Food Gone Foul? Food Safety and Security Tensions

by

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Abstract

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The purpose of this research is to examine how professionals and civil society members engage in food security activities that include food safety precautions and how they work across differences to support a safe and accessible food supply. The objectives are: (a) to explore tensions between those working in community food security and food safety (regulatory authority) and the source of tension; (b) to explore how people experiencing these tensions can improve the way they work together; and (c) to explore potential opportunities for enhancing health equity through food security and food safety programs. Using a case study design, I employ concept mapping and situational analysis as methods, with a complexity science framework. I have illustrated the complex motives behind food safety regulations and examined the neo-liberal agenda favouring market forces over health equity. I have argued that while there is concern for protecting the public's health, food safety regulations are not set with a primary focus on protecting people from unsafe food, but are a vehicle for providing confidence in the market and among international trading partners, at the cost of health and welfare of small-scale producers in rural and remote communities. I am suggesting change not only in how we view and understand personal motives or worldviews of food and market forces, but also a shift on a larger scale, to change structural conditions to promote health and to encourage a moral obligation to reduce health inequities.

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Acronyms

BC	British Columbia
BCFSN	British Columbia Food Systems Network
BCAFM	BC Association of Farmer's Market
BCCDC	British Columbia Centre for Disease Control
BCFIRB	BC Farm Industry Review Board
BSE	Bovine spongiform encephalopathy
CAS	Complex adaptive system
CFIA	Canadian Food Inspection Agency
CIHR	Canadian Institutes of Health Research
CK	Community Kitchen
CRD	Capital Regional District of Greater Victoria, BC
EHO	Environmental Health Officer
EU	European Union
FAO	Food & Agriculture Organization
FSC	Food Secure Canada
HA	Health authority
HACCP	Hazard analysis critical control point
HC	Health Canada
HEAL	Health Eating/Active Living Network
ICC	Island Chefs Collaborative
IH	Interior Health Authority
IWCC	International Women's Catering Co-op
MAL	Ministry of Agriculture and Lands
MCPP	Model core program paper
MDS	Multi-dimensional scaling
MIR	Meat inspection regulation
MOH	Ministry of Health
NAFTA	North American Free Trade Agreement
PHAC	Public Health Agency of Canada
SARS	Severe acute respiratory syndrome
SIWES	South Island Women for Economic Survival
SPS	Sanitary-Phyto-Sanitary
SRM	Specified risk material
UHT	Ultra-heat treated
VCH	Vancouver Coastal Health Authority
VIHA	Vancouver Island Health Authority
WHO	World Health Organization
WTO	World Trade Organization

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Participants are the lifeblood of any social science research, and I am most grateful for the time, enthusiasm, and stories from everyone who talked to me about food security and food safety.

Dedication

I dedicate this work to small-scale farmers who are also nurses. Mary, Sarah, and Kerry keep their farms and their families functioning through off-farm work in healthcare. They know the value of quality food to health and the importance of strengthening public health services and the food system.

Chapter 1

This work is an exploration of tensions between two public health programs, and provides insight to public health renewal processes to enhance food accessibility and safety. Through this research I examined how professionals and civil society members engaged in food security activities that included food safety precautions and how they work out different perspectives to support a safe and accessible food system. Strengthening a coalition between food security and food safety may help to balance perceived power differentials by creating space for community building where everyone is working together. It is important to consider the extent and feasibility of intersectoral collaboration in order to recommend ways to improve public health services. I explore how people who work from very different worldviews can come together to support a safe and accessible food supply, considering the complexities of the global food system.

Background

Public health services are a fundamental part of the health care system. Public health is a systematic approach to promote, protect, improve, and restore health and wellbeing of the population through individual, collective or social actions, with a focus on reducing health inequities (BC Ministry of Health, 2013). In Canada, the turn of the 21st century was a time of multiple public health crises straining public health services and a system that was already suffering from weakened support (O'Neill, Pederson, Dupere & Rootman, 2007). Public health officials faced contaminated water in Walkerton, Ontario, bovine spongiform encephalopathy (BSE) in Alberta beef, the outbreak of severe acute respiratory syndrome (SARS) mainly affecting Ontario, West Nile virus creeping east to west, and an avian influenza outbreak leading to a massive cull

of British Columbia (BC) flocks. The need to strengthen and value public health in Canada was particularly evident from the struggle to contain the SARS communicable disease outbreak. Various reports, such as the Naylor Report, highlighted the need for developing effective public health services for the 21st century (National Advisory Committee on SARS and Public Health, 2003; Canadian Institutes of Health Research, 2003).

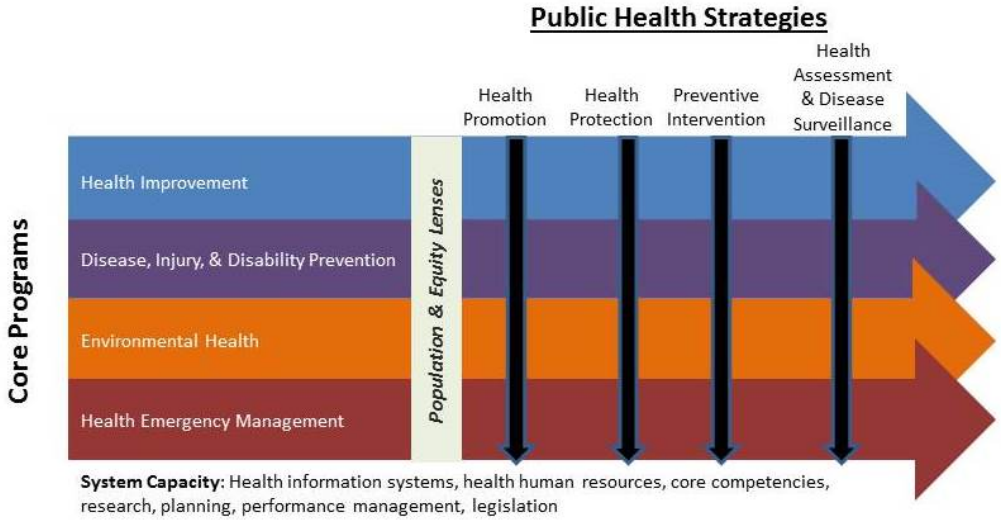
Public Health Core Programs

In BC, drawing on these reports, public health renewal began with the revision of the provincial Public Health Act, and development of a core public health functions framework encompassing 21 core programs (see Figure 1) (BC Ministry of Health Services, 2005a). The core functions framework consists of what many consider traditional public health, such as disease prevention and surveillance, as well as areas that are newer to public health service delivery, such as food security. The development of the core public health functions was a participatory, collaborative process involving public health practitioners throughout the province (BC Ministry of Health, 2005a; Seed, 2011). There are four main components of the framework: (a) core programs representing the minimal level of public health services expected of the health authorities; (b) public health strategies to be used in each core program, such as health promotion, health protection, prevention, and surveillance; (c) a population lens and an equity lens to ensure the needs of specific populations are met; and (d) system capacity elements that provide support and foundation for the other components in the framework including information systems, research and knowledge development, and staff training and development (BC Ministry of Health, 2005b). The framework includes four main

program areas: health improvement with six programs; disease, injury and disability prevention with seven programs; environmental health with five programs; and health emergency management with three programs. Figure 1 displays how each set of core programs is filtered through both lenses, and each of the four public health strategies are employed in all the core programs.

