Institutional Collective Action in Ontario's Fire Service:

Conducive and Inhibiting Factors of Local Collaboration of Fire Safety Inspections and Enforcement

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ABSTRACT

Institutional Collective Action in Ontario's Fire Service: Conducive and Inhibiting Factors of Local Collaboration of Fire Safety Inspections and Enforcement

Ontario's fire departments are obligated to provide fire prevention services to their respective communities. The Fire Protection and Prevention Act, 1997, is largely permissive legislation leaving the mechanism for delivery of these services to the discretion of local governments. The economic, political and social environment, however, is placing increased pressures on fire chiefs and elected officials to do more with less. Within the individualized contexts of municipalities' needs and circumstances, the prospect of mandated training requirements for Chief Fire Officials and Assistants to the Fire Marshal coupled with increased regulatory responsibilities for fire safety inspections and enforcement is increasing demands on already constrained resources. Adopting Institutional Collective Action as the theoretical framework for this research, the conducive and inhibiting factors of voluntary collaboration of fire prevention activities were found to be consistent with the literature. Although perceived resistance by organized labour is a barrier to improved fire prevention activities, association representation does not explain the dearth of formalized fire prevention agreements across the province. Chief administrative officers and elected officials are perceived to be receptive to collaborative arrangements, yet how the issue makes it to the council agenda is unclear. Fire chiefs seem to be receptive to the net benefits of collaboration, yet a question remains whether they are advocating informal or formal alternative service delivery mechanisms.

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CHAPTER 1: INTRODUCTION

1.1 Background

There are 453 municipal and northern fire protection fire departments in the province of Ontario. The capacity of each fire department to conduct fire safety inspections and enforce the Ontario Fire Code (OFC) varies widely by locality. Minimum responsibilities for inspection bureaus include acting upon complaints or requests, adherence to required frequencies for specific occupancies, and approval of fire safety plans. Many fire departments only have the resources to conduct inspections on a complaint or request basis while other fire departments cannot meet the regulatory requirements for inspections of facilities housing senior citizens, our most vulnerable population.

Further, the level of service provided with fire safety inspections differs greatly between communities. Voluntary certification and inadequate training of fire inspectors is an ongoing debate within the industry. From an inspection perspective alone, plans examination, fire alarm, detection and suppression systems, and a multitude of interpretive aspects involving the OFC, National Fire Protection Association (NFPA), Canadian Standards Association, as well as working knowledge of applicable Technical Safety Standards Association and Electrical Safety Authority requirements demand a thorough understanding, continuing education and regular practice. While the Building Code Act specifies qualifications for building inspectors under various disciplines (BCA, s.15.11), the Fire Protection and Prevention Act, 1997 (FPPA) is silent for fire inspector qualifications. Indeed, NFPA professional qualifications for any fire service position, including Fire Inspector Level 1 and 2 certifications, are not mandatory in the province.

Fire Underwriters Survey (FUS) provides inspection frequency recommendations based on the type of occupancy (Table 1.1). These are considered industry best practices for residential and commercial fire insurance rate classifications. Most fire

departments are unable to meet these guidelines or industry best practices, however, some fire services have modified the recommended frequencies to longer intervals.

Table 1.1 Inspection Frequency Benchmarks by Occupancy Classification

Occupancy Classification	Description	FUS Benchmark
A1	Assembly – production and viewing of the performing arts	6 months
A2	Assembly – not elsewhere classified in Group A	6 months
A3	Assembly – arena type	6 months
A4	Assembly – occupants gathered in the open air	6 months
B1	Detention	6 months
B2	Care and Treatment	6 months
B3	Care	6 months
C	Residential	6 months
D	Business and Personal Services	12 months
E	Mercantile	12 months
F1	High Hazard Industrial	3 months
F2	Medium Hazard Industrial	6 months
F3	Low Hazard Industrial	6 months

Source: Fire Underwriters Survey: Routine Fire Prevention Inspection Program (2013)

As the fire service matures in its realization that voluntary inspection programs are not sufficient for public safety and as communities continue to grow, additional legislative and regulatory requirements within the FPPA and OFC can be reasonably anticipated, exposing further gaps in regulatory enforcement and increasing municipal liability.

The province of Ontario's public fire safety policy employs a balanced and flexible approach to local implementation that relies on three components: a) public fire and life safety education, b) fire prevention activities, which include fire safety inspections of buildings and enforcement of the OFC through the use of tickets, orders and prosecutions, and c) emergency responses (Communique, 2014). Collectively, these

principles are known within the fire service community as the “three lines of defense” and are necessary for municipalities to achieve their fire safety outcomes. This paper argues, however, that an historic and continued preoccupation for emergency response, with its emphasis on fire suppression personnel and a focus on highly asset-specific capital items such as fire trucks and stations, have changed little since the FPPA was enacted. Although classified as the third line of defense, emergency response, which includes mutual aid and dispatching, accounts for the largest proportion of fire service collaborations in Ontario. A reactive, rather than proactive, fire protection approach that allocates the majority of its resources and investments to suppression activities is to the detriment of optimal public fire safety.

In the current social, economic and political context, it is important to study public safety activities as municipalities allocate a significant percentage of operating budgets to police, fire, and emergency medical services (Carr and LeRoux, 2005). Fire services have slowly, if not reluctantly, adopted New Public Management style managerial techniques, which focus “mainly in the direction of cutting costs and doing more for less as a result of better-quality management and different structural design” (Hood, 1991). Municipalities are expected to find alternative service delivery mechanisms that increase cost efficiencies and realize economies of scale while concurrently meeting professional and service-level standards (Andersen and Pierre, 2010). Exploring mechanisms to work collaboratively with neighbouring fire departments in order to improve the efficacy of fire prevention programs should be a priority for all fire chiefs, councils, local services boards and the province.

1.2 Research Question

The research question is **“What are the conducive and inhibiting factors of voluntary collaboration for fire prevention activities within Ontario’s fire service?”** Adopting the theoretical framework of Institutional Collective Action, three hypotheses

are advanced in order to expand upon the literature to evaluate the extent of acceptance or resistance by key stakeholders, specifically fire chiefs and firefighter associations, to voluntarily collaborating with other fire departments for fire prevention services.

H_1: The higher the level of a fire chief's education, the greater the benefits of collaboration will be positively perceived

H_2: If the workplace is unionized, then firefighters would oppose collaboration

H_3: If the fire chief felt his/her position or authority was at risk, then he/she would oppose collaboration

1.3 Legislative Framework

The requirements for local governments to provide specific services, vis-à-vis the three lines of defense, are notably vague. The FPPA states:

> Every municipality shall,
>
> (a) establish a program in the municipality which must include public education with respect to fire safety and certain components of fire prevention;

There are no schedules within the Act with which to adhere, notwithstanding the recent issuance of O. Reg. 364/13 mandating annual inspections and fire drill observations of care occupancies, care and treatment occupancies, and retirement homes that house society's most vulnerable populations. There are no other regulations mandating inspection frequencies based on major building occupancy groups.

Fire inspectors have legislative authority and responsibility under ss. 19 (2) of the FPPA as Assistants to the Fire Marshal to conduct fire safety inspections of buildings and structures for the purpose of ensuring that owners are compliant with the regulation. The OFMEM currently has no minimum training or certification requirements for appointments as an Assistant to the Fire Marshal. That practice is likely to change, however, to mirror O. Reg. 150/13 that requires training of Chief Fire Officials who are

responsible for reviewing and approving fire safety plans for vulnerable occupancies. This is the first mandated minimum training of a member of the fire service in Ontario.

The FPPA is permissive legislation that allows for alternative service delivery mechanisms by municipalities for fire protection services, including service agreements between municipal fire departments. The Act states:

> 2. (5) A municipality may, under such conditions as may be specified in the agreement, enter into an agreement to,
>
> (a) provide such fire protection services as may be specified in the agreement to lands or premises that are situated outside the territorial limits of the municipality; and
>
> (b) receive such fire protection services as may be specified in the agreement from a fire department situated outside the territorial limits of the municipality. (FPPA, ss.2.(5))

This subsection of the Act permits mutual aid agreements and the provision of services to and receipt of services from outside of the municipality. The decision on service production may only be limited by language within collective agreements restricting or prohibiting contracting out of services. The portion of the Act enabling automatic aid reads:

> 2. (6) A municipality may enter into an automatic aid agreement to provide or receive the initial or supplemental response to fires, rescues and emergencies. (FPPA, ss.2.(6))

These are generally formalized agreements, perhaps as a fee for service, which requires a stipulated response by the contracted fire department upon notification.

CHAPTER 2: LITERATURE REVIEW

2.1 Mutual Aid and Emergency Response

Academics have conducted some research on voluntary collaborations amongst fire departments but almost no literature exists regarding activities beyond emergency response, particularly fire prevention. The primary focus of such literature is on risk-spreading through mutual aid. Mutual aid has been described as a form of asset

specificity in which time-sensitive and site-specific dependence on human and technological intervention is imperative (Williamson, 1991). Shrestha (2008) explains the notion of site and temporal specificity is rooted in mitigation of uncertainty where jurisdictions do not have the resources to increase fire suppression resources for underserviced border areas. Agreements are reached with multiple providers to reduce the risk of a single provider being unable to provide assistance due to a simultaneous emergency (Shrestha, 2008).

Mutual aid agreements rely on good faith and trust amongst participants to the agreement as the parties “are under no obligation to furnish assistance when requested if providing such aid would… jeopardize their capacity to provide the service to their own residents” (Andrew, 2009, 134). While maintaining the local autonomy of constituent municipalities, mutual aid agreements allow for the provision or receiving of assistance in an emergency upon request (Andrew and Hawkins, 2012). Wood’s PhD thesis (2004) noted that mutual aid in the Kansas City metropolitan region extended not just beyond city jurisdictions, but also county and occasionally state geopolitical boundaries.

Spicer’s PhD dissertation (2013) found that the 18 separated cities in Ontario are not forming collaborative arrangements at a high rate with their regional neighbours. His thesis utilizes the ICA framework and points to the challenges that growth and development in rural municipalities place on the traditional urban-rural divide. In his research, however, Spicer found that mutual aid and fire dispatch agreements between separated cities and their lower tier neighbours were, by far, the predominant collaborative agreements between the separated city and the upper tier municipality (Spicer, 2013).

Hatley’s PhD thesis (2010) explored the attempted voluntary consolidation of the five municipal fire departments within the metropolitan Detroit area. Despite the net benefits with an agreed upon cost sharing formula and the considerable effort and time expended

in forming a consolidated fire authority, the initiative failed. It was found that elected and appointed officials perceive collaborations differently. If either perceives past interactions negatively, it may be sufficient to prevent serious discussions on collaboration (Hatley, 2010). “It is important to future local government actors considering collaboration to have a better understanding of what role these perceptions play in determining the success or failure of collaboration activity” (Hatley, 2010, 184). The political context and preferences of political actors is a key lesson learned from the Detroit experience.

The formation of institutional ties within the public safety sector through formal and informal interlocal arrangements (ILA) has been extensively studied by Andrew (2006; 2009; 2012). He determined that the characteristics of public safety as a public good or service not only impacted transaction costs, but significantly influenced the type of ILA adopted. A single functional service area, such as the fire service, has its own distinct homogeneity of policy goals and preferences which can reduce the transaction costs of contract negotiations, maintenance and enforcement and lead to an adaptive agreement (Andrew, 2006).

