences
- Liverpool School of Public Health.

At the inaugural project board meeting in September 2010, a detailed project plan, and other governance documents, were agreed to ensure timescales and key deliverables were met.

Progress was reported to the MFRA Community Safety and Integrated Risk Management Planning Committee.

Resourcing

The costs of running this project were as follows:

Description	Cost (£)
Project manager	35,216
Academic research, development and evaluation Liverpool John Moores University	20,000
Project support costs	10,000
Communication costs (identifying communication methods that are most appropriate to the local community)	10,000
Training costs	2,500
Total	77,716



Challenges and lessons learnt

The main lesson learnt during this exercise was that an analysis of data by area was insufficiently granular to identify individual people at risk. Individuals at high risk of accidental dwelling fires, and the associated injuries and deaths, may reside in areas that are classified as low risk. Therefore, as fire and rescue services (and other public sector services) focus on prevention rather than cure, the use of customer insight to better identify and target vulnerable individuals is essential.

However, this is not always easy and there were a number of barriers and issues to be addressed:

- It is difficult to refocus strategy across partners, from crisis response to preventative interaction, when people are striving to maintain delivery of the existing service.
- The use of customer insight depends on information sharing and some partners are risk averse in their approach to the Data Protection Act – overcoming this requires a not inconsiderable effort of education and communication. One successful activity completed as part of project was a workshop for stakeholders. This allowed MFRS to communicate effectively the purpose of sharing data for this project, and allowed stakeholders to voice any concerns. In addition, MFRS have a standardised data sharing protocol template, which is used for all data sharing with partners, and is also shared with partners who wish to reuse it. Finally, having representation from all external stakeholders on the project board resulted in members feeling informed about the project and the key objectives, making it easier to start the process of sharing

information. It is important to address information governance at an early stage, and the project board meetings provided an ideal opportunity to do so.

- There is a practical difficulty of matching databases which have different purposes – eg fire data has traditionally focused on property but health on individuals. MFRS utilise a data transfer system called AVCO Anycomms, which allows for the user to specify which fields in the database are required when sharing data. The system then uses the specified fields (eg address, telephone number, etc) to match with records held internally at MFRS. Therefore, although the databases have different focuses, they can be matched and utilised for the model.

The second major area of learning was in relation to the data used in the identification of vulnerable individuals. There is a natural tendency to use anything that is available but it is important to ensure that the various factors that could indicate vulnerability are correctly weighted.

MFRS, in partnership with Liverpool John Moores University, completed some research into factors that contributed to fire risk. Currently all risk factors are weighted equally. However, there is an understanding that some factors may contribute to fire risk more than others. Moving forward, this research is being extended to explore the factors, or combinations of factors, that are most influential to fire risk, creating a dynamic, robust model.

It is also important to keep chasing the data that is less readily available but is seen as important in this area – eg drug and alcohol abuse, people with mental health issues, hospital discharges, etc.

To identify changing circumstances it is also important to ensure that the most recent information is used and that it is updated in a regular and timely manner. The following story is an example of this:

**Mark Jones, Watch Manager,
Community Fire Prevention:**

“In December 2008 a HFSC was conducted at a property and it was classified as low risk. However, in October 2011 there was a fire in the property and the owner set alight to his clothes whilst using a gas hob. The investigation identified that the man had developed dementia in the intervening time. If MFRS had known this, through accurate and regularly updated information from partners, then an isolation valve could have been fitted easily and cheaply to the hob and the incident prevented.”

Next steps

Several actions are being pursued as a result of this project:

- The use of customer insight and the vulnerability index will be extended from the pilot areas to cover the whole MFRS area.
- MFRS will continue to work with partners to improve data sharing protocols and to include more data in the system eg by approaching the voluntary sector
- To enhance the vulnerability index methodology further, MFRS will be working with Liverpool John Moores University again to understand how influential each of the risk factors are in relation to accidental dwelling fire. The results of this analysis will be weightings that can be applied to the model. For example, the risk factor “living alone” would be more influential to accidental dwelling fire than “living in a social rented property”. MFRS will also be looking at how combinations of certain risk factors can significant increase fire risk. This will be incorporated into the model.
- More detailed information will be collected for and provided to advocates – to help them make contact (eg phone numbers) and to be prepared for their visits.
- The lessons from this project will be used to inform other FRSs and to inform and influence national strategy through the Chief Fire Officers Association.

