

Reaching those ‘Out-of-Reach’: An Explorative Case-Study of Fire Prevention in Vulnerable Urban Communities within Copenhagen

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Lund 2020

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Number of pages: 44

Illustrations: 6

Keywords

Fire Prevention, Reception of Fire Rescue Services, Risk Communication, Fire Governance, Urban Vulnerable Communities, Community Risk Reduction

Abstract

Considering the nature of vulnerability to fires and at-risk groups, the issue is arguably a social problem where spatial analysis has allowed for a greater context, beyond the individual, to be analyzed. Furthermore, reports from fire rescue services of local safety concerns and the convergence of interest between different stakeholders has made communities disposition to fire safety increasingly relevant. Resulting in further recognition of for instance Community Risk Reduction (CRR). As such, the intention of this thesis was to examine relevant concerns and considerations for fire prevention as well as fire response in two urban vulnerable communities; Nørrebro and Tingbjerg-Husum, in Copenhagen. The main data collection is drawn from interviews with employees of the Greater Copenhagen Fire Department, and a few affiliates, which subsequently were thematically analyzed. A literature study was also conducted with the intention of examining the viability of incorporating risk and safety engineering principles into fire rescue services prevention strategies. Findings from the study highlight the relevance of cross-sector collaboration, trust management and community based participation for preventing fires alongside with the challenges of reaching at-risk groups as well as managing issues of safety and recognition in the studied communities. Informants tell also how conflicts perceivably occur less often and the rescue services are largely appreciated in these areas. The literature study provided tangible considerations for navigating efforts, though it overall suggested a significant need for more research into the particulars of managing vulnerability in urban communities.

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Avdelningen för Riskhantering och samhällssäkerhet, Lunds tekniska högskola, Lunds universitet, Lund 2020.

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Acknowledgements

First and foremost I'd like to acknowledge the invaluable guidance and expertise provided by my mentors; Marcus Abrahamsson in the *Division of Risk Management and Societal Safety* at Lunds Tekniska Högskola and Fredrik Ryber & Cecilie Lillelund at the Greater Copenhagen Fire Department (GCFD). I'm very appreciative for the trust, encouragement and knowledge provided throughout the process, especially considering the more difficult and uncertain circumstances of an ongoing pandemic. A particular token of appreciation to Marcus for the gracious support from the very first conception of an idea until reaching the final results, as well as to Fredrik and Cecilie for their transparency and willingness which made this thesis possible.

A word of appreciation also for the help and support from Henrik Hassel in the *Division of Risk Management and Societal Safety* at Lunds Tekniska Högskola, who facilitated the initial contact with the GCFD and examined this thesis.

This thesis neither would have been possible without the active participation of the eleven informants who willingly provided their time, energy and effort to the study. Furthermore, to the student at Lund University which assisted in the translation process.

Lastly, I'd like to express my gratitude to Dr Richard Walls and Dr Robyn Pharoah of Stellenbosch University who inspired me to address the issues of fire prevention and response in vulnerable communities.

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List of Abbreviations

CRR	Community Risk Reduction
DEMA	Danish Emergency Management Agency
FRS	Fire Rescue Services
GCFD	Greater Copenhagen Fire Department, a.k.a. Hovedstadens Beredskab (HBR)
HFSC(s)	Home-Fire-and-Safety-Check(s)
NDA	Non-Disclosure Agreement
NFPA	National Fire Protection Association
NRC	National Research Council
SSP(+)	School, Social Services and Police (Youth Division)
ToC	Theory of Change
UBK	‘Ungdomsbrandkorpset’, a.k.a. Project Fire-Cadets.
QDA	Qualitative Data Analysis

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1 Introduction

This chapter provides an brief overview of fire vulnerability and vulnerable urban communities. Also, the scope, purpose and objectives of the study, as well as the reports disposition, is presented.

1.1 Background

Fire safety science is a scholarly field stemming from interdisciplinary research that over the last century has evolved greatly in parallel with an increasingly complex and dynamic society, with research-needs arguably amplifying to meet the demands of emerging global societal challenges such as population growth, urbanization and socio-economic disparities (Jennings, 2013; McNamee et al., 2019). Parallel with the conducted research, domestic fire regulation developed significantly as well as an resurgence in analytical tools. However, as apparent in fire fatality statistics, the increased levels of obtained fire safety have not transferred in the same extent to vulnerable groups as to the general population (Nilson, 2019). This, among other things, has propelled different Fire Rescue Services (FRS) and civil safety agencies to evaluate their role in preventing fires. There has been a comprehensive overview of future research needs for the Swedish FRS (Frantzich et al., 2019), Norway is further evaluating methods of fire investigation and targeting of vulnerable groups (Gjøsund et al., 2016; NOU, 2012; Steen-Hansen et al., 2020) while in Denmark there is an advancement of citizen-centred fire prevention in order to reduce fire related fatalities (Beredskabsstyrelsen, 2016). Overall, a paradigm shift towards a more nuanced and evidence-informed anticipatory fire governance, as O'Grady (2018) puts it, is arguably observed in these Scandinavian countries. With the apparent intent to meet the demands of contemporary and future challenges, with particular emphasis on detailing preventive efforts to those most at risk.

Identifying at-risk groups, in terms of residential fires, has largely been made possible through statistically available data on fire frequencies, fatalities, injuries and FRS responses. Commonly referred-to risk factors being; old age, mental illness, physical disabilities, smoking and substance abuse (Gjøsund et al., 2016; Holborn et al., 2003; Jonsson et al., 2017; Leth et al., 1998; Runefors, 2020). Overall constituting residential fire risk as a social problem, as ratified by studies on socio-demographic parameters such as deprivation, solitary living and housing conditions (Jennings, 2013; Smith et al., 2008; Steen-Hansen et al., 2020). Spatial analysis has also contributed to the apprehension of so-called 'hot-spots' for fire incidents in terms of residential fires, deliberate fires and/or malicious alarms. Often positively related to the socio-economic vulnerability of the area (Chainey, 2013; Corcoran et al., 2011; Higgins et al., 2013). Furthermore, hot-spot areas have been raised as of converging interest for the police and the FRS, with fire brigades in Sweden, the U.K. and Denmark reporting at-times concerns of threat and hostility towards FRS personnel (Chainey, 2013; Guldåker & Hallin, 2013; HBR, 2016; LRD, 2005). As such, vulnerability is to be assessed in the context in which it is produced and the issue of fire prevention encompasses not only individual vulnerability but also the household and community context (Gjøsund et al., 2016; Halvorsen et al., 2017; Steen-Hansen et al., 2020).

One novel holistic approach that incorporates several levels of vulnerability is Community Risk Reduction (CRR), which involves programs, actions and services used by a community to further achieve FRS mandated functions. One key characteristic of CRR is enabling partnerships in communities, grounded in an initial community analysis, that inform pursued FRS mitigation strategies (Sawyer et al., 2016). Drawing on this, enabling partnerships between the FRS and other public as well as private stakeholders has recently been emphasised as a key asset to successful fire prevention among vulnerable groups in Norway (Gjøsund et al., 2016). As stakeholder partnerships may be essential to facilitate access on a broader scale to vulnerable residents and/or their homes before an fire occurs, which is a predeterminant of common interventions such as Home-Fire-and-Safety-Check's (HFSCs), risk communication measures and adaptations to a households living environment (Arch & Thurston, 2012; Halvorsen et al., 2017; Runefors, 2020). However, there is a scarce amount of analysis in terms of reaching vulnerable groups in an urban community context. Though HFSCs for instance have shown to reduce accidental residential fires and possibly cost-effectively so, see for instance Sund et al. (2019), there is a limited amount of reflection on the parameters involved. Even less-so in the context of vulnerable urban communities with a myriad of socio-economic challenges, which HFSC's as well as CRR programmes are most commonly targeted towards.

1.2 Aim and Research Questions

This thesis aims to particularly look at the context of vulnerable urban communities, considering their disadvantaged position in terms of fire safety. Commonly identified as ‘hot-spots’ for residential as well as malicious fires and more likely to consist of a considerable number of vulnerable groups (Chainey, 2013; Smith et al., 2008). Of particular interest are the implications this precarious urban setting provides for fire prevention and FRS ability to pursue different mitigation strategies. As mentioned earlier, reports from different FRS tell of safety concerns when operating in ‘hot-spot’ areas and this is scarcely investigated further in currently available published literature. Furthermore, available perspectives in risk and safety engineering are not commonly analysed in this setting though they could be intrinsically important in the adaptation of evidence-informed fire prevention strategies. With risk communication, risk governance, risk perception, community resilience, trust and Theory of Change (ToC) being particularly relevant when considering the pro-active, communicative and cooperative nature of tackling vulnerability as suggested by several recent studies in Norway, see for instance Steen-Hansen et al. (2020). To clarify, these concepts were chosen as fire prevention in the form of HFSC’s involves risk communication and therefore risk perceptions when rightfully considering the audiences role in this process. Furthermore, in a multi-stakeholder fire prevention strategy to induce change and manage risk this falls into the fields of risk governance and ToC. Lastly, dealing with safety issues, attitudes towards the FRS and managing relations in a community concerns both trust and community resilience.

As such, available research findings will be investigated in light of a particular local context though the issue is relevant for most fire rescue services operating in metropolitan areas. Findings from the study may suggest implications for FRS in other contexts as well. However, the context chosen consists of two urban vulnerable communities in Copenhagen, under the jurisdiction of the Greater Copenhagen Fire Department (GCFD). The two chosen urban areas; Nørrebro and Tingbjerg-Husum, are characterised by a myriad of socio-economic challenges and are categorised as ‘hot-spots’ by the GCFD (Borgerrepræsentationen, 2017; HBR, 2016; Transport- og Boligministeriet, 2019). Therefore, this study aims to identify concerns for the FRS in responding to and preventing fires in Nørrebro and Tingbjerg-Husum, as well as the viability of theoretically rooted strategies for fire prevention. More specifically, the study consists of a literature study and semi-structured interviews with personnel from the GCFD as well as a few affiliates.

Consequently, the study aims to answer the following research questions;

1. *Among GCFD employees, what is the experienced reception of FRS when operating in vulnerable urban communities such as Nørrebro and Tingbjerg-Husum? Furthermore, are there any particular challenges when responding to incidents in these areas?*
2. *What are the challenges and opportunities for enabling successful fire preventive work in vulnerable urban communities such as Nørrebro and Tingbjerg-Husum?*
3. *To what extent can findings from current research inform efforts to prevent fires and/or improve reception within vulnerable urban communities of Copenhagen?*

1.3 Delimitations

The study focuses solely on two specific residential areas in Copenhagen, which limits the applicability of the findings in this report to other areas of Copenhagen or completely different cities. Furthermore, the study is to an extent one-sided whereas GCFD employees present their opinions and thoughts without further calibration with local residents perspectives. Although one local resident affiliated with the GCFD is included in the interview sample. Beyond this, the challenges and opportunities for fire prevention identified stem mostly from interviewed personnel’s opinions. As such, different biases and blind-spots may reduce the possibility of uncovering certain challenges.

1.4 Thesis Outline

Following this introduction chapter, the thesis is divided into the following chapters:

Chapter 2 provides an overview of the case-study context.

Chapter 3 describes the utilised research design, as well as the methodological considerations and delimitations of the study.

Chapter 4 provides an outline of the theoretical framework and obtained results from the conducted literature study.

Chapter 5 presents the main findings from the qualitative data analysis, in relation to the research questions of the thesis.

Chapter 6 summarizes the findings of the study and presents a discussion of the obtained findings. Suggestions for future research are also presented.

Chapter 7 provides an concise description of the achieved outcomes and findings of the study.

2 Case Study Context

This chapter presents the GCFD organisation and its currently pursued strategies to mitigate fire risk. Additionally, the two chosen urban vulnerable communities; Nørrebro and Tingbjerg-Husum, are presented.

2.1 Greater Copenhagen Fire Department (GCFD)

The FRS mandated function in Denmark is determined by the legal act LBK nr 314 af 03/04/2017, i.e. the 'Emergency Preparedness Act' which corresponds in its purpose to the Civil Protection Act in Sweden (Beredskabsloven, 2017). The act states that the overbearing task for the emergency services in Denmark is to prevent, limit and mitigate damage towards people, property and the environment during accidents and catastrophes or in the event of imminent danger thereof (§1). The act constitutes also that two or more municipal councils can coordinate their emergency services to do this (§10). As such, in 2016 the GCFD was established by merging the former Copenhagen fire department with three other fire departments resulting in the joint coordination of 8 municipal councils emergency services in the Greater Copenhagen region. The organisation currently has 13 operative stations and deals with possible incidents ranging from major industrial accidents to more everyday occurrences such as residential fires. During the year of 2019 the GCFD responded to 8,301 incidents including nearly 3000 responses to fires (Beredskabsstyrelsen, 2020; HBR, 2020).

In the most recently published strategic plan for the GCFD, the *RBD 2017+*, the organisation emphasises that their foremost task is to prevent incidents before they occur (HBR, 2016). The report elaborates that in order to facilitate resources effectively for local fire prevention, the organisation aims to strengthen relations between local fire-and-rescue stations and the citizens it intends to protect. As such, the employed strategy entails increasing safety by an increased local presence of the FRS through awareness and intervention campaigns within residential areas. More specifically this includes for instance door-to-door campaigns to provide or assist installing smoke detectors, communal events, offering courses in first-aid, visiting neighbourhoods after a residential fire and social media campaigns. The GCFD refers to these preventive strategies as inspired by the observed potential of a more deliberate CRR approach that utilises local resources and partnerships to increase levels of safety and prevent fires (HBR, 2016; Sawyer et al., 2016). The approach stems also from the national strategy as employed by the Danish Emergency Management Agency (DEMA), alongside with an urge to reduce fire fatality in Denmark by stratifying efforts towards vulnerable groups such as the elderly and the socially disadvantaged (Beredskabsstyrelsen, 2016).

GCFD states also their intention to pursue projects and collaborative efforts that can reduce incidents of threat or violence towards operative personnel, as well as vandalism and arson (HBR, 2016). Ongoing efforts includes strengthening partnerships with other agencies such as the SSP/SSP+ (Schools, Societal Services and Police), that partially facilitates the cooperation with the police, schools and social services. As well as continuously developing the volunteer youth program 'Ungdomsbrandkorpset', a.k.a. Project Fire-Cadets. The latter aims to build mutual understanding and relations between FRS employees and youth in vulnerable communities with a fire-cadet program at the GCFD (Hansen & Sohn, 2012; HBR, 2016). The Fire-Cadet program entails three phases, with first a general education and training phase, followed by being assigned a mentor from the GCFD and lastly having cadets join the FRS youth unit, i.e. 'Ungdomsbrandkorpset' (Hansen & Sohn, 2012). Members of this unit may subsequently proceed with a part-time employment within GCFD and be a participator of future preventive campaigns (HBR, 2016).