Figure 1 Core Public Health Functions Framework

Adapted from BC Ministry of Health (2005b)



The BC health authorities (HAs) organized and delivered the core programs according to their community context with the support of the MOH through program evidence review papers and model core program papers (MCPP). The MOH contracted the development of the evidence review papers to produce documents identifying evidence-based best practice for the program area at the start of the core functions process. A provincial level working group comprising members from all health authorities collaboratively used the evidence review documents to develop a MCPP. Each HA used the MCPP to tailor their program to the local context, providing

consistency across the province, and with the knowledge that the best available evidence was the basis of the program. Health Authority staff in the program area developed a performance improvement plan and a "gap analysis" in which currently existing programs in the HA were compared to the model paper. This process allowed for the identification of both gaps and HA strengths in relation to specific programs. By recognizing the gaps, there were new opportunities for programs to develop strategies to address the gaps based on the needs of their own population guided by the best practices identified in the MCPP. Thus, each of the BC health authorities was able to tailor programs according to their unique context. They each developed performance improvement plans and performance reports for public postings.

Three of the 21 programs focus on food as a key determinant of health. Food is addressed in three separate program areas: nutrition is in the healthy living program, food safety is an environmental health program and food security is one of the health improvement programs. Food safety and food security are the focus of this research.

Food Safety Core Program.

Food Safety sits within the environmental health programs, along with water quality, air quality, and community sanitation and environmental health. The food safety model core program incorporates evidence from peer reviewed and grey literature and evidence considered by the Environmental Health Officers (EHO) as best practices (Food Safety Working, 2006). The food safety program has four main components: inspection, investigation, education, and surveillance. Best practices include three main strategies: (a) the use of a risk assessment and categorization tool to set up risk-based inspection frequency; (b) an appropriate hazard analysis system; and (c) training for safe food

handling for restaurant staff. The main objectives of the food safety core program are to prevent foodborne illness through food inspection programs, to minimize negative impacts of foodborne illness outbreaks, increase knowledge of food safety, and provide surveillance of food safety (Food Safety Working Group, 2006). The EHO personifies the food safety regulatory framework and the food safety model core program

Cooperative approaches between the EHOs and those who undergo inspection are key elements for this program to operate smoothly and efficiently. Intersectoral coordination and collaboration is a component of all of the 21 core programs (Food Safety Working Group, 2006). Intersectoral coordination and collaboration can refer to both inside the health authority and outside the healthcare system. Within public health, those writing the core functions process identified early there would be a need for collaboration and coordination to achieve public health goals. According to the Food Safety MCPP (Food Safety Working Group, 2006), "many of the [core] programs are interconnected and thus require collaboration and coordination between them" (p. 1). Additionally, the authors note the importance of collaboration beyond the health authorities:

> Intersectoral collaboration and coordination with officials at the federal, provincial and municipal levels is essential. As well, it is important to establish positive working partnerships with the food industry, food establishments, non-government agencies and the community at large. Cooperative approaches strengthen all prevention, protection and promotion strategies (Food Safety Working Group, 2006, p. 20).

Food safety is one component of the work of EHOs. They also provide inspection and education to ensure quality of air and water, and protection of land from sanitation or environmental hazards. There are both federal and provincial food safety regulations. Health Canada is responsible for federal regulations and the Canadian Food Inspection Agency is responsible for federal inspection of food production and distribution. At the provincial level, EHOs are primarily responsible for inspecting food production and distribution under provincial regulations, including the provincial Public Health Act.

Food Security Core Program.

Food Security is one of the Health Improvement programs, along with reproductive health, healthy development, healthy communities, and mental health promotion (BC Ministry of Health, 2005a). The MOH adopted Bellows and Hamm's (2003) definition of community food security "... as a situation in which all community residents obtain a safe, culturally acceptable, nutritionally adequate diet through a sustainable food system that maximizes community self-reliance and social justice" (p. 37). The Food Security Model Core Program consists of four main components: a comprehensive food policy framework, an array of food security programs and services, public awareness initiatives, and surveillance, monitoring and evaluation of food security programs (Food Security Working, 2006).

The main objectives of the food security core program were to create healthy food policy, strengthen community action, create supportive environments, increase food knowledge and skills, facilitate access, and to provide surveillance, monitoring and evaluation of food security programs (Food Security Working Group, 2006). The MOH recognized food safety as a key element in food security (Food Security Working Group,

2006). The provincial working group for the food security MCPP noted that program success would require intersectoral coordination and collaboration with community partners and the integration of food security principles into programs such as primary care, hospital services, the food safety program, healthy living programs, and the communicable disease control program (Food Security Working Group, 2006).

Canadian health services have traditionally employed nutritionists and dieticians to engage in food-related activities, with a major focus on nutrition and obesity, and not on the food system as a whole. BC is the only Canadian province with food security as a core public health program on its own and in which community food security is prominent. Other provinces include some food security initiatives in conjunction with other programs. For example, both New Brunswick and Manitoba were promoting food self-sufficiency as part of larger programs on mitigating the effects of climate change. This new focus for BC HAs required each organization to create a food security coordinator position or to incorporate food security program responsibilities into a pre-existing position. The food security core program is run independently in each of the BC HAs. That is, the program is implemented according to the local context and not reliant on what the other HAs are doing. However, the HAs do have some shared indicators for evaluation of food security programs. I describe below the food security activities in each of the five regional BC health authorities.

Vancouver Costal Health Authority (VCH) does not have a separate food security core program, but the responsibilities are shared among many different areas within the organization, with one person coordinating activities across the HA (VCH, 2008). For example, there is a staff member from within Employee Wellness engaged in setting up a

pocket market for staff, and someone in Facilities Management is involved with composting. A VCH staff member in the business department is investigating internal food policies and contracts, and there are community health nurses and nutritionists working on community gardens and kitchens. Community developers and the Aboriginal Health team also support and fund food security activities (personal communication C. Gram, Sept 29, 2010). The food security core program in Vancouver Island Health Authority (VIHA) is more centralized, with the food security coordinator working on developing a strategic plan, developing an internal food policy, and increasing capacity and access to information for community members (Vancouver Island Health Authority, 2007).