2.2 Linking Building Inspectors to Fire Inspectors

As previously stated, there is no academic literature available pertaining to voluntary collaborations for fire prevention activities. Applied research projects for the Executive Fire Officer program at the National Fire Academy in Emmitsburg, Maryland have concentrated on regionalization and consolidation of specific cities or districts within various states outside of the ICA framework, thus did not factor into this literature review.

Shrestha’s contribution (2010) raised possibilities for predicting factors conducive to fire prevention collaborations through findings of reciprocal arrangements for building inspectors. Like fire inspectors, building inspectors have great specialization and a responsibility for public safety. While fiscal considerations for cost efficiencies may be an initial driver for discussion amongst institutional actors, improved effectiveness and

service level standards through adaptive and reciprocal agreements may become the sustaining and primary outcome.

Fire prevention activity collaborations can achieve economies and reduce fire hazards. Such efficiencies and risk reduction limit the frequency of mutual aid, thereby reducing labour costs, dollar losses and negative externalities. Thurmaier and Wood (2002) found in the case study of Johnson County, Missouri's contractor licensing and building code enforcement ILA, the impetus for collaboration of building inspectors "was primarily increased regulatory effectiveness, with an expected outcome of greater public safety in buildings" (Thurmaier and Wood, 2002, 595). Eliminating the fragmentation caused by 22 different building enforcement codes throughout its municipalities was the key driver for collaboration.

2.3 The Problem of Fragmented Policy

Fragmented decision making is a direct result of delegation of roles and responsibilities from a central authority, such as the provincial government, to municipalities and local agencies (Feiock, 2009). Although Oakerson and Parks (2011) state that the delegation of roles and responsibilities can improve local resilience and responsiveness, delegation also creates ICA dilemmas (Feiock, 2009; Feiock & Scholz, 2010). "ICA dilemmas arise directly from the division or partitioning of authority in which decisions by one government in one or more specific functional area impact other governments and other governmental functions" (Feiock, 2013, 397). ICA dilemmas are created when vertically and horizontally fragmented decisions by one jurisdiction create positive and/or negative externalities for another.

The focus of ICA is "on the externalities of choices in fragmented systems in which decisions by one independent formal authority do not consider the costs or benefits that these decisions impose on the constituencies and policy outcomes of concern to other authorities" (Feiock and Scholz, 2010, 6). Institutional and policy fragmentation can be

“mitigated by a high degree of intergovernmental collaboration that forms cooperative agreements, mutual trust, and social capital that can avert collective action problems and achieve reasonable outcomes” (Wood, 2004, 192).

It is within the context of this research that the extent of vertical fragmentation of provincial public fire safety policy may create a dilemma of perceived ineffectual implementation by local governments due to inconsistent and non-standardized fire prevention activities. Whitford (2010) reasons that a delegator “wants to ensure that the delegatee makes and implements policy within some band of acceptance” (Feiock and Scholz, 2010, 34). The province has an interest in ensuring municipalities carry out its public fire safety policy, however, current legislation, regulation and directives are not overly prescriptive on municipalities. Public Fire Safety Guidelines provide municipalities with approaches they may consider in determining local fire safety policy and programming, but there is great debate as to the enforceability of such guidelines in the absence of regulation or directive.

Inconsistencies between provincial interests and local implementation are not only vertically fragmented, but also produce horizontally fragmented decisions between local governments. When local fire prevention activities do not reduce the frequency and severity of fires, the negative spillovers may consist of increased reliance on mutual aid, localized economic impact due to business disruption, or environmental contamination crossing municipal boundaries caused by smoke and water run-off. Whitford (2010) was concerned that negative externalities caused by neighbouring municipalities may lead some to want the central authority to guard against an erosion of the standard of quality, which can lead to a “race to the bottom”. Some fire chiefs may welcome additional regulation in order to “level the playing field” within their regional area, as it can be a challenge for a municipality to compete for and retain business if it strictly enforces the OFC and its neighbour does not.

2.4 Institutional Collective Action (ICA) Framework

2.4.1 Working Definition of ICA

The strength of the Institutional Collective Action (ICA) framework is recognized by academics studying voluntary collaboration under its various appellations. Feiock and Scholz (2010) brought together scholars from across the spectrum who have made contributions using similar themes under differing terminology such as multi-lateral agreements (MLA), inter-jurisdictional agreements (IJA), inter-local agreements (ILA), contracts, voluntary regionalization, and imposed consolidations. Collectively, they represent the range of mitigating mechanisms, which creates the framework of ICA.

The literature review revealed a theoretical model that was adopted for this research and data analysis; the ICA framework. ICA is a voluntary, self-organizing collaborative arrangement between one or more municipalities for the coordination or joint provision of a local service (Feiock, 2007; Feiock and Scholz, 2010). Feiock and Scholz (2010) define self-organizing federalism “as the endogenous development and maintenance of institutional mechanisms that mitigate a recognized ICA dilemma by those directly affected by the dilemma” (Feiock and Scholz, 2010, 5). In general terms, collaboration is “the process of facilitating and operating in multi-organizational arrangements to solve problems that cannot be solved, or solved easily, by single organizations” (Agranoff and McGuire, 2003, 4). The research is situated largely in regional and metropolitan areas of the United States, although the ICA framework has broad applicability (Feiock and Scholz, 2010). The model has been used in Canadian-focused research (Conteh, 2012; Spicer, 2013) as well as small towns and rural settings (Morton, Chen and Morse, 2008; Bel and Warner, 2015).

2.4.2 Mitigating Mechanisms

The ICA framework can be broadly applied across the local service delivery spectrum and provides a range of mitigating mechanisms to deal with ICA dilemmas. As illustrated in Figure 2.1 (Feiodck and Scholz, 2010), the mechanisms range from the

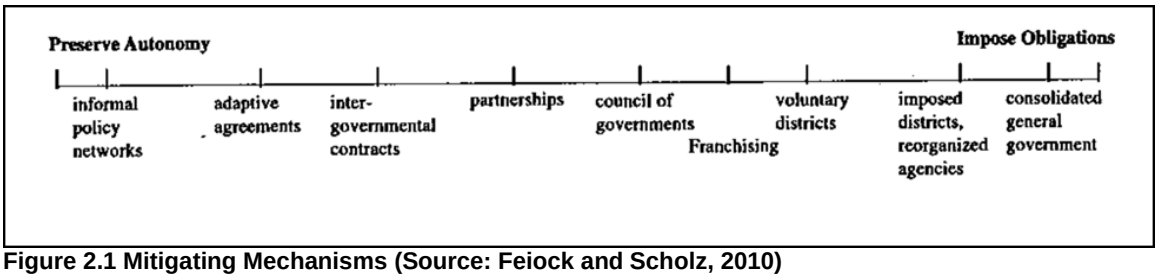

Figure 2.1 Mitigating Mechanisms (Source: Feiock and Scholz, 2010)

adaptive, informal arrangement that maintains local autonomy on the far left of the spectrum to the restrictive, formalized agreement that transfers local autonomy to another institution on the far right. The selection of an available mechanism is determined by the nature of the dilemma and the function or service it is intended to advance.

2.4.3 Application and Limits of ICA

Kwon and Feiock (2010) state that inefficiencies caused by jurisdictional fragmentation can be overcome through collaboration of service delivery responsibilities. The ICA framework "can be applied to a wide range of policy dilemmas in which local governing units can potentially achieve better outcomes collectively than acting individually by reducing barriers to mutually advantageous collaborative action as represented by the transaction costs required for achieving joint projects" (Feiock, 2013, 399). The ICA framework encompasses multiple theories in support of its approach, including the application of "contracting and individual-level collective action to institutional actors such as cities, counties, and government agencies" (Feiock, Lee, Park and Lee, 2010, 242).

Simon Andrew expands upon the work of Feiock (2007; 2009) by examining local government decisions to enter into Inter-Jurisdictional Agreements (IJA). Andrew discusses the network approach that encompasses the ICA framework. He emphasizes factors such as the characteristics of goods and services, composition of contracting parties, political institutional characteristics, and interlocal politics (Andrew, 2009). Andrew further states that “The institutional collective action framework is an excellent example of a model that has been developed to explore factors associated with IJA adoption” (Andrew, 2009, 136).

ICAs, however, are not panaceas for fragmented service delivery. Collins wrote “if the benefits are so pronounced and interest is so high, why aren’t all local governments taking advantage of such an option?” (Collins, 2006, 3). Such is the nature of this research. Feiock identified limits to self-organizing mechanisms due to fragmentation of local jurisdictions in solving “diseconomies of scale, positive and negative externalities, and common property resource problems” (Feiock, 2009, 357). As well, depending on the transaction costs involved, IJAs are not “the only tools that can be used to achieve meaningful regional integration” (Andrew, 2009, 139). Imposed regional authorities, for example, may address an ICA dilemma, however, to the detriment of local autonomy. Kwon and Feiock (2010) found that even though the potential benefits of collaboration may be recognized, transaction cost problems of institutional design and implementation may still exist, often due to weak relationships. Such elements would be useful for framing any discussion of regionalization of Ontario’s fire services and the potential barriers to such a provincial policy decision.

Ostrom (1983) cautioned that coercion and seller opportunism are detrimental to local autonomy. “Contractual arrangements are meaningful only where instrumentalities are independent or autonomous, capable of saying no, maintaining an arm’s-length

relationship when necessary, and undertaking cooperative arrangements when mutual advantage can be gained" (Ostrom, 1983, 144).

Additionally, Andrew (2009) acknowledges that findings have been difficult to broadly apply due to issues of measurement and an absence of comprehensive data. While academics such as Andrew (2009), Andrew and Hawkins (2012), and Jung et al. (2013) have attempted to produce generalizable findings of voluntary collaboration in the fields of emergency management and fire service mutual aid, there is less evidence available for fire prevention activities. Yet, many academics argue that these shortcomings can be overcome through selection of the most appropriate ICA mechanism in the given context, dependence upon networks for both informal and formal arrangements (LeRoux, Brandenburger and Pandy, 2010), and continued research aimed at assisting practitioners (Feiock and Scholz, 2010).

2.4.4 Transaction Costs

In economics, transaction costs are the management costs associated with planning, adapting, and monitoring provided services (Williamson, 1981; Carr, LeRoux and Shrestha, 2009). Transaction costs are viewed as a primary barrier to mitigating ICA dilemmas. They include information costs, negotiation costs, external decision costs, and enforcement costs. Such barriers to collective action are dependent on "the difficulty or ease of search, the costliness of information, the time and effort needed in bargaining or making decisions, and the fact that contracts required policing and enforcement" (Whitford, 2010, 37). Critical to the transaction costs are the extent to which time and information are available, and for the latter, accurate. "The costliness of information is the key to the costs of transacting, which consist of the costs of measuring the valuable attributes of what is being exchanged and the costs of protecting rights and policing and enforcing agreements" (North, 1990, 27). The greater the uncertainty, the greater the net benefits must be. Feiock (2002) and Kwon and Feiock (2010) add agency costs to the

discussion. These occur when the preferences of elected and appointed officials negotiating the agreement diverge from the public's preferences.

Homogeneity of demographics, industry, building stock and geography play a role in recognizing commonalities, including risks and preferences that can reduce transaction costs. Feiock, Jeong and Kim (2003) found that "Knowledge of the costs and benefits of an agreement also allows government officials to more accurately identify joint or individual responsibilities, but this process becomes more difficult without information concerning participant preferences and behavior" (Hawkins, 2009, 110-111).