2.2 *Vulnerable Urban Areas in Copenhagen*

The current political framework for vulnerability in Copenhagen is outlined in the framework *Politik for Udsatte Byområder*, i.e. ‘Policy for Vulnerable Urban Areas’. First established in 2011 and superseded in 2017, it is the first integrated policy in Copenhagen to reduce vulnerability through collaboration between all local mayors in regards to social services, urban planning, healthcare, youth, culture and integration. Within the policy, six vulnerable urban areas of Copenhagen are identified, including Tingbjerg-Husum and Nørrebro as represented in Figure 1, through an assessment of the following five indicative criteria constituting social and spatial vulnerability (Københavns Kommune, 2017);

- Number of residents not in the job market;
- Number of residents without education;
- Number of residents with low income;
- Number of residents with non-western heritage; and
- living area per resident.

As such, the policy outlines characteristics in which vulnerable areas may substantially differentiate from other areas of the city resulting in a significant agglomeration of vulnerable groups. The implications of this for fire prevention has been previously described but in conclusion an higher fire risk is expected due to the social disposition, though not considering heritage, see for instance Jennings (2013). Furthermore, one particular consideration is that these vulnerable areas characteristically have twice as many children with native language difficulties when starting pre-school compared to other parts of Greater Copenhagen (Københavns Kommune, 2017). Indicating that native language comprehension may differ from other residential areas on a community level, providing implications for risk communication (Lindell & Perry, 2004).

Beyond the aforementioned policy, local government policy also uniquely distinguishes ‘Mjølnerparken’ in Nørrebro and Tingbjerg-Husum as areas with particularly concerning levels of segregation and deprivation (Transport- og Boligministeriet, 2019). Both areas, as mentioned before, are associated with a broad range of social and urban planning challenges as well as being emerging hot-spots for fires and malicious alarms (HBR, 2016; Københavns Kommune, 2017). Additionally, Nørrebro in particular has a history of noteworthy events of conflict and demonstrations, for instance during the resignation of ‘Youth House’ in 2007, as well as being associated with a fragile relationship to municipal authorities (Karpanstchof & Lindblom, 2009). Such events of civil unrest are likely correlated to local peaks of fires in street containers and bonfires in the street, as presented in ‘Appendix A – Fires & Civil Unrest’, which the FRS has to attend to under precarious circumstances. Whether such events should be referred to as anomalies or rather indictive of an ingrained distrust towards municipal authorities such as the police and/or the FRS is further investigated herein this thesis.

Overall, Nørrebro is a city district that in public media is commonly referred to as one of the most ethnically diverse districts in Denmark and has a strong historic affiliation with members of activist groups such as ‘the autonomous’ (Illeborg, 2007; Karpanstchof & Lindblom, 2009). The current goals from the municipal government for the area is to create a unified community, enable strong primary education, increase safety throughout the area and provide equal opportunities for employment (Københavns Kommune, 2012). In a ‘safety plan’ from 2019, which correlates closely to the development plan from 2015, similar goals for Tingbjerg-Husum are presented. With the additional emphasis to also minimize the effects of its geographical isolation from the city and facilitate further cooperation between the neighbouring areas (Københavns Kommune, 2019; Københavns Kommune et al., 2015). Safety and criminality is an apparent issue of concern for both residential areas, with at times implemented visitation-zones by the police, where police routinely perform searches of individuals leaving and entering the area. In 2020 visitation-zones covering Husum and Nørrebro where implemented at least from the 8th of April until the 29th of May (Københavns Politi, 2020a, 2020b).

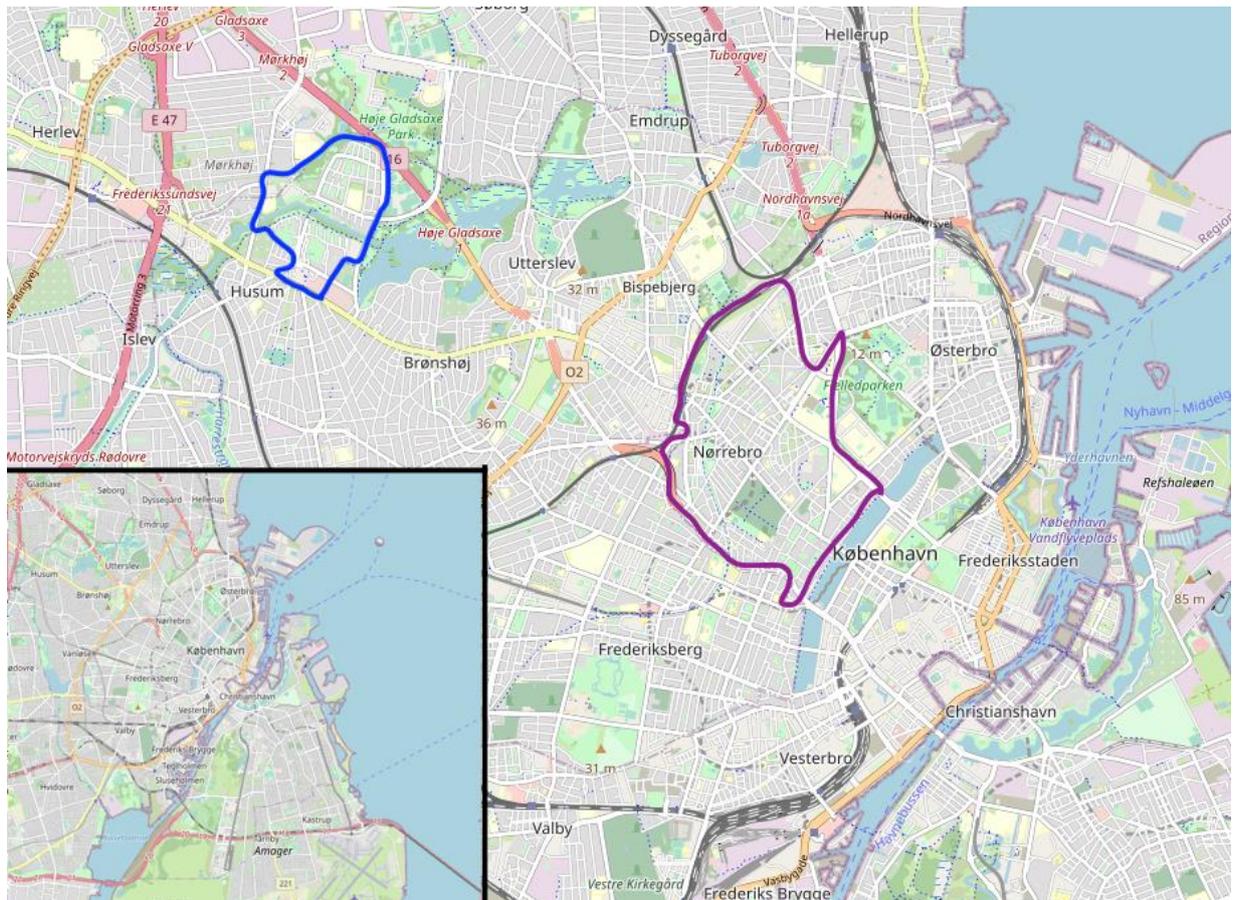


Figure 1: Map of the Tingbjerg-Husum and Nørrebro district in relation to the city of Copenhagen. The blue and purple line represents the borders of the Tingbjerg-Husum respectively Nørrebro area. Pictures are derived from the open-source mapping tool OpenStreetMap.

3 Methodology

This chapter presents the research methodology for the study including research design, data collection, analysis and methodological limitations.

3.1 Research Design

The study is designed as an explorative case-study, as the study aims to generate new hypotheses from a particular context with the help of pre-determined research questions. In contrast, a more descriptive and confirmatory study would have been guided by specific hypotheses the researcher aims to examine. The research process included data collection from semi-structured interviews as well as a literature study. The use of interviews in the study constituted an ontological position whereas the experiences, knowledge and perceptions of the informants are regarded as meaningful properties of the social reality the research questions aims to explore (Mason, 2002). Furthermore, a semi-structured format was selected as, in contrast, an open-ended format may have prohibited reliable results in relation to the research questions while a structured interview could have prohibited novel input.

A schematic figure of the research process is provided below in Figure 2.

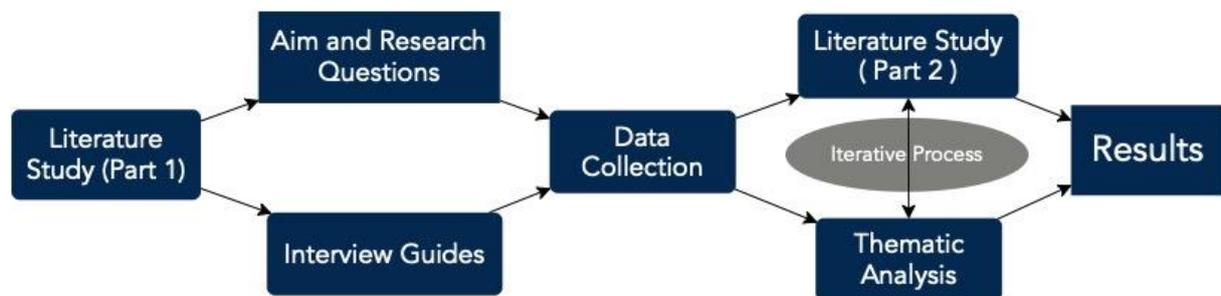


Figure 2: Research process.

3.2 Literature Study

The literature study consisted primarily of an iterative review of current literature on the subjects of risk communication, risk governance, risk perception, community resilience, cooperative risk management, trust and ToC, due to their perceived applicability in relation to the research questions as presented in chapter 1. Prior to this, an initial literature study was conducted, see Figure 2, which included an review of residential fire risk, fire governance, vulnerability and anti-social behavior in urban communities. An excerpt of the identified literature, including utilized keywords, are presented in ‘Appendix H – Literature Study’.

The literature has been identified mainly using the platform ScienceDirect using the granted accessibility for students at Lund University. Keywords and concepts related to the research topic were utilized to identify applicable literature within all fields available in the database and thereafter stratified to solely search within journals such as the ‘Fire Safety Journal’, ‘Journal of Safety Research’ and ‘Journal of Safety Science and Resilience’. When conducting these searches Boolean operators such as “AND”, “OR”, “NOT” and “AND NOT” were used to combine or exclude keywords. The same approach to identifying literature was employed for the Lund University library catalogue; LUBcat. In addition to the literature independently identified by the researcher, articles and books within the *M.Sc. in Risk Management and Safety Engineering* curriculum were reviewed alongside with literature provided by external mentors.

During the review process if a piece of literature contained information deemed applicable, or possibly raised new queries for investigation, this often led the researcher to either search for other works of the same author or new keywords. Furthermore, new literature was commonly identified through the references used by an author. If these works were published, peer-reviewed and accessible to the researcher they were then reviewed by the researcher. Ultimately the excerpted literature content was further stratified around relevant topics in the Qualitative Data Analysis (QDA) software ‘NVivo’ (release 1.3).

3.3 Data Collection

In order to conceptualize informants perceptions in regards to the research questions, semi-structured interviews were conducted with eleven people over the course of two months. The sampling of the informants, the interview process and the chosen method for analysis is presented below.

3.3.1 Sampling

The goal of the sampling, as in most studies that rely exclusively on interviews, is not primarily to produce a fully representative sample but setting a range in the sample that covers essential variations among informants, in order to enable theoretically and empirically grounded arguments about studied qualities (Mann, 2016; Mason, 2002). More specifically, this meant including a broad range of different personnel within GCFD but also adding stakeholders not employed by the GCFD though affiliated with the organization. A complete list of the informants that were invited and proceeded to participate in the study is outlined below in Table 1 and one way to describe the sampling conducted is by referring to the four aspects of sampling as presented by Robinson (2014)

- defining the sample;
- deciding upon a sample size;
- selecting a sampling strategy; and
- sample sourcing.

Firstly, the sample was determined to broadly include personnel or other affiliated members that have previously or currently been involved in fire preventive or operative efforts in vulnerable communities. Thereby the sample did not exclude informants based on their vocational roles and the sample could include partners not employed by the GCFD yet involved in their efforts. Secondly, the sample size was predominantly determined with considerations of the boundaries in time and resources available for the study. Thirdly, the sampling strategy employed was a convenience-stratification strategy (Robinson, 2014) where a discussion was held between the researcher and the external mentors at GCFD regarding the scope of the study, resulting in an identification of prospective informants by the external mentors. Thus, the sampling sourcing was primarily rooted in the external mentors identifying informants within their ‘arena’.

Informant Number	GCFD Employee [Y/N]	Description
1	Y	Fireman
2	Y	Fire Station Manager
3	Y	Prevention-specialist and part of the Volunteer Unit
4	Y	Fire Safety Inspector
5	Y	Fire Safety Inspector
6	Y	Chief of Operations and Incident Commander
7	Y	Chief of Civil Sectors Preparedness
8	Y	Chief of Educational Department
9	Y	Project Coordinator of UBK
10	N	Nørrebro Resident (participated in HFSC campaign)
11	N	SSP+ Consultant

Table 1: List of informants. Description of titles are translated from Danish, which are presented in its original format in ‘Appendix B – Translations’.

3.3.2 Interview Process

Twelve prospective informants were contacted early June, 2020, with an invitation to participate in the study. The invitation letter is presented in ‘Appendix C – Invitation Letter to Informants’. Nine of these successfully participated and after the initial sampling two additional informants were added, which are identified as number 8 and 10 in Table 1. Informant number 10 is a local resident in Nørrebro that after a fire in a neighbouring apartment contacted the GCFD which thereafter proceeded with a fire safety campaign to install smoke-detectors in the informants neighbourhood in February, 2019. The informant remained involved during the campaign as a representative for the housing association (Hovedstadens Beredskab, 2019). The possibility to contact the local resident was enabled by one of the informants in the original sample. Additionally, one more informant employed by the GCFD was added during the data collection stage after a follow-up meeting with the external mentors.

In the invitation letter, informants were given the opportunity to select a time-slot suitable for them and once a meeting had been scheduled the researcher provided informants with additional preparatory information as presented in ‘Appendix D – Additional Info to Informants’ (in Swedish). This included brief instructions and tips for the interview, such as being seated in a quiet and familiar environment as recommended by Mann (2016) and an overview of the topics intended to be discussed during the interview. The interviews were then virtually conducted through the video-chat software Microsoft Teams. The intent of having these sessions recorded for analytical purposes were brought up in the preparatory instructions for the interview and then verbally agreed upon before starting the interview.

The interview guide, found in ‘Appendix E – Interview Guides’ (in Swedish), was divided into the following five key segments

- **Segment 1:** Information about the informant;
- **Segment 2:** Activities and presence in vulnerable urban communities;
- **Segment 3:** Cooperation between stakeholders;
- **Segment 4:** Efforts to facilitate trust within vulnerable urban communities; and
- **Segment 5:** Additional comments.