Northern Health Authority was focusing on food security prior to implementation of the core programs, through the Healthy Eating/Active Living (HEAL) Network. This is a multi-sectoral, grass-roots network connecting people and initiatives aimed at promoting health of northerners in BC (Northern Health Authority, 2008). Fraser Health Authority has a policy approach to food security, with the goal of achieving at least 50% of hospitals and long-term care facilities developing nutritional guidelines for vending machines in public places, and standardizing the process to support initiatives of community partners. They also have a "Framework for Action for Food Security", and are developing a monitoring, surveillance, and evaluation plan for food security activities, which are under review (Fraser Health Authority, 2009). Interior Health Authority (IH) is focusing on food policy development in communities and schools, and also exploring opportunities for local food procurement for use in their facilities, and supporting

communication about food security through website development (Interior Health Authority, 2009).

The Provincial Health Services Authority is the coordinator for joint food security activities among all regional health authorities. They guide the development of evaluation indicators for the Community Food Action Initiative, which is a funding mechanism for community-based food security projects, and are the communication hub for networking across the health authorities on all the core functions programs (Drasic, Karmali, McCarney, Jayatilaka, & Stoffman, 2010).

Population and inequalities lenses.

Health equity and "populations of concern" are important considerations in planning and implementation across all BC core programs (BC Ministry of Health, 2005a). Achieving health equity requires that everyone can reach their full health potential, and that social position or other socially constructed conditions should not place anyone at a disadvantage (Whitehead & Dahlgren, 2006). The Framework for Core Functions in Public Health had inequalities, originally, as a crosscutting lens, but in later years, the language and focus shifted to inequities versus inequalities. This change in language is more about responding to differences between population groups and across the social gradient. Inequalities can be present for a number of reasons, but when they are avoidable, unfair, or unjust, they become inequities (BC Ministry of Health, 2007). Health equity and equality are different but closely related, although in some European countries the words have the same meaning and health equality is the more common term (Whitehead, 2007; Whitehead & Dalgren, 2006). According to the Framework for Core

Functions in Public Health (BC Ministry of Health, 2005b), health inequalities are observable health status variations between population groups.

The application of an inequities lens meant examining the new core program through an equity-focused health impact assessment to identify what the program was trying to do, look for evidence of inequality, consider who may be disadvantaged by the program, and identify what might be unintended consequences of program implementation (BC Ministry of Health, 2007). The MOH produced the evidence review on equity after implementation of the two food programs but prior to programs such as Dental Health, Water Quality, and Healthy Schools. The core functions framework document, and personal knowledge or interpretation of equity, therefore, would have guided the application of the inequities lens in the food programs at the time of implementation, rather than a provincially agreed upon interpretation of an inequities lens. The development of the MCPP may have been different for the food safety program if there had been a fuller understanding of health equity at the time. Working through the relationship between food safety and reducing health inequities would have the potential for added considerations in the food safety core program. For the food security MCPP, health equity concepts are embedded into the program, since unfair or unjust access to quality and culturally appropriate food is the basis of food security as defined by the MOH (Food Security Working Group, 2006). Health equity is not embedded in food safety MCCP.

Many programs aim to reduce health inequities by focusing on disadvantaged groups, improving access to programs, engaging in partnerships with community organizations, supporting community development, and ensuring the core programs

reflect priorities of those with greatest need (BC Ministry of Health, 2007). Application of an inequities lens to food security is more readily evident because the focus of food security initiatives is often on those in greatest need. Applying the inequities lens to food safety is equally important but may be new territory for many who work in this area, since food inspection regulations apply equally to areas under inspection.

In summary, a purpose of public health renewal is to promote, protect, improve, and restore health and reduce health inequities. Guiding renewal in BC is the core functions framework consisting of 21 programs implemented by HAs with the application of an inequities lens to contribute to reduction of health inequities throughout the province. This study begins with the relationship between the two food programs in order to study public health renewal and promote ways to strengthen the food system.

Defining the Issue

During the implementation of food safety and food security programs, those involved noted areas of overlap resulting in some tension as well as opportunities for collaboration between those working in food security initiatives and those enforcing food safety regulations (Rideout, 2010). For example, Rideout (2010) identified the challenge for those working in temporary markets (a food security activity) of being subject to general food safety guidelines for food handling, yet lacking the washing facilities expected of a permanent restaurant. EHOs were expected to enforce guidelines that could not be practically applied to a temporary setting, causing tensions between market managers and EHOs. The resolution came through collaboration between the BC Centre for Disease Control (BCCDC), provincial health authorities, and the BC Farmer's

Markets Association to develop specific food safety guidelines for temporary markets (Rideout, 2010).

Another strong factor in recognizing tensions was the outcry from small-scale farmers resulting from changes in meat inspection regulations. The intent of the BC Meat Inspection Regulation (MIR), enacted in 2004, was to standardize meat production in the province, protect public health and foster confidence in the BC food supply (McMahon, 2011; BC Food Systems Network, 2004). The impact of the MIR on producers included higher slaughter costs, lower profit margins, lost revenues, loss of farm status, and reduced livestock production (Johnson, 2008). The resulting lack of product made it difficult to source locally produced meat and posed a serious economic impact for producers and their communities. Ongoing collaboration with the MOH (then the Ministry of Healthy Living and Sport), resulted in changes to meat regulations in an effort to better support the needs of small-scale farmers (Ministry of Healthy Living & Sport, 2010). The changes in the meat regulations produced a loud outcry in the civil society food security world, providing fuel for overall distrust of food safety regulations.

An additional source of tension was the increase in community food security activities, such as community kitchens and temporary markets, which has added more and alternative venues for food safety inspections by EHOs without an increase in staff or budgets for public health departments. The increased workload for EHOs due to the growth of food security activities may be an unintended consequence of program delivery. Without careful planning and clear communication about new food security activities, the EHOs may not be prepared to face unusual food production situations,

causing undue stress and strain on their relationship with producers or program organizers.

As with any change in program delivery, the potential impact of one program on another is challenging to anticipate. Throughout the first four years of implementing food safety and food security core programs, opportunities for collaboration between these programs, such as those noted above, presented themselves. Those involved in the food safety and food security programs at the ministry level began working more closely to identify common and contradictory ground of these programs, and to explore how they can be more closely aligned yet remain separate programs (Personal Communication, C. MacDonald, October 15, 2009; M. Day, September 9, 2010). The food safety core program is highly regulated under the Public Health Act, with the EHO sector focused on inspection, education, and surveillance. The food security core program is primarily community-based providing support to community members through resources, advocacy, and leadership (Vancouver Coastal Health, 2008). There is a food security coordinator position in each health authority supporting various community groups and a variety of people from diverse backgrounds is involved. The food programs share a common goal of access to a safe food supply, but finding the right balance between ensuring access and safety is challenging for many reasons. Especially challenging are the different disciplinary perspectives operating across sub-sectors within the public health system and beyond, because the disciplinary focus is often on the program and not on a common comprehensive understanding of what constitutes safe and healthy food (Health Canada, 2000). The culture and training of EHOs may have implications for their view of community food security, focusing largely on commercially produced and

processed food. People engaged in community food security activities may view local, small-scale production as safe, regardless of food safety oversight.

