NEW ZEALAND FIRE SERVICE COMMISSION
Whakaratonga Iwi

Fire Research Report

Home Fire Safety Checks Evaluation Phase 2

EvaluationConsult

October 2015

The evaluation examined the effectiveness and impact of the Home Fire Safety Check (HFSC) programme, a key plank of the New Zealand Fire Service's (NZFS) efforts to reduce fire risk by directly engaging householders in their own homes. HFSCs primary audiences are at-risk groups, including low income households, Community Services Card holders, and homes with young children and/ or elderly people. Phase 1 of the evaluation (2014) established evidence of HFSC programme progress against key strategic outcomes (see Home Fire Safety Check Evaluation Phase 1 Report). Phase 2 updated the data baseline identified in Phase 1, and, in particular, explored further the lessons identified in Phase 1 on delivery method and best practice partnership models.

A mixed method (qualitative and quantitative) approach was employed in the evaluation, including case study site visits in Whanganui, Rotorua and Hamilton; NZFS Station Management System data; and an online survey questionnaire with two cohorts of HFSC recipients. The survey's overall low response rate of 11% rate indicated a need to employ more appropriate data collection methods for this audience in future.

The evaluation found the programme was mostly successful in reaching at-risk groups for HFSCs, primarily through partnering with community organisations. The extent to which the programme successfully delivered appropriate fire safety messages and identified fire hazards in homes was highly dependent on individual deliverers' skills-set. Overall, the HFSC programme has contributed to increasing fire safety for households receiving a HFSC, but impact on at-risk groups specifically is not clear.

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EVALUATIONCONSULT

Home Fire Safety Checks Evaluation Phase 2

New Zealand Fire Service – Contestable Research Fund

Final report

9 October 2015

Confidential

Home Fire Safety Checks Evaluation Phase 2 Final Report

New Zealand Fire Service – Contestable Research Fund

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This document provides the final report for the Home Fire Safety Check Evaluation Phase 2.

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Executive summary

Background

The New Zealand Fire Service (NZFS) began a targeted Home Fire Safety Check (HFSC) campaign in 2010 (the 'programme'). The HFSC programme seeks to reduce fire incidence for all New Zealanders and particularly at-risk groups, by directly engaging householders with fire safety in their own homes. At-risk groups include low income households, Community Services Card holders, and homes with young children and/ or elderly people.

The HFSC is delivered through NZFS's 428 Stations in 24 Fire Areas in 5 regions across New Zealand. Over 80% of rural and urban fire force personnel are volunteer brigades.[1] The HFSC programme receives funding for 6,000 smoke alarms annually. Additional alarms are donated from organisations such as Rotary NZ or supplied by householders themselves.

Evaluation objectives and questions

The **overall purpose** of the evaluation was to evaluate the success and effectiveness of the HFSC programme in delivering appropriate fire safety education and smoke alarms to at-risk audiences. Phase 1 of the evaluation[2] established evidence of HFSC programme progress against key strategic outcomes (see Appendix A for a summary of HFSC progress). Phase 2 updated the data baseline identified in Phase 1, and, in particular, explored further the lessons identified in Phase 1 on delivery method and best practice partnership models (Table 1. Evaluation questions 3, 4 and 5).

Specific overall **evaluation objectives**[3] were to:

1. Evaluate the success and effectiveness of the HFSC programme in reaching and affecting at-risk groups;
2. Identify potential improvements to its activities;
3. Examine the potential to extend the initiative to other at-risk groups;
4. Assess the contribution of the HFSC programme to Fire Service Commission's strategic outcomes.

Phase 1 of the evaluation ran in 2014, with data collection August – November 2014 (*Phase 1 Final report* December 2014). Just under a year passed between Phase 1 and Phase 2 data collection which took place in August 2015.

Evaluation approach and methodology

A mixed method (qualitative and quantitative) approach was employed in the evaluation. Phase 2 data sources included:

[1] Department of Internal Affairs/ Te Tari Taiwhenua *Fire Services Review Discussion Document* May 2015
[2] *Final Report: Overview of key findings Home Fire Safety Check Evaluation* 18 December 2014
[3] NZFS Request for Proposal 2013

- **Case study site visits** were conducted in Whanganui, Rotorua and Hamilton.[4] Whanganui and Rotorua had been previously visited in Phase 1. In Phase 2, Hamilton was selected as a new third site in order to provide data on a metropolitan context of HFSC delivery. Semi-structured interviews were conducted with station personnel (n=13) and partner organisations (n=6).

- **Station Management System (SMS) data** (1 July 2014 – 30 June 2015). The SMS collates data on HFSC requests, appointments and delivery. Phase 2 findings concur with the Phase 1 report which noted SMS data-set limitations (specifically, incomplete records of HFSC visits indicate some data inaccuracy which means there is an undetermined level of response error).

- **An online survey** questionnaire was run with two cohorts of HFSC householders who had received a completed HFSC and consented to be contacted for research purposes.[5] The survey sought to measure householders' perceptions of HFSC service delivery and impact on their fire safety knowledge and behaviour. In total, 294 survey invitations were posted and 32 responses were received, an overall response rate of 11%.

Evaluation findings

Programme access and reach

In 2014/15, 15,131 Home Fire Safety Checks were recorded nationwide. [6] SMS data records information about delivery to 'at risk' groups in 2014/15, as follows: Low income homes[7] (37% nationally); Rented homes (20% nationally, with 14% of these rented through Housing New Zealand). An aggregate assessment of risk factors reveals that 75% of HFSCs for 2014/15 were delivered to homes where 1 or more risk factors were present[8] and 31% had 2 or more factors present.

SMS records show that 4% of HFSCs nationally over 2014/15 were delivered to homes in rural fire areas.[9] The capacity for Volunteer Brigades (largely rural) to deliver HFSCs emerged in stakeholder interviews as an issue for rural coverage and access.

Nationally, 29,219 people benefitted from a Home Fire Safety Check in 2014/15. Phase 1 analysis revealed variation in programme access pathways. Appointments for a HFSC can be made through phoning a 0800

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[4] Phase 1 case site visits were Whanganui, Tokoroa and Rotorua. The case studies were purposefully selected in collaboration with NZFS. Selection criteria were: sub-populations of interest; alignment with NZFS priorities and understanding of programme delivery; and to ensure information-rich cases that would best inform evaluation objectives. Rotorua and Tokoroa are part of the Central Lakes Fire Area, and Whanganui is in the Whanganui Fire Area (2 of 24 Fire Areas in the NZFS).

[5] Refer to Appendix B - Data collection methods and tools

[6] NZFS Station Management System (1 July 2014 – 30 June 2015).
[7] NZFS definition
[8] Risk factors tallied are low income, elderly over 65, child under 5, student, special needs.

[9] The checkbox 'rural' in the SMS records whether the HFSC took place in a rural fire area. This is determined by fire crew local knowledge. Delivery by rural crews is not captured in this field.

number, direct contact with the fire station or referral from external agencies. There is strong agreement across Phase 1 and 2 findings that the 0800 number is the least successful access point for HFSCs, except in the exceptional situation immediately following a neighbourhood fire. The evaluation asked survey respondents about their experience of accessing a HFSC. 80% (24 out of 29) strongly agreed the process of getting a HFSC was easy and clear.

A tension emerged in NZFS stakeholders' views on access to HFSC. Fire officers in all case sites felt strongly that access criteria (e.g. holding a Community Services Card) should be more strictly applied to ensure HFSC resource is targeted at those in greatest need (broadly agreed to include low income, elderly and families with young children). Overall, fire officers felt those in greatest need (the target audience) were the least likely to access the HFSC.

Programme delivery

Of the 15,131 Home Fire Safety Checks recorded nationally, only 6,247 (41%) were marked as complete (with the HFSC covering all fields in the Checklist).[10] Of the case study sites, Rotorua has the highest number of completed HFSCs (80%), followed by Hamilton (70%). Whanganui has the lowest at 34%. It is important to note, however, that 75% of HFSCs nationally that were marked incomplete received at least 1 message. Variation in HFSC delivery of fire safety messages is evident in both the number and type of messages delivered. Variation *within* station is less but the difference *between* sites is marked. It is important to note that more messages delivered is not necessarily better or more effective.

Fire officers delivering HFSCs are tailoring delivery to meet householders' context. This includes adapting content to meet specific audience needs, whether this means audience (e.g. elderly householders) or responding to specific fire hazards (e.g. overloaded power plugs). A number of fire officers stated they prioritise key messages when delivering HFSCs depending on what they find when they visit homes. The ability to successfully assess, prioritise and communicate key messages is agreed by all stakeholders to be paramount.

HFSCs are delivered by both Career Fire Service and Volunteer Brigades, as well as Fire Risk Management personnel. NZFS stakeholder interviews indicate the majority of HFSCs are delivered by Career Crew who are mostly located in urban areas. NZFS personnel pointed out potential issues for Volunteer Brigade delivery, including the daytime window for HFSC appointments. Perhaps most significantly, however, is that Volunteer Brigades cannot order HFSC smoke alarms directly but must access them via Career Fire Stations.

There is variation in HFSC management in different case site areas. A clear HFSC champion was evident in some case study sites but not others. The reasons for this appear to be linked to the individuals in key positions and the extent to which they actively engage in HFSCs. This was also found in Phase 1. In at least one case study site, other NZFS personnel apart from fire crew are carrying out HFSCs, sometimes alone.

Information and monitoring systems

The primary data collection system for HFSCs is the NZFS SMS. Questions over the integrity of the SMS data set were raised by all NZFS stakeholders who reported being unsure whether HFSCs made any difference to fire safety outcomes. This in turn affects some fire officers' buy-in to the HFSC. Reasons for doubts over SMS data integrity include: significant mismatch between the HFSC Checklist and SMS data

[10] Completion criteria determined by SMS question 'Did you complete the HFSC List'.

entry reporting fields; and, many NZFS personnel find it difficult to ask personal questions (ethnicity, income, owner occupier/renter), perceiving them to be intrusive and unnecessary.

Impact on fire safety knowledge and behaviour

There is strong consensus from external stakeholders that in-home delivery of fire safety messages is the most effective method to engage and educate people. NZFS stakeholders are divided between those who agree with in-home delivery and those who think mass media is the best method for fire safety messages. Both groups (external stakeholders and NZFS) had mixed views on whether Fire Officers, in uniform and on a fire truck, increased HFSC effectiveness, or whether HFSCs were better delivered through a community delivery model.

Several NZFS personnel noted a discrepancy between the single donated alarm available via the HFSC, with the Fire Service recommendation for a smoke alarm in every bedroom, living area and hallway. Fire officers identified a cost barrier for low income households to carry out all their fire safety advice. The issue of single alarms also emerged for Whare Ora clients:

Survey respondents find the fire safety advice delivered during HFSC clear and are more aware of fire safety and risk. The evaluation asked HFSC clients over 2013 – 15 to assess the impact of the HFSC on their fire safety knowledge. There were no notable differences between responses for Phase 1 and 2 cohorts. Overall, HFSC clients are very likely (80% or 24 out of 29) to strongly agree they know more and that NZFS gave clear advice on: preventing fires; responding to fire; home escape plans; and the importance of having working smoke alarms.

NZFS personnel are deeply divided over the perceived effectiveness and value of the HFSC. At one end of the spectrum, fire officers felt the only value in the HFSC was smoke alarm installation. Smoke alarms are universally agreed to reduce fire risk and harm. At the other end of the spectrum, fire officers are enthusiastic and believe wholeheartedly in the HFSC combination of smoke alarm and fire safety education. Training and preparation for effective delivery emerged as a key theme in interviews. For those personnel who believe HFSC delivery and effectiveness can be improved, training fire officers in HFSC and public engagement needs to be improved. When asked about the HFSC training DVD, most interviewees had heard of this but could not remember seeing it.