As suggested by Mann (2016) the initial part of the interview functioned partly as an ‘icebreaker’, with questions that are less cognitively demanding or requiring much reflection. Thus, providing an opportunity for both the informant and the interviewer to ‘warm up’ (Mann, 2016). This information would also provide further clarification on the homogeneity vs heterogeneity of the defined sample group which could assist when distinguishing commonalities among informants (Robinson, 2014). The segments to follow the introduction, segments two to four, consisted of the central questions in relation to the research focus. Segment 5 aimed to conclude the interview on a less demanding note while providing the opportunity for participants to express themselves more freely. The same interview guide was consistently used for all interviews except with informant 10 where it was adapted to a non-employee. The altered version is also included in ‘Appendix E – Interview Guides’.

3.3.3 Transcription

The transcription template utilized is presented in ‘Appendix F – Transcription Template’ and the transcriptions were conducted using the play-back program ‘ExpressScribe’. To not limit the informants ability to express themselves (Mann, 2016), informants were provided the opportunity to respond in their own first-language; Danish. While the chosen language medium for the interviewer and consequently the transcripts were in Swedish. The translation of informants responses were conducted by the researcher with assistance of one external mentor who speaks both Danish and Swedish fluently. An additional quality assurance was enabled with the help of a university student previously enrolled in several Danish language and translation courses at Lund University. Before gaining temporary access to the interview content the student signed a Non-Disclosure Agreement (NDA).

3.3.4 *Analysis*

In order to process the collected data the researcher used the QDA software ‘NVivo’ (release 1.3). The program allowed the researcher to refer statements to a specific code whereas these codes could be assembled into categories, which in turn were assembled to represent emergent themes from the data. This approach has been categorised as a ‘traditional approach’ to qualitative analysis or alternatively as an applied thematic analysis approach with influence from grounded theory (Guest et al., 2014; Woolf & Silver, 2018). The intention of this analysis was to identify both implicit and explicit ideas within the data, i.e. themes. Considering the study as explorative, the codes and consequently themes were content-generated and therefore not decided upon before-hand. However, this process of splitting data into codes and ultimately themes were guided by findings from the literature study as well as inspiring to a closer look at certain concepts.

The two fundamental concepts explored in the analysis, derived from the research questions, were ‘FRS Reception’ and ‘Fire Prevention’. The meaning of the former was defined to entail perceptions of the fire brigade as experienced by the informants as well as the perceived implications of this in regards to their operative procedures. Meanwhile, the concept of ‘Fire Prevention’ referred to preventing residential fires as well as intentional fires and entails asserted processes, procedures, challenges and opportunities that govern the GCFD’s fire preventive work in vulnerable communities. The two concepts and constituent themes are not independent of each other but rather largely interconnected through direct and indirect implications.

3.3.5 *Delimitations*

Data saturation is an ideal target for qualitative research, which may inherently have to involve a iterative approach of combining sampling, data collection and data analysis until saturation. Arguably this is a challenging endeavor and the amount of interviews deemed ‘enough’ heavily depends on the context (Baker & Edwards, 2012). As commonly seen and as in this study, practical limitations defined the possible sample size by the expected amount of time available. As such, though the sampling was arguably successful in covering a range of informants, the study may have likely benefited from additional informants and extending the range of informants to include housing representatives, social workers and/or police officers. Additionally, only one resident was included in the sample which is clearly not representative for all residents but representative of one particularly invested individual.

Furthermore, considering the imposed travel restrictions due to the Covid-19 pandemic in 2020 the interviews were conducted virtually. Though this is not necessarily detrimental to the quality of the interviews, see for instance Mann (2016), technical glitches during the interviews inhibited the ‘flow’ of the session. Considering the reflexive process of mutually producing the interview content, the study may have benefited from the possibility to conduct these interviews non-virtually. Furthermore, due to the apparent differences between Swedish and Danish there was an element of mutually limited language comprehension. The consequences of this language barrier is difficult to reliably measure or portray in obtained results, though one tangibly experienced limitation is that the researcher was limited in providing informed follow-up questions during the interview. As such, the derived content primarily reflected answers to the pre-determined questions to the extent that they were mutually comprehended.

4 Literature Study

This chapter provides an overview of the concepts analyzed in the literature study which were consequently applied to analyze results from the data collection.

4.1 Framing Risk

A plethora of literature frames risk differently and though the term ‘risk’ can be viewed differently it commonly carries certain core elements. As such, risk is the absence of certainty (Sellnow et al., 2009) and can be addressed as “*a measure of the probability and consequence of uncertain future events*” (Yoe, 2019). Furthermore, risk is truly interdisciplinary if not transdisciplinary, with different technical, social, economic and psychological frameworks to address it (Aven & Renn, 2010). As some researchers propose, risk arguably defies simple concepts of causation due to uncertainty, complexity and ambiguity, with simple risks as a ‘special’ case where these qualities are low (van Asselt & Renn, 2011).

In this thesis, risk is primarily informed by technical, social and psychological perspectives. Fire risk is consequently viewed not as a ‘special’ case but carrying complex, uncertain and ambiguous elements. Lastly, when appraising risk, two selection rules should be considered; the underlying goal, as established by all actors and often legally prescribed, and the implications derived from the present state of knowledge (Aven & Renn, 2010). The latter is briefly covered in the background section herein this report, i.e. chapter 1.1, and the legally prescribed underlying goal is loosely established in 2.1 in the Emergency Preparedness Act.

4.2 Risk Communication

Risk communication has traditionally been viewed as a subset of technical communication and built on the predominant paradigm of persuading the general public to assert protective measures by communicating sound expert judgements. This historically rooted approach has over time been criticized for oversimplifying the process and there is now a long-lasting consensus of a more enriched perspective (Bourrier & Bieder, 2018; Lindell & Perry, 2004). As first proposed in National Research Council’s (NRC) influential work in 1989, one-way communication between experts and the public is preferably abandoned to be substituted by an open interactive process of exchanging information and opinions about risks. As such, contemporary risk communication research advocates rather for an iterative long-term process with input from both experts and intended audiences, establishing the public as an active participant in apprehending risk (Sellnow et al., 2009; van Asselt & Renn, 2011).

Aligned with this is the idea of ‘*convergence communication*’ where the communication process should push an organization and its audience to converge on common ground by identifying points of convergence to ground the multiple interacting arguments (Bourrier & Bieder, 2018; Sellnow et al., 2009). The intended benefits of an interactive two-way process is that participants can gain insight, reflect on apparent issues and ultimately provide well-informed recommendations or decisions while preserving the democratic dialogue and fostering mutual trust (Renn, 2008; Sellnow et al., 2009). The full potential of risk communication to serve the public is arguably not utilized without viewing the exchange as an dialogue rather than a monologue (Bourrier & Bieder, 2018). Drawing on this, new channels for risk communication such as social media have become important modes to provide an interactive platform where message providers and receivers can engage in this two-way communication process (OECD, 2016).

4.2.1 *Best Practices of Risk Communication*

In the book *Effective Risk Communication* (2009), nine best practices for risk communication are presented which may constitute a broad overview of relevant considerations when structuring a risk communication strategy. The best practices are not intended to be considered as separate approaches but rather to be complementary, though not realistically available in all circumstances. The nine practices are as follows

- **Infuse risk communication into policy decisions:** Grounding the organisations position for a risk issue whereas future decisions can remain consistent and reflect the overall interests of the organisation.
- **Treat risk communication as an process:** Avoiding the position of viewing communication as an product that once delivered will subsequently deliver the desired outcome. As such opening for dynamic, interactive and adaptive communication. Risk communication should furthermore consist of multiple messages and feedback can be an important adaptative element of the communication system.
- **Account for the uncertainty inherent in risk:** Especially when dealing with dynamic and ambiguous risks.
- **Design risk messages to be culturally sensitive:** By considering individual, community and cultural influences that influences perceptions, communicators can adapt strategies to various audiences. Drawing on the fact that there is no homogenous audience, though messages can be directed towards an universal audience. Engaging multiple communicators working with their particular groups, opening up for a multitude of approaches, can be effective, as well as tailoring communication according to the needs and expectation of targeted audiences (Renn, 2008). In this sense, the more that is known about the receiving audiences normative beliefs and values, the greater the chance is for risk communicators to reflect these in their messages. A culture-centred approach could also include involving underrepresented groups in the process of developing messages to their respective cultural groups i.e. particular audiences.
- **Acknowledge diverse levels of risk tolerance;** Considering also that human behaviour is primarily driven by perceptions and not facts (Renn, 2008). Discounting this may inhibit the possibilities for convergence.
- **Involve the public in dialogue about risk:** Enabling an open process where stakeholders may express their positions and create a valuable exchange of information.
- **Present risk messages with honesty:** Communicating risks in an accurate, honest and frank manner.
- **Meet risk perception needs by remaining open and accessible to the public:** Enabling two-way communication.
- **Collaborate and coordinate about risk with credible information sources:** Overcoming institutional and cultural barriers to mitigate mistrust. As such, not aiming for universal agreement but rather convergence around essential issues of the risk. An supplementary consideration is that interests among various stakeholders are diverse and evolves over time. (Bourrier & Bieder, 2018). Adjusting efforts to collect feedback and sense changes in values or attitudes over time may increase the probability of convergence.

4.3 Risk Perception

A constituent for effective risk communication, as referred to in several best practices, is addressing risk perception. For studies of risk perception, risk is viewed as a mental model and the responses to risk are correlated to individual risk constructs and images (Renn, 2008; W. Merkhofer, 1987: p.20). These risk constructs that individuals and groups carry may be referred to as ‘perceptions’ (Renn, 2008: p. 93). Risk perception may be understood through four contextual levels as depicted in Figure 3. Firstly, the risk perception of an individual can be fundamentally assessed by exploring how an individual translates received information and/or physical signals about an adverse event into judgements that dictates the chosen response (Jaeger et al., 2001; Renn, 2008: p. 93, pp. 99-105). This may be referred to as the heuristics of information processing as well as the cognitive-affective factors. Secondly, beyond the single agent, further considerations are the social-political institutions and cultural background (Brehmer & Sahlin, 1994; Renn, 2008: pp. 105-144). As such, mental models and cognitive mechanisms that enable individuals to process and judge risks are internalized through social as well as cultural learning with constant moderation by external factors such as peer influences or media reports (Renn, 2018).

Findings from risk perception provides numerous implications that may influence the risk communication process. Firstly, ability and motivation are two criteria that will govern whether a person’s attention will be gained and consequently initiate a series of information selection and processing mechanisms. These criteria are themselves further governed by factors such as time available to process, absence of distractions and reference to personal interests (Renn, 2008: p. 99). Furthermore cognitive biases influences decision making, as different cognitive mechanisms help an individual to draw inferences from absorbed information during processing (Renn, 2008: p. 103). The implications of cognitive heuristics are that seemingly irrational deviations from maximizing one’s utility may be the result of intervening contextual factors. As such, actors responses to risk may be characterized as rational when considering these contextual parameters (van Asselt & Renn, 2011). Values constitute, as well, an indirect role in the evaluation process of risk information where they serve as attention and selection filters, as well as for orientation in judging and guiding behavior (Renn, 2008: pp. 119-121). Lastly, interactions between different stakeholders, coexistence of information selection and social amplification of risks creates an multi-stage process that should be considered. Drawing on this, the credibility as well as the sincerity of risk information providers, and consequently trust between receiver and provider, are key factors to risk responses (Renn, 2008: pp. 123-124).

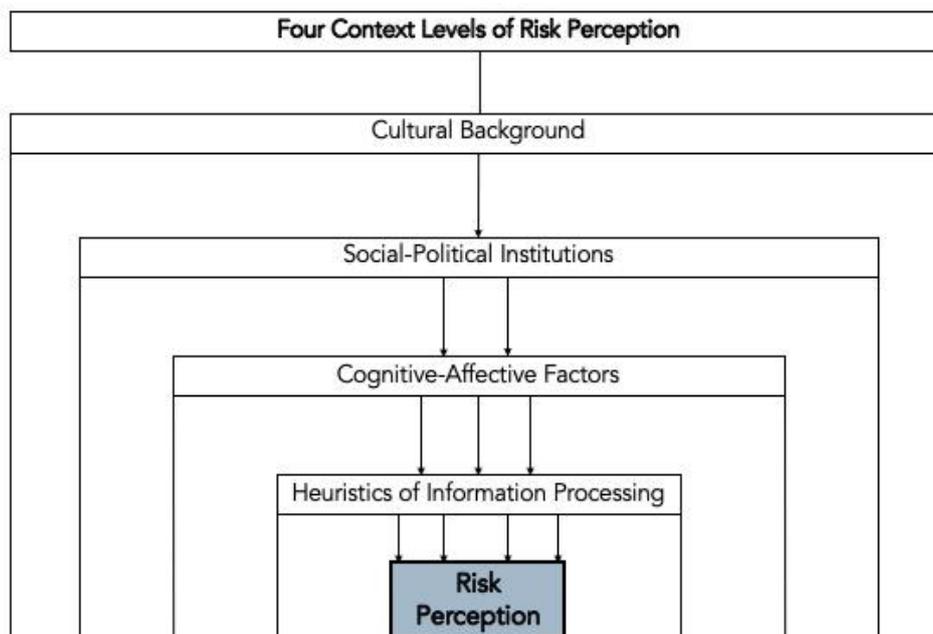


Figure 3: Integrative model of risk perception (Renn, 2008).

4.4 Trust, Confidence and Cooperative Risk Management

Trust is a major objective of risk communication as well as confidence and credibility. Regarding trust, it may be defined “*as the willingness, in expectation of beneficial outcomes, to make oneself vulnerable to another based on a judgement of similarity of intentions or values*” (Earle et al., 2007). One model emphasizes that, based on empirical and experimental studies, that essentially trust is based on shared values and that it can be indicated by measures of in-group membership, morality, integrity, inferred traits and intentions as well as fairness and caring (Earle et al., 2007). Confidence is instead denoted as “*the belief, based on experience or evidence, that certain future events will occur as expected*” (Earle et al., 2007) while credibility accounts for the communication aspect, whether the source partially or fully meets desired expectations of honesty, openness, flexibility and sincerity (Renn, 2008). Rather than indications for shared values, as in trust, confidence can be indicated by measures such as familiarity, evidence, contracts, experience, control, competence and rules/procedures (Earle et al., 2007).

The concepts of trust and confidence in this approach is beneficially differentiated. Some researchers advocate that confidence characterizes stable states, as the foundation for daily life, while trust can be a force of change; a transitory function between these states. In this sense, trust is essentially forward-looking while confidence is backwards-looking (Earle et al., 2007). Trust can also be differentiated as in-group trust and across-groups trust i.e. General Trust (GT). Empirical studies show that there is a negative relation between in-group trust and GT, as well as activated group identity as being strongly related to trust. An additional consideration in this regard is that empirical studies have evidently shown that one of the primary determinants of GT is life satisfaction as well as the positive effects connected to it (Earle et al., 2007).