An additional layer of challenge to the relationship between food programs in the ministry is the commitment by the MOH to health equity and implementation of a health inequities lens for each program, because of different disciplines and programs may have different interpretations of health inequity. According to Margaret Chan, Director General of the WHO (2006-2017) (Blas & Sivasankara Kurup, 2010), the world will not become a fair place for health without intervention; she asserted that to obtain health equity there needs to be deliberate policy decisions to improve health equity. Public health renewal is not only strengthening health promotion and disease surveillance, but includes strengthening a fair and just society, so no one is disadvantaged in obtaining full health potential due to social position or circumstances (Whitehead & Dahlgren, 2006). The ministry deliberately identified health equity as a crosscutting lens on all the BC core functions programs to ensure meeting the health needs of all British Columbians. The MOH produced the health equity evidence review following the evidence reviews and model core program papers on food safety and food security. Thus, health equity was not as clearly understood or embedded in these programs as it was for other core functions programs. The Equity Lens Evidence Review recommends reducing health inequities by focusing on disadvantaged groups, improving access to programs, engaging in partnerships with community organizations, supporting community development, and ensuring the core programs reflect priorities of those with greatest need (BC Ministry of Health, 2007).

In summary, there are two very distinct but related domains in public health that relate to food – food safety and food security. Each domain has specific goals with the shared goal of a safe, accessible food supply. Challenges include finding a balance between safety and ease of accessibility to quality food; application of an inequities lens, and intersectoral collaboration. Addressing these challenges involves recognition of tensions and negotiating relationships between people who may hold very different views on what is safe and what is quality food.

Purpose and Objectives of the Study

The purpose of this research is to examine how professionals and civil society members engage in food security activities that include food safety precautions and how they work out different perspectives to support a safe and accessible food supply. I am asking two main questions: (a) how are the intersecting areas between food safety and food security negotiated, and (b) what are the facilitators and constraints to collaboration? The objectives are: (a) to explore tensions between those working in community food security and food safety (regulatory authority) and the source of the tension, (b) to explore how people experiencing these tensions can improve the way they work together, and (c) to explore potential opportunities for enhancing health equity through food security and food safety programs.

Using a case study design, I employ concept mapping and situational analysis as methods to answer the questions and to achieve the purpose and objectives. Case study design allows for focused examination of food security activities, and a means for constructing boundaries for the situation. The cases I am using are food security activities that involve food safety. They are community kitchens, farmer's markets,

urban chickens, and unpasteurized milk. Concept mapping allows for direct responses on ways to work across differences and provides some theoretical focus for the situational analysis. Situational analysis provides a means of looking at the problem from a systems perspective, to gain a broad view and consider the structural forces at play in the situation.

This research aims to contribute to a better understanding of the processes of negotiating interdisciplinary terrain, especially when disciplines operate from diverse perspectives. In this study, I identify the drivers behind the tensions and provide suggestions on how to decrease tensions in the delivery of safe food security programs while promoting health equity. It is important to consider ways to enhance relationships between those working in food safety and in food security in order to strengthen public health services and provide confidence in the food system. I do this through case studies on food security activities that require food safety inspections. By examining different food security activities, I extract common themes, issues, and challenges in respect to food safety, and make general suggestions and recommendations for improving interdisciplinary collaboration. I also explore the broader philosophical considerations in the tension between the right to food and need for surveillance. The outcome of this research may support MOH and HA continued efforts in delivering mutually beneficial high quality food safety and food security core public health services. Better understanding of intersectoral coordination and collaboration between these two core functions services can assist with alleviating tensions that may occur in other core services experiencing similar overlaps and challenges. This can contribute to strengthening public health services in Canada.

Dissertation Overview

In Chapter 1 (this chapter) of this dissertation, I provided background information on the core functions initiative and introduce the research problem, purpose and objectives. In Chapter 2, I outline the literature on food safety and food security, acquaint you with the cases in detail, reviewing the literature on each case, and summarize the state of the science for intersectoral collaboration. In Chapter 3, you will find a review of complexity science as the theoretical framework for this study. Following this, I detail the methodological approaches of case study, concept mapping, and situational analysis. Finally, I describe data collection details.

I present the research findings in chapters four through six. In chapter four, I describe the four cases. Chapter 5 presents the results of concept mapping, and Chapter 6 reveals the situational analysis. In Chapter 7, the discussion highlights the themes from the findings and this is where I answer the research questions and objectives using data from the findings and present a summary of the research, outlining limitations and recommendations for future research. This also holds reflections about the application of complexity science to nursing research and opportunities for further methodological development in this area.

Chapter 2 - Literature Review

In this chapter, I outline the literature on food safety and food security, with an overview of the four cases: community kitchens, farmer's markets, urban chickens, and unpasteurized milk. The issue I investigate in this research is how those working in food safety and food security engage across differences in the work they do to support a safe and accessible food system. There are many people involved in the food system. Intersectoral collaboration - both within and outside the healthcare system - is a large part of public health, as a means of improving health outcomes in a more effective, efficient, and sustainable manner than might be achieved by operating alone (Blas & Sivasankara Kurup, 2010). In the final section of the literature review, I focus on different methods of interdisciplinary and intersectoral work.

Food Safety

The purpose of food safety systems is to prevent foodborne illness by preventing the consumption of microbial or chemical contaminants (Serapiglia, Kennedy, Thompson, & de Burger, 2007). Foodborne illness is the largest class of emerging infectious diseases in Canada (Weatherill, 2009). A recent report from the United States estimates that each year 31 major pathogens caused 9.4 million episodes of foodborne illness, over 55 thousand hospitalizations, and 1,351 deaths (Scallan, Griffin, Angulo, Tauxe, & Hoekstra, 2011). Foodborne illness has a greater impact on the lives of those in developing or industrializing countries than on those in post-industrial countries, but it is an ongoing concern worldwide. The extent of foodborne illness worldwide is unknown but the World Health Organization (WHO) is working to estimate the global burden of foodborne disease (Kuchenmuller et al., 2009). Although great improvements have been

made to reduce the risk of contracting a foodborne illness, new pathogens are emerging that challenge the food system (Baines, Ryan, & Davies, 2004; Scallan, Griffin, et al., 2011). Morris (2011) suggests that, in spite of efforts to reduce foodborne illness, the rates have risen over the past ten years or at least there is no evidence of sustained improvement. Foodborne illness can be merely inconvenient or ultimately deadly. It has economic implications for affected individuals, for the establishments linked to contaminated food, and for society in terms of health care costs and lost productivity (Copeland & Wilcott, 2006).