Politicians and public service administrators do not always make decisions with complete information or clearly defined outcomes (Andrew and Hawkins, 2012). "Boundedly rational actors have limited capacity to gather or process information regarding all potential costs involved in an exchange" (Feiock, Clinger, Shrestha and Dasse, 2007, 73). Perfect information would include all transaction costs, however, decisions are not only based on finances. "A framework based entirely on purposive rationality, even bounded rationality, is incomplete without complements drawn from institutional theory" (Brown and Potoski, 2003, 465). Leslie Pal (2006) defines public policy as "a course of action or inaction chosen by public authorities to address a given problem or interrelated set of problems" (Pal, 2006, 2). With the exception of larger urban centres, which may employ full time policy analysts, the rational process of policy making is not the reality for most municipalities. Tindal and Tindal (2004) support this assertion in that "the policy making process in practice is quite different from the logical series of interrelated steps suggested by the rational-comprehensive or classical model of policy making" (Tindal and Tindal, 2004, 354). Lindblom argues that a limited capacity for problem-solving, incomplete information and insufficient time for comprehensive analysis results in an incremental approach to policy making (Lindblom, 1959). The "muddling through" approach closely resembles that of Popper's "piecemeal social

engineering", whereby social policy evolves through trial and error. This is a significant nuance, as not all benefits and costs are immediately known for particular ICA problems and mitigating mechanisms within varying local political, economic and social contexts.

2.4.5 Individuals as Institutional Actors

The literature suggests that individuals are composite actors and that homogeneity, social capital and policy actors' willingness to set aside personal and institutional self-interest are key considerations in developing ICA arrangements. Composite actors have positional responsibilities, possess the authority to act within prescribed limits, and have their own personal preferences whether to act or not on behalf of the organization. These institutional actors have the capacity to collaborate with other institutional actors for better outcomes. Such collaboration is only achieved through local policy actors; both appointed and elected.

These actors' perceptions of the benefits and transaction costs of collaboration is material to the survey conducted for this research. Carr, LeRoux and Shrestha (2009) claim that the ICA framework bridges rational choice and institutional theories. Furthermore, ICA "combines institutional, transaction-cost, and social-network explanations for local government service production decisions" (Carr, LeRoux, and Shrestha, 2009, 404). Using a broad range of solutions, institutional actors can achieve outcomes that are efficient to achieve economies of scale, fairly distribute the benefits and costs, and are sustainable over the long term because of adaptable incentives.

Institutional actors have positional responsibilities and the authority to act. It is necessary that they share the benefits and costs of collaboration in a fair and equitable manner without attempting free-riding. "If local actors pursue strategies based on their short-term interests, then the collective action problem dictates that the outcomes of individual decisions will be collectively inefficient in the absence of mechanisms to integrate decisions across policies and/or jurisdictions" (Feiock, 2013, 398).

2.4.6 Networking and Social Capital

Recognizing that appointed and elected officials make decisions for and act on behalf of local government, ICA encompasses the capability for intentional action by individuals for the benefit of the organization or institution. The context of social networks and voluntary governance is dependent upon the social capacity of individuals, the nature of institutions, and strength of relationships (Feiock, 2007). Social capital is built upon trust and developed networks of various policy actors over time through previous informal and formal agreements, including a positive reputation for following through on their commitments.

While transaction costs “create a disincentive for local public officials to use interlocal service agreements, the institutional collective action framework posits that the transaction costs of cooperation can be mitigated by networks and networking among local government actors” (LeRoux, Brandenburger and Pandy, 2010, 270).

2.4.7 Imposed Authority versus Voluntary Consolidation

“Fragmented governmental jurisdiction is pervasive and has long been the subject of contentious debate over the primacy of local or regional interests” (Feiock, 2013, 397). When public policy is slow to be implemented locally or negative externalities continue without resolution, the province may exert its authority, which Feiock acknowledges by stating “Solutions to fragmented authority are often imposed by statute and are designed and coordinated by a higher level government or third party” (Feiock, 2009, 370). Feiock goes on to say, however, that “The fragmentation and institutional complexity found in metropolitan areas makes the imposition of standardized solutions difficult or even impossible” (Feiock, 2009, 370). The fragmentation problem may be solved through imposed regionalization or amalgamation, but the resultant high transaction costs do not achieve purported economies of scale, increased efficiencies or improved effectiveness.

When ICA dilemmas and collaboration risks continue to hinder provincial goals, "higher level institutions have the authority to resolve the problems by changing the geographic or functional jurisdictions to internalize the externalities" (Feiock, 2009, 361). Farmer's PhD thesis (2008) found that higher levels of government can impose regional authorities. This is supported by Feiock (2009) who states "many states use regional level special districts to mitigate the horizontal problem of metropolitan service provision for geographic consolidation of services such as planning, resource management, schools, or emergency services" (Feiock, 2009, 361).

Voluntary regional authorities in which individual municipalities voluntarily delegate some of their control and decision making to a formalized body do so because

> as the complexity of interactions increases, they generally involve collective governance through decision bodies representing all or most of the affected entities. The public administration literature has traditionally looked to this type of governance body with sufficient authority as the mechanism to effectively mitigate ICA dilemmas. (Feiock, 2013, 405)

In "many fire departments in rural and small town Canada which are volunteer-based, problems of population aging or population decline, combined with increasing regulations around fire training standards, may mean that smaller community departments are consolidating" (Halseth, 2006, 78). Following the forced amalgamations of the 1990's, however, voluntary consolidations have not been the predominant mechanism for finding efficiencies, economies, or addressing declining pools of human resources in Ontario's volunteer fire departments. Aside from a long-standing practice of outsourcing the provision of communications infrastructure and dispatching services to larger urban centres or other public safety agencies, and reliance upon mutual and automatic aid agreements to provide additional firefighting resources for emergency response, IJAs are relatively sporadic in Ontario. Morton, Chen and Morse (2008) show

that in-house provision of highly visible fire services in small towns may have more to do with maintaining a sense of community than finding economies.

The above literature review indicates that there are mechanisms to deal with Institutional Collective Action (ICA) dilemmas. Where local governments fail to voluntarily collaborate in an efficacious manner to overcome externalities of choice caused by fragmentation (Feiock, 2013), thus hindering stated policy goals of higher levels of government, particularly in the realm of public fire safety, the risk of coercion increases with the threat of an imposed authority mechanism. The loss of autonomy and higher transaction costs then becomes secondary to societal expectations.

CHAPTER 3: RESEARCH DESIGN AND METHODOLOGY

A cross-sectional study and analysis was undertaken to collect data of relevant variables at a specific point in time. The data was collected from various sources, including databases from the Municipal Fire Protection Profiles/Northern Fire Protection Profiles (MFPP/NFPP) and Municipal Analysis and Retrieval System (MARS), online surveys sent to fire chiefs within the province, and case studies of three fire departments experienced in collaborations of varying degrees. A fourth interview was conducted with the OFMEM to gain the provincial perspective. The snapshot approach was selected as it is well suited for studies that collect data on multiple variables and from geographically dispersed participants (O'Sullivan, Rassel and Burner, 2008).

Future changes, even in the near term, in the political, social or economic environment, would likely affect the study, analysis and potentially generate different results. Such environmental influences may include, for example, a fire event involving fatalities, increased regulation, new appointments in senior leadership, or significant changes to the local economy impacting municipal revenues.

3.1 Concurrent Triangulation Approach

A mixed-method strategy used a concurrent triangulation approach (Creswell, 2009) by simultaneously collecting quantitative and qualitative data (McDavid, Huse and Hawthorn, 2013). The three sources of data were:

1. Secondary data from MFPP/NFPP and MARS databases;
2. Primary data from an online survey of fire chiefs; and
3. Qualitative case study interviews.

McDavid et al. (2013) suggest that multiple sources of evidence that provide consistent findings are much more reliable than single-source findings as “The basic idea of this approach is that qualitative and quantitative lines of evidence are complimentary” (McDavid, Huse and Hawthorn, 2013, 207). Secondary quantitative data from the MFPP and MARS databases and primary quantitative data from fire chief surveys were gathered while qualitative data was attained from interviews of various policy actors. The qualitative aspect provides for an increased understanding of application of the ICA framework, contextual factors and program effectiveness in attaining observed outcomes.

Using a triangulation approach, the analysis blended the statistical interpretation of the quantitative findings in relation to the qualitative interview process. “Mixed-methods evaluation designs, and the triangulation approach in particular, have become a central feature of evaluation practice in governmental and nonprofit settings” (McDavid, Huse and Hawthorn, 2013, 208). Statistical analysis used visual representations through charts and graphs, analysis of variance (ANOVA), as well as summaries of the quantitative data from the questionnaires and secondary data sources. The case study approach provided a qualitative analysis to expand upon the numbers and provide insight into why and how voluntary collaborations work within these organizations.

3.2 Secondary Quantitative Data

Secondary data was obtained from the Ministry of Municipal Affairs and Housing's Municipal Analysis and Retrieval System (MARS) database and the OFMEM's Municipal Fire Protection Profiles/Northern Fire Protection Profiles (MFPP/NFPP) database. The 2013 Financial Information Returns (FIR) is the primary data collection tool as part of the Municipal Performance Measurement Program. Annual reporting is mandatory for municipalities, as the ministry uses the data for statistical and financial monitoring of municipalities. For the study, FIRs were accessed online via a link to "FIR Data – By Schedule". Schedule 02 – Municipal Data provided populations and Schedule 40 – Consolidated Statement of Operations: Expenditures provided fire department operating expenses adjusted program support.

The OFMEM collects MFPP/NFPP reports from local municipalities on an annual basis. The 2014 document requests were sent from the OFMEM to clerks and Chief Administrative Officers (CAO), not fire chiefs, although these forms often were sent down the chain to fire chiefs to provide the information and to return populated forms back to the clerk or CAO. The purpose of the profiles is to collect information regarding fire protection services for each municipality and each northern fire protection community (Appendix A). The database compiled electronic data from fillable PDF documents for the first time in 2014. Previous years' submissions from municipalities were done via hard copy. This data is kept within the MFPP/NFPP database, which is available and accessible to the public upon request to the OFMEM. The Data, Applications and Technical Support Division of the OFMEM verifies the validity and reliability of the MFPP/NFPP database to the extent that the forms submitted by clerks and CAOs are accurately populated.

The first request for the 2014 MFPP/NFPP data was made via email to the OFMEM on 13 February 2015. Through regular email exchange and telephone conversations

verifying required data with sample data charts, the final Microsoft Excel spreadsheet was received from the OFMEM's Manager of Data, Applications and Technical Support on 10 April 2015. The data provides information on the 414 municipalities and 49 fire protection districts within the province. It includes agreement summaries, percentage of fire suppression (emergency response) coverage provided by a municipality or partner, staffing breakdown by function, fire department contact information, unionization status of the labour force, core services (emergency response), and agreement details. The agreement details section provides the description of the types of service arrangements between municipalities, such as mutual aid, automatic aid, dispatch, or fire prevention services.

The secondary data from the OFMEM was used to evaluate the number of fire prevention personnel whose primary responsibility is fire and life safety inspections, in relation to all fire service personnel in the province, the incidence of collaborative arrangements between fire departments, the most frequent types of collaborations, and the prevalence of fire prevention collaborative agreements. The secondary data from the FIRs were used as independent variables to assess population size and operating budget with the survey responses.

3.3 Primary Data from Survey to Fire Chiefs

3.3.1 Variables

The independent variables were Population Size, Adjusted Operating Budget, Education Level of the Fire Chief, Type of Municipality, and Type of Fire Department. The first dependent variable, Perceived Fire Prevention Capacity, was used to determine possible service level gaps and to gauge if collaborations were perceived as even necessary. The other the dependent variables were based on the ICA framework and included Demographic Homogeneity, Networking and Social Capital, Benefits of Collaboration, Transaction Costs, and Policy Actor Resistance to Collaboration.