NZFS personnel are also sceptical about measuring HFSC effectiveness under current monitoring. Reasons include incoherent data collection tools (HFSC Checklist and SMS), but also a more general sense that behaviour change is difficult to evidence. Some felt the only real measure (even acknowledging high mobility of residents) was to monitor fire incidence and damage in HFSC addresses compared to regional statistics.

Community engagement and partnerships

Senior NZFS station staff responsible for assigning HFSCs value community partnerships. This aligns with Phase 1 findings that NZFS coordination with communities is a positive aspect of the HFSC. Such relationships are considered to increase HFSC reach to at-risk audiences as these organisations are the ones who 'open the door' to people's homes.

Overall, the HFSC has increased NZFS community engagement through relationships with local agencies/ community organisations. These relationships range from formal partnerships with Memoranda of Understanding to less formal connections that may be occasional or periodic (e.g. Fire Safety Presentations; Community Days). These less formal connections include NZFS engagement with organisations that seek to promote HFSCs rather than take on a referral role.

Community organisations find the HFSC valuable and are keen to work with the NZFS to increase their client groups' fire safety. When asked how well they felt the partnership with NZFS was going, community

stakeholders' views varied depending on the closeness of their relationship. For referring organisations, the NZFS partnership is working well. These organisations are very happy their clients can access a HFSC.

NZFS personnel have mixed views on the way the HFSC connects to other community fire safety programmes. For some officers, HFSCs are part of a wider approach to fire prevention which includes community engagement (e.g. Fire Safety Days) and Fire Wise programmes in schools. For others, HFSC is primarily about technical installation of a smoke alarm.

Conclusions and recommendations

Over Phases 1 and 2, the evaluation assessed the success and effectiveness of the HFSC programme in delivering appropriate fire safety education and smoke alarms to at-risk audiences. Based on the evidence available to the evaluation, the following overall conclusions can be made.

The programme was mostly successful in reaching at-risk groups for HFSCs, primarily through partnering with community organisations. A significant minority (25%) of 2014/15 HFSCs, however, were delivered to homes with no risk factors recorded. The extent to which the programme successfully delivered appropriate fire safety messages and identified fire hazards in homes was highly dependent on individual deliverers' skills-set.

There is limited evidence of HFSC programme contribution to reducing at-risk fire behaviour in at-risk groups (Evaluation question 3). Overall, the HFSC programme has contributed to increasing fire safety for households receiving a HFSC, but impact on at-risk groups specifically is not clear. Measuring behaviour change attributable to a specific programme is difficult.

Key lessons for most appropriate and successful delivery method to reach at-risk groups (Evaluation question 4) includes the finding that recruitment and referral by community organisations is a successful approach to reach at-risk groups. In particular, agencies charged with going into people's homes (Plunket, Age Concern) are a highly effective way for the NZFS to reach at-risk groups. In-home delivery of fire safety as per the HFSC (versus mass media fire safety messages for example), is the strongly preferred delivery method for external stakeholders and NZFS personnel who believe in the HFSC.

Best approaches to developing partnership models with community organisations and volunteer brigades to reach at-risk groups (Evaluation question 5): include the importance of strategic partnerships with the most appropriate organisations. Evaluation findings indicate volunteer brigades' capacity to deliver HFSCs is logistically constrained and this has a significant impact on potential partnership models.

The following conclusions and recommendations can be made for key programme areas in Phase 2:

Programme access and reach

Although a composite profile of risk factors indicates three quarters of HFSCs were delivered in homes where there were one or more risk factors (low income; over 65; child under 5; special needs), only 37% of HFSC recipients 2014/15 were recorded as low income. Further, there is negligible data on Community Services Card holders. There is an underlying tension between the HFSC as a service available to all, versus a limited resource targeted at greatest need. This tension is present in the programme Theory of Change (see Appendix A) which outlines the HFSC goal to reduce fire incidence for all New Zealanders and particularly at-risk groups.

Limitations in the SMS data mean it is very difficult to assess the success of promotional activity or local/ regional initiatives (e.g. the 2014 'Safer Houses' initiative in Rotorua) in HFSC uptake. In order to determine

any effect of major promotions, accurate data on promotional activity, as well as other events that could contribute to HFSC demand (e.g. higher than normal incidence of fire deaths) needs to be captured.

Only 4% of HFSC are recorded as delivered in rural fire areas over 2014/15, which raises questions for rural coverage and access.

Programme delivery

There is wide variation in the way HFSCs are managed and delivered. This includes the extent to which HFSCs are recorded as complete. Nationally, only 41% of HFSC were recorded as complete over 2014/15 and completion rates vary significantly for each case site (ranging from 34%-80%). The number of fire safety messages delivered in HFSCs (both complete and incomplete) also varies widely. In effect, this means NZFS cannot be sure of the extent to which HFSCs appropriately cover fire safety messages. It also indicates inconsistencies in HFSC management at a station level. A further example of variation is HFSC delivery by Volunteer Brigades and the constraints on Volunteer Brigades' HFSC delivery (daytime delivery windows, ordering HFSC kits). Finally, there is wide variation in smoke alarm outputs between the case study sites.

Fire officers find HFSC resource intensive at a time when they are experiencing rising demands across their jobs. Suggestions for alternative delivery mechanisms (e.g. hiring HFSC delivery staff; not using fire crews necessitating four officers and a fire truck) were also mentioned by all stakeholders. It is clear some fire officers feel more able to deliver fire safety messages and education to the public. The reasons behind this need to better understood by the NZFS in order to make improvements.

Information systems and performance measurement

The current data collection system is not adequate to effectively assess HFSC performance in reaching and impacting at-risk groups' fire safety behaviour. Furthermore, doubts over the integrity of SMS data on HFSC have a negative effect on delivery (reducing fire officers' buy-in to the service). The mismatch between the HFSC Checklist and SMS data entry is imposing unnecessary burden on programme staff and data accuracy. Rationalising SMS reporting requirements (e.g. asking whether all the data requested is needed and clarifying what HFSC monitoring should seek to measure) would improve monitoring efficiency and effectiveness. For example, SMS holds data on fire related incidence where smoke alarms were successfully activated (and were installed but failed to activate). These statistics, along with statistics on incidence of structural fire incidence and harm, are a potential source of year on year comparison of HFSC addresses against regional fire incidence. Qualifiers (e.g. mobile populations) would need to be fully explored.

There are a number of unknowns in the SMS, including the failure rate of smoke alarms installed as part of a HFSC and the percentage of homes insufficiently protected by a single HFSC alarm.

Impact on fire safety knowledge and behaviour

Overall, surveyed HFSC clients strongly agree the HFSC had a positive effect on their fire safety knowledge and behaviour. The survey sample was small however, and the impact of the HFSC on actual reduced fire incidence and harm is not known. Re-considering the system for monitoring HFSC performance (see above) would shed light on its impact on fire safety outcomes over time.

The mixed views of NZFS staff on the impact of HFSCs indicates an underlying issue of mixed capability within NZFS to effectively deliver fire safety messages to people in their homes. Following Fire Fighter entry training on HFSCs, crew learn how to conduct HFSCs on the job. The approach they learn is therefore highly likely to depend on pockets of local practice. Building capability with training (e.g. in social education and

community engagement skills) is a significant challenge which also involves addressing organisational culture. The HFSC training DVD is no longer effective and needs to be re-thought.

Community engagement and partnerships

The HFSC is part of NZFS's community engagement and this engagement demonstrably increases HFSC reach to at-risk audiences. Community organisations also value the HFSC and their relationship with NZFS. Better communication of HFSC results is desired by some organisations.

Different partnering types emerged in the evaluation, with some partners referring HFSC clients, while others only promote HFSCs. Although key organisations are referring HFSCs clients, the extent to which this is consistent nationally or whether partnership gaps exist is not known. The evaluation found variation between case sites in the degree to which NZFS staff proactively seek engagement with new community organisations in order to increase HFSC uptake. In some existing relationships, there are also degrees of active engagement (keeping in touch regularly for example). Relationships appear to be driven by individuals rather than strategy.

In light of these conclusions, a number of draft recommendations for future HFSC programme design and delivery can be made:

- Clarify the target audience for HFSCs and, in particular, what 'at-risk' means for HFSC eligibility.
- Address regional inconsistencies in managing the HFSC process (scheduling, delivery and recording).
- Examine data on rural access to HFSCs and define meaningful rural targets and operation for equitable coverage. This includes clarifying expectations and capacity of Volunteer Brigades to deliver HFSCs.
- Complete plans to align the HFSC Checklist and SMS data entry as an immediate remedial step and consider how data entry via tablet can be utilised (within the ICTS on Mobility Strategy).
- Develop HFSC performance measures and data collection that meaningfully captures the difference HFSCs make for fire incidence and harm nationally and regionally.
- Review current training, learning on the job and mentoring arrangements for HFSC against a 'best practice' HFSC delivery model (e.g. tailored to context; identifying in-situ fire hazards; delivered appropriately to different audiences). This includes HFSC training for NZFS leaders.
- Rebrand and relaunch the HFSC as part of a joined up strategy with other initiatives (e.g. Firewise Programme; Community Fire Safety Days) aimed at reducing fire risk in communities. This would include communicating the findings of the present evaluation.
- Develop a national strategic plan for HFSC community partnerships that commits to proactive identification of potential partners and relationship management.

1. Introduction

1.1. Background

The New Zealand Fire Service (NZFS) began a targeted Home Fire Safety Check (HFSC) campaign in 2010 (the 'programme'). The HFSC programme seeks to reduce fire incidence for all New Zealanders and particularly at-risk groups, by directly engaging householders with fire safety in their own homes. At-risk groups include low income households, Community Services Card holders, and homes with young children and/ or elderly people. The Fire Service had previously installed smoke alarms and provided fire safety advice in people's homes, but from 2010, began to deliver the service as the brand 'Home Fire Safety Checks'. This was a strategic move by the NZFS to increase the profile of reducing fire incidence by directly engaging at-risk groups with fire safety in their own homes.

HFSCs were initially targeted at deprived neighbourhoods, and the first campaign focused on Community Service card holders without working smoke alarms. Other operational activities included the installation of long-life photoelectric smoke alarms. At-risk clients were recruited via a mail drop which instructed the respondent to contact a 0800 number. National communication staff then assigned local fire stations with appointment set up and delivery. A DVD and supporting material showing how the campaign worked was sent to all fire stations to help familiarise fire fighters with the intervention. The HFSC programme receives funding for 6,000 smoke alarms annually. Additional alarms are donated from organisations such as Rotary NZ or supplied by householders themselves.

Recruitment to the programme has changed to include contact via engagement with local community organisations (e.g. Age Concern and Plunket). This alternative recruitment method has led to more direct contact between communities and fire stations. Fire crews have supported community partnerships by identifying strategies of engagement in their district plans and securing suitable Memorandum of Understanding (MoU) with individual organisations.

The HFSC is delivered through NZFS's 428 Stations in 24 Fire Areas in 5 regions across New Zealand. Over 80% of rural and urban fire force personnel are volunteer brigades.[11]

1.2. Evaluation objectives and questions

The **overall purpose** of the evaluation was to evaluate the success and effectiveness of the HFSC programme in delivering appropriate fire safety education and smoke alarms to at-risk audiences. Phase 1 of the evaluation[12] established evidence of HFSC programme progress against key strategic outcomes (see Appendix A for a summary of HFSC progress). Phase 2 updated the data baseline identified in Phase 1, and, in particular, explored further the lessons identified in Phase 1 on delivery method and best practice partnership models (Table 1. Evaluation questions 3, 4 and 5).