It is difficult to detect origins of foodborne illnesses because unspecified agents are major contributors of acute gastroenteritis (Scallan, Griffin, et al., 2011). Additionally, resources are not necessarily available to pursue food vehicle and origin of contamination. As reported by Jones and colleagues (2004), the food vehicle was only identified in 54% of the 336 outbreaks under study, and of those outbreaks, 66% of sources were restaurants, 9% involved catered food, and 7% were private homes. It is not surprising, therefore, that the majority of food safety efforts tend toward food service establishments and public education, which comprises the traditional work of EHOs related to food (Copeland & Wilcott, 2006).

The need for a robust health protection service is clear. According to Nestle (2003), the microbes responsible for outbreaks are increasing in strength. *Listeria* now has a death rate of 20 percent, *Salmonella* can cause a type of arthritis, and campylobacter is a precipitating factor in up to 25 percent of cases of Guillain-Barré Syndrome. *E. coli* 0157:H7 is especially interesting because it was not recognized in an outbreak until 1982 but is increasingly frequent (Nestle, 2003). The mortality from this

infection is three to five percent; 82% of people infected see a physician, and 18% are hospitalized (Nestle, 2003). The increase in *E. coli* 0157:H7 is primarily due to changes in food production including "factory" systems and the overuse/abuse of antibiotics needed for animals kept on such a concentrated industrial scale (Nestle, 2003). To deal with this increasingly threatening reality, regulators introduce science-based controls and regulations to stem the flow of the burden of disease rather than considering a reduction in the industrial scale of production.

While the core public health programs are provincial programs, food safety regulations cross federal and provincial jurisdictions. There are two main federal regulatory bodies protecting the public from foodborne illness in Canada. Health Canada sets the standards for food safety and nutrition quality, and the Canadian Food Inspection Agency (CFIA) provides federal inspection services. Health Canada is responsible for establishing policies and setting standards while administering the provisions in the Food and Drugs Act that relate to public health, safety, and nutrition (Health Canada, 2007). The CFIA carries out federal inspections and works closely with other federal and many provincial and municipal organizations for health protection. For example, the Public Health Agency of Canada (PHAC) works closely with the CFIA in outbreak surveillance and provides health protection advice (PHAC, 2009). Although the CFIA has consolidated food safety inspection and practices, Canada does not have a uniform method for collecting data on foodborne illness. The extent of foodborne disease, therefore, is difficult to measure, and the health impact of CFIA's regulatory and inspection regime remains unknown.

Canada's food protection system, while complicated with overlapping federal and provincial regulations, was not always organized this way. Some consider the formation of the CFIA to be an innovation in public organization (Prince 2000). The creation of the CFIA reflected a transformation of a part of the public sector into a science-based regulatory field, set within a parliamentary system (Prince, 2000). Created in 1997, the formation of the CFIA was triggered by the imperative to reduce the federal deficit after much consideration by politicians and bureaucrats as reflected in a number of reports spanning 25 years (Prince, 2000). Additionally, this was a period of a growing sense of fear produced by incidents such as outbreaks of BSE and the banning of British beef imports (Cram, 2010). The impact on trade due to large-scale food safety breakdown was significant and instigated new international standards on transmissible animal disease standards and sanitary safety (Cram, 2010). Creating the CFIA was a way to demonstrate Canada's commitment to food safety, supporting trade.

The CFIA is responsible for managing food safety risks by verifying industry compliance, regulating and inspecting abattoirs and food processing plants, and by testing products (Canadian Food Inspection, 2007). It is also responsible for export certifications, laboratory support, crisis management (shared with PHAC and HC), product recalls, biotechnology regulation, food labelling, and support of research and development (Canadian Food Inspection, 2007). This work is done through collaboration with provincial organizations. CFIA also encourages industry to use science-based risk management and provides accreditation for Hazard Analysis Critical Control Point (HACCP) systems (Hobbs et al., 2002). Overall, the role of the CFIA is to protect the public, instilling confidence that the government is working toward a safe and healthy

food supply and to have Canada-approved, inspected, and certified food for trade purposes (Prince, 2000). It is a large organization with a mandate to regulate a large domestic and export industry.

At the provincial level, food safety is regulated by the MOH and Ministry of Agriculture and Lands (MAL) through the BCCDC and the health authorities. There are numerous venues for food safety inspection. The CFIA's focus is on processing operations that sell to other provinces and countries. For example, the CFIA regulates five percent of meat processing plants, leaving the provinces and municipalities to regulate the remaining small plants in Canada. These CFIA inspected plants are among the largest and produce 95% of Canadian meat products (Doering, 2003). Small-scale producers are responsible for a small portion of meat products. EHOs working with BCCDC or health authorities inspect food that is processed for local sale, or for sale within province. Health Authorities mainly oversee food inspection for restaurants, temporary markets, grocery stores, and assist with local foodborne disease outbreak investigations that may include local farms. The health authorities do not have the capacity for lab work to test for contaminants, or for establishing shelf life stability of a product, and refer to BCCDC or CFIA as necessary.

Food Scares – Perceived Risk of Foodborne Illness

A driver of food safety regulations is response from the public and trading partners to a food safety incident that gets escalating media attention. The magnitude of risk to the consumer and the extent of media attention are driving forces that can turn an incident into a food scare (Knowles et al., 2007). A contaminated food product that causes illness and death may cause a greater scare than one that causes illness alone,

regardless of the number of incidents. Additionally, novelty outbreaks or fear of the unknown can create a media response that generates a food scare. Tunagate, for example, was a huge scandal in 1985 that occurred when Canadian Fisheries Minister John Fraser, approved millions of cans of rancid Star-Kist tuna for sale against the advice of inspectors. There were no reported cases of serious illness from the tainted tuna, but the public outrage led the minister to resign (Malling, 1985). Zoonotic scares, such as avian flu and foot and mouth disease, pose no known risk to human health through consumption of meat, but have influenced buying behaviour as a result of media attention (Knowles et al., 2007). The media play a large part in generating public perception and reaction, and are a mechanism for public discourse. Public opinion is important to politicians who want to be seen as taking action on issues as important as food safety, so perceived risk and food scares influence food safety regulations.