Appendix B describes the dependent variables and their observed or proxy measures in greater detail. Andrew (2009) provides a caution that the inherent difficulty of measuring key variables will require careful operationalization and refinement. Within each category of dependent variables, survey questions (Appendix C) were specifically designed to extrapolate data for elements of the ICA framework

3.3.2 Online Survey

Interceptum.com was selected as the online survey provider, under software license from Acquiro Systems Inc. operating out of Gatineau, Quebec. Potential respondents were informed that the company's servers are located in Quebec and it does not allow third parties to track survey participants. Also, the provider's terms of service agreement and privacy policy allows for the secure collection, retention, use, disclosure, security and disposal of personal information and is in accordance with Canada's Freedom of Information and Protection of Privacy Act.

Draft survey questions were developed and refined from mid-January and provided to a fellow MPA candidate on 11 April 2015 followed by faculty supervisor for review and comment on 20 April 2015. The feedback resulted in amendments to the content and format of the survey. Caution was exercised so as not to inadvertently harm respondents. Questions that may have alienated fire chiefs, led to embarrassment upon reflection, or caused one to perceive potential professional harm would only serve to promote gaming or result in non-participation. In order to keep the survey length manageable and encourage participants to complete the survey, great care was taken to only ask for relevant information and not create perceived intrusions. A pilot of the survey was sent via Interceptum.com on 27 April 2015 to the seven local fire chiefs within the Region of Waterloo and a university faculty member not associated with the Local Government Program. Additional minor amendments were then made as a result of the feedback. The final version with introductory letter and privacy policy were

submitted to the Local Government Program Coordinator on 11 May 2015 to forward to the university's Departmental Research Ethics Committee for approval. Permission for research on human subjects was received on 14 May 2015.

3.3.3 Target Population and Sample Size

The OFMEM secondary data was used as the basis of determining the target population (*N*) of fire chiefs. There are 414 local municipalities as defined by the Municipal Act, ss. 1, which are comprised of 173 single tier and 241 lower tier municipalities. In addition to the 414 local municipalities, there are 49 Northern Fire Protection Programs (NFPP) in northern Ontario. This resulted in a potential of 463 municipal and northern fire departments in Ontario.

The OFMEM provided a list of 453 fire departments, which is less than the number of municipalities and northern fire protection districts. As Table 3.1 illustrates, there are 16

Table 3.1 Distribution of Ontario's Fire Departments amongst Communities

• Communities with one fire department (364 municipalities and 49 NFPP communities)		413
• Municipalities with two fire departments (Brockton, Brooke-Alvinston, Frontenac Islands, Huron-Kinloss, Lucan Biddulph, Plympton-Wyoming, Russell, South Algonquin, South Bruce, Temagami, Warwick, and West Elgin)	(+24)	12
• Municipality with three fire departments (Arran-Elderslie)	(+3)	1
• Municipalities with 4 fire departments (Bluewater, North Dundas)	(+8)	2
• Municipality with 5 fire departments (Lambton Shores)	(+5)	1
	Total	453

Source: Data, Applications and Technical Support Office of the Fire Marshal and Emergency Management

municipalities with more than one fire department, permitted under subsection 5.(2) of the FPPA. This adds an additional 40 contacts to the previous 413 fire departments.

The OFMEM list excluded 34 municipalities that a) do not have a fire department, b) purchase services from other departments, and/or c) jointly operate a department that is counted in the above communities (Appendix D). The jointly operated department is

Central York Fire Services, which is discussed in the qualitative analysis. The target population (*N*) for the online survey was determined to be 453.

453 is considered to be a small population. O'Sullivan, Rassel and Berner (2008) suggest that in order to achieve ±5% accuracy with a 95% confidence level, a sample of half the population is needed. Adjusting for the 12 exclusions discussed below, 50% of the population size 441 (*N*) is 220 (*n*), which is the sample size needed in order to generalize the results across the province.

3.3.4 Survey Invitations and Responses

Of the 453 fire departments targeted for the online survey, 12 exclusions were made. Seven (7) fire chiefs each split their responsibilities between two (2) fire departments. Interceptum.com did not permit duplicate emails to be sent to the same address. As a result, seven (7) municipal fire departments were excluded. As well, the municipality of Bluewater has the same contact information for its four fire departments, eliminating three (3) invitations. A further two (2) municipalities, Brockton and Brooke-Alvinston, each with two fire departments, only received one (1) invitation apiece. The 12 exclusions resulted in 441 online surveys being sent out. The online surveys were sent via Interceptum.com to the 441 fire chiefs on 15 May 2015. The use of online invitations and follow-up provided the expected economization of time and effort. Four follow-up requests were made in the form of re-invitations to potential participants.

241 responses were received. 13 responses came from non-management staff including fire prevention officers, administrative assistants, captains, coordinators, and chief fire prevention officers. Two responses without name, position, or email address to verify that survey answers originated from a targeted participant were rejected. In total, 15 responses were excluded, as they did not come from or could not be confirmed that they came from a fire chief, deputy fire chief, director, manager or similar decision-

making position within the department. The remaining response rate of 226 participants met the required sample size of 220 necessary for generalization of results.

3.4 Qualitative Data through Case Study Interviews

A jurisdictional scan of collective action revealed three examples of alternative service delivery arrangements outside of the traditional emergency response realm. They include a shared Fire Inspector position for Middlesex County, a shared Training Officer in Wellington County, and the voluntary consolidation of Newmarket and Aurora fire departments into the Central York Fire Services. A former fire chief in Middlesex Centre, Ontario, Middlesex County Fire Prevention Officer John Elston was interviewed in Ilderton on 06 July 2015. Centre Wellington Fire Department Fire Chief Brad Patton was interviewed in Fergus on 19 June 2015. The interview of Central York Fire Services Fire Chief Ian Laing and Deputy Fire Chief Robert Comeau regarding voluntary consolidation was conducted in Newmarket on 12 June 2015. The interview questions (Appendix E) provided greater understanding of the impetus for voluntary collaboration, the inhibiting factors of collaboration, how those barriers were overcome and the continued benefits that serve to sustain these arrangements.

An additional interview was conducted by telephone with Jim Jessop, the Interim Fire Marshal and Chief of Emergency Management on 07 July 2015. The purpose of this interview was to gauge the province's view of the current state of fire prevention activities at the local level. It proved insightful in forecasting the expected direction of fire and life safety inspection requirements and fire department collaborations. The discussion validated the timeliness and utility of this research as a matter of interest to the province as pertains to its public fire safety policy.

CHAPTER 4: ANALYSIS AND FINDINGS

4.1 Secondary Data from the OFMEM

Initial observations of the MFPP/NFPP data supports the assertion that emergency response is the primary focus of most municipal fire departments. The numbers depicted in Table 4.1 show that fire prevention personnel account for 3% of total fire department staffing.

Table 4.1 Comparison of Fire Prevention Personnel to All Fire Service Personnel

Fire Department Type (n=453)	Fire Prevention Staff	Percentage of Total Prevention	Total Staff in Province	Prevention Staff as Percentage of Total Staff
Full Time	623	66.56%	11,365	
Composite	40	4.27%	264	
Volunteer	273	29.17%	19,414	
TOTAL	**936**		**31,042**	**3.02%**

The cities of Toronto, Mississauga and Ottawa, with 130, 41 and 38 full time fire prevention staff, respectively, account for 209 or 22% of all fire inspectors in the province. An unexpected finding, however, was that 165 of 453 fire departments (36%) did not have a single person dedicated to fire prevention activities.

As depicted in Figure 4.1, the MFPP/NFPP data breaks down the types of agreements between fire departments and third parties.

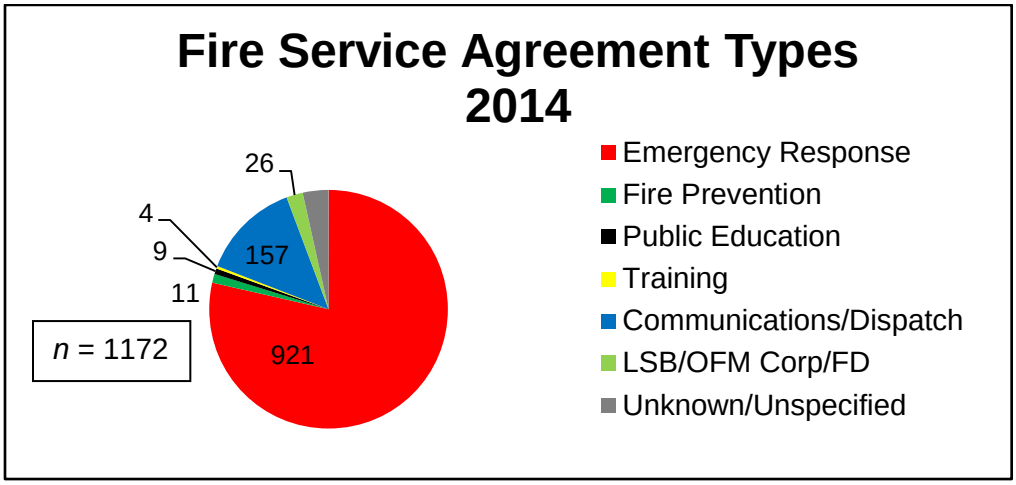

Figure 4.1 Agreement Types for Ontario Fire Services, 2014
Source: Data, Applications and Technical Support Office of the Fire Marshal and Emergency Management

Of the 1172 agreement types in place within fire services in Ontario, only 11 (0.9%) of all formal agreements pertain to fire prevention, inspection services or inspection activities.

The MFPP/NFPP data is not entirely accurate due to misreporting within the 2014 forms. The inadvertent omission of data is to be expected. While guidelines are provided to assist with entering required information, there is sufficient opportunity to misinterpret the instructions or simply enter an incorrect value. An example of such an omission as pertains to this research comes from Middlesex County, where eight municipalities, excluding the City of London, share in the costs and benefits of fire prevention services. This agreement was reported by only one of the eight participating local municipalities in their MFPP/NFPP submission.

A further limitation of this data is that it captures formal agreements only, and does not capture the informal arrangements that may exist amongst fire chiefs. One such example exists in Oxford County, where a reciprocal arrangement between Tillsonburg and South-West Oxford exchanges fire prevention activities for fire training expertise on an as-needed basis.

Notwithstanding the imperfect data, there is sufficient information to infer that the purported importance of fire prevention activities as a proactive approach to fire and life safety is not reflected in a corresponding number of fire prevention officers nor in the frequency of formalized fire prevention agreements. There is a clear focus on collaborative arrangements that address emergency response, including communications/dispatch services.

4.2 Online Survey Results

Electronic responses were downloaded from Interceptum.com into a Microsoft Excel 2010 spreadsheet. This primary data was combined with the secondary data from the OFMEM and the 2013 Financial Information Returns (FIR) submitted to the Ministry of

Municipal Affairs and Housing to create a working document. The FIRs provided fire department adjusted operating budgets and population size. All data was codified and transferred into IBM SPSS (ver. 23) after verification for accuracy. Original/raw data with identifiers redacted is available from the author upon written request.

Online responses regarding fire prevention capacity of fire departments support the findings attained through the secondary data (Appendix F) provided by the FIRs and OFMEM. 89.7% of fire chiefs rated the number of fire prevention officers/inspectors for their departments from “average” to “poor”; 77.6% rated the use of certified fire prevention officers/inspectors as “average” to “poor”; and 81.6% rated their municipality’s capacity to prosecute for non-compliance as “average” to “poor”. The OFMEM numbers and the perceptions of fire chiefs demonstrate a clear lack of capacity in fire prevention activities.