Specific overall **evaluation objectives**[13] were to:

[11] Department of Internal Affairs/ Te Tari Taiwhenua *Fire Services Review Discussion Document* May 2015
[12] *Final Report: Overview of key findings Home Fire Safety Check Evaluation* 18 December 2014
[13] NZFS Request for Proposal 2013

5. Evaluate the success and effectiveness of the HFSC programme in reaching and affecting at-risk groups;
6. Identify potential improvements to its activities;
7. Examine the potential to extend the initiative to other at-risk groups;
8. Assess the contribution of the HFSC programme to Fire Service Commission's strategic outcomes.

Key evaluation questions for Phases 1 and 2 are outlined in Table 1 below.

Table 1: Evaluation questions

Evaluation question	Phase
1. What is the extent of progress/success against the programme model, including identification of the programme theory of change and assumptions?	1
2. How has the programme been delivered by New Zealand Fire Service (NZFS) personnel nationally and locally (including promotion and penetration to at-risk groups across New Zealand)	1
3. What evidence is there of the contribution of the programme to reducing at-risk fire behaviour in 'at-risk' groups?	1 & 2
4. What are the key lessons learned, particularly in identifying the most appropriate and successful delivery method for extending the programme to reach at-risk groups?	1 & 2
5. What is the best approach to developing a best practice partnership model for working with different volunteer brigades and other partners to extend the reach of the Home Safety Check programme to at-risk groups?	1 & 2

Phase 1 of the evaluation ran in 2014, with data collection August – November 2014 (*Phase 1 Final report* December 2014). Just under a year passed between Phase 1 and Phase 2 data collection which took place in August 2015.

1.3.Evaluation approach and methodology

A mixed method (qualitative and quantitative) approach was employed in the evaluation. Phase 2 data sources included:

- **Case study site visits** were conducted in Whanganui, Rotorua and Hamilton.[14] Whanganui and Rotorua had been previously visited in Phase 1. In Phase 2, Hamilton was selected as a new third site in order to provide data on a metropolitan context of HFSC delivery. Semi-structured interviews were conducted with station personnel (n=13) and partner organisations (n=6).

Table 2: Phase 2 Case study site interviews sample

Case study site	NZFS stakeholders	Partner organisations
Hamilton	4	3
Whanganui	6	2
Rotorua	3	1
Total	**13**	**6**

[14] Phase 1 case site visits were Whanganui, Tokoroa and Rotorua. The case studies were purposefully selected in collaboration with NZFS. Selection criteria were: sub-populations of interest; alignment with NZFS priorities and understanding of programme delivery; and to ensure information-rich cases that would best inform evaluation objectives. Rotorua and Tokoroa are part of the Central Lakes Fire Area, and Whanganui is in the Whanganui Fire Area (2 of 24 Fire Areas in the NZFS).

- **Station Management System (SMS) data** (1 July 2014 – 30 June 2015). The SMS collates data on HFSC requests, appointments and delivery. Phase 2 findings concur with the Phase 1 report which noted SMS data-set limitations (specifically, incomplete records of HFSC visits indicate some data inaccuracy which means there is an undetermined level of response error).

- **An online survey** questionnaire was run with two cohorts of HFSC householders who had received a completed HFSC and consented to be contacted for research purposes.[15] The survey sought to measure householders' perceptions of HFSC service delivery (Phase 2 cohort) and impact on their fire safety knowledge and behaviour (Phases 1 and 2 cohorts). The intention behind re-surveying Phase 1 HFSC clients was to test sustainability of knowledge and behaviour change. Because of the small sample size (n=34), and to increase the likelihood of capturing this data, Phase 1 clients were followed up with telephone survey invitations. In total, 294 survey invitations were posted and 32 responses were received, an overall response rate of 11%. Response rates for each cohort differ, as outlined below.

Table 3: Survey sample

Cohort	Survey invitations	Achieved sample	Response rate
Phase 1: Survey respondents from Phase 1 (HFSC clients in Whanganui, Rotorua and Tokoroa 2013-14).	34	11	32%
Phase 2: HFSC clients in Whanganui, Rotorua, Hamilton (2014/15) and Tokoroa 2013/14).	260[16]	21	8%
Total survey	**294**	**32**	**11%**

1.3.1.Notes on limitations

A number of issues can be identified with the online survey method. The intention was to resurvey Phase 1 survey respondents to test the sustainability of any improved fire safety knowledge and behaviour changes captured in Phase 1. The low response rate indicates an online survey is not the ideal method to reach HFSC audiences. By following up with telephone surveys, however, the Phase 1 response rate was raised to 32%. In addition, the survey followed an 'opt-in' model, resulting in a self-selected sample with possible positivity bias. Because the survey sample size is small (n=32), results must be considered indicative only.

The short time frame between Phase 1 and 2 data collection (just under a year) should also be noted. A risk was identified in the Evaluation Plan that revisiting the same sites (Whanganui and Rotorua) within a year may not show any significant change overall.

[15] Refer to Appendix B - Data collection methods and tools

[16] This figure includes 30 clients whose HFSC was not checked as complete were contacted in error.

2. Evaluation findings

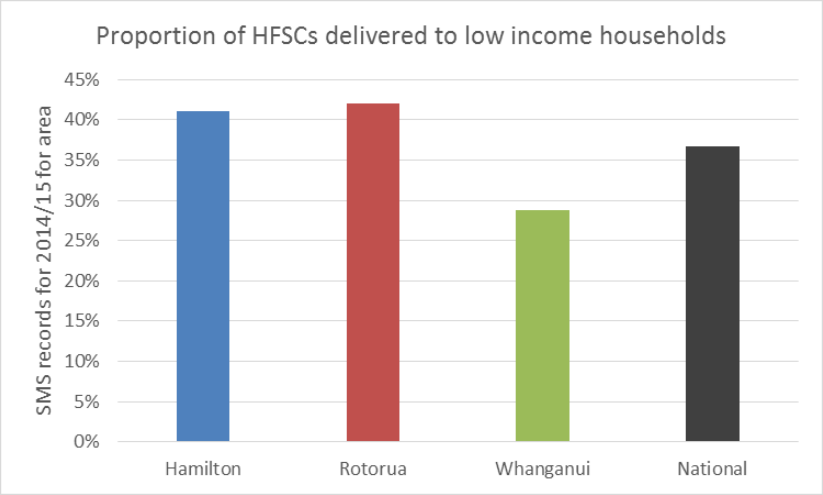
2.1.Programme access and reach

In 2014/15, 15,131 Home Fire Safety Checks were recorded nationwide. [17] SMS data records information about delivery to 'at risk' groups in 2014/15, as follows:

- Low income homes[18] (37% nationally)
- Rented homes (20% nationally, with 14% of these rented through Housing New Zealand)

An aggregate assessment of risk factors reveals that 75% of HFSCs for 2014/15 were delivered to homes where 1 or more risk factors were present[19] and 31% had 2 or more factors present (see Figure 3 over page). Additionally, 40% of HFSCs to elderly were delivered to homes that were classed as low income as well.

Figure 1: HFSC delivery to low income households



The ethnicity profile of HFSC delivery nationally over 2014/15 is as follows:

- European (65%)
- Maori (11%)
- Pacific Island (3%)
- Other (2%)
- Asian (1%)
- Unknown/ unasked (17%).

[17] NZFS Station Management System (1 July 2014 – 30 June 2015).
[18] NZFS definition
[19] Risk factors tallied are low income, elderly over 65, child under 5, student, special needs.

Figure 2: HSFC in Housing New Zealand homes

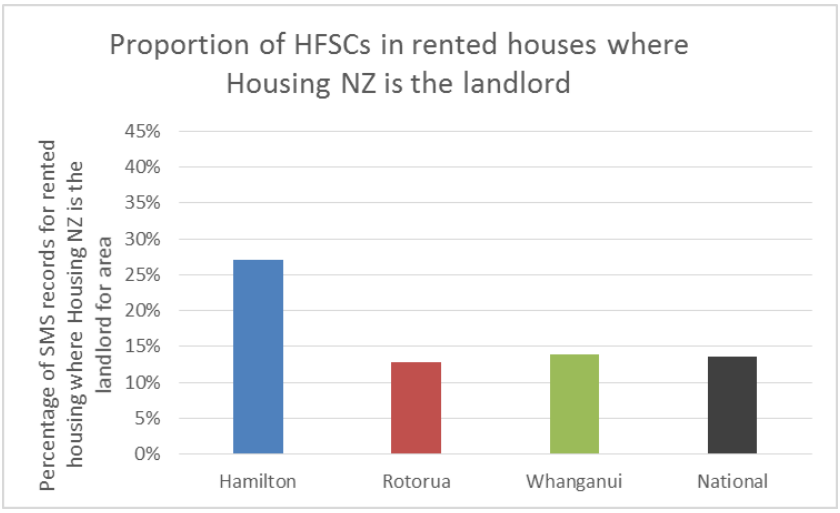
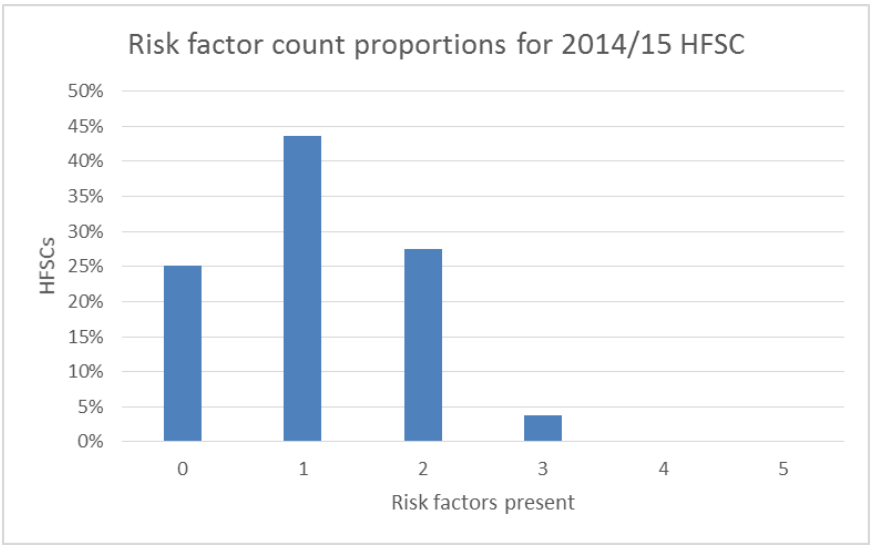
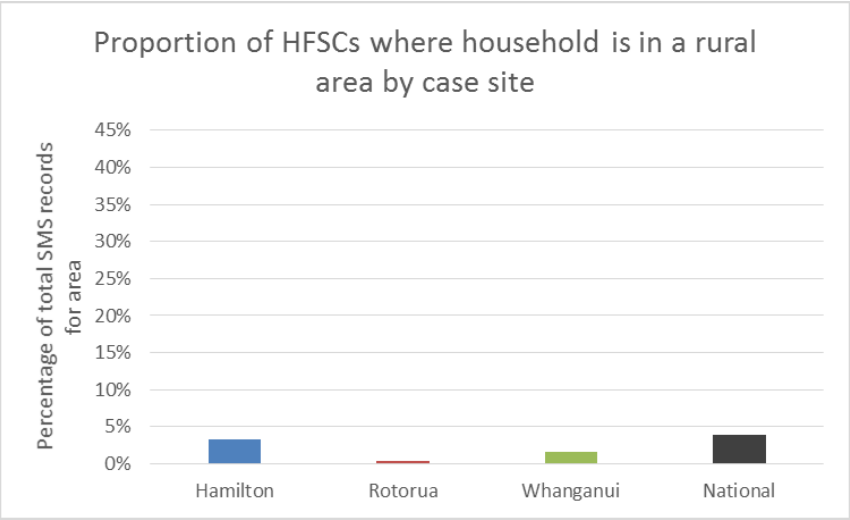


Figure 3: Quantity of risk factors present at HFSCs nationally



SMS records show that 4% of HFSCs nationally over 2014/15 were delivered to homes in rural fire areas.[20] The capacity for Volunteer Brigades (largely rural) to deliver HFSCs emerged in stakeholder interviews as an issue for rural coverage and access.