Under conditions of lack in trust, confidence and/or credibility, active trust management is required (Renn, 2008). Normative measures that may provide orientation in this endeavour can be for instance developing a climate that enables the audience to identify with the personal communicators. However, as some experimental studies indicate, trust is not solely the way to cooperative risk management. Some situations signals confidence rather than trust. As such, information that has value implications (signalling trust) and performance implications (signalling confidence) both are ways to enable to cooperative risk management (Earle et al., 2007).

Trust, confidence or a combination of both can be essential to facilitate collaboration between agents as well as stakeholders. Trust and confidence can also be a key asset in risk management partially in terms of risk perceptions whereas effecting trust or confidence can in turn benefit risk perceptions and ultimately risk acceptance or rejection (Earle et al., 2007). The relative importance of trust versus confidence, overall, is dependent on the contextual factors but usually confidence is preferably sought after. As a final remark, community resilience researchers has also raised the value of social trust, i.e. in-group trust, as a way to underpin successful collaboration among individuals and between local institutions and local government (Multinational Resilience Policy Group, 2015). Though, as a clarifying remark, all in-group members are not expected to be trusted equally (Hogg, 2007).

4.4.1 Community Resilience and Legitimacy

Trust as seen by community resilience researchers is an crucial element to legitimacy; that community members perceive others action as appropriate, which is a primary concern for police-community relations and how police are perceived. Legitimacy in this sense is essential for the community’s ability to collectively work to address safety, while police perceptions of community legitimacy influences the ability to collaborate on local efforts as well (Soska & Ohmer, 2018). Lessons learnt from projects in other contexts on trust is that specifically targeting discussions with local community members on trust or social cohesion itself brought minor results. From one particular project, in Northern England, it was concluded that social trust resulted rather from joint activities which would address the specific local problems. In this sense dialogues involving community members may benefit from practical applicability. This particular project was initiated by providing emergency related information, opening up for volunteer participation and having local community leaders organize groups to meet and discuss on various issues such as gang concerns and specific emergency-related issues (Multinational Resilience Policy Group, 2015).

A community approach is endorsed by various social science researchers, where the community is perceived as having the potential to play an important role in the redistribution of natural and social resources (Aldrich, 2017). Commonly, researchers raise the importance of social capital which can be described as the networks that connects individuals to each other (Aldrich, 2017). One aspect to consider in the modern day, however, is that the traditional certainties of neighborhoods and community have generally diminished (Jensen, 2020). Arguably, this poses the question of incorporating social media and other virtual platforms to address ‘virtual communities’ and facilitate cooperation. Building community development in multicultural neighborhoods also necessitates identifying ways in which people of differing cultures and values can be brought together. Some researchers advocate in this scenario to identify the ‘right’ people in and around the neighborhoods to be developed as leaders, as well as creating a ‘good’ combination of different stakeholders, to address community needs (Itzhaky & Bustin, 2018).

4.5 Risk Governance

In the context of fire prevention there is a clear jurisdictional responsibility for the FRS to protect the public, yet as paid attention to in this thesis fire risk in the public sphere is not evenly distributed and as many other risks may necessitate cooperation between a range of stakeholders who have diverging interests and perceptions. Rather than resorting back to over-simplifying the issues as static and simple, elements of complexity, uncertainty and ambiguity should be acknowledged in a collective decision-making process (Gjøsund et al., 2016; van Asselt & Renn, 2011).

As such, governance, on a national level, refers to the structures and processes for collective decision-making among governmental and non-governmental actors. *Risk governance* translates the substance of these core principles of governance into the field of risk decision-making (Renn & Klinke, 2015). From a descriptive point of view, risk governance can be the critical study of complex networks dealing with risk. In a normative sense it can be an informative model for all societal actors for dealing responsibly with risk (van Asselt & Renn, 2011). Therefore, Asselt & Renn (2011) propose three primary principles which can guide actors when organizing structures and processes to govern risks:

- communication and inclusion;
- integration; and
- reflection.

Firstly, the principle of communication and inclusion endorses the two-way communication process as outlined in section 4.1. Furthermore, communication and trust is delicately intertwined. As such, in the context of risk governance, it refers to facilitating inclusive exchange between governmental authorities, experts, stakeholders and the general public. The aim being to provide a foundation for the responsible governing of risks. Benefits includes a meaningful exchange of information, facilitation of trust among various actors and involving people in decision-making as a catalyst for gaining ownership. The intention being not only to bring various people together but to have meaningful interactions (van Asselt & Renn, 2011). Involving the public can be pursued through participation programmes such as public hearings, conferences or advisory groups, which acknowledges the public's role in the process as well establishes the risk issue as part of the public discourse (Jönsson et al., 2016).

The second principle of integration, refers instead to the need of collecting and synthesising relevant knowledge as well as experience from various disciplines and sources. Including articulations of risk perceptions, values and uncertainty information. This emphasises the need to consider connections between various risk-related activities, in terms of both the available content and in the risk governance process (van Asselt & Renn, 2011). For example, utilising data available among the police and the fire department into an integrated assessment of high-risk areas as conducted in a pilot-project in England (Chainey, 2013). Lastly on the third principle of reflection, the authors points out that in order to ensure deliberate and informed decisions in the process, iterative reflection with a balancing of pros and cons should be implemented. This principle emphasises that certain aspects of the issue may require repeated consideration from all actors, to avoid refraining back to familiar frames that discounts elements of complexity, uncertainty or ambiguity (van Asselt & Renn, 2011).

4.6 *Theory of Change (ToC)*

The ToC discourse and approach is an essential asset to critically reflect over perceptions and assumptions incorporated into a pursued change process. The approach draws from an urge to better understand the complex societal processes that we intend to effect and has become a mainstream tool relevant for all organizations that pursue social impact. This arguably also includes aspects of the FRS work in the contemporary world as well. Fundamentally, the ToC approach aims to make imbedded assumptions, for the means of change, explicit (Valters, 2015). Assumptions representing assertions about the world we believe are true, which we at times fail to question (van Es et al., 2015). As such, it should include how change occurs in a given context and the role of the organizations involvement in which the organizations efforts contributes to this change (Valters, 2015). Change is an constant process and as such efforts should be synchronized with current streams in impulses and resources (Reeler, 2007).

Overall, researchers and practitioners advocate for organizations to implement a ToC process to develop effective impact programmes and strategies in their given context. This includes initiating an analysis of how change is pursued in the organisation and then ensure consistent evaluation as new information unfolds. Considering the dynamics of change and shifts in local context, some researchers implore practitioners to implement it as a process and thus avoid creating ‘static evidence documents’ that does not translate into programmes. A feedback-loop can assist in this endeavour, to facilitate learning into the process and furthermore involve local stakeholders and thus avoid a top-down approach that may exclude input from beneficiaries. Furthermore, at the onset of new endeavours, researchers argue that rather than viewing ToC’s as a roadmap to change, to instead apply it as an metaphorical compass that guides efforts while testing exerted hypotheses for change (Valters, 2015; van Es et al., 2015).

For further reading, with practical guidelines, on the subject of ToC, the author recommends reading *Theory of Change Thinking in Practice: A step-wise approach* by Hivos (2015).

4.7 *Summary*

The identified literature, as reiterated by research in several fields, promotes addressing risk issues with an effective two-way communication process including multiple stakeholders and an iterative governance process of analysis and evaluation informed by perceptions, uncertainties and lessons learnt. Identified barriers to the process are furthermore lack of trust, legitimacy, confidence, communication, inclusion or reflection, which can limit convergence and ultimately diminish the effectiveness of implemented measures. From a practical point of view, the imbedded intentions, political willingness and available resources will also govern the opportunities for a comprehensive evidence-informed strategy that deals with these barriers effectively. Overall, however, apprehending the potential of cross-sector cooperation, effective two-way communication and trust management may be a key starting point to navigate fire prevention efforts for vulnerable urban communities.

5 Results from Thematic Analysis of Interviews

The study included eleven informants with a range of expertise and experience, as portrayed in a brief demographic summary in Table 2. The thematic analysis conducted is grounded in two major concepts of the study; ‘FRS reception’ and ‘fire prevention’. As such, the content-driven themes identified in the data, in relation to the two dominant concepts, are presented in Figure 4. The constituent themes and elements of the major themes identified, are thereafter presented in a hierarchical manner. Furthermore, quotes from the conducted interviews are presented in English, as translated by the researcher. The code frequency for each theme and sub-theme are presented in ‘Appendix G – Code Frequencies’.

Participant No.	1	2	3	4	5	6	7	8	9	10	11	Ratio/Average
GCFD employee [Y/N]	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	≈82% GCFD employees
Work experience in current role [years]	12	-	2	8	7	4	4	1	2	7	7	Mean Average ≈5,4 years
Total work experience in FRS [years]	12	33	9	38	25	30	36	28	2	N/A*	N/A*	Median Average ≈28 years
Operative experience [Y/N]	Y	Y	Y	Y	Y	Y	Y	Y	N	N/A*	N/A*	≈89% with operative experience
Currently carrying an operative position [Y/N]	Y	Y	Y	N	N	Y	Y	N	N	N/A*	N/A*	≈56% operative
Chief position [Y/N]	N	Y	N	N	N	Y	Y	Y	N/A*	N/A*	N/A*	50% in chief positions

Table 2: Demographic summary of sample population. *N/A values are discounted when determining ratio or average.

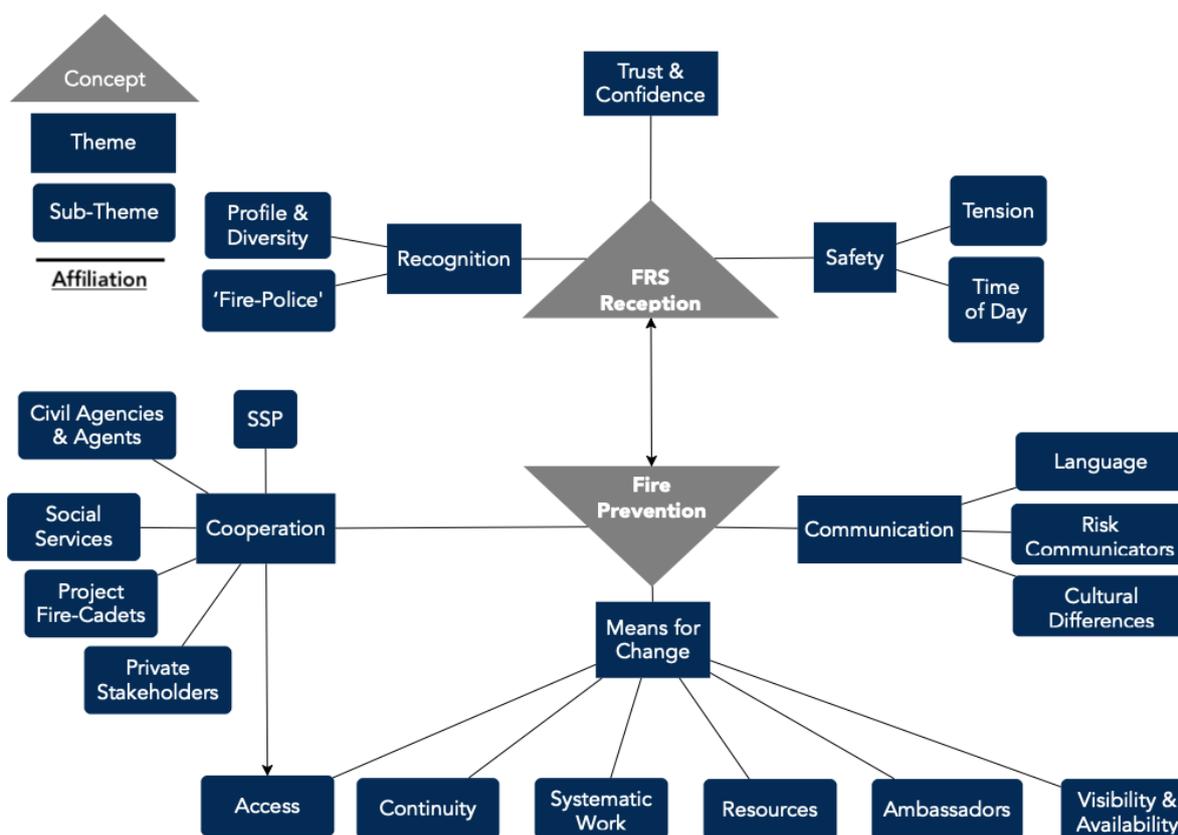


Figure 4: Schematic map of thematic analysis. Constructed in NVivo (release 1.3).

5.1 FRS Reception

The first research question of the study is as follows:

Among GCFD employees, what is the experienced reception of FRS when operating in vulnerable urban communities such as Nørrebro and Tingbjerg-Husum? Furthermore, are there any particular challenges when responding to incidents in these areas?

Among informants in an operative position there is a majority consensus, four out of five, that during ordinary responses, without any particular unrest in the area, there is essentially a non-problematic stance towards the FRS. Informants carrying a preventive role, conducting for instance fire safety checks at institutions and commonly involved in door-to-door campaigns, describe also day-to-day reception as unproblematic. Beyond this, six out of the 9 GCFD informants attest to a perceived positive change in reception over time. Two informants, however, express concerns for a negative trend over time while one informant takes a neutral stance. The experienced reception of FRS is exemplified with the following statements:

“Fundamentally, it is unproblematic for us to come there (to Nørrebro or Tingbjerg-Husum). We don’t experience challenges in the day-to-day, though Nørrebro is an area that historically consists of different types of social tensions and youth cultures which have in part been violent ... The starting point is that they don’t have anything against us.” - Informant No. 6

“We’ve experienced a positive development in Tingbjerg ... with us having been more and more visible in the area, it’s created a positive effect and people are happy we come (during communication campaigns).” - Informant No. 8

“(It’s) more of a negative tendency, since it’s more and more that we get met with people throwing rocks ... or taking the air out of the tires of our vehicles while we extinguish fires ... It’s one of those vicious cycles, that it gets worse and worse because these guys in these areas compete over doing it a little bit tougher, a little bit worse next time.” – Informants No. 7

As such, the experienced reception is nuanced. Three major themes identified which help shed light on the topic are ‘Recognition’, ‘Safety’ and ‘Trust & Confidence’.

5.1.1 Recognition

Informants commonly describe that the extent in which the FRS are distinguished as its own authority versus being conjoined with authorities in general, and particularly the police, has tangible implications on the reception of FRS. In this sense whether rescue services are seen as ‘fire-police’ or rather as fire rescue services.