Appendix 1: A sample community profile

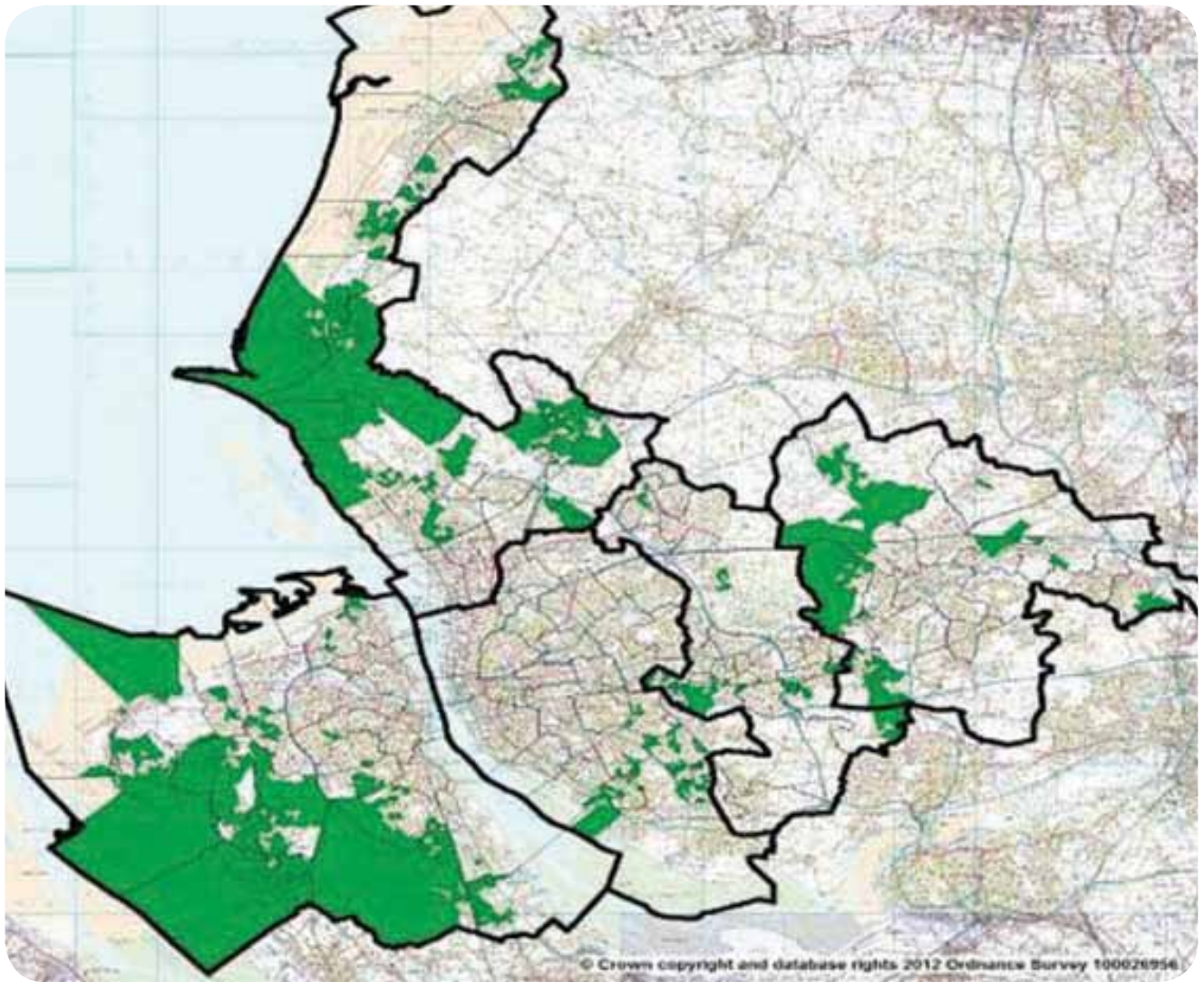
Key information about Profile Group 1:

1. Wealthy, older population, in particular larger 75+ population.
2. Privately owned, high value detached properties.
3. High life expectancy.
4. Good levels of general health, with low obesity rates and low rates of emergency admissions to hospital.
5. Low levels of health inequalities.
6. Generally low benefit need, however there may be a need for disability related benefits.
7. Low crime levels within the local area
8. Low numbers of accidental fires and related fatalities.
9. Less likely to participate in sport, however activities such as golf and bowls appeal. Improving access to facilities is likely to increase participation.
10. Generally low levels of fuel poverty and low levels of poor quality housing.
11. May be willing to volunteer within their local community.

Communication preferences:

Almost 89 per cent of residents within this group have a landline telephone. In addition, approximately 80 per cent have a mobile telephone. However, nearly 35 per cent of residents do not have internet access at home.