Figure 4: HFSC rural delivery



Nationally, 29,219 people benefitted from a Home Fire Safety Check in 2014/15. The beneficiary profile as recorded in SMS is as follows (see Appendix C- Beneficiary profile graphs):

- Elderly over 65 (35%)
- Children under 5 (13%)
- Special needs (9%)
- Students (4%)
- Only 6 records noted data on Community Service Card holders.

Phase 1 analysis revealed variation in programme access pathways. Appointments for a HFSC can be made through phoning a 0800 number, direct contact with the fire station or referral from external agencies. These agencies vary from area to area. Examples in Whanganui, Hamilton and Rotorua include Grey Power and Plunket. There is strong agreement across Phase 1 and 2 findings that the 0800 number is the least successful access point for HFSCs, except in the exceptional situation immediately following a neighbourhood fire. The evaluation asked survey respondents about their experience of accessing a HFSC. 80% (24 out of 29) strongly agreed the process of getting a HFSC was easy and clear.

Nationally, 28% of HFSCs were recorded as linked to a promotional activity or initiative. The type of promotion or further detail is not detailed however. 2% received the HFSC invitation as a result of a fire in their area.

A tension emerged in NZFS stakeholders' views on access to HFSC. Fire officers in all case sites felt strongly that access criteria (e.g. holding a Community Services Card) should be more strictly applied. This would ensure HFSC resource is targeted at those in greatest need (broadly agreed to include low income, elderly

[20] The checkbox 'rural' in the SMS records whether the HFSC took place in a rural fire area. This is determined by fire crew local knowledge. Delivery by rural crews is not captured in this field.

and families with young children). There is a conflict within this desire for greater targeting, however, in that it is difficult for the NZFS to turn away householders interested in fire safety. Some fire station personnel particularly expressed concerns about delivering the service to higher income householders. This group includes not only people able to afford smoke alarms and installation, but also those who are already fire safety conscious. Overall, fire officers felt those in greatest need (the target audience) were the least likely to access the HFSC. Although Community Service Card holders are a HFSC criteria and target audience, only six records in the 2014/15 data set of 15,131 HFSCs, reference Community Service Cards.

"Some people won't come to us, we really need to go to them but can only do this with partner agency introduction and brokering. To get into a lot of homes, we can't get in there on our own." (Senior Fire Risk Officer)

"We don't check or vet the HFSC [applicants]. They should qualify for the criteria."(Station Officer)

"The HFSC is necessary and we would like to see it expand into rural areas." (Community stakeholder)

2.2.Programme delivery

In 2014/15, 15,131 Home Fire Safety Checks were recorded nationwide. In the three case study sites, HFSC delivery numbers for 2014/15 are as follows:

- Whanganui: 723
- Rotorua: 233
- Hamilton: 185.

Nationally, over this period:

- 19,217 new smoke alarms were installed (of these, 62% were supplied by the NZFS and 37% were long life);
- Funded smoke alarms (6,000 annually) constituted 31% of new smoke alarms installed;
- 2,282 smoke alarms were relocated within homes;
- Batteries were changed in 7,568 smoke alarms; and
- 13,504 smoke alarms were cleaned and checked.

Table 4: HFSC Smoke alarm outputs by case site

Smoke alarm outputs	Hamilton	Rotorua	Whanganui	National
New smoke alarms installed	291	228	690	19,217
Smoke alarms supplied by NZFS	208	168	394	11,980
Smoke alarms relocated	35	33	104	2,282
Batteries were changed	55	30	539	7,568
Smoke alarms cleaned and checked	128	100	431	13,504

Of the 15,131 Home Fire Safety Checks recorded nationally, only 6,247 (41%) were marked as complete (with the HFSC covering all fields in the Checklist).[21] Of the case study sites, Rotorua has the highest number of completed HFSCs (80%), followed by Hamilton (70%). Whanganui has the lowest at 34% (see Figure 5). IT is important to note, however, that 75% of HFSCs nationally that were marked incomplete received at least 1 message (see Figure 7).

[21] Completion criteria determined by SMS question 'Did you complete the HFSC List'.

Figure 5: Proportion completed HFSC by area

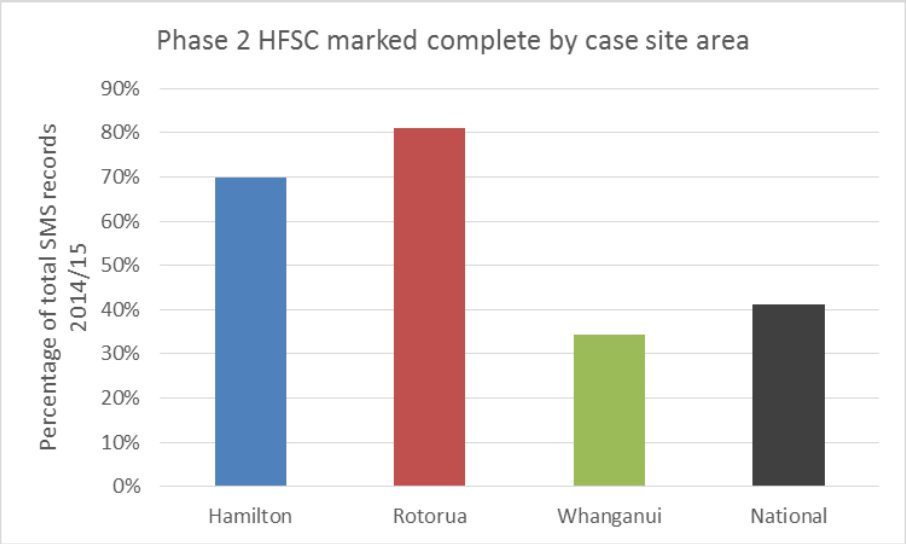
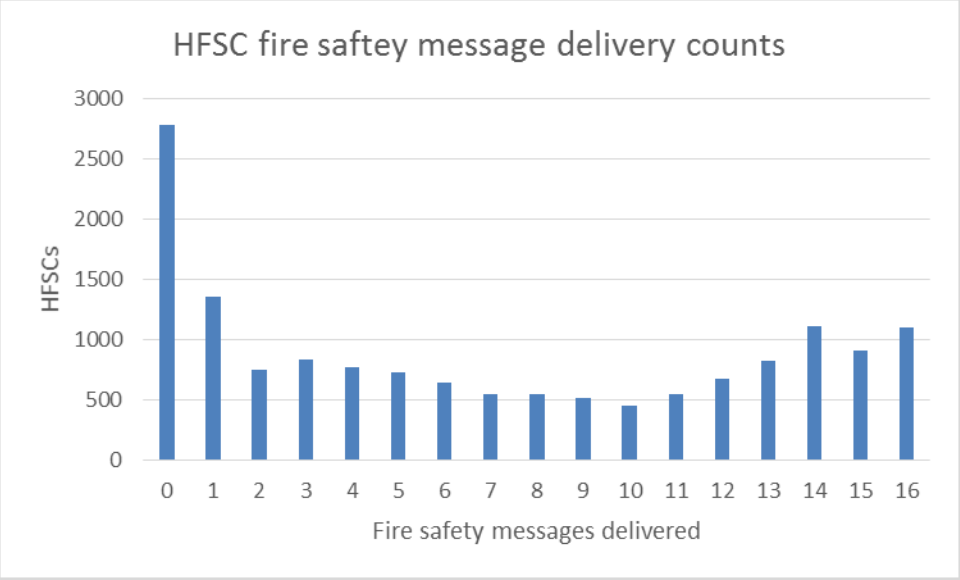


Figure 6: National message delivery



There is variation in the delivery of fire safety messages in the HFSC. Variation is evident in both the number and type of messages delivered. HFSC deliverers are selecting fire safety messages from the full checklist of 16 (see Figures 6 and 7). At a national level, none, or 1, message or between 13 and 16 messages are most common. The frequency of a mid-range number of messages (2-12) is roughly equal.

Figure 8 depicts the number of messages delivered at a case site level. Variation *within* station is less but the difference *between* sites is marked. It is important to note that more messages delivered is not necessarily better or more effective.

Figure 7: Message delivery to 'incomplete' HFSCs

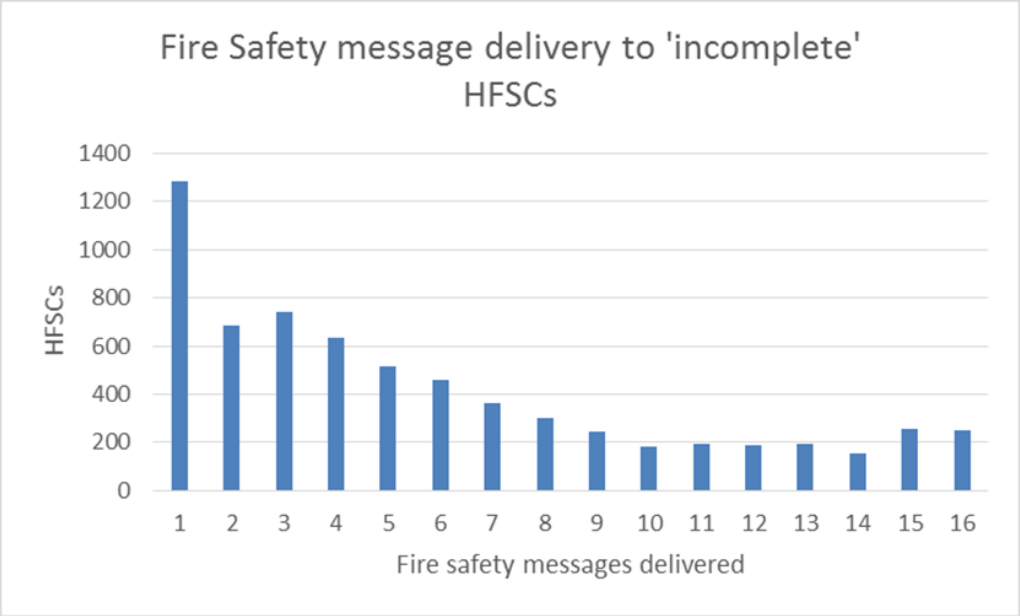
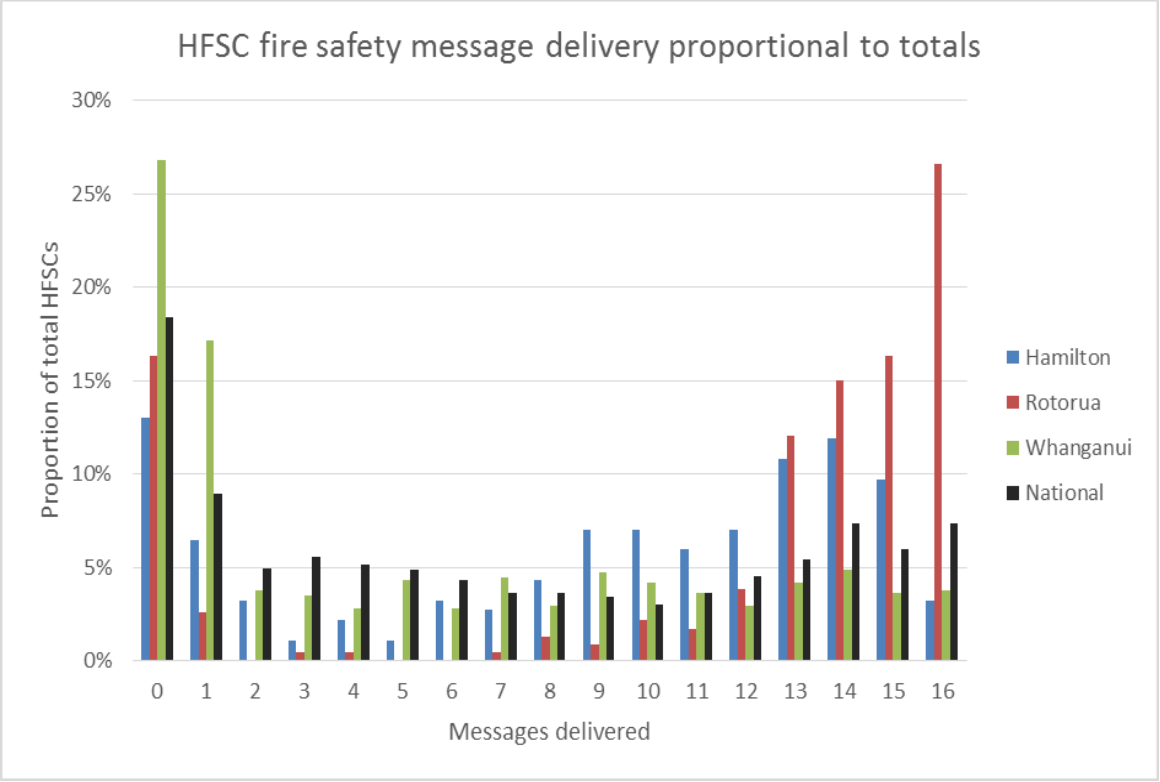