Observations from the survey results generally support the ICA framework. The conducive and inhibiting factors of voluntary collaboration proposed through the survey questions supported the literature’s application to fire prevention activities with some exceptions. Homogeneity of preferences is a factor conducive to collaboration as “costs related to communication, securing accountability, and the sharing of gains are more easily handled under conditions of homogeneity than heterogeneity” (Andersen and Pierre, 2010, 228). Survey results indicate that age range distribution, language(s) spoken and building stock/fire risk are predominantly “somewhat similar” to “very similar” in nature. The single outlier appears to be the perception of the mix of industrial, commercial, and residential properties, which were rated more toward “somewhat dissimilar” and “very dissimilar”. This category was nuanced from the previous building stock/fire risk category and did not provide the expected consistent result, owing to it being a poorly worded or unnecessary category.

Social capital is clearly well developed amongst fire chiefs in Ontario. Regular participation at mutual aid meetings, attendance at Ontario Association of Fire Chiefs conferences, and reciprocal assistance beyond formalized agreements all serve to build trust in their counterparts' ability and willingness to meet their contractual obligations. LeRoux et al. (2010) similarly found that "social networks help to establish trust, create norms of reciprocity, and reduce transaction costs, thereby increasing the likelihood that local government officials will engage in service cooperation" (LeRoux, Brandenburger and Pandy, 2010, 269). While fire chiefs have sufficient social capital to overcome transaction costs, there remains a scarcity of formalized fire prevention agreements. Given the perceived need to improve fire prevention activities, it would be valuable for future research to study if fire chiefs are championing informal or formal collaborative efforts. As Andrew (2009) points out, well-designed operationalization will be required.

Policy actors such as municipal councils and CAOs are not perceived by fire chiefs to be inhibiting the collaborative process. Indeed, 78.9% of respondents consider council to be neutral on the matter, if not willing to collaborate with other councils. Furthermore, 88.8% of fire chiefs perceive the CAO/City Manager as being neutral or receptive to collaborations. Despite similarities between neighbours,

> municipalities are less likely to enter into direct arrangements with other municipalities because of local politics and policy incompatibilities" [and even though] "they often share similar concerns, their attempts to improve conditions are impeded by administrative turf battles, local politics, and past experiences. (Andrew, 2009)

A previously stated limitation of this research is that it only polls fire chiefs, not CAOs or members of council. Further research could survey CAOs to determine their level of understanding of the need for fire prevention efficacy, or if they would support and put voluntary fire prevention collaboration on council agendas.

The benefits of collaboration appear to be understood by survey participants. 70.4% of respondents “agree” to “strongly agree” that savings on operating budgets could be achieved or that costs could be deferred, and 75.8% “agree” to “strongly agree” with an ability to meet regulatory requirements. There was an even greater positive desire for improved service effectiveness, increased service levels, and that success could lead to more collaborations. These results are supported by the literature, as Chen and Thurmaier (2009) state that the “most common reasons for the creation of agreements is a belief by public officials that an ILA will increase the effectiveness and efficiency of a public service” (Chen and Thurmaier, 2009, 548). These conducive factors, however, are still not enough to move the inertia of traditional, response-centric fire departments towards alternative service delivery mechanisms permitted under the Act.

Transaction costs, predictably, were the greatest inhibiting factors to fire chiefs for voluntary collaborations. As seen in table 4.2, it was generally perceived to be more

Table 4.2 Transaction Costs Survey Results

	Reach agreement on fire safety goals		Formulate rules that govern the agreement		Fair division of benefits		Equitable distribution of costs		Potential that some communities will not uphold agreement	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Easy	36	16.1	12	5.4	13	5.8	14	6.3	6	2.7
Somewhat Easy	120	53.8	88	39.5	62	27.8	60	26.9	24	10.8
Neutral	42	18.8	58	26.0	85	38.1	71	31.8	81	36.3
Somewhat Difficult	21	9.4	57	25.6	56	25.1	58	26.0	79	35.4
Difficult	4	1.8	8	3.6	7	3.1	20	9.0	33	14.8
Total	223	100.0	223	100.0	223	100.0	223	100.0	223	100.0

difficult to formalize agreements, share the benefits and equitably distribute program costs. Of note are two findings: 1) only 70% felt it would be easy to agree on the goals, which is surprising given that the stated missions of most fire departments are almost identical, and 2) despite the trust in other fire chiefs to uphold their commitments, 50% of respondents felt that it would be “somewhat difficult” to “difficult” to enforce penalties on communities that do not uphold the agreement. A possible explanation for this apparent

conflict may be that while penalties may be included within the conditions of a formal agreement, time constraints placed on fire chiefs' to monitor adherence to agreement terms may pose a challenge.

The analysis and findings of section 4.1 answers the research question seeking the conducive and inhibiting factors of voluntary fire prevention collaborations using the ICA framework. Section 4.2 examines the three hypotheses as set out in the introduction.

4.2.1 Education Level

The first hypothesis (H_1) stated the highest level of education attained by a fire chief is directly related to a positive perception of the benefits of voluntary collaboration.

H_1: The higher the level of a fire chief's education, the greater the benefits of collaboration will be positively perceived
H_0: Education level has no bearing on the perception of collaboration benefits

The hypothesis sought to explore if higher education levels would have any correlation with the decision-maker's probability of understanding the benefits of collaborative practices. Figure 4.2 illustrates that 30% of respondents had completed community college and 18% of respondents had some form of university education.

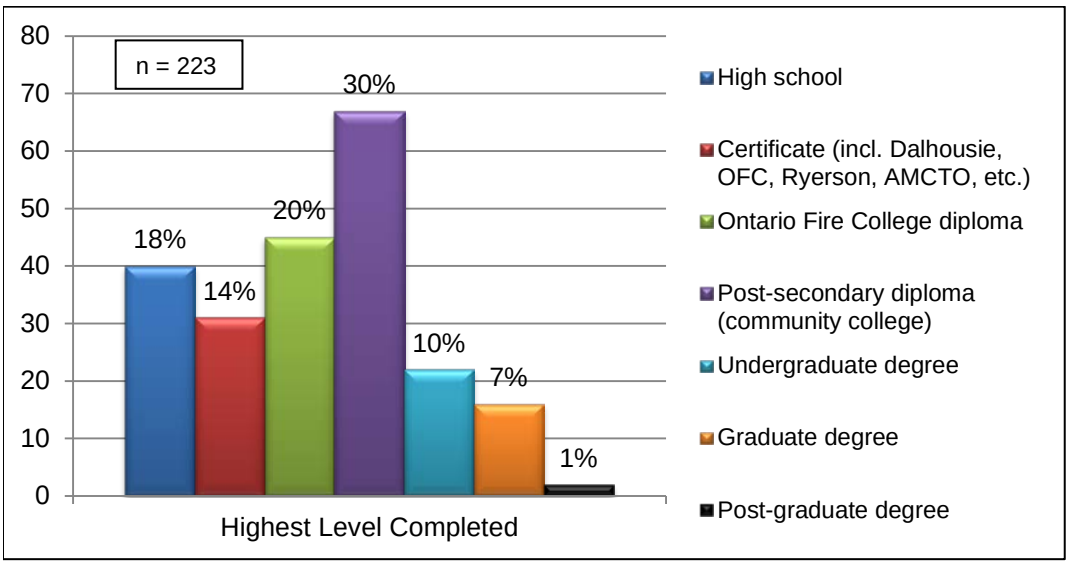

Figure 4.2 Frequency of Education Levels

Statistical analysis using ANOVA, however, showed no significance of the education levels of fire chiefs on their perceived benefits of voluntary collaboration. Using the *F*-test of significance, Table 4.3 reveals no value for *F* larger than the critical factor of 2.10, as

Table 4.3 ANOVA – Education Level to Benefits of Collaboration

		Sum of Squares	Df	Mean Square	F	Sig.
Operating budget savings/cost deferral	Between Groups	5.864	6	.977	1.235	.290
	Within Groups	170.997	216	.792		
	Total	176.861	222			
Improved service effectiveness	Between Groups	3.447	6	.574	.956	.456
	Within Groups	129.782	216	.601		
	Total	133.229	222			
Increased service levels	Between Groups	3.759	6	.626	.909	.489
	Within Groups	148.878	216	.689		
	Total	152.637	222			
Sharing costs makes program start-up affordable	Between Groups	1.935	6	.323	.544	.774
	Within Groups	128.047	216	.593		
	Total	129.982	222			
Success may lead to more collaborations	Between Groups	1.057	6	.176	.412	.871
	Within Groups	92.351	216	.428		
	Total	93.408	222			
Access to better trained/certified inspector(s)	Between Groups	4.755	6	.793	1.012	.418
	Within Groups	169.083	216	.783		
	Total	173.839	222			
Ability to meet regulatory requirements	Between Groups	4.729	6	.788	1.143	.339
	Within Groups	148.984	216	.690		
	Total	153.713	222			
Long-term sustainability	Between Groups	5.496	6	.916	1.369	.228
	Within Groups	144.486	216	.669		
	Total	149.982	222			

determined by the degrees of freedom (Df). The null hypothesis (H_0) stated that education level has no bearing on the perception of collaboration benefits. Based on the ANOVA, H_0 cannot be rejected. Similar results, that fire chiefs appear to positively perceive voluntary collaborations, were noted across the other independent variables. This is contrary to a perception in academia that “professional public managers with an MPA degree share a common commitment to values of efficiency and equity imparted by a master’s education that may make them more inclined toward collective problem solving” (Leroux, Brandenburger and Pandy, 2010, 271). Conversely, in a separately run ANOVA, there was no statistical significance of educational level influencing the ease or difficulty in overcoming transaction costs.

4.2.2 Fire Department Type and Member Resistance to Collaboration

H_2 hypothesized that members of full time fire departments would resist attempts at voluntary collaboration.

H_2: If the workplace is unionized, then firefighters would oppose collaboration
H_0: There is no difference in opposition to collaboration based on unionization

The assumption of H_2 is that there is often language within collective agreements over "ownership" of the work typically done by association members and whose executive bargaining agent would be reluctant to negotiate away such rights. This would potentially limit collaborative efforts to work with other fire departments, particularly if work was to be done by someone from outside of the bargaining unit. Survey responses were generally evenly mixed by frequency, as depicted in Figure 4.3.