“my experience is that there is a conflict in the way we’re perceived as an authority, not as a fire-rescue authority as such ... It’s the uniform they see as a threat, as representative for an authority.” - Informant No. 7

Negative connotations of being an authority are commonly attributed to an observed fragile relationship between certain groups such as criminal youth and the ‘autonoma’ with the police. As such, being conjoined with the police is perceived as a contributing factor to an at-times negative reception, resulting in conflicts or mutual distrust, towards FRS personnel. As described by one informant

“In that moment when the police chooses to arrive, it can sometimes go the wrong way ... from us being a few that are ‘ok to be there’ to, now, it’s a problem ... we’re just (seen) as one. And that’s a problem that can escalate.” - Informant No. 2

A cultural aspect of why this conjunction occurs, at least among those with a different heritage, is raised by several informants. For instance in the following way

“In many other countries there is a cohesion between fire services, police and perhaps the military as one organization. This makes some uncomfortable.” - Informant No. 8

One informant with a Kurdish heritage raises also language inferences noticed during operative responses

“So when we arrive (in Tingbjerg) they say here comes the ‘fire-police’, regular police or here comes ‘traffic-police’ and so on ... so they believe it’s the police, and since they’re upset with the police it becomes detrimental to us.” - Informant No. 1

One aspect that several informants, however, describe as a constituent to foster positive reception is a diverse FRS with different cultural backgrounds, ages and gender. One informant encapsulates the perceived impact of greater diversity with the following statement

“if we solely have one type of person, gender and so-on, employed, I think that it can contribute to us not having the same opportunity to understand and act in environments where sometimes there could be such challenges [referring specifically to language barriers as well as conflicts] ... I think that it can create a good work-environment for us.” - Informant No. 2

Four informants describe how ethnic diversity is particularly considered an asset that may enable both greater reciprocity between residents and GCFD personnel as well as mitigating the risk of escalating conflicts. For example in the following manner

“One of my co-workers ... that has a middle-eastern background ... is often an ‘ice-breaker’, when we’re out in some of these areas, if there’s any unrest or someone who’s not behaving properly or something else.” – Informant No. 2

5.1.2 Safety

Four of the eight GCFD informants with operative experience could refer to personal experiences of conflict, threat or sabotage of equipment during operative responses in the referred residential areas. One refers also to an incident in a neighboring area. A reoccurring issue is for instance also fireworks being directed towards FRS employees, which is, however, not necessarily limited to Nørrebro and Tingbjerg.

Informants describe how these experiences have translated into safety considerations during operative procedures, with prominent considerations being the current ‘tension’ within an area and the risk associated with operating after dark.

“If it’s in the daytime, we are received in the same way as in other parts of the city. In the night or evening hours an assessment from the police is needed.” - Informant No. 3

“It depends totally on what’s happening at the time, in the society ... Is there unrest or not? ... Is there a discontent with the police in the area which they mark, unfortunately, with deliberate fires and so-on ... We can have time-periods where it’s completely calm. No challenges whatsoever. Then we can have time-periods where it accumulates and just gets more and more challenging.” - Informant No. 2

During confrontations or to avoid confrontations, informants describe an essential cooperation with the police to ensure the safety of personnel.

“When we arrived in the night to Nørrebro where there was a container-fire, there were rocks thrown towards the firetruck. Then we have some definitive guidelines from the police on how to manage it. We leave the area and await police if they haven’t arrived yet. The days after we normally drive to the area and await police before we drive in, if it’s not concerning a life-threatening situation” - Informant No. 6

Another informant reflects also on the emerging considerations for a leader during operative procedures in the referred areas

“ ... but you put a lot of energy, when you're in a leader position, on being attentive to what's going on around you. What cues can you pick up from the people in the area? The young people, what can you hear? How many cars are driving by? ... What's our possibility for leaving? What more do we need to attend to purely extinguishing-wise?” - Informant No. 2

5.1.3 Trust and Confidence

The theme of trust and confidence is an implicit theme recognized in the data with references of mutual understanding, enabling communication and facilitating confidence. For further perspective on the issue, the interviewed SSP+ consultant describes also how confidence and legitimacy can deteriorate.

“If we have some young people in an area with inappropriate behaviour and have started to put things on fire because they are very frustrated that the police are searching them. In a visitation zone, they search everyone ... They get frustrated and have a more aggressive stance towards the police, and it becomes an escalating problem. The more aggressive they are towards the police, the more the police has to do with the youth and then that's when we would like to come in and have a meeting ... So we start a dialogue with them and that actually works very well.” - Informant No. 11

Informants refer also often to the desired output of *mutual* trust, as a constituent to positive reception and fire preventive work. As phrased by one informant

“We could surely be involved in more activities in these areas ... And you can view it in multiple ways, it's both to get to know our firemen **and that our co-workers feel safe with those that are out there** [Emphasis added]. But it's just as much to prevent fires.” - Informant No. 6

The importance of establishing mutual trust through constructive dialogue is furthermore reflected upon by several informants.

“ If you come as 'fire-police' and just kick open the door (figuratively) to say [harshly]; this is how you're going to do this, they will distance themselves immediately. If you're open, positive and want to have a good dialogue, they will also.” - Informant No. 5, Fire prevention employee.

Though several informants describe a perceived general distrust towards authorities, especially among young 'trouble-makers' and the 'autonomous', some informants highlight that especially families can be very welcoming.

“Actually you can say that the kindness towards rescue services may even be greater than in more well-set areas ... among the families with young children there is especially an understanding that we are here to do something good.” - Informant No. 3

5.2 Fire Prevention

The second research question of the study is as follows:

What are the challenges and opportunities for enabling successful fire preventive work in vulnerable urban communities such as Nørrebro and Tingbjerg-Husum?

Consequently, the identified main themes related to the second research question and the concept of fire prevention are 'Communication', 'Cooperation' and 'Means for Change' as seen in Figure 4.

5.2.1 Communication

Communication with residents is perceived as an crucial element, as brought up by six informants, for both solving conflicts and preventing fires. One informant expresses the following opinion

“I believe that communication is the way forward to solve all conflicts, fights and everything.” - Informant No. 1

Furthermore, all eight informants with operative experience, including three preventive specialists, describe language as a common barrier to successful preventive or conflict resolving communication.

“For the most part, where we have challenges, is particularly in Mjølnerparken [in Nørrebro]. Where we meet non danish-speaking and their English isn’t necessarily very good either... personally I don’t get across with my message because I don’t know their native tongue... Typically (though) if the parents don’t know Danish, the children know. So we involve the children in the dialogue.” - Informant No. 3

Two informants mentioned also a perceived cultural difference among residents in the awareness of how to act during a fire or to prevent one, for example in the following manner

“These are more difficult areas as there are many different ideas around fire protection and preventive work within families with a different heritage. I think, they see it differently, and that could be difficult.” - Informant No. 5

Lastly, in terms of communication, informants commonly make implicit statements of the role and responsibility of the risk communicator. Where diversity among communicators to overcome language barriers is regularly perceived as a valuable asset.

“We did a large fire alarm campaign in one area with a lot of fires. I noticed that one of my firemen, who’s Turkish, could talk to them in their language. It was such a meaningful difference that they could understand (it) better.” - Informant No. 5

Beyond language comprehension, risk communicator characteristics are commonly brought up. As in the following statement

“I want to say that it requires people [from GCFD] with maturity ... you don’t need to sympathize with people acting in a bad way ... but it’s good to separate personal opinions (from work). When you’re at work it’s a function for society you’re performing and (you should) keep focus on that.” - Informant No. 2

Related to the willingness to engage in preventive work, one informant provided the following answer

“The last 10 years it’s been much better. For a long time it was hard to see preventive work as a task for the rescue services ... It’s important that those who does the task are positive to it, otherwise the task won’t be performed as well. If ‘fire-people’ don’t think it’s a task for them they need to be convinced first.” - Informant No. 8

5.2.2 Cooperation

Informants are generally positive to cooperating with local agencies/agents and other municipal stakeholders in order to enhance preventive efforts. Several informants in a chief position within the GCFD positively affirm pre-existing forums and secretariats, such as ‘Sikker By’ i.e. Safe City. Other informants emphasize more the potential of expanding cooperative efforts though also affirming current endeavors, especially Project Fire-Cadets.

As a starting point for materializing new endeavors, a few informants refer to the available flexibility.

“We can almost do whatever we like in terms of fire prevention. So I think it’s only a question of getting the idea... if we’re unsure about something we can ask the board (of mayors).” - Informant No. 7

Two informants believes also in the idea of creating a common cooperative forum with local residents, as stated by on the fire prevention inspectors

“A common meeting forum where you could meet should be created ... both for me and them, but first and fore-most for them ... A common place where we can talk together, and listen. I have many good and strong arguments, but it’s not about that. I think we should listen.” - Informant No. 4

The SSP+ consultant refers also to how their agency have used local forums in the past for their work

“We’ve had for example round-the-table discussion with residents and young people. Or panel debates where different stakeholders get together ... for example a police officer together with a person from a housing association ... We also try in many preventive efforts to involve kids and young people, in the conceptualizing stages ... instead of (directly) try to come with a suggestion to do this and that and that.” - Informant No. 11

Regarding civil agencies such as local housing, cultural or sports associations, there is a generally agreed upon opportunity among all informants for cooperation. Overall, cooperating with housing associations is brought up as the most viable and impactful opportunity.

“I think it can help a lot if we could start cooperating with these associations in the area as well. It could be housing associations, sports associations or something else. I think it could be a part of becoming closer to each other at least.” - Informant No. 1

*“If it was up to me, the rescue services would go out and establish these partnerships with housing associations. Especially where we know there is a risk-group with socially vulnerable that don’t know much about preventing fires or has a behavior that can cause fires.... I believe the most important (part) of this (conducted campaign) was the partnership made with Hovedstadens Beredskab”
– Informant No. 10, Nørrebro Resident*

Involving housing associations infers also to including community members in door-to-door campaigns, as endorsed by several informants as a viable approach to gain additional access. One informant hypothesizes around the issue in the following way

“It’s the relationship that’s necessary, because you don’t want to open the door when the rescue services are knocking ... There are people that are mentally or socially ill, which are afraid of the rescue services ... That’s a barrier and I think you overcome it when you work with people that (normally) come to their homes, like neighbors or friends.” – Informant No. 10, Nørrebro Resident

Speaking of “people that normally come to their homes”, one opportunity endorsed by those in a preventive role is to elaborate the cooperative work with the social services.

*“There could be much more support for these social workers, (for instance) with a checklist related to fire security being created ... and to formalize this so that it’s part of their work. If something sticks out then maybe we could get in touch with the resident or tag along during a visit or do something else ... **I would never get the opportunity to enter their apartment, or (even) know who they are** [Emphasis added] ... Then we have also created a forum where we have access to the people that interact with the socially vulnerable.” - Informant No. 4*

Beyond social services and civil agencies; cooperation with the police, private stakeholders and schools is viewed positively. SSP and UBK are furthermore identified as important stakeholders to facilitate cooperation. Among informants in a preventive role, incorporating fire-cadets more extensively in risk communication campaigns is especially viewed as a potential asset.

“We also have UBK and there I think that when we are going out into these areas and having these campaigns, they should play a much larger role. They can typically speak the language. So I think that should be a consideration during the planning.” – Informant No. 5

Additional opportunities, as identified by a few informants, includes collaborating with ‘neighborhood police-officers’ and allowing further cooperation between police-cadet programs and the UBK. Private stakeholders such as TrygFonden is furthermore referred to as a valuable asset, based on past experience, to obtain funding for campaigns and being able to provide smoke detectors for free.

5.2.3 Means for Change

Apparent among informants is that one of the major barriers experienced, primarily during risk communication campaigns, is to initiate interactions and gain access to socially isolated residents. During the interview with the Nørrebro resident, the informant provided the following description

“I had a neighbor that unfortunately passed away in a fire and didn’t have a fire alarm. He was socially vulnerable, I would say ... We have such (people) in our housing association. People around that don’t want to open their doors, that have a distrust towards strangers and the system.” – Informant No. 10

The informant continues by describing the campaign conducted with the GCFD and reflects on the campaign in the following way

“It became apparent that the greatest challenge is not the well-functioning... they gladly open their doors and let someone set-up a fire alarm. But it’s those that have it so bad.” – Informant No. 10

The perspective of GCFD members closely resembles this description, as described by one of the informants

“We have experienced (that) there were many that didn’t want to open their door since they were scared of whoever’s visiting... There are also residents that we have found it particularly hard to access... residents that are perhaps alcoholic, unemployed, live alone. Really that whole group of people that live alone and don’t work.” - Informant No. 8

As such gaining access constitutes an prominently important part of enabling fire prevention. Eight informants refer also to the visibility and availability of fire workers as meaningful elements for achieving change, especially from a long-term perspective of continuity. As exemplified by the following statements

“So I believe it’s in the long term, you don’t change (much) by being there one day... but by being there again and again, and getting a relationship to the residential area. I think that’s really important” – Informant No. 3

“It’s a long-term activity [i.e. fire prevention] where it should be scrutinized all the time and continue with partnership as well as communication.” – Informant No. 10, Nørrebro Resident

“I believe for sure that we could prevent even more by being more visible in these areas” - Informant No. 9

In order to enable continuity, informants address ‘windows of opportunity’ such as routine hydrant inspections and visiting the area the day after a residential fire but also to work systematically with residential areas.

“A (meaningful) change would be to have systematic, regular contact with those groups that are especially vulnerable... I don’t think I want more guidelines for what we do. If we will have guidelines it should be to conduct things more systematically and be anchored in some type of evidence.” - Informant No. 3

“We wish to make a difference, and we want to preferably be able to see the change based on where we’ve been ... It should be a form of structuring but it should be easy and intuitive.” - Informant No. 4

A primary limitation, however, among informants for scaling preventive efforts are available resources. As expressed by one informant when asked about cooperating more with local agencies.

“That is a question of time, money and political willingness. So that answer will have to remain open.”
– Informant No. 2

Lastly, however, an implicit though apparent theme is that informants overall tend to express confidence in creating ambassadors and role-models as an effective way of achieving change. Project Fire-Cadets and local housing associations are both mentioned in this regard.

“I think that as we get UBK cadets educated they can also be ambassadors for GCFD, when we go out and talk fire prevention.” – Informant No. 5.

“Housing associations (sometimes) calls us and ask to set up fire alarms or provide some fire alarms, and then I’ll say that we can’t (only) give fire alarms but we can come out and install them for you. But it requires that you also help us with it. It’s a part of it, that people receive ownership to be part of it and suddenly we have some ambassadors that really want to be part of it and make a difference.”
- Informant No. 5

“From my perspective I hope on two things ... (firstly) that we can create young preventers. Some young people that can help prevent (intentional fires) in these residential areas. Some good citizens, that knows what’s wrong and right when they are out in their neighborhood. As part of that, I hope that young (people) with bad experiences from school, can have friends and feel that they are good enough.”
- Informant No. 9, Project coordinator of Project Fire-Cadets

6 Discussion

The obtained results are the product of an iterative thematic analysis of the conducted interviews and as presented in the theoretical framework, a literature study. The results are discussed following the two pre-established topics from the research questions; FRS reception and fire prevention.