Action on food safety is not always based on science. There are two approaches to risk assessment: science-based and values-based. A science-based risk assessment counts numbers of cases and deaths, while a value-based approach assesses the situation as voluntary or imposed, familiar or foreign, and controllable or uncontrollable (Nestle, 2003). Slovic, Finucane, Peters and McGregor (2004) explain how science-based and value-based assessments work in parallel for rational decision making. These authors state, “analytic reasoning cannot be effective unless it is guided by emotion and affect” (Slovic et al., 2004). According to Nestle (2003), numbers and cases do not contribute to food scares as much as the number and intensity of dread and outrage factors. Dread and outrage comes from perceiving risks as involuntary, unpreventable, unfamiliar, and inequitably distributed. Contaminants or food alterations with a seemingly low risk for

disease but are highly preventable or unfamiliar, such as BSE or genetically modified food, can cause great fear and negative response from the public. The perceived lack of personal control and fear of the unknown affects public response, and such a response contributes to political action through public pressure. Increased regulation by government in response to public outcry can be seen as a form of government action. According to Brown-John (1986), health and safety regulations often come from government initiatives based on catastrophic incidents resulting in illness or death, and the public demanding something be done. It does not come from average foodborne illness risks that occur daily.

There is an increase in public dialogue about food risks and food safety and in people seeking local and organic food. Magkos et al (2006) suggest the increase in purchasing local and organic may be a means of mitigating food safety risk, as well as concerns about health and obesity. According to MacRae, Martin, Juhasz, and Langer (2009), organic food is the only significant growth sector in the Canadian food system. This heightened awareness around food leads to consumer expectation of governments having up-to-date information for public advice, standards, and regulations (McAmmond, 2000). Food scares are not only based on incidents of microbial contamination, but now include fears of genetically modified foods, food additives, and packaging and pesticide residues. The actual risk involved with these food scares is not always clear and generally not easy to determine or measure.

Food Security

A commonly cited definition of food security comes from the World Health Summit held in Rome in 1996 and states “food security exists when all people, at all

times, have physical and economic access to sufficient safe and nutritious food to meet their dietary needs and food preferences for a healthy and active life" (Food and Agricultural Organization, 1996). There are other similar definitions (Cook, 2008; Hamm & Bellows, 2003), but generally food security definitions revolve around access, affordability, and nutrition. Some definitions, however, include elements of environmental sustainability and the economic livelihood of producers, harvesters, and processors (Epp, 2009). For the purpose of this project, the focus is community food security as defined by the MOH adopted from Bellows and Hamm (2003) who define food security as "... a situation in which all community residents obtain a safe, culturally acceptable, nutritionally adequate diet through a sustainable food system that maximizes community self-reliance and social justice" (p. 37). This definition of food security provides a community and health equity perspective to ensure everyone is fed and resources are used appropriately and are protected for future use (Hamm, 2009). Clearly, food is one of the social determinants of health and a priority in public health.

There is a broad scope of food-related public health interventions related to food security. Food security strategies can fit into three main categories: efficiency (individual), participatory or transition (community), and system redesign (government and society) (Cook, 2008; Community Nutritionists Council of British Columbia, 2004; McCullum, Pelletier, Barr, Wilkins, & Habicht, 2004). Efficiency strategies, with a focus on the individual, form a charitable response to hunger, such as food banks and soup kitchens. This solution to food security responds to immediate hunger without considering or taking action on the greater social structural challenges of inadequate income or accessibility nutritious food. The second category of participatory or transition

strategies, involves a practice or process that is developed in opposition to one that is inadequate. Developers believe these strategies will improve a failing system (Cook, 2008). This category is community-focused with different strategies according to community context. The third category is system redesign or radical restructuring at the roots of a problem in which strategies are targeted at government and society. This could include policies aimed at poverty reduction, reducing costs of basic needs such as housing and food, or policies that promote small-scale production in rural and remote communities.

Cases

Cases used in this study belong in the second category of participatory or transition strategies. They are not, in themselves, solutions to food insecurity on a large scale, but work at the community context level to improve on the current food system. Data collection was province-wide but case-specific descriptions were mostly at the local level. The community context for this study is the Capital Regional District located on the southern tip of Vancouver Island. It consists of 13 municipalities and three electoral areas, with a population of roughly 350,000 people. The City of Victoria, the capital city of BC, is the urban centre.

Community food security initiatives in the Capital Regional District include a number of broad areas as identified by the Capital Region Food and Agriculture Initiatives Round Table (CR-FAIR), an organization identified as a food security hub in Victoria, BC (Vancouver Island Health Authority, 2011). CR-FAIR defines nine areas of food security activity: urban agriculture, farmlands and farming, food processing, education and training, policy and planning, research, Aboriginal food sovereignty and health, access to

healthy diets, and food distribution (CR-FAIR, 2008). Urban agriculture involves backyard, balcony, rooftop, community and school food gardens; city farms; farmer's markets; and raising small animals and chickens in the city. Food processing includes activities such as community kitchens, processing collectives and cooperatives. Activities involving access to healthy diet include such things as campaigns for a guaranteed liveable income and other advocacy strategies; food recovery and distribution programs; Good Food Box programs; and food buying clubs. Distribution activities include markets, distributors' cooperatives, emergency food distribution agencies and networks, school fruit and vegetable programs, and neighbourhood based retail food outlets. Additionally, policy and planning food security activities include local food purchasing policies, agriculture advisory bodies and agriculture area plans, regional food and health action plans, regional food charters, food and nutrition policies, and comprehensive school health policies. This broad list of food security activities includes a range of professionals and lay people who generally share a passion for or strong affinity with food production, processing, procurement or distribution.

I conducted four case studies on food security to better understand and describe the interface between food security and food safety, particularly related to coordination and collaboration efforts among sectors. I selected cases with the potential for tension with food safety. They had to be popular enough for accessing interviews, documents, and site visits, and they had to be different enough from one another to get a variety of experiences and ideas. The cases are urban chickens, farmer's markets, community kitchens, and unpasteurized milk. These cases represent food security initiatives that face unique challenges to food safety regulations. In the following sections, I describe the

literature on these activities and their relationship to food safety and effectiveness in addressing food security issues.

Urban chickens.

The City of Victoria has developed an official community plan, which names 'food systems' as one of 14 priority areas. The overarching goal in relation to this priority is to have a community-based food system that will enhance community health and resilience by 2041 (Scott, 2010). Urban agriculture is a participatory or transition food security strategy because of the perceived need for resilience regarding food in the future. It would safeguard against a failing food system. This includes supporting the expansion of urban farming. Urban agriculture is the production of crops and livestock within cities and towns (Zezza & Tasciotti, 2010). Activities include developing community and backyard gardens, planting fruit trees, and raising livestock such as chickens and goats (Bouris, Masselink, & Geggie, 2009). In their description of urban agriculture, Bouris and colleagues (2009) also include activities necessary to get food from gardens to kitchens of urban dwellers - food preserving, packaging, marketing, selling and transporting. There has been little concern from the public or authorities on fruit or vegetable production in the city, but keeping farm animals on city lots offers distinct challenges for animal bylaw enforcement and EHOs.