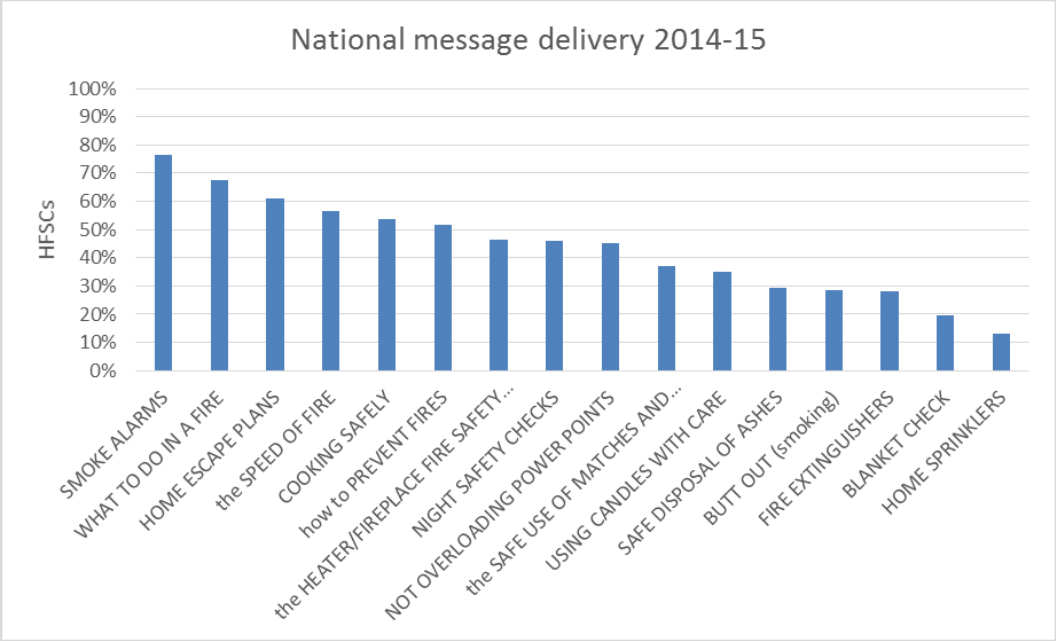
Figure 8: Message counts as a proportion of the total for each case site



Fire officers delivering HFSCs are tailoring delivery to meet householders' context. This includes adapting content to meet specific audience needs, whether this means audience (e.g. elderly householders) or responding to specific fire hazards (e.g. overloaded power plugs). A number of fire officers stated they prioritise key messages when delivering HFSCs depending on what they find when they visit homes. Messages which were most delivered are shown in Figure 9. The ability to successfully assess, prioritise and communicate key messages is agreed by all stakeholders to be paramount.

"We need to be able to tailor for different audiences, for example, people without kids, older people, because not all of the Checklist points apply." (Station Officer)

Figure 9: Quantity of delivery by message



HFSCs are delivered by both Career Fire Service and Volunteer Brigades, as well as Fire Risk Management personnel. NZFS stakeholder interviews indicate the majority of HFSCs are delivered by Career Crew who are mostly located in urban areas. NZFS personnel pointed out potential issues for Volunteer Brigade delivery, including the daytime window for HFSC appointments. Perhaps most significantly, however, is that Volunteer Brigades cannot order HFSC smoke alarms directly but must access them via Career Fire Stations. A number of NZFS personnel would like to map HFSC delivery, as they are aware of areas with little service. SMS data denotes VRFF (Volunteer Rural Fire Force) and it is not clear if this denotes 'Volunteer' delivery.

"Volunteer Brigades don't get HFSC kits but have to order smoke alarms [to carry out HFSC]. Took one volunteer brigade over 6 weeks to respond to one rural HFSC and I just went and did it in the end." (Fire Risk Management Officer)

NZFS personnel interviewed for the evaluation felt the HFSC is time and resource intensive, typically involving a crew of four fire officers and a fire truck. In addition, fire officers do not understand how HFSC targets are set by National Headquarters, and reported feeling pressured to complete HFSCs as they are logged (at a rate NZFS crew have no control over). Apprehension about generating demand for HFSCs that cannot be delivered in a timely way is the reason several personnel did not favour actively promoting the HFSC. A number of delivery issues emerged in interviews with fire officers. These included a perceived exposure to risk if the NZFS is seen to 'sign off' a HFSC as a warrant of fire safety fitness. Additionally, many NZFS personnel are worried about raised expectations of the NZFS delivering HFSCs following forthcoming legislation (July 2016) mandating every rental property have smoke alarms.

"Some watches are very proactive, others not. Some say we're too busy, others may see it as a drag. Lot refer to them as home invasions, slang thing. If you put them into the system, they will go and do them. Proactive watches will go and look for them." (Senior Station Officer)

"To do it properly, they [Fire officers] have to sit down and talk it through with householders. It is going to come down to the individuals involved. Those who are believers in the HFSC will do it thoroughly, those who aren't, won't." (Senior Fire Risk Officer)

"HFSC are being done with just the alarm installed, not looking at the house overall e.g. overloaded plugs. Fire crew haven't got time to do the HFSC." (Fire Risk Management Officer)

There is variation in HFSC management in different case site areas. A clear HFSC champion was evident in some case study sites but not others. The reasons for this appear to be linked to the individuals in key positions and the extent to which they actively engage in HFSCs. This was also found in Phase 1. HFSCs booked through the central 0800 number are logged into relevant Fire Station's SMS but the way HFSCs are assigned and managed can vary. Variations include the number of times householders will be phoned to try and book an appointment. Some fire officers will follow up with a door knock as a final attempt to make contact. In at least one case study site, other NZFS personnel apart from Fire Fighters are carrying out HFSCs, sometimes alone.

"The booking of fire crews is random, [it] doesn't focus on people who are better or worse at doing HFSC." (Assistant Area Manager)

"If people come to us, then great. But [it's] too time consuming for us to go out and get this." (Volunteer coordinator)

"Today I prioritised an urgent case, young mums in a 6 bedroom house with one smoke alarm. Dropped everything to go do that one. The battery wasn't even working in the single smoke alarm. I go alone even though I know I shouldn't, but who else will come with me? There is a lot of other things to do and I can't get a firefighter to come with me when they're on shift. That would have to be arranged days in advance. HFSC is at the bottom of their list." (Fire Risk Management Officer)

2.3.Information and monitoring systems

The primary data collection system for HFSCs is the NZFS SMS. Questions over the integrity of the SMS data set were raised by all NZFS stakeholders who reported being unsure whether HFSCs made any difference to fire safety outcomes. This in turn affects some fire officers' buy-in to the HFSC. Reasons for doubts over SMS data integrity include:

- **Significant mismatch between the HFSC Checklist and SMS data entry reporting fields.** This includes questions on SMS that do not appear on the Checklist used by fire officers in HFSCs. This finding was reported in Phase 1 and NZFS plan to address this issue. During Phase 2 interviews, fire officers conducting HFSC reported feeling frustrated over how user unfriendly SMS is. An example given was the requirement to check off 'completed' boxes multiple times in order to designate a HFSC as completed.
- **Many NZFS personnel find it difficult to ask personal questions (ethnicity, income, owner occupier/renter)**, perceiving them to be intrusive and unnecessary. This results in demographic data fields being ignored or guessed. Some fire officers report that they do not use the Checklist at all, while other only use parts of it.

These factors contribute to the high proportion of HFSCs which are incomplete on SMS. In effect, this means NZFS cannot be sure of the extent to which almost 60% of HFSCs are covering fire safety messages fully and appropriately.

> *"I've stopped doing the checklist questions, think they're invasive, if you know enough in your mind, then you can figure it out. I know it's good for stats but I don't think it's cool to ask about low income or demographic. I'll never ask someone if they're Maori or low income. They think they are being interrogated." (Fire Risk Management Officer)*

> *"You have to ask awkward questions so usually just fill this out from our own bat…mak[ing] assumptions about the demographics for the statisticians in Wellington." (Senior Station Officer)*

There are also a number of 'unknowns' such as how many households are insufficiently protected by the single HFSC alarm. Several NZFS interviewees raised alarm failure as problematic, both from the perspective of HFSC effectiveness and that of reputational damage to the Fire Service. Phase 1 reported a 3% smoke alarm failure in one case study site.[22] This information was collated by an individual Fire Station. The national failure rate of smoke alarms installed during HFSCs was unavailable to the evaluation.

A number of specific points emerged on data clarity. These include a question mark over the unit of measurement for a HFSC SMS record (e.g. a home receiving a HFSC and smoke alarm or potentially, a collective unit such as marae or retirement villages with many residential units and smoke alarms installed but entered as a single HFSC). SMS has data fields to capture information on what is prompting householders to access a HFSC (cold calls, invitation by letter box or referral from another agency). These fields are hardly used, however, with only 21 records in the 2014/15 data set. Information is also gathered on whether HFSC

[22] Whanganui Fire Station estimated the long life fire alarm to have a 3% failure rate based on the return of non-working alarms (*Final Report: Overview of key findings Home Fire Safety Check Evaluation* 18 December 2014)

visits are linked to promotional activities but these records do not specify which promotion events and are poorly filled in.