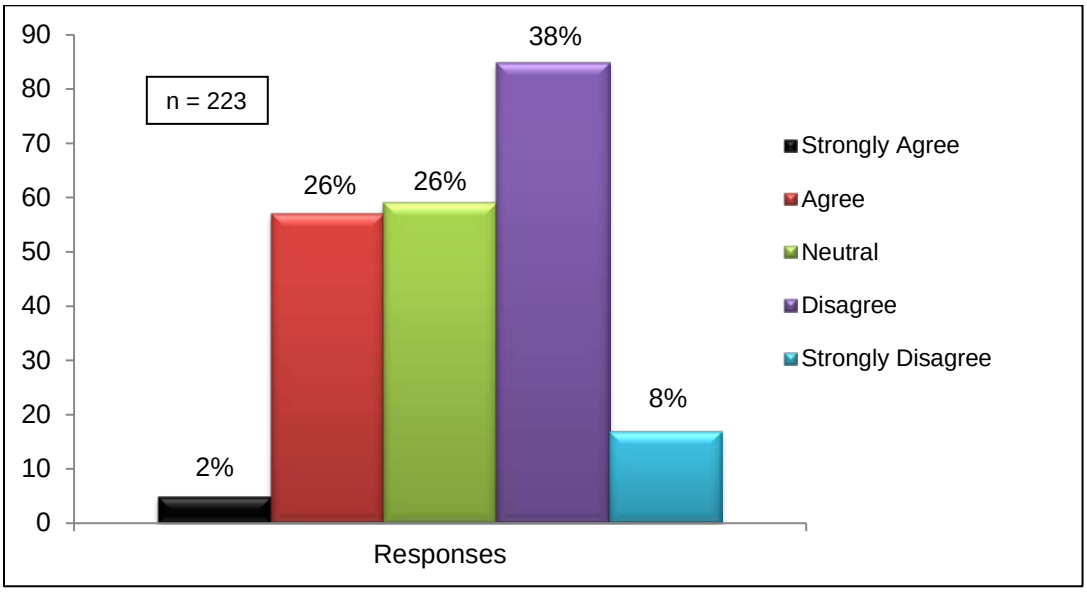

Figure 4.3 Response to Statement "Department members would oppose collaboration"

However, when analyzed by Department Type in Table 4.4, the mean shows fire chiefs of full time departments responded with "agreed" and "strongly agreed" more so than fire chiefs from composite fire departments, whose mean was closer to "neutral". Fire chiefs of volunteer departments tended to respond with "disagree" and "strongly disagree", reflecting the nature of their workforce and predominantly non-unionized workplaces.

Table 4.4 Fire Department Type to Opposition by Members

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Volunteer	73	3.47	.944	.110	3.25	3.69	1	5
Composite	122	3.21	.964	.087	3.04	3.39	1	5
FT/Career	28	2.71	1.049	.198	2.31	3.12	1	5
Total	223	3.23	.991	.066	3.10	3.36	1	5

Statistical analysis using ANOVA in Table 4.5 further verifies significant findings with a large *F*-value of 6.15 exceeding the critical value of 2.99 with $p \leq 0.005$.

Table 4.5 ANOVA - Department Members Would Oppose Collaboration

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	11.537	2	5.768	6.150	.003
Within Groups	206.338	220	.938		
Total	217.874	222			

At least two of the groups differed significantly from each other, in this case full time and volunteer departments. The null hypothesis (H_0) is rejected. The variance supports the H_2 hypotheses to the extent that the presence of organized labour in a workplace cannot be ruled out as a significant factor inhibiting voluntary collaboration in fire prevention activities.

The Institutional Collective Action literature reviewed for this research was silent on the issue of organized labour. The aspect of ICA research focusing on institutional actors deals with high-level policy decision makers, from senior bureaucrats to politicians. There was no reference or discussion found pertaining to the influence of collective action by workers which, ironically, occupies important roles within institutional theories and organizational behavior. As the ICA literature predominantly arises from the United States, with considerable contributions originating out of Florida, one plausible explanation for this lack of consideration of the impact of unionization is that Florida is a 'Right to Work' state. According to the US Bureau of Labor Statistics, Florida's rate of union membership is 5.7% of total employment, which ranks 35th in the nation (USBLS, 2014).

4.2.3 Fire Chief Resistance to Collaboration

H_3 posits that fire chiefs would resist voluntary collaboration if they thought it would weaken their decision-making authority or even lead to loss of their job.

H_3: If the fire chief felt his/her position or authority was at risk, then he/she would oppose collaboration
H_0: Fire chiefs do not feel collaboration will result in loss of position or authority

Consideration for self-preservation of authority and position is consistent with the literature. Thurmaier and Wood (2002) acknowledged that "it is not easy to separate individuals from their organizations when one analyzes the dynamics of ILAs (Thurmaier and Wood, 2002, 587)". Feiock et al. (2010) further write:

> If we assume that institutional actors act in a self-interested manner by selecting the available strategy that most enhances their (generally short-term) interests, then absent regional institutions, the collective action problem dictates that the outcomes of individual decisions will lead to collectively inefficient decisions. (Feiock, Lee, Park and Lee, 2010, 243)

As proxies for resistance to collaborations, potential inhibiting factors of career harm and loss of decision-making authority were separately set against all dependent variables for ANOVA. The summary of *F*-values and critical factors are shown below in Table 4.6:

Table 4.6 Summary of *F*-values and Critical Factors for Fire Chief Resistance to Collaboration

	My career would be harmed by collaborating			I would resist any loss of decision-making authority		
Variable	F	Sig.	C.F.	F	Sig.	C.F.
Population	.537	.586	2.99	.915	.402	2.99
Type of Municipality	2.093	.126	2.99	.247	.781	2.99
Type of Department	1.415	.245	2.99	.560	.572	2.99
Operating Budget	2.944	.055	2.99	2.247	.108	2.99
Education Level	1.068	.373	2.37	1.538	.192	2.37

The only *F*-value that approaches the critical factor is 2.944 for operating budget. Therefore, the null hypothesis (H_0), that fire chiefs do not feel collaboration will result in loss of position or authority, cannot be rejected. While section 4.2 answered the three hypotheses as set out in the introduction, section 4.3 provides increased understanding of the applicability of the ICA framework to three fire service in Ontario.

4.3 Qualitative Data from Interviews

4.3.1 Central York Fire Services

Aurora and Newmarket, Ontario, situated within York Region, voluntarily consolidated their fire departments into the Central York Fire Services on 01 January 2002. Governance of the fire department is provided by a Joint Council Committee (JCC), consisting of three (3) Aurora council members and three (3) Newmarket council members. Annual reports are made to both municipal councils. Direction comes from the JCC, not individual councils. On a day-to-day basis, the Fire Chief reports to the Newmarket CAO.

In 2000, with a Newmarket Deputy Fire Chief running Aurora Fire Department as Acting Fire Chief, several meetings were held with politicians to gauge their support for consolidation. The Newmarket CAO, Dennis Perlin, asserted that all parties needed to be on board or there likely would not be an agreement. Bargaining unit resistance would be a major barrier unless they could see the benefits. The executive committees of both firefighter associations were invited to these meetings and were informed on what was being considered. Both associations were asked if they were willing to participate as a party to the process; to which they agreed and became key stakeholders. The associations jointly provided a draft collective agreement to the towns, which were agreed to by the municipalities (Laing and Comeau, Interview, 2015). The new agreement provided for an averaging up to the highest common standard for salaries, benefits, health and safety. It also had provisions that safeguarded employee

employment in case of dissolution. The need to negotiate, admittedly with improved and more expensive terms and conditions, in order to overcome contractual barriers was considered less costly for each municipality working to achieve collective benefits than trying to provide higher levels of in-house services with significantly increased costs (Laing and Comeau, Interview, 2015).

Characterized by Chief Laing as a great success, the perceived benefits were initially financial, but the long term value was increased effectiveness. In its 2008 annual report, the impetus for consolidation was cost deferral with “the ability to meet the minimum requirements for fire protection without having to pay the extra costs needed to do so independently. In addition, improved levels of service and a broader range of services have been made available as a result of consolidation that would not be available to the municipalities separately, without significantly increased costs” (CYFS, 2008, 6). The gains realized through cost avoidance, economies and operational efficiencies were perceived to be less than the transactional costs associated with bringing the two departments together, even with leveling up of full time salaries and benefits.

4.3.2 Wellington County Fire Training Officer

Wellington County consists of the municipalities of Centre Wellington, Erin, Guelph-Eramosa, Mapleton, Minto, Puslinch and Wellington North. Working out of an office at the Centre Wellington Fire Department headquarters since 2011, the Wellington Training Officer serves all seven municipalities. The Training Officer is considered an employee of Centre Wellington, however, Centre Wellington invoices the county on a quarterly basis for 100% of the costs, including administration, vehicle usage, salary and benefits.

Championed by Fire Chief Brad Patton of Centre Wellington, discussions within the Wellington County Fire Chiefs Association began in 2009, as the fire chiefs were looking very closely at Meaford’s near-fatal fire incident and the Point Edward training fatality; both events saw members of the municipal fire department charged under the

Occupational Health and Safety Act (Patton, Interview, 2015). There was a significant change in training requirements by the Ministry of Labour, such as training officer qualifications, documentation of lesson plans, records of delivery, evaluation and maintenance of records. The training delivery model of individual fire departments at the time was not sustainable in its present format, as training delivery and documentation requirements were determined by the local fire chiefs to be inadequate.

The costs of an additional salary and benefits absorbed by the county seems to have less importance than the apparent risk to fire chiefs and local municipalities. There have been many benefits of the shared Training Officer position. Through increased training interactions, neighboring stations are working much better together at mutual aid incidents. The quality of training has improved and is more consistent across the county, resulting in improved teamwork on fire scenes. The Training Officer has helped to build relationships, trust and knowledge amongst the departments' members. In addition, the Training Officer has been able to coordinate resources that were previously being under-utilized. The fire chiefs quickly learned that the volunteer training officers, who were Associate Instructors in various disciplines under the previous Ontario curriculum, were all within the county, but not being utilized collectively until after the Training Officer started coordinating them.

According to Chief Patton, there is no rigid structure for time allocation. "It very much relies on cooperation and the Training Officer's self-direction based on demand and expressed needs and priorities stated by the local chiefs and local training officers" (Patton, Interview, 2015). The structure is left intentionally informal. Time spent with constituent fire departments seems to have balanced itself out over the years. There have been no complaints from any of the local fire chiefs pertaining to the amount of time spent by the Training Officer in their respective municipalities. There is a high

degree of social capital amongst the fire chiefs developed over the years with strong relationships based on trust and reciprocity to allow for such cooperation.

4.3.3 Middlesex County Fire Prevention Officer

Middlesex County consists of the municipalities of Adelaide-Metcalfe, Lucan-Biddulph, Middlesex Centre, Newbury, North Middlesex, Southwest Middlesex, Strathroy-Caradoc and Thames Centre. The eight municipalities share the services of a full time and part time Fire Prevention Officer. First implemented 01 January 1998, each municipality pays a levy to the county to cover the costs of salaries and benefits of both the full time and contracted part time employees. Reporting to the County Engineer responsible for emergency services, the Fire Prevention Officers are appointed by each municipality as an Assistant to the Fire Marshal.

Strathroy Fire Chief Bill Gibson, the only full time fire chief in the county at the time, was the champion for a shared fire inspector. Chief Gibson recognized the need for increased fire inspections by a competent person, as the Office of the Fire Marshal was reducing its field assistance for inspections (Elston, Interview, 2015) and “the FPPA was forthcoming with new fire inspection and public education requirements” (Bellchamber, Interview, 2015). The collaboration began as an informal agreement between Middlesex County CAO and City of London CAO to have London Fire Department (LFD) provide fire inspection and investigation services to the county.

By 2004, local councils became concerned about the inability to control the increasing costs from LFD (Elston, Interview, 2015). Still wanting to continue the program, local fire chiefs and CAOs within the county recognized that they could contract with an individual fire inspector independent of LFD. This individual started in October 2004 and still continues on a part time basis in conjunction with the full time Fire Prevention Officer.

The main benefits have been increased quantity and quality of fire safety inspections. There is now a standard approach to fire safety inspections across the county. Inspections are not just complaint and request-based, but they also conduct routine inspections that exceed the minimum requirement of the regulation. They can also meet the inspection frequency requirements for vulnerable occupancies throughout the entire county. There are fewer false alarms, as owners are maintaining their fire alarm systems. Fire spread and losses are mitigated because of maintained fire separations and enhanced early detection.