Keeping livestock in an urban setting has become an increasingly popular point of discussion. A search of newspaper articles in ProQuest (Canadian Newsstand Major Dailies) of "backyard chickens" from August 2009 to August 2013 identified 1166 stories. Canada-wide, city councillors have been responding to increased interest in establishing bylaws permitting city chickens. The City of Victoria, an identified leader in

this capacity, has an animal bylaw permitting an unspecified number of chickens but no roosters over 6 months of age, and no other livestock except rabbits. There are an estimated 50 homes currently having backyard chickens (Bouris, et al., 2009). In comparison, city governments in Portland, San Francisco and Seattle, in the United States, permit a wider range of small farm animals, but in Canada, Victoria is one of the most permissive cities for urban agriculture (Bouris, et al., 2009). The City of Vancouver has recently introduced a bylaw for backyard chickens restricting the number to four hens, with defined guidelines for placement and size of coops (Chief License Inspector, 2010). The differences between cities with respect to permitting urban livestock may reflect typical property owners' concerns and values held by the cities as seen through council decisions.

Pollock, Stephen, Skuridina and Kosatsky (2012) describe the proposed benefits and negative impacts of keeping urban chickens in a North American context. These authors describe urban chickens as companion animals that contribute to psychological health and social interaction. They may produce eggs that are nutritionally superior to commercial eggs, and provide environmental benefits by consuming kitchen scraps and producing natural fertilizer (Pollock et al, 2012). Potential health risks of urban chickens include various infectious diseases (although rare) including diseases spread through chicken waste (Pollock et al, 2012). Eggs are prone to carrying pathogens that cause enteric diseases resulting in nausea, vomiting and diarrhoea. Infected hens can transfer *Salmonella* and this was the cause of an egg recall in the United States of 380 million eggs (Neuman, 2010). Such recalls and food scares can trigger decentralized alternatives to food production, and this can include keeping backyard chickens (DeLind & Howard,

2008). Interestingly, the Canadian news stories on keeping backyard chickens have not commented on *Salmonella* as an issue of concern (see Appendix A).

The primary complaints about chickens are more often concerns about predators and pests, odour, or noise, although a squawking hen is quieter than a barking dog (Pollock et al., 2012). The City of Kelowna Memo on Urban Chickens identified the risks to be transmission of pathogens (e.g., *Salmonella* or *Campylobacter*), improper disposal of wastes, unspecified food safety risks, and poor animal welfare practices (Deputy City Clerk, 2010). The report includes comments from the IH stating that while risk for pathogen transmission is present, it can be mitigated with appropriate chicken housing and proper hygiene when handling eggs. Additionally, backyard chickens do not appreciably increase risk of avian influenza, and IH recommended limiting egg distribution to personal use and prohibiting egg sales, home-based slaughter, and meat sales (Deputy City Clerk, 2010). Although there are potentially serious food safety risks, such as *Salmonella*, *Campylobacter*, and health risk from avian influenza, these are not generally stated concerns in the popular press.

Avian influenza (H5N1) is of particular global concern because of the threat for developing a virus that could trigger a pandemic. Little has been published on the risk factors of H5N1 infection in backyard chickens, but one study concentrating on Africa and Asia (where 80% of poultry are backyard flocks), identified the strongest risk factor to be the feeding of purchased infected chicken remnants to backyard flocks (Biswas et al., 2009). Other risk factors were keeping domesticated ducks with chickens and having birds sharing a nearby body of water where virus-shedding ducks may have been (Biswas, et al., 2009).

Keeping chickens in urban areas has great potential to provide high quality protein and contribute to a community-based food system. Pollock and colleagues (2012) did not find any cost-benefit evaluations on home egg production, and noted that many Canadian jurisdictions do not allow rearing of chickens for meat production. They suggest that keeping urban chickens does not reduce food insecurity. In industrializing societies, urban agriculture is primarily an activity of the poor, but in Greater Victoria, it would generally be landowners or house renters, who could have urban chickens (Zezza & Tasciotti, 2010; Pollock et al, 2012). Given the high cost of housing in Greater Victoria, likely several socioeconomic classes keep chickens, including both renters and homeowners. In industrializing societies, households engaged in urban farming were primarily the poorest but had access to a wider variety of foods at a cheaper price than those not engaged in urban farming, thus, resulting in a significant impact on their food security (Zezza & Tasciotti, 2010).

Farmer's markets.

Farmer's Markets are sales venues where growers or producers from a local area are present in person to sell their own products directly to the public (Worsfold, Worsfold, & Griffith, 2004). This is a participatory or transition food security strategy because there is a growing demand for fresh, local, healthy food that is not being delivered in many traditional supermarkets in Canada. There are at least 116 farmer's markets in BC, represented by the BC Association of Farmer's Markets, including 1000 farmers (BC Association of Farmer's Markets, 2013). Farmer's markets increase access to healthier food choices and a wider variety of food (Larsen & Gilliland, 2009).

In 2010, there was media concern over restrictions that food safety regulations place on small vendors for temporary markets. A story from the Globe and Mail noted, "We are starting to see the first friction between these two systems – the need for keeping us safe and the need for neighbour-to-neighbour, small-scale, kind of nimble approaches that are going to allow this local-eating revolution to happen" (Lindell, 2010). The problem may lie in the scale of operation; small-scale temporary market vendors may not fully understand the requirements or restrictions if they operate a home production business that does not need inspection. Additionally, food safety regulations may be geared for larger producers, and not scaled down to support temporary market vendors.

According to Worsfold and colleagues (2004), food safety concerns about temporary markets include the frequent lack of temperature control and opportunities for cross contamination due to lack of hand and equipment washing facilities at many markets. EHOs are unable to be at all markets at all times to ensure safe food handling, so food safety rest primarily on the producer. Worsforld and colleagues (2004) also found that consumers were not concerned with food safety standards at markets, assuming vendors would be trained in food safety and subjected to inspection. More education for producer and consumer may help to address the issue of risk and to inform personal decision making about the purchase of unregulated products. Similarly, Mortlock and colleagues (1999) examined food hygiene practices of food handlers, and found that better risk communication was necessary to improve practices to minimize risk. Providing knowledge or documentation on safe practices was not enough, but understanding the extent of foodborne illness from unsafe practices helped in

understanding risks and influencing safe food handling practice (Mortlock, et al., 1999; Taylor, 2008).