2.4.Impact on fire safety knowledge and behaviour

There is strong consensus from external stakeholders that in-home delivery of fire safety messages is the most effective method to engage and educate people. NZFS stakeholders are divided between those who agree with in-home delivery and those who think mass media is the best method for fire safety messages. Both groups (external stakeholders and NZFS) had mixed views on whether Fire Officers, in uniform and on a fire truck, increased HFSC effectiveness, or whether HFSCs were better delivered through a community delivery model. The Te Kotahitanga initiative[23] was mentioned as an exemplar of this model as it deployed community members to deliver home fire safety messages. A number of NZFS stakeholders pointed out the particular value of in-home delivery is that fire officers can identify and educate on actual fire hazards in people's homes (e.g. blocked exits, overloaded power sockets).

> *"We are getting the message into homes with the HFSC – we are passing on that important information." (Senior Fire Risk Officer)*

> *"The new guys are more willing to do this activity which is good because it is touched on in training. New guys are much better at engaging with the public. They know what the expectations are because public engagement is part of training [now]." Assistant Area Manager*

> *"Some fire crew may not actually talk to the public much in the regular course of their jobs. Public relations and education is something NZFS could improve training for. They [operational crew/ fire fighters] wouldn't necessarily be able to talk in-depth about fire safety and prevention. It's not their all day, every day work. There is a perception that fire safety management officer is responsible." (Senior Fire Risk Officer)*

> *"Key ingredients with high needs families are: face to face delivery and a physical asset, the alarm in this case….Our experience is that face-to-face is irreplaceable" (DHB stakeholder)*

Several NZFS personnel noted a discrepancy between the single donated alarm available via the HFSC, with the Fire Service recommendation for a smoke alarm in every bedroom, living area and hallway. Fire officers identified a cost barrier for low income households to carry out all their fire safety advice. The issue of single alarms also emerged for Whare Ora clients:

> *"People are positive about the HFSC but it is one alarm…whanau point out a single fire alarm is not enough." (DHB stakeholder)*

Survey respondents find the fire safety advice delivered during HFSC clear and are more aware of fire safety and risk. The evaluation asked HFSC clients over 2013 – 15 to assess the impact of the HFSC on their fire safety knowledge. There were no notable differences between responses for Phase 1 and 2 cohorts. Overall, HFSC clients are very likely (80% or 24 out of 29) to strongly agree they know more and that NZFS

[23] Te Kotahitanga (TK) is a community based fire safety project that ran in the Te Taitokerau (Northland) region 2001 – 11. The project was originally developed in response to the high levels of fire related mortalities that occurred in the area during the 1997-2001 period. (New Zealand Fire Service Commission Research Report Number 85 (2008).

gave clear advice on: preventing fires; responding to fire; home escape plans; and the importance of having working smoke alarms. When asked what would help them remember key messages, survey respondents mentioned the following: fridge magnets; a check list to put on the fridge; and tea towel/ calendar with fire safety messages. Five people did not know what would help or admitted they were not good at remembering the fire safety message. Suggestions for reminders included:

> *"Small stickers to be put in areas of concern, e.g. above stove and by PowerPoints. Fun book made specifically for children to show the importance of not overloading sockets, playing with matches, lighters etc. as well, to reinforce what we are saying as parents." (Survey respondent)*

> *"More visual displays of how quickly fires can be started (went to Mega Mitre 10 last year and they had a fire vehicle there that they were using to show people examples." (Survey respondent)*

> *"A message on a lighter, so when I light the fire I can re-read it." (Survey respondent)*

> *"All my reminder stickers 'keep looking when you're cooking' placed by my oven and our tea towel." (Survey respondent)*

Overall, survey respondents rate HFSC effectiveness highly. The evaluation asked HFSC clients about results of the HFSC, including any change to their behaviour following a HFSC. Most (90% or 28 out of 31) strongly agree they have a working smoke alarm, but only 74% (23 out of 31) strongly agree they regularly check it is working. Most (87% or 27 out of 31) strongly agree they have a fire escape plan and that people in their home know the plan. 61% (19 out of 31) strongly agreed they had talked to others about the HFSC.

When asked what changes they had made to make their homes safer from fire, respondents indicated the following in order of most to least mentioned:

1. Ensured the right number of smoke alarms in the right positions
2. Made sure exit doors are kept clear/ Kept matches and lighters away from children
3. Stopped overloading power sockets
4. Turned appliances off at the wall
5. Cleaned heat pumps/ other heating appliances
6. Bought a fire extinguisher.

When asked what would help them to make changes to improve their fire safety, responses included: not having heat pump so high; putting splash backs behind the oven/ stove; get alarms that do not need batteries; cleaning the chimney; an affordable fire extinguisher; being vigilant in turning off appliances when not in use; and caution when cooking. Another survey respondent mentioned specific materials for children in the household (e.g. grid maps to plot a fire escape plan). Many NZFS personnel feel the approach fire officers take to delivering fire safety messages is key to making a difference for HFSC clients.

> *"When I do it, I don't rush through it, I use actual examples that might stick a little more." (Fire Officer)*

Overall, these findings concur with Phase 1 survey findings which found HFSCs quite effective in raising awareness of home fire safety and behaviour change (note small Phase 1 survey sample size (n=38).

NZFS personnel are deeply divided over the perceived effectiveness and value of the HFSC. At one end of the spectrum, fire officers felt the only value in the HFSC was smoke alarm installation. Smoke alarms are universally agreed to reduce fire risk and harm. At the other end of the spectrum, fire officers are enthusiastic and believe wholeheartedly in the HFSC combination of smoke alarm and fire safety education.

NZFS personnel commenting on those fire officers who disliked HFSCs noted a number of factors: a lack of training in social education and community engagement skills; a legacy effect of the way HFSCs were introduced at a difficult period between fire officers and management (the 'war period'); and the personal capability of individual fire officers to enter people's homes on their terms. Training and preparation for effective delivery emerged as a key theme in interviews. For those personnel who believe HFSC delivery and effectiveness can be improved, training fire officers in HFSC and public engagement needs to be improved. When asked about the HFSC training DVD, most interviewees had heard of this but could not remember seeing it.

NZFS personnel are also sceptical about measuring HFSC effectiveness under current monitoring. Reasons include incoherent data collection tools (HFSC Checklist and SMS), but also a more general sense that behaviour change is difficult to evidence. Some felt the only real measure (even acknowledging high mobility of residents) was to monitor fire incidence and damage in HFSC addresses compared to regional statistics.

"I don't think it [HFSC] does what it is meant to do" (Senior Fire Fighter)

"I disagree completely with the HFSC because we are creating dependencies. I believe in personal responsibility." (Station Officer)

"We are reinforcing good practice with those who are somewhat fire conscious. Others are never going to change their behaviour." (Assistant Area Manager)

"TV ads and radio are the best for fire safety messages. You can talk until you're blue in the face but you can't force fire behaviour change" (Senior Station Officer)

I am really passionate about HFSC. People shouldn't be dying in fires, we still have too many fire deaths in NZ." (Senior Fire Risk Officer)

2.5.Community engagement and partnerships

Senior NZFS station staff responsible for assigning HFSCs value community partnerships. This aligns with Phase 1 findings that NZFS coordination with communities is a positive aspect of the HFSC. Such relationships are considered to increase HFSC reach to at-risk audiences as these organisations are the ones who 'open the door' to people's homes. In addition, referrals from local agencies and community organisations are viewed as a good way to ensure HFSC resource is aimed at target groups as this form of referral is considered to 'pre-screen' client eligibility. A few NZFS personnel felt NZFS partnerships with community organisations should result in more referrals.

Overall, the HFSC has increased NZFS community engagement through relationships with local agencies/ community organisations. These relationships range from formal partnerships with Memoranda of Understanding to less formal connections that may be occasional or periodic (e.g. Fire Safety Presentations; Community Days). These less formal connections include NZFS engagement with organisations that seek to promote HFSCs rather than take on a referral role. Initiatives such Safer Houses, the Koutu initiative[24] (Rotorua) and Healthy Homes (Hamilton) connect the NZFS to other local agencies, usually in cross-sectoral networks. Community engagement in all case study sites involved key partnerships with organisations who make HFSC referrals. In Hamilton, NZFS reported that HFSC engagement with Grey Power and Volunteer Brigades has significantly increased HFSC reach to older rural residents. In Hamilton, NZFS's main HFSC referral partnerships are with the Waikato District Health Board's Maori Health Unit (Whare Ora project), Grey Power and Age Concern. In Rotorua, fire officers reported Plunket, and Red Stag, as well as property groups/ real estate agents as the organisations they work with on HFSCs. There is some tension over installing smoke alarms in landlords' properties as fire officers generally feel this should not be NZFS's responsibility. In Whanganui, NZFS receive referrals from Plunket, Birthrite, Neighbourhood Support and Maori health organisations.

A 'most significant' network for HFSC delivery emerged in two case study sites. In Rotorua, the 'Treasure Rotorua' Safer Community initiative is the primary network regularly connecting NZFS to other agencies and community organisations. In Whanganui, NZFS sit on the Safety and Well-being Reference Group which is part of the Safer Communities initiative. A Hamilton community organisation mentioned NZFS were not involved in the Community Network Meetings, multi-agency networks which run every two months and function as a fast forum to share and communicate.

Community organisations find the HFSC valuable and are keen to work with the NZFS to increase their client groups' fire safety. When asked how well they felt the partnership with NZFS was going, community stakeholders' views varied depending on the closeness of their relationship. For referring organisations, the NZFS partnership is working well. These organisations are very happy their clients can access a HFSC. Several organisations mentioned that they would like to hear back from NZFS on how many of their referrals have been completed. Other data interests mentioned included: information on how long it takes from referral to completion; ethnicity; and household occupancy rate, as well as fire incidence outcomes for HFSC homes.

[24] The Koutu initiative involved fire safety, crime prevention, fall prevention and emergency preparedness messages in a collaboration between Police, Fire Service, ACC, Civil Defence, Neighbourhood Support, Maori Wardens and Community leaders. The Koutu programme visited 5-600 homes in March 2014.

"The Maori Health Unit has been an important relationship for the NZFs getting into Maori communities. We have the relationships and NZFS provides the resource…our Whare Ora eligibility criteria meet HFSC criteria." (DHB stakeholder)

"The HFSC is very easy to access, good clear brochures, older people trust the Fire Service and it's free. Feedback from clients is all positive, the Fire Service are friendly and respectful." (Community stakeholder)

"Feedback from whanau is that NZFS are good to work with…the key thing is respect when you go into people's homes. Agencies can see these families as a problem." (DHB stakeholder)

"I think, to improve [the HFSC], put in keen people who don't not look the part. You are representing the NZFS and should want to do fire safety. I don't understand why some fire crew don't want to do fire safety. What is needed is the right person with the right equipment. Maybe hire somebody who comes in and wants to do them." (Fire Risk Management Officer)

NZFS personnel have mixed views on the way the HFSC connects to other community fire safety programmes. For some officers, HFSCs are part of a wider approach to fire prevention which includes community engagement (e.g. Fire Safety Days) and Fire Wise programmes in schools. For others, HFSC is primarily about technical installation of a smoke alarm.

"Fire Wise and HFSCs go hand in hand – Fire Wise educates children on smoke alarms and we want the kids to go home and look at whether they have an alarm." (Senior Fire Risk Officer)

The evaluation asked HFSC clients where else they heard fire safety messages. In order of most to least mentioned, survey respondents indicated the following additional sources:

1. TV ads
2. Local newspapers
3. Word of mouth
4. NZFS promotional material/ Radio ads/ School visits
5. Fire safety presentation and community engagement event.