6.1 FRS Reception

One of the primary findings is that GCFD employees tend to believe that the extent in which FRS are recognised as ‘fire-police’ significantly influences the reception of FRS in Nørrebro and Tingbjerg-Husum. Theoretical concepts that shed a light on this include legitimacy, confidence and trust. The legitimacy aspect refers to the fragile police-community relations which may particularly exist in vulnerable communities and hinder cooperation or initiate conflicts which the FRS get drawn into (Soska & Ohmer, 2018). In terms of confidence, indicators of for instance experience, evidence, procedures and control, can dissect the issue further (Earle et al., 2007). Looking at the example provided by the SSP+ consultant, the youth’s experience with the police from arbitrary searches in visitation zones can cause spiralling effects where levels of confidence may deteriorate. From this perspective, fires and other malicious events can be viewed as an reaction to regain control. Beyond this, across-groups trust has shown to be negatively related to in-groups trust (Earle et al., 2007) which reinforces the issue of pre-existing scepticism towards the police and the FRS. As such, fragile police-community relations may be a viable explanation for the reoccurring conflicts and negative interactions. Independent of the cause, such events likely influence FRS workers perceived ‘welcomeness’ in the area. Contributing to mutual discontent and lack of confidence.

However, it is indicated among several informants that conflicts currently occur further apart over time than historically experienced. Thus, GCFD employees pre-dominantly describe a general positive reception among community members even when considering certain group-behaviour, with primary emphasis on autonomous and criminal youth, as problematic. Thus, the confidence negated by past conflicts is arguably regained through every-day experiences. This poses, however, the question of its fragility and whether one single event will swiftly erase a significant part of the confidence regained. As such, being able to manage tensions and be able to early intervene during increasing tensions may be an essential part of the risk governance process. The risk and inherent uncertainty of when a conflict will occur creates also the enduring challenge for the FRS to ensure the safety of personnel in these vulnerable urban communities. Especially under familiar conditions of civil unrest as well as after dark. As such, cooperation with the police is outlined as the current standard practice, and an appreciated one, during times of unrest. Though the procedure may prolong responses and is not optimal for work-forces ability to swiftly, effectively and safely carry out their duties. The close affiliation in these communities between the FRS and the police might also mitigate the distinctions between the two authorities. Especially among community members familiar with a different context where rescue services, police and even the military may consist of one authority.

Fully tackling these issues of recognition, trust, confidence and safety may in essence be outside of the FRS jurisdiction and working capacity. However, as recommended in the literature, when facing frail levels of confidence or trust it is encouraged to pursue active trust management (Renn, 2008). Learning from other contexts, this can involve community members to practically address local problems resulting in trust as a by-product of the process (Multinational Resilience Policy Group, 2015). Furthermore, considering the principles presented by Asselt & Renn (2011) managing the risks of conflicts and malicious fires would benefit from a broad inclusion of stakeholders, including civilian representatives, pursuing meaningful exchanges of information and iterative reflection of imposed strategies. Beyond this, more tangible and specific measures are also raised by the GCFD informants. Firstly, nurturing a diverse workforce is brought up. Considering the nature of trust as proposed by Renn (2008) and Earle et al. (2007) this likely could facilitate trust through indication of in-group membership and thus constitute a transitory status towards regained confidence. Furthermore, lingual diversity that is reflective of community profiles may also be a potential facilitator for conflict resolution. Alongside with the conduct of personnel, as reinforced by Earle et al. (2007), where indicators of fairness, integrity and caring can translate to greater trust.

6.2 Fire Prevention

In terms of fire prevention, informants repeatedly refer to the challenge of reaching socially isolated citizens and others reluctant to interact with an authority. Additionally, overcoming language barriers is brought up and to a lesser extent fire safety knowledge among residents. Beyond this, risk communicator characteristics are considered in terms of FRS employees willing to inhabit a fire preventive role and managing the responsibility of it. As such, issues in communication primarily revolve around dealing with and properly adjusting to the heterogenous nature of different audiences.

With apparent limitations in HFSC campaigns this reinforces a need for merging social and psychological perspectives alongside the technical aspect of installing smoke alarms. In terms of risk communication best practices, it is therefore proposed to acknowledge diverse levels of risk tolerance, meet risk perception needs and design culturally sensitive risk messages (Sellnow et al., 2009). Drawing on the contextual levels of risk perception, as presented by Renn (2008), a person's willingness to provide their attention to FRS workers or allow for a smoke alarm to be set up is the result of a myriad of factors from ability and motivation to also personal values and external factors such as the political culture. As such, acknowledging as well as analysing risk perceptions and the diversity of audiences can be an important first step in a risk communication strategy.

Furthermore, dealing with practical constraints of language, access and recognition with risk communicators, it is apparent that cooperation among stakeholders can be an crucial element for greater success as highlighted also in several Norwegian studies (Halvorsen et al., 2017; Steen-Hansen et al., 2020). A promising finding is that a range of different informants emphasises the potential gains of increasing cooperation with social workers, local residents and/or fire-cadets in the preventive work of the FRS. By involving multiple stakeholders, and thereby multiple communicators, a climate of recognition with risk communicators could be built alongside with an active involvement of public agents into the risk management process (Earle et al., 2007; van Asselt & Renn, 2011). In a practical sense, particularly involving social workers and neighbours is highlighted as the most tangible way in which access can be gained to at-risk groups.

Beyond this type of cooperation, the idea of common local forums to gather stakeholders in a joint discussion on fire risk issues converges well with managing issues of reception as presented above. Whereas local forums can facilitate trust, as a by-product (Multinational Resilience Policy Group, 2015), but also help to stratify fire preventive efforts through integration of stakeholders as well as through reflection and two-way communication (van Asselt & Renn, 2011). Social media platforms may in these sense also contribute to virtually available forums for two-way communication (Bourrier & Bieder, 2018).

The emerging trend in informants responses otherwise revolve around being continuous, systematic, resource-effective and evidence-informed. Considering the informants responses and GCFD's expressed interest in CRR, see *RBD 2017+* (HBR, 2016), incorporating the National Fire Protection Association (NFPA) CRR framework through the scope of this thesis and available research might enhance preventive efforts systematic qualities. Though, ultimately there is currently a limited amount of published literature assessing CRR in other contexts beyond the U.S.. Overall, however, to work systematically and continuously, an initial important step could be to avoid linear risk communication frameworks and moving towards more process-oriented one's as informed by contemporary research (Bourrier & Bieder, 2018).

Lastly, creating fire-prevention ambassadors through Project-Fire cadets and civil agencies is touched upon by a few informants. In light of the ToC framework, this approach may constitute an stance on how change is believed to occur. As recommended by the literature, identifying assumptions that may either strengthen or weaken these claims could be an informative task for the FRS (van Es et al., 2015). Beyond this, explicitly working with ToC frameworks could in essence contribute with a guiding compass for future preventive efforts (Reeler, 2007; van Es et al., 2015).

6.3 Limitations and Suggestions for Future Research

Considering the implemented methodology, one emergent limitation is the semi-structured format of conducted interviews which led to briefly touching upon on a vast amount of different topics and insights. As such, the thematic analysis could have benefited from a more targeted approach or an initial questionnaire spread among a greater amount of informants which shaped the following interviews. Furthermore, a translator present during the interviews could have allowed for better follow-up questions and therefore also helped navigate the interview content towards more ‘common ground’.

Descriptions and views of local residents behaviour, motives and beliefs are based to a great extent on the views and experiences of GCFD employees. Thus, a one-sided visualisation of the issue is provided. This approach, however, did provide a perceived data saturation in terms of the FRS perspective on the two major concepts and constituent themes. Though overall data saturation on the issues at such was not achieved due to the limited input of external stakeholders. Furthermore, certain issues of residents not opening their doors can also be attributed to inherent limitations of door-to-door campaigns, considering that campaigns are usually conducted over a short-time period such as a weekend. Perceived cultural differences and concerns may also stem from a lack of familiarity with other groups contexts and values. These claims would be highly strengthened if they could be clarified through additional research. Beyond this, additional analysis of CRR could help determine whether the placed confidence in this approach is appropriate. As of now, the positivity towards the approach may be primarily based on its convergence with certain essential theoretical aspects and the political willingness in Denmark for its implementation. However, more data is reasonably needed to justifiably determine whether CRR and other community centred fire safety initiatives actually have the sought after positive effects.

However, based on the findings and discussion herein this report, the author proposes the following suggestions for future research:

- Pilot studies for incorporating local residents, especially in vulnerable urban communities, into fire prevention schemes.
- Examining community participation and stakeholder cooperation to address reception as well as fire prevention issues, in light of available risk governance frameworks;
- Analysis of receptions and perceptions of FRS among residents in vulnerable urban communities;
- Cultural influence on perceptions of the FRS;
- Cultural differences, or indifference, of fire-safety knowledge among immigrants and non-immigrants in Denmark as well as other Nordic countries;
- Examining the role and available jurisdiction for the FRS to prevent fires in vulnerable urban communities;
- Evaluation of CRR programmes and involved success-factors;
- Investigating indicators of ‘tension’ in neighborhoods, communities and/or cities, as well as the utility of such indicators in a monitoring system;
- Comparative study of risk communication strategies in a similar context to Copenhagen, such as Malmö, Sweden.

6.4 *Suggestions for Fire Rescue Services*

The role and adherent responsibility of FRS in dealing with these issues should in each local context be determined. FRS could suggestively have a coordinating function when meeting with other stakeholders and an executing function in terms of risk communication campaigns as well as training. FRS could also provide expert knowledge to municipal councils and local government for intended strategies. In order to facilitate cooperation, however, it is likely necessary for involved stakeholders to gain financial support from either local councils or private stakeholders similar to TrygFonden. Overall, local FRS services can help clarify the issue and place the issue of fire safety in urban vulnerable communities on the agenda. On a national level, civil contingency agencies could also appoint members for a ‘vulnerability group’ that works with synchronizing and coordinating efforts. This could include devising vulnerability indexes and CRR program frameworks similar in nature to the NFPA’s *Standard on Community Risk Assessment and Community Risk Reduction Plan Development*.

Some findings of this study may be as applicable for other FRS as it is for the GCFD. In terms of reception, a diverse workforce may be one available catalyst to produce long-term change. More specifically, involving members that have different native languages may in this perspective be an asset to facilitate trust through in-group membership and resolve conflicts in situations where language barriers can constitute a problem. Beyond this, a close collaboration with local police agencies to monitor ‘tensions’ within urban neighborhoods can help prepare for a larger increase of deliberate fires and timely decide on necessary interventions. In terms of fire prevention, cross-sector collaboration in general has also been raised as an valuable asset.

Local housing agencies and social services in the context of Copenhagen were identified as the two most tangible ‘partners’ to reach vulnerable residents. One viable approach to increase collaboration can be to have local forums with residents and local housing agency representatives. As such, these forums should have a practically rooted agenda as in “how can we stop car-fires?” and “how can we look out for our neighbors?” rather than emphasizing on the root issues of say trust or risk perceptions. Respectively for social workers, a top-down approach that involves municipal governments can help facilitate resources for greater collaboration. With intentions set on a higher level beyond the jurisdiction of the FRS, fire workers can in turn be set to facilitate educational resources to social workers. In this regard, data-sharing between stakeholders can also be crucial whereas when social workers identify fire hazards this should ideally be communicated to the FRS.

7 Conclusion

In terms of the first research question;

Among GCFD employees, what is the experienced reception of FRS when operating in vulnerable urban communities such as Nørrebro and Tingbjerg-Husum? Furthermore, are there any particular challenges when responding to incidents in these areas?

The experienced reception among GCFD employees is to a significant degree positive. Though most employees have experienced threats or similar occurrences, which consequently have resulted in safety measures and a likely fragile state of confidence. However, residents in general and perhaps especially families are perceived to have a good understanding of the protective role of FRS. Identified concerns as such primarily revolve around certain young people's behaviour and political activists, i.e. autonomas, with a perceived distrust towards authorities in general. As such, effectively differentiating FRS from other authorities can be considered a meaningful exercise.

Beyond this, the level of awareness and precautions necessary during times of un-rest as well after dark can be considered a challenge. Especially when considering the desired level of swiftness of fire-responses and the intended safety for FRS personnel. As such, being able to halt escalating tensions before they result in conflict is a relevant challenge concerning all involved stakeholders, where the SSP could likely have an important role in pre-emptive conflict resolution.

In terms of the second research question;

What are the challenges and opportunities for enabling successful fire preventive work in vulnerable urban communities such as Nørrebro and Tingbjerg-Husum?

One of the primary challenges identified is to successfully reach those that are socially isolated and others reluctant to interact with authorities. Though these may very well consist of at-risk groups, based on what is known in terms of vulnerability. However, involving civil agencies and agents, such as local housing associations, is viewed as one pathway to facilitate more interactions. As well as formalizing a systematic effort together with social services, which may already be affiliated with and have access to some of these residents. Beyond this, the issue of language barriers could be mitigated through the involvement of civil agents and possibly incorporating ethnically diverse fire-cadets to a greater extent. Among GCFD employees it may also be essential to promote relevant characteristics for risk communicators and foster a climate of preventive work as part of the FRS role in society. Also, as mutually beneficial for reception and prevention, facilitating community participation and invoking local ambassadors in the pursued work. Community participation programs seems to already be part of the SSP+ process and the expansion of such with the GCFD actively involved may arguably lead to greater attachment between the community and the FRS. As actively pursued in a CRR approach.

Lastly, in terms of the third research question;

To what extent can findings from current research inform efforts to prevent fires and/or improve reception within vulnerable urban communities of Copenhagen?

It is noticeable that involving too much theoretical 'lingo' may be detrimental to the intuitiveness of different programs. However, on many points a theoretical framework may help navigate efforts and provide meaningful considerations for the opportunities and challenges identified for the first and second research question. This entails that when managing trust, promoting collaborations and implementing fire prevention campaigns, a theoretical framework may help develop strategies in a scientific manner. Though the studied context of Nørrebro and Tingbjerg-Husum is quite specific, areas with similar traits can likely to the same extent benefit from this.

Overall, the study implies a few normative suggestions for the context of Copenhagen and touches upon a great deal of topics which could benefit from further investigation. It also reiterates findings from other contexts, such as managing fire-risk among vulnerable groups may benefit significantly from cross-sector collaboration. New paradigms and holistic approaches such as CRR may furthermore serve as intuitively relevant for managing fire-risk, though they should be informed by current research and be underpinned by additional analysis.

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Appendix A – Fires & Civil Unrest

Presented herein this appendix is statistical and spatial data for the frequency of container fires between the first of January 2019 until the end of August 2020. As well as the number of intentionally set fires day-by-day in April 2019.