4.3.4 Office of the Fire Marshal and Emergency Management

The Office of the Fire Marshal and Emergency Management (OFMEM) is a branch of the Community Safety Division of the Ministry of Community Safety and Correctional Services (MCSCS). As the top bureaucrat of the organization, the Fire Marshal and Chief of Emergency Management advises the deputy minister, minister and cabinet on matters of public fire safety policy. As well as administering the FPPA and the OFC, the OFMEM provides a wide range of programs and activities in support of local municipalities in providing “adequate levels of fire prevention and protection in accordance with the needs and circumstances of the areas they serve” (About the Office of the Fire Marshal) under the requirements of the act.

The OFMEM wants local governments to take a balanced approach to prevention. It strongly encourages the enforcement of the fire code, where necessary and appropriate. There are some municipalities, however, that are still reluctant to do this. They either do not realize the importance of inspection and enforcement or they lack the skills and/or resources to effectively inspect and/or enforce (Jessop, Interview, 2015).

As to perceived gaps pertaining to fire inspectors, the legislation does not have adequacy standards. While qualifications for building inspectors are required, there is currently only one required qualification under the FPPA; training for Chief Fire Officials

responsible for approving fire safety plans for vulnerable occupancies. According to Jim Jessop, the Interim Fire Marshal and Chief of Emergency Management, “the OFMEM is in the process of finishing, with imminent release, requirements for all Assistants to the Fire Marshals to take training” (Jessop, Interview, 2015).

Although there are some impediments to the effective delivery of fire prevention activities, particularly in rural areas, there is no consideration of forced consolidation or amalgamation by the province at this point (Jessop, Interview, 2015). This is counter to the literature that suggests that the province may impose solutions upon local governments when they fail to adequately implement provincial policy.

As well, there is no indication that the OFMEM is looking at mandating professional qualification standards for fire inspectors. Requiring volunteer fire departments to certify its members to the same standard as full time departments would be an unfunded mandate. Fire chiefs from smaller municipalities claim that they do not have the resources and any further requirements would make it difficult to recruit and retain volunteers (Jessop, 2015). This argument by fire chiefs is certainly true for fire suppression, which has a greater dependence on human resources for service effectiveness and safety, but it is difficult to use the same rationale for a single, perhaps shared fire prevention position.

CHAPTER 5: DISCUSSION AND RECOMMENDATIONS

5.1 Strengths and Implications of the Study

A key strength of the study is that it is original research for fire services in Ontario. The limited ICA literature pertaining to fire services has primarily focused on mutual aid agreements. The study will serve to inform decision-makers at the provincial and local levels of government. The OFMEM has expressed interest in the outcome of this research as it contributes, in part, to the evaluation of its public fire safety policy and understanding of municipalities’ implementation of their responsibilities under the FPPA.

It further serves to inform local leaders, particularly those who can span the political-administrative dichotomy, on factors to weigh when considering alternative service delivery options which may include collective action.

This research also creates implications for other service areas within the municipal sector. Local officials may consider the co-provision of selected services such as human resources, information technology, building, public works or transportation departments. Morton et al. (2008) caution, however, that collaboration is not merely an economic and effectiveness decision for small towns, as the sense of community from highly visible services can be equally as important to residents. Municipal decision-makers informed by an engaged public "might selectively choose nonvisible, routine portions of public services to share while directly providing those services that seem most important to their residents" (Morton, Chen and Morse, 2008, 59). This is consistent with direct provision of emergency response services and less visible service agreements for dispatch and fire prevention activities.

5.2 Limitations of the Study and Future Research

This study has two apparent limitations. The secondary data from the OFMEM only includes formal fire prevention agreements and the survey only polled decision makers in the role of fire chief. Informal collaborations, which are part of the ICA spectrum, were not measured. Anecdotal evidence from Oxford County and the literature suggest that there may be more informal arrangements than recognized. Future research should try to determine the prevalence and scope of informal arrangements and the frequency of informal fire prevention collaborations, in particular. As senior administrators with strong networks may "regularly propose new collaborative arrangements to their respective elected officials" (Chen and Thurmaier, 2009, 540), future study could also ascertain if fire chiefs have initiated collective action discussions with their colleagues from adjacent

municipalities, their CAOs, or presented an alternative service delivery mechanism business case to council.

The second limitation of the study was that the perspective of voluntary collaboration was restricted to fire chiefs. CAOs were not included in the survey. CAOs are key decision-makers and their leadership is critical for steering collaborative efforts and putting the issue and solution on council's agenda. Consideration for further study could include a survey directed at CAOs/City Managers to gauge their awareness of fire prevention gaps, their willingness to engage in collaborative fire prevention efforts, whether they expect the fire chief to prepare and present the business case for voluntary collaboration, and which contextual factors might have the greatest influence on whether the issue is put on council's agenda.

CHAPTER 6: CONCLUSIONS

Fire prevention activities vary greatly across the province. Non-standardized service levels, from minimum qualifications to inadequate allocation of personnel resources, adversely impact non-standardized frequencies of fire safety inspections for most major occupancies. Even meeting the minimum regulated requirements for inspections upon complaint or request and vulnerable occupancies is a challenge for many departments.

Traditional in-house service delivery methods with its emphasis on emergency response are slow to change, and while alternative service delivery methods have been permitted under the Act since 1997, few formalized agreements for fire prevention activities exist. This research is important because in the current economic, political and social climate in which New Public Management techniques are normative, innovative solutions to better manage changing institutions are required. Institutional Collective Action (ICA) is a voluntary collaborative arrangement between one or more municipalities for the coordination or joint provision of a local service.

The research question of this study was **"What are the conducive and inhibiting factors of voluntary collaboration for fire prevention activities within Ontario's fire service?"** A triangulation approach was taken to answer the question. Secondary data from the OFMEM and MMAH was used in conjunction with primary data from an online survey to fire chiefs to first confirm that there was even a perceived need for collaboration. The survey design followed the theoretical framework of ICA, with the bulk of the survey data being used to explore homogeneity of communities, networking and social capital amongst fire chiefs, benefits of collaboration, transaction costs, and policy actors such as CAOs and elected officials. Attaining a response rate of half of the small target population, the results are generalizable across Ontario's fire service. The findings are consistent with the ICA literature, although there is little evidence of formal collaborative efforts.

Primary data generated from the online survey to fire chiefs represents factors conducive to voluntary fire prevention collaborations. These favorable attributes include a close similarity between communities, strong relationships with a high degree of trust amongst fire chiefs, the recognition of the increased efficacy of fire prevention activities and possible cost avoidance, and a perception that CAOs and councils are receptive to working with their neighbouring municipalities. Transaction costs associated with negotiating the rules to govern the agreement, fairly dividing the benefits, ensuring an equitable distribution of costs , and monitoring and enforcing the terms of the agreement appear to be more challenging to resolve, but are not immovable barriers to overcome.

Three hypotheses were advanced to evaluate the extent of acceptance or resistance by key stakeholders, specifically fire chiefs and firefighter associations, to voluntarily collaborating with other fire departments for fire prevention services. For the first hypothesis (H_1), which stated that the higher the level of a fire chief's education, the greater the benefits of collaboration would be positively perceived, the null hypothesis

could not be ruled out. The benefits of collaboration were generally perceived equally positive, regardless of education level. The second hypothesis (H_2) stated if the workplace was unionized, then firefighters would oppose collaboration. This was true primarily for full time fire departments and the results were statistically significant to permit the null hypothesis to be ruled out. Hypothesis three (H_3) postulated if the fire chief felt that his/her position or authority was at risk, then the fire chief would oppose collaboration. Again, the null hypothesis could not be rejected. Fire chiefs do not appear to feel threatened by the prospect of entering collaborative arrangements with other fire departments.

The qualitative aspect of the study provided a greater level of understanding of the impetus for voluntary collaborations and the role of the fire chief as an agent of change. Interviews with past and present fire chiefs and other key players reiterated the need for improved effectiveness of service delivery. Strong relationships are important to advance discussions, implementation and sustainability of collaborations.

Fire departments of all sizes and types are facing similar needs for improved fire safety inspections with increased frequency. Institutional Collective Action provides a broad range of mechanisms to address the economic, political and societal challenges faced by many fire departments. While not a panacea, the ICA framework offers a spectrum of mitigating mechanisms sufficiently flexible to account for temporal and spatial contexts. Local municipalities considering alternative service delivery options for fire prevention activities might explore opportunities to voluntarily collaborate with one or more of their neighbours to meet their local needs and circumstances.

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APPENDICES

Appendix A – MFPP/NFPP Agreement Details

***MUNICIPAL/NFPP Fire Protection* Profile**
Office of the Fire Marshal and Emergency Management

Agreement Details

Services: **R** = Received; **P** = Provided; **R/P** = Received and Provided

	Agreement with (Name)	Agreement Year	Agreement Type	Services Received *and/or* Provided	Bylaw # (if applicable)	Date Passed
1			Agricultural Extrication			
2			Automatic Aid			
3			Dispatch			
4			LSB-Corporation			
5			LSB-FD			
6			MNR Forest Fire Protection			
7			MTO Extrication Resolution			
8			Mutual Aid			
9			OFM-Corporation			
10			OFM-FD			
11			OFM-LSB			
12			Prevention			
13			Public Education			
14			Suppression			
15			Training			
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Appendix B – Dependent Variable Categories and Descriptions

Dependent Variable Category	Description
Perceived Fire Prevention Capacity	In light of current fire prevention activities, determine if there is a need for collaboration based on perceived gaps in regulatory requirements, minimum program of complaints and request, number of fire inspectors, number of certified inspectors, and capacity to prosecute for non-compliance.
Demographic Homogeneity	It has been shown that municipalities with similar characteristics are more likely to voluntarily collaborate due to similarity of citizen preferences.
Networking with other Fire Chiefs	Established social, professional and/or policy networks serve to build relationships and trust, which may facilitate collaborations, particularly when positive outcomes have been previously achieved.
Perceived Benefits of Collaboration	It is argued that improved service effectiveness, increased service levels, economies of scale and other cost savings can be obtained through collectively working together in the provision of services.
Perceived Costs of Collaboration	Costs associated with collaboration may include the uncertainty of process and outcomes along with limited information during negotiations, start-up costs, the maintenance, monitoring and enforcement costs, and the potential for late-comers trying to be opportunistic and benefit from the work done by others. The theory suggests that when these costs are higher than the benefits, collaborative efforts become difficult. Conversely, when benefits are higher than the costs, collaboration becomes easier.
Policy Actors Resistance to Collaboration	Municipalities and professional associations have their own cultures, values and belief systems. Individuals are influenced by such institutions but this is moderated by their own perceptions and preferences. The likelihood of collaborations occurring or not occurring is related, in part, to the extent of municipal and individual alignment.

Appendix C – Online Survey Questions and Response Coding

BACKGROUND INFORMATION:
This section gathers some basic background information about you and your department's fire prevention capacity.

1. How do you perceive the delivery of fire prevention services within your community?

Ability to meet regulatory inspection requirements
Ability to exceed the minimum inspection requirements
Number of fire prevention officers / inspectors
Use of certified fire prevention officers / inspectors
Capacity to prosecute for non-compliance

Excellent=1, Above Average=2, Average=3, Below Average=4, Poor=5

2. What is the highest level of education you have attained?

High school	=1
Certificate (including OFC, Dalhousie, Ryerson, AMCTO, etc.)	=2
Ontario Fire College diploma	=3
Post-secondary diploma (community college)	=4
Undergraduate degree	=5
Graduate degree	=6
Post-graduate degree	=7

COMMUNITY PROFILE:
This section gathers some basic background information on the composition of your community. It has been shown that municipalities with similar characteristics are more likely to voluntarily collaborate.