Appendix 2: Data dictionary

A data dictionary has been created to outline the most up-to-date sources of information that may be relevant for identifying customer risks and needs across Merseyside. This is being constantly updated to reflect how reliable data is – ie when it was last updated, the smallest geography it is available to etc.

The fields within the data dictionary include:

Disability Living Allowance: Count of all Claimants
Disability Living Allowance: High Rate Care
Disability Living Allowance: Low Rate Care
Disability Living Allowance: Middle Rate Care
Disability Living Allowance: Nil Rate Care
Disability Living Allowance: High Rate Mobility
Disability Living Allowance: Low Rate Mobility
Disability Living Allowance: Nil Rate Mobility
Employment and Support Allowance Benefit Claimants
Severe Disability Allowance
Income Support Benefit Claimants
Child Benefit Claimants
Tax Credit Claimants
Lone Parents
Pension Claimants aged 70-74
Pension Claimants aged 75-79
Pension Claimants Under 70
Pension Claimants Over 80
DASS Claimants
Council Tax Benefit Claimants
Job Seekers Allowance Claimants
Communication – Landline
Communication – Mobile
Communication – Internet at Home
Accidental Dwelling Fire Injuries
Accidental Dwelling Fires
Accidental Dwelling Fire Fatalities
Anti-Social Behaviour Crimes
Burglary Crimes
Other Crimes
Robbery Crimes
Vehicle Crimes
Violent Crimes
Crime: Count of All Crimes
Properties without a Home Fire Safety Check
Average Weekly Income
Health Deprivation and Disability

Living Environment Indicator
Illness and Disability
Child Wellbeing Index (Child Poverty): Material Wellbeing
Child Wellbeing Index (Child Poverty): Health
Child Wellbeing Index (Child Poverty): Education
Child Wellbeing Index (Child Poverty): Crime
Child Wellbeing Index (Child Poverty): Housing
Child Wellbeing Index (Child Poverty): Environment
Child Wellbeing Index (Child Poverty): Children in Need
Child Wellbeing Index (Child Poverty): Overall Index
Emergency Admissions to Hospital
Mental Health Indicator
Good general health
Fair General Health
Poor General Health
Adult BMI Over 30
Alcohol Profile: Attitudes Towards Alcohol
Alcohol Profile: Consumption
Alcohol Profile: Hospital Admissions
Alcohol Profiles: Pen Portraits
Elderly Falls
Childhood Obesity (Aged 4-5)
Childhood Obesity (Aged 10-11)
Fuel Poverty
Council Tax Band A Properties
Council Tax Band B Properties
Council Tax Band C Properties
Council Tax Band D Properties
Council Tax Band E Properties
Council Tax Band F Properties
Council Tax Band G Properties
Council Tax Band H Properties
Council Tax Band I Properties
Council Tax Band X Properties
Housing In Poor Condition
Renting from a Social Landlord
% Own a property
% Rented Properties
Property type: Detached
Property type: Semi Detached
Property type: Terraced
Property type: Flats
Property type: Other
Vacant Properties
Domestic Electric Consumption
Domestic Gas Consumption

Changes of Tenure Ownership by Dwelling Price
Housing Problems: Short of Space
Housing Problems: Noisy Neighbours
Housing Problems: Street Noise
Housing Problems: Lack of Light
Housing Problems: Lack of Heating
Housing Problems: Condensation
Housing Problems: Leaky Roof
Housing Problems: Damp
Housing Problems: Wood Rot
Housing Problems: Pollution
Housing Problems: Vandalism
Residents aged 0-15
Residents aged 16-24
Residents aged 25-49
Residents aged 50-64
Residents aged 65 plus
% Population Inflow
% Population Outflow
Females Life expectancy at birth
Males Life expectancy at birth
Persons Life expectancy at birth
Live Births
Deaths
Sense of Community: Willing to attending meetings for local group
Sense of Community: Willing to do unpaid voluntary work
Sense of Community: Willing to do occasional voluntary work
Sense of Community: Not willing to do unpaid voluntary work
Sporting Participation: Would like to complete more sport
Sporting Participation: Completes 1 session per week
Sporting Participation: Completes 2 sessions per week
Sporting Participation: Completes 3+ sessions per week
Popular Sporting Activities
Increasing participation: Longer Opening Hours
Increasing participation: Better Facilities
Increasing participation: Better Playing facilities
Increasing participation: People to go With
Increasing participation: Improved Transport
Increasing participation: Childcare
Increasing participation: Less Busy
Increasing participation: Cheaper Admission
Increasing participation: More Time



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