On the 15th of April, 2019, an demonstration in Nørrebro by an far-right political activist was held which has been distinguished by the public media as causing massive unrest in the city and particularly in Nørrebro where the conflict began (Goos, 2019). As such, the statistical data below provides an example for how civil unrest and erupting tensions in an area may result in significant peaks in container fires as well as intentional fires in general. Consequently, such events emerge as intense time periods of additional pressure on FRS. Not portrayed in the data, yet an essential consideration, are the precarious operating instances where the deliberate fires occur; with violent encounters between the police and protesters and in-between protesters.

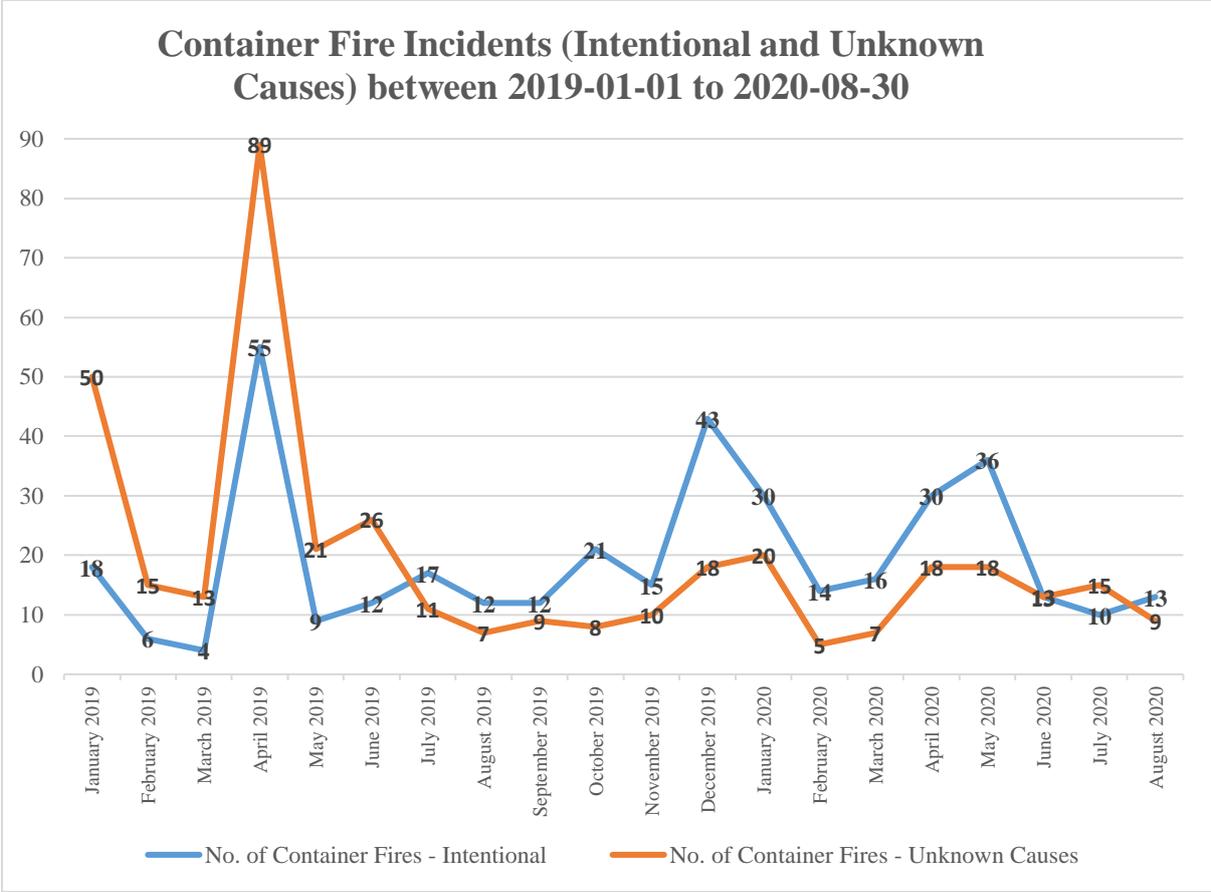


Figure 5: Graph for the frequency of container-fires per month, including intentional or unknown causes and only real alarms i.e. no false alarms. The data ranges from the 1st of January 2019 until the 30th of August, 2020. Data derived from GCFD.

For the analyzed time period there is a clear indication, without performing additional statistical analysis, that an unusual amount of container fires occurred during April 2019 with intentionally set container fires primarily distributed around the demonstration area as presented in figure 5 below. The evaluation of the cause for the container-fires is conducted by GCFD employees attending the events. Furthermore, a spike in intentionally set fires can be observed on the day of the protest, i.e. 15th of April, as well as in its adjacent days can be seen in figure 6.

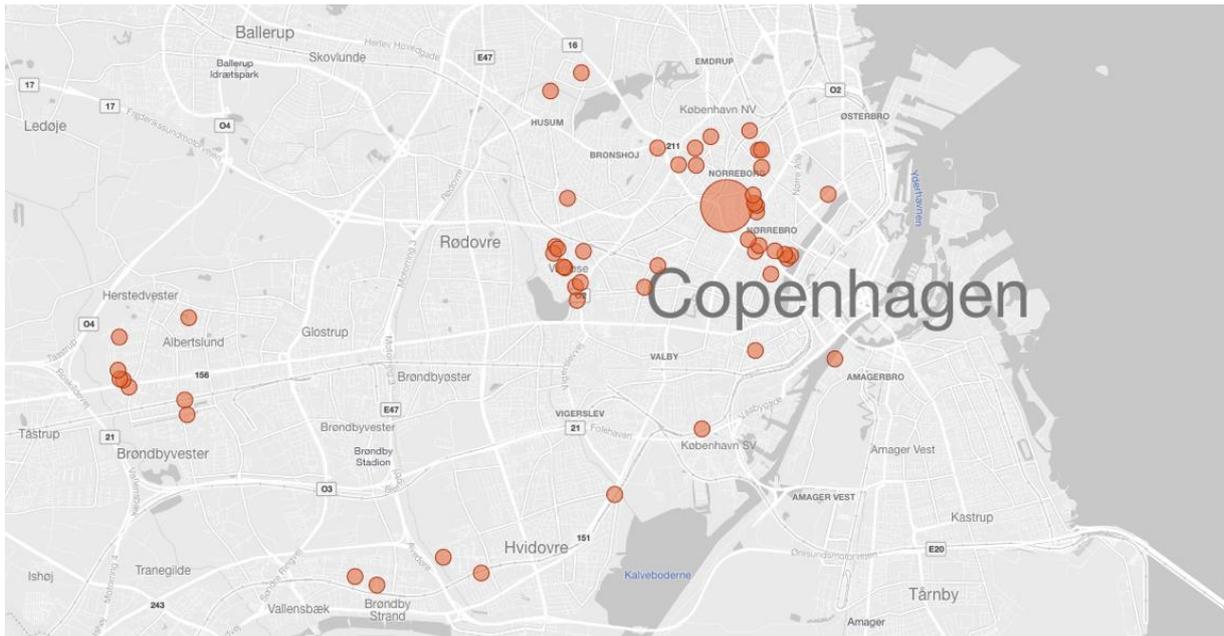


Figure 6: Spatial distribution of intentionally caused container-fires for April, 2019. Image derived from GCFD, using the Power BI interface.

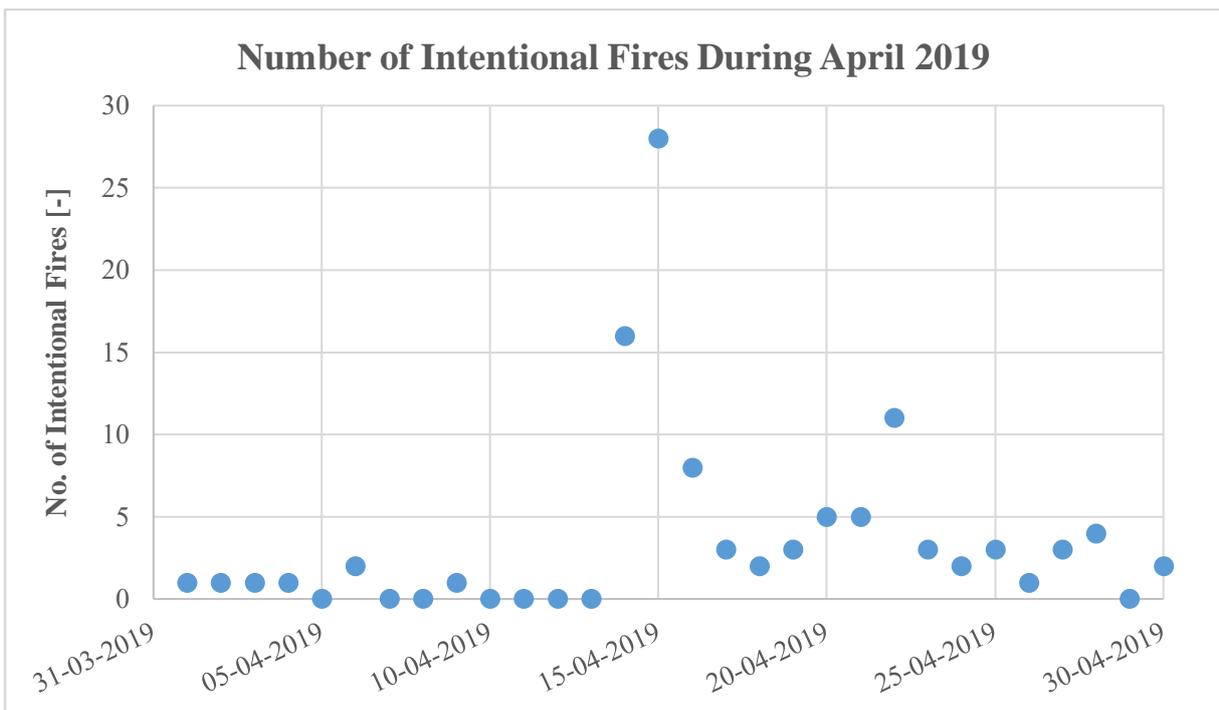


Figure 7: Day-to-day distribution of intentional fires during April, 2019. Solely real alarms, i.e. no false alarms. Data derived from GCFD.

Appendix B – Translations

The vocational titles and descriptions of participants were translated by the researcher and, as such, the original titles in Danish are presented below.

Informant Number	English Title	Original Danish Title
1	Fireman	Brandman
2	Fire Station Manager	Styrkledare i Tomsgårdens Distrikt
3	Prevention-specialist and part of the Volunteer Unit	Beredskabsspecialist, aktiv frivillig
4	Fire Safety Inspector	Beredskabsinspektor (BI)
5	Fire Safety Inspector	Beredskabsinspektor (BI)
6	Chief of Operations and Incident Commander	Operationschef & Insatsledare
7	Chief of Civil Sectors Preparedness	Leder af Civil Sektors Beredskab
8	Chief of Educational Department	Leder af Uddannelsesafdelingen
9	Project Coordinator of UBK	Projektkoordinator; Ungdomsbrandkorpset
10	Nørrebro Resident (participated in HFSC campaign)	-
11	SSP+ Consultant	SSP+ Konsulent

Appendix C – Invitation Letter to Informants

”Hej,

Jag heter Aron Fransson och studerar vid Lunds Tekniska Högskola (LTH) för en examen som brandingenjör och civilingenjör i riskhantering. Över sommaren kommer jag att utföra mitt examensarbete kring tillvägagångssätt för att stärka tilliten till räddningstjänsten och samarbetet mellan aktörer i utsatta områden av Köpenhamns kommun. Arbetet stöts av Fredrik Ryber och Cecillie Lillelund hos Hovedstadens Beredskab samt min handledare Marcus Abrahamsson, universitetslektor vid LTH. Studien berör främst Tingbjerg-Husum och Nørrebro området, men förhoppningen är även att arbetet ska kunna informera framtida satsningar i andra likartade områden inom Köpenhamns kommun. Ett viktigt moment i det planerade arbetet är att genomföra intervjuer med aktiv personal inom räddningstjänsten, personal inom SSP-nätverket och även representanter från lokala resursgrupper. Din personliga erfarenhet, uppfattning och kunskap av arbete i utsatta områden och med resurssvaga grupper är en högst värdefull tillgång vilket kommer att bidra till resultatet av studien.

Med detta vill jag bjuda in mottagare av detta dokument att delta i en intervju vid ett passande tillfälle helst under veckorna 26-29 via Microsoft Teams. Intervjun varar ungefär 30-60 minuter med en öppen dialog mellan mig själv och deltagaren, där jag utgår ifrån en förberedd mall för att försöka fånga upp relevant information för forskningsfrågan. Deltagares sekretess är en prioritet och inga namn blir presenterade i den slutliga rapporten. Förutsättningen är att intervjun sker på Svenska men att deltagaren svarar på sitt egna huvudspråk, Danska. Rapporten skrivs sedan på engelska.

För att boka ett intervjutillfälle som passar dig kan följande länk användas:

<https://doodle.com/meetme/qc/P6NR408LNc>

Vid bokat möte kommer därefter en inbjudan till Teamsmötet, via följande mail: aron.fransson@risk.lth.se, och förberedande instruktioner.

Ifall någon större förändring sker går det bra att avboka mötet och använda länken igen för att boka om till annat tillfälle, förutsatt att andra tider finns tillgängliga.

Slutligen, ifall du är intresserad av resultatet från studien finns det möjlighet att vid ett senare tillfälle få en elektronisk kopia av rapporten. Rapporten blir på engelska.

Tack i förväg.

Med vänliga hälsningar,

Aron Fransson

Brandingenjör- & Riskhanteringsstudent vid Lunds Tekniska Högskola, Lund, Sverige.

Email: aron.t.fransson@gmail.com alternativt aron.fransson@risk.lth.se

Telefonnummer: [REDACTED]

Hi,

My name is Aron Fransson and am currently writing my Master's Thesis at Lunds Tekniska Högskola (LTH) in Fire protection engineering and Risk Management. The topic of the thesis is on confidence in fire rescue services in vulnerable communities of Copenhagen and stakeholder collaboration. At Hovedstadens Beredskab I have two external mentor that oversee the work, these are Fredrik Ryber and Cecilie Lillelund. From Lund University my mentor is Marcus Abrahamsson Adjunct Professor at LTH. The intended scope of the study is to focus on the Tingbjerg-Husum and Nørrebro areas, with the hopeful intention to have findings applicable for Greater Copenhagen as well.

One essential part of the study I wish to pursue is to conduct interview with personnel within Hovedstadens Beredskab with work experience related to different tasks in these areas, personnel within the SSP-network and ideally also representatives from local committees involved in the area. The personal experience, knowledge and thoughts from personnel and representatives who receive this invitation is highly valuable and will contribute to a broader understanding of the issues and possibilities for raising confidence in vulnerable communities that will be included in the report.