3. My perceptions of the extent of similarity or difference between my municipality and neighbouring communities are:

Age Range Distribution
Industrial / Commercial / Residential Mix
Topographic / Natural Features
Language(s) Spoken
Ethnic Origin
Household Income
Building Stock / Fire Risk

Very Similar (1), Somewhat Similar (2), Neutral (3), Somewhat Dissimilar (4), Very Dissimilar (5), Do Not Know (6)

NETWORKING:
Research indicates that established social, professional and/or policy networks serve to build relationships and trust which may facilitate collaborations, particularly when positive outcomes have been previously achieved.

4. For each of the following statements, rate your interactions with area fire chiefs.

I regularly attend mutual aid meetings
I regularly attend OFMEM seminars and/or the OFC
I help out area fire chiefs where I can without charge
I socialize with area fire chiefs regularly
I regularly attend OAFC seminars/conferences
I trust my fellow fire chiefs to honour their commitments

Strongly Agree (1), Agree (2), Neutral (3), Disagree (4), Strongly Disagree (5)

COLLABORATION BENEFITS:

It is argued that improved service effectiveness, increased service levels, economies of scale and other cost savings can be obtained through collectively working together in the provision of services.

5. Fire prevention collaborations can produce the following benefits:

Operating budget savings/cost deferral
Improved service effectiveness
Increased service levels
Sharing costs makes program start-up affordable
Success may lead to more collaborations
Access to better trained/certified inspector(s)
Ability to meet regulatory requirements
Long-term sustainability

Strongly Agree (1), Agree (2), Neutral (3), Disagree (4), Strongly Disagree (5), Do Not Know (6)

COLLABORATION COSTS:

Costs associated with collaboration may include the uncertainty of process and outcomes along with limited information during negotiations, start-up costs, the maintenance, monitoring and enforcement costs, and the potential for late-comers trying to be opportunistic and benefit from the work done by others. The theory suggests that when these costs are higher than the benefits, collaborative efforts become difficult. Conversely, when benefits are higher than the costs, collaboration becomes easier.

6. For each of the following potential barriers to fire prevention collaboration, rate the degree of ease or difficulty to resolve:

Reach agreement on fire safety goals
Formulate rules that govern the agreement
Information discrepancies
Reach agreement on how inputs and outputs will be monitored
Fair division of benefits from collaboration
Equitable distribution of costs
Potential that some communities will not uphold agreement
Potential that a late-comer will want to join the agreement

Somewhat Easy (1), Easy (2), Neutral (3), Somewhat Difficult (4), Difficult (5)

KEY PLAYERS:

Municipalities and professional associations have their own cultures, values and belief systems. Individuals are influenced by such institutions but this is moderated by their own perceptions and preferences. The likelihood of collaborations occurring or not occurring is related, in part, to the extent of municipal and individual alignment.

7. For each of the following key players and decision-makers, indicate how you perceive their receptiveness to collaborations:

Council is willing to collaborate with other councils
My career would be harmed by collaborating
Department members would oppose collaboration
Collaboration would help politicians get (re)elected
I would resist any loss of decision-making authority
The CAO/City Manager is receptive to collaborations

Strongly Agree (1), Agree (2), Neutral (3),Disagree (4), Strongly Disagree (5), Do Not Know (6)

# of Departments (in Municipality)	Municipality	Percentage of Land Covered	Municipality Jointly Operates Department	Fire Department Name	Fire Department's Municipality
0	AMARANTH	33	X	Grand Valley & District Fire Department	TOWN OF GRAND VALLEY
0	AMARANTH	40	X	Shelburne&District Fire Department	SHELBURNE
0	AMARANTH	25		Orangeville Fire Department	ORANGEVILLE
0	ARMOUR	100	X	Burk's Falls & District Fire Department	BURK'S FALLS
0	ASHFIELD-COLBORNE-WAWANOSH (Township of)	60	X	Lucknow District Fire Department	HURON - KINLOSS
0	ASHFIELD-COLBORNE-WAWANOSH (Township of)	35		Goderich Fire Department	GODERICH
0	ASHFIELD-COLBORNE-WAWANOSH (Township of)	5		Fire Department of North Huron	NORTH HURON (Township of)
0	AURORA	100	X	Central York Fire Services	NEWMARKET
0	BRETHOUR	100		Casey Township Fire Department	CASEY
0	CARLOW/MAYO (Township of)				
0	CHAMBERLAIN	100	X	Englehart & Area Fire Department	ENGLEHART
0	CHARLTON and DACK (Municipality of)	100	X	Englehart & Area Fire Department	ENGLEHART
0	COCKBURN ISLAND				
0	DAWSON	100	X	West Rainy River District Fire Service	RAINY RIVER
0	EAST GARAFRAXA	33		Town of Erin Fire and Emergency Services	ERIN
0	EAST GARAFRAXA	33	X	Grand Valley & District Fire Department	TOWN OF GRAND VALLEY
0	EAST GARAFRAXA	33		Orangeville Fire Department	ORANGEVILLE
0	ENNISKILLEN	1		Wyoming Fire Department	PLYMPTON-WYOMING (Town of)
0	ENNISKILLEN	5	X	Inwood Fire Department	BROOKE-ALVINSTON TOWNSHIP
0	ENNISKILLEN	45	X	Petrolia & North Enniskillen Fire Department	PETROLIA
0	ENNISKILLEN	50	X	Oil Springs Fire Department	OIL SPRINGS
0	EVANTUREL	100	X	Englehart & Area Fire Department	ENGLEHART
0	HARRIS	100	X	Temiskaming Shores Fire Department	TEMISKAMING SHORES (The City of)
0	HEAD, CLARA and MARIA (United Townships of)				
0	HILLIARD	100		Armstrong Township (Earlton) Fire Department	ARMSTRONG TWP
0	HILTON BEACH	100	X	Hilton Union Fire Department	HILTON
0	JOLY	100		Sundridge-Strong Fire Department	SUNDRIDGE
0	LAIRD	100		Echo Bay Fire Department	MACDONALD,MEREDITH & ABERDEEN ADD'L
0	LAKE OF THE WOODS	100	X	West Rainy River District Fire Service	RAINY RIVER
0	MACHAR	100	X	South River-Machar Fire Department	SOUTH RIVER
0	MATTAWAN				
0	MELANCTHON	37.5		Dundalk Fire Department	SOUTHGATE
0	MELANCTHON	38	X	Shelburne&District Fire Department	SHELBURNE
0	MELANCTHON	24	X	Mulmur/Melancthon Fire Department	MULMUR
0	MORRIS-TURNBERRY (Municipality of)	74		Fire Department of North Huron	NORTH HURON (Township of)
0	MORRIS-TURNBERRY (Municipality of)	26		Huron East Fire Department	HURON EAST (Municipality)
0	PERTH SOUTH	50		St. Marys Town Fire Department	ST. MARYS
0	PERTH SOUTH	35	X	Perth East Fire Department	PERTH EAST
0	PERTH SOUTH	15	X	Biddulph-Blanshard Fire Department	LUCAN BIDDULPH
0	PLUMMER ADDITIONAL	100		Bruce Mines Volunteer Fire Department	BRUCE MINES
0	RYERSON	100	X	Burk's Falls & District Fire Department	BURK'S FALLS
0	STRONG	100	X	Sundridge-Strong Fire Department	SUNDRIDGE
0	TAY VALLEY TOWNSHIP	100	X	Drummond/North Elmsley Tay Valley Fire Rescue	DRUMMOND/NORTH ELMSLEY, Twp. of
0	TAY VALLEY TOWNSHIP	15		Lanark Highlands Fire Service	LANARK HIGHLANDS
0	THE ARCHIPELAGO	10		Seguin Fire Services	SEGUIN

Data Source: FDM 2015-06-30

Municipalities who either don't have a fire department, purchase services from other departments, and/or jointly operate a department with another municipality

# of Departments (in Municipality)	Municipality	Percentage of Land Covered	Municipality Jointly Operates Department	Fire Department Name	Fire Department's Municipality
0	THE MUNICIPALITY OF GORDON/BARRIE ISLAND	100	X	Gore Bay Fire Department	GORE BAY
0	THORNLOE	100		Armstrong Township (Earlton) Fire Department	ARMSTRONG TWP
0	TUDOR and CASHEL	50	X	Madoc Township Fire Department	MADOC
0	TUDOR and CASHEL	50	X	Limerick Township Fire Department	LIMERICK
0	WESTPORT	100		Rideau Lakes Fire and Rescue	RIDEAU LAKES

Data Source: FDM 2015-06-30

Municipalities who either don't have a fire department, purchase services from other departments, and/or jointly operate a department with another municipality

Appendix E – Case Study Interview Questions

Interviewee:_____ Dept.: _____

Location: _____ Date: _____

Interviewer: _____ Time:_____

Discussion of Interview Request Letter: No □ Yes □

Permission to Record: No □ Yes □

1. When did discussions on collaboration begin and when did the agreement take effect?
2. Why pursue collaboration at that particular time?
3. Who championed discussions on collaboration?
4. Who were the key stakeholders in discussions?
5. What were the perceived benefits of collaboration?
6. What were the barriers that had to be overcome?
7. How were the collective action barriers overcome?
8. What critical factors sustain the collaboration?
9. How is the collaboration governed?
10. How would you characterize the results or impact of the collaborative effort?
11. Are there any ongoing challenges or sustainability issues?
12. What outcome measures, if any, are used to evaluate program performance?
13. Other question(s) to add based on the conversation of the interview…

Privacy Concerns:

Eliminate Questions:

Request for Prior Review: No □ Yes □

End Time: _____

Thank You Letter to be Provided Within 3 Business Days: No □ Yes □ (include conditions)

Appendix F – Independent Variable Frequency Table

Note: Original data from the FIRs and OFMEM with identifiers redacted is available from the author upon written request.

Type of Municipality

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Single Tier	70	31.4	31.4	31.4
	Lower Tier	140	62.8	62.8	94.2
	NFPP	13	5.8	5.8	100.0
	Total	223	100.0	100.0	

Type of Department

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Volunteer	73	32.7	32.7	32.7
	Composite	122	54.7	54.7	87.4
	FT/Career	28	12.6	12.6	100.0
	Total	223	100.0	100.0	

Firefighters' Association

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	159	71.3	71.3	71.3
	Yes	64	28.7	28.7	100.0
	Total	223	100.0	100.0	

Formal Fire Prevention Agreements

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	210	94.2	94.2	94.2
	Yes	13	5.8	5.8	100.0
	Total	223	100.0	100.0	

Population Size

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<10,000	127	57.0	57.0	57.0
	10K - 99,999	78	35.0	35.0	91.9
	100,000K+	18	8.1	8.1	100.0
	Total	223	100.0	100.0	

Adjusted Operating Budget

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<$500,000	85	38.1	38.1	38.1
	$500-$999K	45	20.2	20.2	58.3
	$1Million+	93	41.7	41.7	100.0
	Total	223	100.0	100.0	

Educational Level

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	High school	40	17.9	17.9	17.9
	Certificate (including OFC, Dalhousie, Ryerson, AMCTO, etc.)	31	13.9	13.9	31.8
	Ontario Fire College diploma	45	20.2	20.2	52.0
	Post-secondary diploma (community college)	67	30.0	30.0	82.1
	Undergraduate degree	22	9.9	9.9	91.9
	Graduate degree	16	7.2	7.2	99.1
	Post-graduate degree	2	.9	.9	100.0
	Total	223	100.0	100.0	