3. Conclusions and recommendations

Over Phases 1 and 2, the evaluation assessed the success and effectiveness of the HFSC programme in delivering appropriate fire safety education and smoke alarms to at-risk audiences. Based on the evidence available to the evaluation, the following overall conclusions can be made.

The programme was mostly successful in reaching at-risk groups for HFSCs, primarily through partnering with community organisations. A significant minority (25%) of 2014/15 HFSCs, however, were delivered to homes with no risk factors recorded. The extent to which the programme successfully delivered appropriate fire safety messages and identified fire hazards in homes was highly dependent on individual deliverers' skills-set.

There is limited evidence of HFSC programme contribution to reducing at-risk fire behaviour in at-risk groups (Evaluation question 3). Overall, the HFSC programme has contributed to increasing fire safety for households receiving a HFSC, but impact on at-risk groups specifically is not clear. Measuring behaviour change attributable to a specific programme is difficult.

Key lessons for most appropriate and successful delivery method to reach at-risk groups (Evaluation question 4) includes the finding that recruitment and referral by community organisations is a successful approach to reach at-risk groups. In particular, agencies charged with going into people's homes (Plunket, Age Concern) are a highly effective way for the NZFS to reach at-risk groups. In-home delivery of fire safety as per the HFSC (versus mass media fire safety messages for example), is the strongly preferred delivery method for external stakeholders and NZFS personnel who believe in the HFSC.

Best approaches to developing partnership models with community organisations and volunteer brigades to reach at-risk groups (Evaluation question 5): include the importance of strategic partnerships with the most appropriate organisations. Evaluation findings indicate volunteer brigades' capacity to deliver HFSCs is logistically constrained and this has a significant impact on potential partnership models.

The following conclusions and recommendations can be made for key programme areas in Phase 2:

3.1. Programme access and reach

Although a composite profile of risk factors indicates three quarters of HFSCs were delivered in homes where there were one or more risk factors (low income; over 65; child under 5; special needs), only 37% of HFSC recipients 2014/15 were recorded as low income. Further, there is negligible data on Community Services Card holders. There is an underlying tension between the HFSC as a service available to all, versus a limited resource targeted at greatest need. This tension is present in the programme Theory of Change (see Appendix A) which outlines the HFSC goal to reduce fire incidence for all New Zealanders and particularly at-risk groups.

Limitations in the SMS data mean it is very difficult to assess the success of promotional activity or local/ regional initiatives (e.g. the 2014 'Safer Houses' initiative in Rotorua) in HFSC uptake. In order to determine any effect of major promotions, accurate data on promotional activity, as well as other events that could contribute to HFSC demand (e.g. higher than normal incidence of fire deaths) needs to be captured.

Only 4% of HFSC are recorded as delivered in rural fire areas over 2014/15, which raises questions for rural coverage and access.

3.2. Programme delivery

There is wide variation in the way HFSCs are managed and delivered. This includes the extent to which HFSCs are recorded as complete. Nationally, only 41% of HFSC were recorded as complete over 2014/15 and completion rates vary significantly for each case site (ranging from 34%-80%). The number of fire safety messages delivered in HFSCs (both complete and incomplete) also varies widely. In effect, this means NZFS cannot be sure of the extent to which HFSCs appropriately cover fire safety messages. It also indicates inconsistencies in HFSC management at a station level. A further example of variation is HFSC delivery by Volunteer Brigades and the constraints on Volunteer Brigades' HFSC delivery (daytime delivery windows, ordering HFSC kits). Finally, there is wide variation in smoke alarm outputs between the case study sites.

Fire officers find HFSC resource intensive at a time when they are experiencing rising demands across their jobs. Suggestions for alternative delivery mechanisms (e.g. hiring HFSC delivery staff; not using fire crews necessitating four officers and a fire truck) were also mentioned by all stakeholders. It is clear some fire officers feel more able to deliver fire safety messages and education to the public. The reasons behind this need to better understood by the NZFS in order to make improvements.

3.3. Information systems and performance measurement

The current data collection system is not adequate to effectively assess HFSC performance in reaching and impacting at-risk groups' fire safety behaviour. Furthermore, doubts over the integrity of SMS data on HFSC have a negative effect on delivery (reducing fire officers' buy-in to the service). The mismatch between the HFSC Checklist and SMS data entry is imposing unnecessary burden on programme staff and data accuracy. Rationalising SMS reporting requirements (e.g. asking whether all the data requested is needed and clarifying what HFSC monitoring should seek to measure) would improve monitoring efficiency and effectiveness. For example, SMS holds data on fire related incidence where smoke alarms were successfully activated (and were installed but failed to activate). These statistics, along with statistics on incidence of structural fire incidence and harm, are a potential source of year on year comparison of HFSC addresses against regional fire incidence. Qualifiers (e.g. mobile populations) would need to be fully explored.

There are a number of unknowns in the SMS, including the failure rate of smoke alarms installed as part of a HFSC and the percentage of homes insufficiently protected by a single HFSC alarm.

3.4. Impact on fire safety knowledge and behaviour

Overall, surveyed HFSC clients strongly agree the HFSC had a positive effect on their fire safety knowledge and behaviour. The survey sample was small however, and the impact of the HFSC on actual reduced fire incidence and harm is not known. Re-considering the system for monitoring HFSC performance (see above) would shed light on its impact on fire safety outcomes over time.

The mixed views of NZFS staff on the impact of HFSCs indicates an underlying issue of mixed capability within NZFS to effectively deliver fire safety messages to people in their homes. Following Fire Fighter entry training on HFSCs, crew learn how to conduct HFSCs on the job. The approach they learn is therefore highly likely to depend on pockets of local practice. Building capability with training (e.g. in social education and community engagement skills) is a significant challenge which also involves addressing organisational culture. The HFSC training DVD is no longer effective and needs to be re-thought.

3.5. Community engagement and partnerships

The HFSC is part of NZFS's community engagement and this engagement demonstrably increases HFSC reach to at-risk audiences. Community organisations also value the HFSC and their relationship with NZFS. Better communication of HFSC results is desired by some organisations.

Different partnering types emerged in the evaluation, with some partners referring HFSC clients, while others only promote HFSCs. Although key organisations are referring HFSCs clients, the extent to which this is consistent nationally or whether partnership gaps exist is not known. The evaluation found variation between case sites in the degree to which NZFS staff proactively seek engagement with new community organisations in order to increase HFSC uptake. In some existing relationships, there are also degrees of active engagement (keeping in touch regularly for example). Relationships appear to be driven by individuals rather than strategy.

In light of these conclusions, a number of draft recommendations for future HFSC programme design and delivery can be made:

- Clarify the target audience for HFSCs and, in particular, what 'at-risk' means for HFSC eligibility.
- Address regional inconsistencies in managing the HFSC process (scheduling, delivery and recording).
- Examine data on rural access to HFSCs and define meaningful rural targets and operation for equitable coverage. This includes clarifying expectations and capacity of Volunteer Brigades to deliver HFSCs.
- Complete plans to align the HFSC Checklist and SMS data entry as an immediate remedial step and consider how data entry via tablet can be utilised (within the ICTS on Mobility Strategy).
- Develop HFSC performance measures and data collection that meaningfully captures the difference HFSCs make for fire incidence and harm nationally and regionally.
- Review current training, learning on the job and mentoring arrangements for HFSC against a 'best practice' HFSC delivery model (e.g. tailored to context; identifying in-situ fire hazards; delivered appropriately to different audiences). This includes HFSC training for NZFS leaders.
- Rebrand and relaunch the HFSC as part of a joined up strategy with other initiatives (e.g. Firewise Programme; Community Fire Safety Days) aimed at reducing fire risk in communities. This would include communicating the findings of the present evaluation.
- Develop a national strategic plan for HFSC community partnerships that commits to proactive identification of potential partners and relationship management.

Appendix A – HFSC result model and evaluation criteria rubric

A **results model** for the HFSC programme was developed in Phase 1 (Appendix B). The results model acts as the cornerstone of an integrated results-focused approach which identifies programme goals; definitions of success; relevant measures and indicators; and reporting requirements. The model was developed collaboratively in a workshop with key HFSC stakeholders and was further informed by a document review, PESTLE analysis[25] and key informant interviews. The results-focused model explicitly sets out the inputs, outputs and outcomes for the HFSC programme. The results model is underpinned by theories of change and action[26] within the HFSC programme (see textbox overleaf).

An **evaluation criteria rubric** was developed to assess the relevance, efficiency, effectiveness, impact and sustainability of the HFSC programme. The merit criteria form the basis for clear evaluation judgements and conclusions. A four point rating scale (High; Good; Fair and Poor) was used to assess progress (colour coded in the figure over the page.

HFSC Theory of Change

The HFSC seeks to reduce fire incidence for all New Zealanders, and particularly at-risk groups, by directly engaging householders with fire safety in their own homes. The HFSC programme is delivered by career and volunteer fire brigades. The programme intent is to: conduct home fire safety checks and to install smoke alarm(s); raise awareness of home fire safety good practice; and to protect homes and occupants. This is intended to lead to: equitable distribution of service delivery based on risk; enhanced community resilience; improved fire-safety behaviours; and to ensure reliable information is collected, monitored, and reported. Further, it is intended that HFSC programme will align to broader strategic NZFS outcomes, including, improvement in community fire outcomes; enhanced community security; increased integration of urban and rural services; and promotion of internal stakeholder partnerships.