Therefore I would like to invite you to participate in an interview at a time that fits you preferably within the coming weeks 26-29, to be held on Microsoft Teams. The interview would last approximately 30-60 minutes and will be conducted as an guided dialogue between myself and the participant. Participant confidentiality will be managed accordingly where any private information, such as your name, will not be included in the later publicly accessible report. As the report is public, there is also the opportunity to receive either or an electronic copy of the report or a link to it, once it's finished.

The interview will include questions posed in Swedish but participants are expected to answer in Danish. The report will be written in English.

To book an interview, use the following link: <https://doodle.com/meetme/qc/P6NR408LNc>

Once a meeting is booked a invite to a Teams meeting at the chosen time will be sent also including a brief instructional document for the interview. If something comes up and you need to change the appointed time, you may use the Doodle link above to reschedule.

Thank you in advance.

Best Regards,

Aron Fransson

MSc Risk Management Candidate

Email: aron.t.fransson@gmail.com or aron.fransson@risk.lth.se

Telephone: [REDACTED]

Appendix D – Additional Info to Informants

The following information, in Swedish, was provided to the informants once an interview session was scheduled with the researcher.

“Följande information är till både för att förbereda inför den tekniska biten då intervjun sker virtuellt och även ge inblick till berörda ämnen i intervjun. Återkom gärna ifall det är några funderingar till följande mail: aron.t.fransson@gmail.com alternativt aron.fransson@risk.lth.se I början av mötet kommer vi att stämma av ljudkvaliteten så att vi förhoppningsvis tydligt kan höra varandra.

Tekniska förberedelser

1. Under intervjun var gärna i en familjär och rimligt tyst miljö, t.ex. ett kontorsrum. Tips: Ifall du vill ha en neutral bakgrund i Teams tryck på ‘...’, sedan ‘background effects’ och välj första alternativet.
2. Använd helst hörlurar med mikrofon.
3. Rekommenderat att stänga ner andra program under intervjun.

Innehåll

Del 1: Information om deltagaren (nuvarande roll och bakgrund)

Del 2: Verksamhet och närvaro i utsatta områden så som Tingbjerg-Husum och Nørrebro

Del 3: Samarbete med andra aktörer

Del 4: Insatser för att öka tillit bland boende

Del 5: Avslutande frågor och övriga kommentarer.

Övrig Information

1. Uppskattningsvis varar intervjun i 30-60 minuter.
 2. Intervjun är anonym och enda informationen om deltagare som kan komma att bli inkluderad i rapporten blir organisations tillhörighet, roll i organisationen och längd av nuvarande uppdrag.
 3. Mot slutet av intervjun finns det tillfälle att ta upp punkter som inte har berörts och bidra med övriga kommentarer (Del 5).
 4. Under intervjun går det bra att be om att få höra frågan på Engelska alternativt be om att upprepa frågan. I efterhand kan det även bli att jag återkopplar ifall det är något vilket skulle ha nytta av att förtydligas.
 5. Intervjun kommer att spelas in och i rapporten kan det komma att inkluderas citat från intervjun.
 6. Facktermer och begrepp jag personligen inte känner till kommer att tas upp med Fredrik Ryber, alternativt Cecilie Lillelund, hos HBR för klargörande.
- Tack för ditt deltagande.

Vänliga hälsningar,

Aron Fransson ”

Appendix E – Interview Guides

Presented below is the interview guide used for all participants except for the Nørrebro resident where an adapted version was used. The adapted interview guide is presented afterwards.

Del 1: Information om deltagaren

1. Namn:

2. Nuvarande roll och tillhörande organisation:

3. Antal år i nuvarande roll:

4. Tidigare erfarenheter och utbildning kopplat till nuvarande roll:

Del 2: Verksamhet och närvaro i utsatta områden

1. Utifrån dina egna erfarenheter, hur upplever du bemötandet av dig och dina kolleger som myndighetsperson när ni är verksamma i mer utsatta områden så som Tingbjerg-Husum och Nørrebro?
- a. Har du uppmärksammat några positiva eller negativa förändringar i bemötandet av räddningstjänsten eller andra samhällsaktörer under dina verksamhetsår?
2. Har du själv upplevt eller bevittnat utfall mot dig eller en kollega under uttryckningar eller annan verksamhet? I så fall, kan du berätta om ett sådant tillfälle?
3. Hur tror du kommunikationen mellan personer i er verksamhet och de boende kan förbättras i dessa områden?
- a. Kan kommunikation anpassas bättre efter ungdomar, föräldrar respektive andra boende i området?
4. Vilka svårigheter ser du i övrigt att skapa och bibehålla goda relationer hos boende till er verksamhet i de nämnda områden?
- a. Gäller detta även för alla myndigheter i området?

Del 3: Samarbete mellan aktörer [Påbörjat efter maximalt 25 minuter]

1. Har du samarbetat med andra myndigheter, till exempel polisen, skolor, HBR, lokala föreningar o.s.v., när du utfört arbetsuppgifter i dessa områden?
- a. Tycker du att dessa interaktioner har varit givande? Varför?
2. Har du upplevt utmaningar i att kommunicera och samarbeta med andra myndigheter i området?
- a. Om ja; Vad tror du har orsakat detta?
- b. Om inte; Vad tror du har möjliggjort bra samarbete?
3. Är du medveten om några relevanta riktlinjerna för samarbete med andra myndigheter och civila aktörer, så som [polisen, HBR, socialstyrelsen]?
- a. Om ja; Hur fungerar det att applicera dessa i praktiken?
- b. Om nej/inte riktigt; Tror du att det behövs riktlinjer och vad för sorts i så fall?

4. Finns det fysiska eller organisatoriska mötesplatser för att kunna samarbeta med andra myndigheter och civila föreningar?

a. Om ja; används dessa i praktiken och medför dom ett värde till både er verksamhet och dig personligen?

5. Vad tror du ytterligare samarbete med lokala föreningar och bolig/ejeföreningar kan bidra med?

Del 4: Insatser för att öka tillit i utsatta områden [Påbörjat efter maximalt 45 minuter]

1. [För HBR Personal]: Ifall du har varit involverad i Projekt Brandkadetter (ofta benämnt UBK förstår jag), vad har din roll varit och vilka möjligheter skapar projektet att stärka relationen till unga i området?

a. Om ja; Tror du att projektet har relevans även för andra aktörer och att modellen kan användas även av polisen till exempel?

b. Är det något du skulle vilja se utvecklas vidare inom projektet?

c. [För Anja, Projektansvarig]; Vad blir förhoppningsvis den långsiktiga effekten av projektet och vilka utmaningar samt möjligheter är framför en?

2. [För SSP/SSP+ Konsulenter]: Vad ser du ge bäst effekt för att förbättra relationen och möjliga samarbetet med unga i området?

a. Vilken fördel finns det i att använda förebilder bland de unga för att stärka tilliten till myndigheter?

Del 5: Övriga kommentarer [Påbörjat efter maximalt 55 minuter]

1. Därmed har vi nått slutet av mina frågor för denna intervju, före jag tackar för ditt bidrag är det något ytterligare du skulle vilja ta upp innan vi avslutar?

2. Vore du intresserad att ta del av resultatet för studien med ett PDF-exemplar av den färdiga rapporten?

3. *Extra*: Har du någon övrig person i ditt nätverk du tror skulle vara lämplig att intervjua? T.ex. SSP konsulenter, representanter från lokala föreningar som arbetar med ungdomar eller

'Probing Questions'

- i.) Vill du säga något mer om...
- ii.) Finns det andra sätt att...
- iii.) Kan du ge ett exempel?
- iv.) Varför tror du att ... är på detta viset?
- v.) Varför är detta viktigt?

Del 1: Information om deltagaren

1. Namn:

2. Tillhörande boområde/boligförening och längd på boende

Del 2: Verksamhet och närvaro i utsatta områden

1. Hur upplever du bemötandet av myndighetspersoner i området?
- a. Har du uppmärksammat några positiva eller negativa förändringar i bemötandet av myndighetspersoner med åren?
2. Har du själv sett eller hört om något utfall mot en myndighetsperson i området? I så fall, kan du berätta om ett sådant tillfälle?
3. Hur tror du kommunikationen mellan personer i boendeområdet och myndighetspersoner kan förbättras i dessa områden?
- a. Kan kommunikation anpassas bättre för att nå ungdomar, föräldrar respektive andra boende i området?
4. Vilka utmaningar ser du att ha bra relationer mellan boende i området och myndighetspersoner?
- a. Gäller detta samma sak för alla myndigheter, alltså polis, socialstyrelsen, räddningstjänsten, i området?

Del 3: Samarbete mellan aktörer [Påbörjat efter maximalt 25 minuter]

1. Hur var det att samarbeta med räddningstjänsten för brandlarms satsningen i området?
- a. Tycker du att det var givande att samarbeta?
- b. Vet du om eller har du själv varit med i något samarbete med andra myndigheter också?
2. Hur har det fungerat att kommunicera och samarbeta med en myndighet som räddningstjänsten?
- a. Om ja; Vad tror du har möjliggjort detta?
- b. Om inte; Varför inte?
3. Är du medveten om några riktlinjer man kan utgå ifrån för att starta ett samarbete med myndigheter?
- a. Om ja; Hur fungerar det att applicera dessa i praktiken?
- b. Om nej/inte riktigt; Tror du att det behövs riktlinjer och vad för sorts i så fall?
4. Finns det mötesplatser för att kunna samarbeta med andra myndigheter och föreningar?
- a. Om ja; används dessa i praktiken och tillför dom nytta?
5. Vad tror du ytterligare samarbete med andra föreningar eller myndigheter kan bidra med?

Del 4: Insatser för att öka tillit i utsatta områden [Påbörjat efter maximalt 45 minuter]

1. Har du hört talas om Ungdomsbrandkadetter och vad tror du kan vara de positiva effekterna av ett sånt projekt? Kan de stärka relationen till unga i området?
- a. Om ja; Tror du att projektet har relevans även för andra aktörer och att modellen kan användas även av polisen till exempel?
- b. Är det något du skulle vilja se utvecklas vidare inom projektet?

Del 5: Övriga kommentarer [Påbörjat efter maximalt 55 minuter]

1. Därmed har vi nått slutet av mina frågor för denna intervju, före jag tackar för ditt bidrag är det något ytterligare du skulle vilja ta upp innan vi avslutar?
2. Vore du intresserad att ta del av resultatet för studien med ett PDF-exemplar av den färdiga rapporten?
3. *Extra:* Har du någon övrig person i ditt boligsällskap eller annat du tror skulle ställa upp på en likadan intervju?

'Probing Questions'

- vi.) Vill du säga något mer om...
- vii.) Finns det andra sätt att...
- viii.) Kan du ge ett exempel?
- ix.) Varför tror du att ... är på detta viset?
- x.) Varför är detta viktigt?

Appendix F – Transcription Template

Interviewer: Aron Fransson (AF)

Interviewee: FirstName LastName (FL)

Date and Time: *Example Monday, 26th of June*

Location: Virtually conducted via Microsoft Teams.

Language mediums: Danish/Swedish, interviewer speaks in Swedish while interviewee responds in Danish.

Meaning of Symbols

... = Repetition of the same words.

.. = Interruptions in the informants or interviewers monologue.

.^.= Inaudible due to glitches or other technical phenomenon's.

.-.= Trouble to understand meaning due to language barrier.

[xx:xx] = Time stamp.

[Transcription Starts at 00:XX]

[00:xx] Del 1: Information om Deltagaren

AF:

FL:

[xx:xx] Del 2: Verksamhet och närvaro i utsatta områden

AF:

FL:

[xx:xx] Del 3: Samarbete mellan aktörer

AF:

FL:

[xx:xx] Del 4: Insatser för att öka tillit i utsatta områden

AF:

FL:

[xx:xx] Del 5: Övriga kommentarer

AF:

FL:

Appendix G – Code Frequencies

Coded references constituting the three emergent themes identified for the concept of reception are presented in a summarizing table below.

Name of Code [C=Concept, M= Main Theme, S= Sub-theme]	No. of Informants Referred (11 Maximum)	No. of coded references
C: Reception	9	13
M: Recognition	0 (8)*	0 (29)*
S: 'Fire-Police'	8	14
S: Profile & Diversity	7	15
M: Safety	9 (9)*	43 (59)*
S: Tension	4	13
S: Time of Day	2	3
M: Trust & Confidence	8	17

Table 3: Code frequency of themes identified for the concept of 'Reception'. *Accumulative values from sub-themes.

In the table below a summary of the coded references, constituting the three emergent themes identified for the concept of prevention, are presented.

Name of Code [C=Concept, M= Main Theme, S= Sub-theme]	No. of Informants Referred to (11 Maximum)	No. of coded references
C: Fire Prevention	0	0
M: Communication	6 (9)*	10 (40)*
S: Cultural Differences	2	3
S: Language	9	15
S: Risk Communicators	6	13
M: Cooperation	8 (11)*	28 (102)*
S: Civil Agencies & Agents	10	39
S: Social Services	8	24
S: SSP	6	15
S: Project Fire-Cadets	5	21
S: Private Stakeholders	2	3
M: Means for Change	0 (9)*	0 (95)*
S: Access	7	23
S: Continuity	7	22
S: Resources	8	18
S: Systematic Work	5	16
S: Visibility and Availability	8	16

Table 4: Code frequency of themes identified for the concept of 'Fire Prevention'. *Accumulative values from sub-themes.

Appendix H – Literature Study

Keywords from the first phase of the literature study were not saved during the search process. However, a list of the literature that were eventually reviewed has been saved. As such, a limited summary of the utilized literature is presented in Table 5 in relation to the topics in which it was divided into using the NVivo (release 1.3) software.

Topic	Selection No. 2 (Reviewed)
Method [Using LUBcat]	2
<i>Thematic Analysis</i>	2
<i>Interviews</i>	4
Case-study literature [Provided by mentors or found through the search engine ‘Google’]	13
<u>Literature derived from ScienceDirect</u>	
Trust and Anti-Social Behaviour	0
<i>Adolescent Development and Behaviour</i>	7
<i>Arson</i>	3
Vulnerability	3
<i>Socio-Economic Vulnerability and Fires</i>	10
Residential Fire Risk	6
<i>Residential Fire Prevention</i>	5

Table 5: Summary of the reviewed literature during the first phase of the literature study.

During the second phase of the literature study, the results from LUBcat were recorded and are thus presented below in Table 6. As discussed in chapter 3, the literature study was done iteratively and additional literature was discovered using the ScienceDirect platform. Beyond this, a few pieces were provided by the mentors and two pieces of literature were reviewed in their hard-copy format as available in ‘V-huset’ library at LTH, Lund.

Search	Results	Selection No. 1	Selection No. 2 (Reviewed)
Risk Communication	488	190	16
Risk Governance	500	110	10
Urban resilience	281	10	2
Risk Governance AND Fire	13	13	1
Risk Communication AND Trust	57	57	1
Community Resilience	261	261	4
Fire and Rescue Services	12	12	0
Risk Perception	149	100	5

Table 6: Summary of the reviewed literature during the second phase of the literature study.