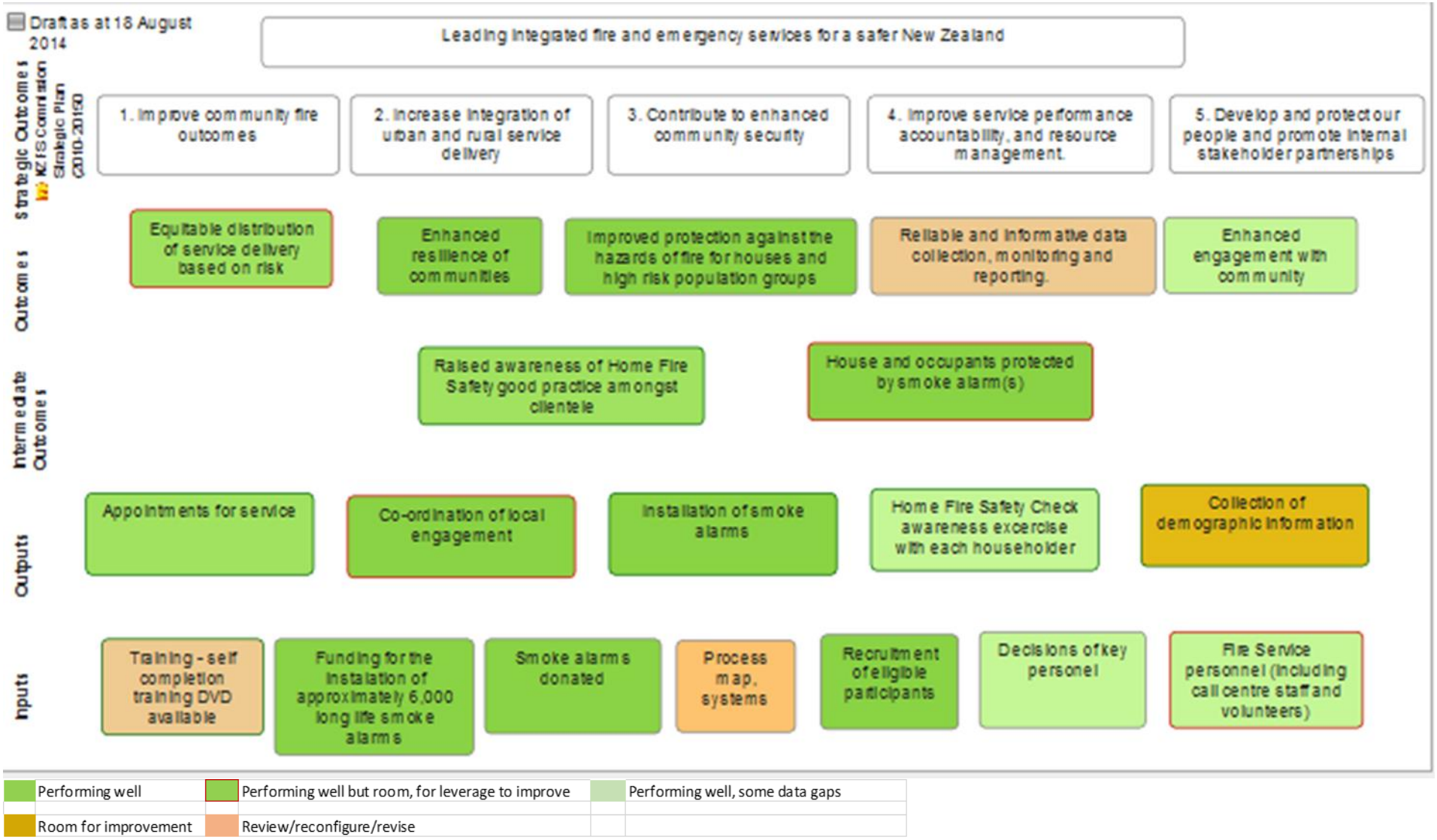
HFSC Theory of Action

The theory of action underpinning the HFSC programme is based on the collaborative effort between career and volunteer fire service staff. This rests on programme training which consists of self-completion of a training DVD. There is no mandate for training completion and not all staff undergo relevant training. Approximately 6,000 long life smoke alarms are funded and a number of additional smoke alarms are also donated annually. Individuals interested in receiving a HFSC can contact the NZ Fire Service through phoning a 0800 number or by contacting relevant fire station stations directly. Appointments for a home fire safety check are then delivered by careers crews or volunteers.

[25] A PESTLE analysis is a Political, Economic, Social, Technological, Legal and Environmental context analysis tool for understanding the external factors that influence service delivery.

[26] Based on Funnell and Rogers (2011), a Theory of Change identifies the central processes or drivers by which changes come about for individuals, groups or communities as a result of the programme. It can be derived from a research-based theory of change or drawn from other sources. A Theory of Action sets out the ways in which programmes or interventions are constructed to activate these theories of change. (Funnell, C.S., & Rogers, J. P. (2011). *Purposeful Program Theory: Effective use of theories of change and logic models.* Jossey-Bass: United States)

Home Fire Safety Checks Results Model showing progress towards outcomes (Phase 1 report)



Appendix B- Data collection methods and tools

Survey

The following tables set out how the selected respondents for the 2014-15 group were identified from the SMS data set. This includes an articulation of the filters applied to the dataset to return only the desired respondent group.

Table 1: 2014/15 respondent group survey numbers

Survey stats	
Total number Selected (including incorrect and duplicates)	266 (2014-15 Data – Filters: (StatName = 'Hamilton', 'Whanganui, 'Rotorua'), (Consented for research = '1' (or True))
Number of respondents incorrectly selected for survey (had not had a completed HFSC)	42 (2014-15 Data – Filters: (StatName = 'Hamilton', 'Whanganui, 'Rotorua'), (Consented for research = '1' (or True), (HFSC completed = '**0**' (or **False**))
Total letters sent out	261 (Initial 266 included 5 Duplicate records that were removed)
Total respondents mailed to	260 (One duplicate slipped through the system. Ie 1 person got the letter twice.)
Total number that should have been selected	224 ((2014-15 Data – Filters: (StatName = 'Hamilton', 'Whanganui, 'Rotorua'), (Consented for research = '1' (or True), (HFSC completed = '**1**' (or **True**))
Total number of eligible respondents ie. Less duplicates	224 – 6 (duplicates) = **218**

The survey was mistakenly sent to 42 respondents who should not have received the invitation (Their HFSC was delivered by a case site and they consented for research but the HFSC was marked incomplete). Of this group 8 had their letter returned to us an undeliverable leaving a group of 34 who received the invitation in error. The original solution to this was to check survey respondents against the SMS data to identify any ineligible responses. However given the low response rate for this group of 8% and the knowledge that a large proportion of HFSCs marked incomplete had actually received fire safety messages. Any ineligible respondents who may have returned a survey response was included as a legitimate response in the findings.

Table 2: Undeliverable letters

Undeliverable letters	
Number of bounced letters	18 (letters returned to the Fire Service)

Undeliverable letters	
Bounces due to Address being read by excel as a date	15 (When the mail merge took place Excel printed the date as its date object instead of the address ie instead of 12/9 it printed 42259).
Bounces due to incorrect address in SMS	3 – No further action to be taken. Can't get correct address.
Number of those who also received were actually eligible to respond	7 – (8 were incorrectly mailed letters)
Number of letters re-sent with correct addresses	7 – (Rectified the address error and re delivered to the Fire Service for mail out 4/8/2015)

Table 2 shows the process by which we handled undeliverable letters. Of the 18 Letters returned to the fire service 7 were re sent a week later with the correct address.

Table 3 shows the methods by which the respondents from phase one to be surveyed again were identified. To do this Evaluation Consult used a pre-existing data set of the names, addresses and phone numbers from phase 1.

Table 3: 2013/14 respondent group survey numbers

Survey stats	
Total number Selected (including incorrect and duplicates)	34 ('respondents from last year' Data – Filters: None)
Number of respondents incorrectly selected for survey (were from Tokoroa)	9 ('respondents from last year' Data – Filters: Address3 = 'Tokoroa')
Total letters sent out	34
Total respondents mailed to	34
Total number that should have been selected	25 ('respondents from last year' Data – Filters: Address3 = 'Rotorua' & ' Whanganui')
Total number of eligible respondents	25

9 of last year's respondents from Tokoroa were incorrectly mailed a letter to participate. (Tokoroa was not a case site for phase 2 of the HFSC evaluation). This group was included in the findings as the response rate was low and they were still able to comment on the sustainability of the HFSC.

Interview questions

Stakeholder: Fire Service personnel and Partner community organisations
Name
Role and organisation
Interview Date

Question	Response
What is your current role? Please describe	
Please tell us a little about what HFSC promotion and delivery looks like in your area?	
In your view, what difference are the Home Fire Safety Checks making for: • Householders' awareness of fire safety and risks • Householders' behaviour change to make their home safer *Probe: do you have any examples?*	
In your view, to what extent does the Fire Service reach 'at-risk' households in your area? *Probe: recruitment processes and prioritisation of activities to deliver*	
What should the NZFS do more of to reach at-risk households? *Probe: identifying and delivering most effectively/ appropriately*	
To what extent do you think the partnership between the Fire Service and local community organisation/s works well? What works less well? *Probe: communications, relationships, expectations, understanding of roles and responsibilities*	
Review results model for feedback *Probe: does this look like your understanding of the programme?*	
What would you do to improve the Home Fire Safety Check programme? *Probe: Reach, delivery method, training, effectiveness in raising awareness and changing behaviour, community engagement, materials*	
Thinking about an ongoing information system to monitor programme effectiveness, what outcomes and data collection would you prioritise?	
Do you have any other comments on the Home Fire Safety Check program	

Survey questions

Survey questionnaire

The NZ Fire Service wants to find out how well it is delivering the Home Fire Safety Check Service. The NZ Fire Service has commissioned Evaluation Consult, an independent research company to carry out this research.

- This survey asks questions about your experience of the Home Fire Safety Check
- Survey information will be confidential and will only be used for the NZ Fire Service Home Safety Check Programme research.
- The survey will take about 10 minutes to complete
- There are no right or wrong answers, and all responses will remain anonymous.

Thank you for your contribution

Grouping questions

Q. Have you responded to a survey on the Home Fire Safety Check Previously?

□ Yes

□ No

Q. Was your Home Fire Safety Check conducted after July 1st 2014?

□ Yes

□ No

Please tell us about your Home Fire Safety Check

Q. How did you hear about the Home Fire Safety Check?

□ Mail out

□ Friend/Family

□ Community Organisation

□ Fire Service Crew

□ Other

If you ticked 'Other' please tell us how

Q. When did your Home Fire Safety Check take place?

□ 1 – 2 months ago

□ 4 – 6 months ago

□ 7 – 9 months ago

□ 9 – 12 months ago

□ 12+ months ago

Q. To what extent do you agree or disagree with the following statements:

Statement	Rating scale
Delivery of Home Fire Safety Check	□ Strongly disagree □ Somewhat disagree □ Somewhat agree □ Strongly agree
The process of getting a HFSC was easy and clear	
The HFSC crew gave clear advice on how to prevent fires (e.g. cooking safely, use of matches/lighters)	
The HFSC crew gave clear advice on what to do in a fire	
The HFSC crew gave clear advice on home escape plans	
The HFSC crew gave clear advice on why it is important to have working smoke alarms	
Impact of the Home Fire Safety Check Because of the HFSC:	
I have a working smoke alarm in my home	
I am more aware of fire safety and risks in my home	
I understand the benefit of having a fire escape plan for people in my home	
I have talked to others (e.g. friend/ family members) about the HFSC	
We have a fire escape plan in our home	
If agree/strongly agree: People in my home know the fire escape plan	
I check my smoke alarm is working every six months (e.g. at changing of the clocks)	
I have made changes to make our home safer from fire (please tick all that apply)	□ Turned appliances off at the wall □ Made sure we have the right number of smoke alarms in the right positions □ Made sure exit doors are kept clear

	□ Cleaned heat pumps/ other heating appliance □ Stopped overloading power sockets □ Bought a fire extinguisher □ Kept matches and lighters away from children

Improving the Home Fire Safety Check

Q. From which sources have you or your family seen/or heard any other fire safety messages? Please tick all that apply:

□ TV ads
□ Radio ads
□ School visits
□ Fire Service community engagement event
□ Fire safety presentation
□ Local community media (i.e. Newspapers)
□ Word of mouth
□ Promotional material
□ Other (please specify)
□ TV ads

Q. What would help you to remember the fire safety messages delivered in the Home Fire Safety Check?

Q. What would help you to make changes to make your home safer from fire?

Finally, please tell us a little about yourself

Q. Are you male or female?

□ Female

□ Male

□ Gender diverse

Q. What is your age?

- □ 18 to 24
- □ 25 to 44
- □ 45 to 64
- □ 65+

Q. Which ethnic group do mainly identify with?

- □ Māori
- □ Pacific Islander
- □ European
- □ Asian
- □ Other (please specify)

Q. How many people currently live in your household?

- □ 1 - 2
- □ 3 - 5
- □ 6 - 8
- □ 9+

Q. How many household members are children?

- □ 1 - 2
- □ 3 - 6
- □ 7+

Q. Which case study area best fits your location?

- □ Hamilton
- □ Rotorua
- □ Tokoroa

□ Whanganui

Q. In case you qualify for a prize. Please enter the following details

Name:

Address:

Address 2:

City/Town:

ZIP/Postal Code:

Appendix C- Beneficiary profile graphs