In April 2010, a new MarketSafe program was implemented in BC for farmers and producers who produce food for sale at farmer's markets, farm gate, or temporary markets (BC Association of Farmer's Markets, 2010). This program is similar to FoodSafe, a program for those working in the food service industry. The MarketSafe course was initiated through the BC Association of Farmer's Markets. Development and delivery of the program is shared by farmer's market vendors, government (agriculture & public health), education, industry associations, and other stakeholders (Personal communication, S. Shyng, Food Safety Specialist, BCCDC, November 09, 2010). There is no identified background to this program, or baseline risk assessment of farmer's markets or any knowledge of planned evaluation for this program. The purpose was to "increase awareness and knowledge of food safety and safe food handling procedures for farmer's market vendors, market managers, farm gate vendors, home kitchen small-scale food processors, and others who may make, bake or produce food products for public consumption outside of regulated food service establishments" (MarketSafe Program Overview, 2010, para. 1).

In the CRD, there are a number of farmer's markets, with Moss Street Market being one of the more popular markets in the city. There are a number of seasonal markets in surrounding communities. They are all temporary food premises, with no fixed building for year round access to locally grown or produced food.

Community kitchens.

Community or collective kitchens are community-based cooking programs consisting of small groups pooling labour and resources to make one or more meals (Engler-Stringer & Berenbaum, 2006). This is a participatory or transition food security strategy because it fills a need in a failing system involving food literacy (how to cook), and lack of resources for food and cooking equipment. Community kitchen participants determine the structure according to their needs. Typically they meet twice per month, once to plan the menu and the shopping list and then to cook and divide the food to take home (Tarasuk & Reynolds, 1999). Community kitchens may be organized by both public health and lay people. Those working in public health may receive subsidies, and operate programs out of community centres or church kitchens. Lay people who organize kitchens are generally self-funded, and use home kitchens. Community kitchens have a highly interactive atmosphere that can increase nutritional knowledge and encourage healthy eating, contribute to practical skills such as budgeting and food preparation, promote socialization, and encourage food safety practices (Fano, Tyminski, & Flynn, 2004).

Benefits of community kitchens include interaction and support. Some participants gain economical food management skills but many are already very frugal when it comes to food purchases (Tarasuk & Reynolds, 1999). One study found participants were sharing food safety information and some groups had their own food safety rules such as hand washing, wearing hairnets and aprons, activities which were occasionally transferred to their daily lives (Engler-Stringer & Berenbaum, 2006). They also found participants gained an increased awareness of political issues related to

poverty, community, and the food system (Engler-Stringer & Berenbaum, 2006). Community kitchens offer something very important over food banks: choice, control and social support.

Community kitchens can, but do not necessarily, serve the same population as food banks and soup kitchens that are efficiency or individual food security strategies. Tarasuk and Reynolds (1999) question the use of ongoing subsidies to community kitchens due to the potential for creating stigma similar to that associated with use of food banks. These authors found participation in community kitchens did not seem a source of shame or embarrassment for members of subsidized programs. Participants found it less humiliating than going to a food bank, and the food was better. From a food security perspective, researchers have demonstrated that community kitchens and food banks are not useful strategies to address hunger (Kirkpatrick & Tarasuk, 2009; Tarasuk & Reynolds, 1999). While these community-based programs have benefits, there is a need for new policy directions and system redesign, such as adequate incomes, to have real impact on food security (Kirkpatrick & Tarasuk, 2009).

In the CRD, community kitchens are supported through the work of community nutritionists in the health authority. CR-FAIR has identified community kitchens as an important food process activity, and important for increasing food literacy and reskilling (Vancouver Island Health Authority, 2011). Community kitchens are not only valuable for food knowledge and skills, but play and important role in bringing people together to better understand the food system and to discuss the social and political structures that create poverty (Engler-Stringer, 2011). It is unclear if this aspect of understand food insecurity is discussed at community kitchens in the CRD.

Unpasteurized milk.

A supply management marketing board regulates the dairy industry in BC. Dairy products represent nearly 20% of BC's agriculture production, with nearly $400 million per year in farm gate sales (Weicker, 2006). All milk sold in Canadian retail outlets is pasteurized. Pasteurization of milk "means that the product … from which it was made was subjected, under controlled conditions, to heat at a temperature and for a time sufficient to destroy all of the pathogenic types of micro-organisms and most of the other organisms present" (Government of Canada, 2009). The result is safer milk with a longer shelf life, due to the destruction of pathogenic and spoilage organisms (Angulo, LeJeune, & Rajala-Schultz, 2009).

Unsafe milk has a long history of contributing to infant mortality and epidemics, such as the 1927 Montreal typhoid epidemic affecting 5353 people (Ostry, 2006). The health of cows and cleanliness of facilities and production areas affects the quality of milk produced. In Ontario, in 1911, the Milk Act mandated the inspection of herds and dairy facilities, and by 1914, the City of Toronto made pasteurization of milk sold in the city compulsory (Ostry, 2006). The rest of Canada, however, continued to be at risk for illness with the consumption of unsafe milk, but public health professionals recognized the nutritional value of cow's milk as significant (Ostry, 2006). The importance of creating a safe milk supply led to a conflict between the producers (dairy farmers, processor and distributors) and public health officials (Ostry, 2006). Ostry (2006) describes how public health officials had to convince the industry of their role in spreading disease. By 1923, not only had municipal public health and the dairy industry formed alliances, but the Department of Agriculture and Division of Child Welfare were

working across sectors to promote the health benefits of a safe milk supply (Ostry, 2006). Through a process of education, compromise, and conflict, a safe supply of nutrient-rich milk became available to all Canadians (Ostry, 2006).

People who prefer raw milk have argued that the pasteurization process changes the flavour and nutritional quality (Adams, Olexa, Owens, & Cossey, 2008). The loss of vitamins is extensive for ultra-heat treated (UHT) extreme pasteurization, but for average pasteurization, vitamin loss can be less than ten percent of vitamin B1**,** B12, and folic acid, 0-8% of B6, and 10-25% of vitamin C (Adams, et al., 2008). Protein and enzyme degradation is also a noted concern of raw milk supporters (Adams, et al., 2008). In a study by Perkin (2007), the consumption of unpasteurized milk provided protective factors against eczema, seasonal allergic rhinitis symptoms, and atopy (IgE allergy). Recognizing the increase of harmful bacteria in raw milk over pasteurized milk, there is still a marked improvement in allergy sensitivity for children who drink raw milk, but the actual component of raw milk contributing to the effect has yet to be discovered (Perkin, 2007). The public health community has established that cow's milk, either raw or pasteurized, provides an overall protective health effect providing vitamins, minerals and necessary proteins, fats, and carbohydrates (Nestle, 2007; Smith & Signal, 2009). The majority of the population appear to agree that pasteurization is an acceptable method to reduce harm caused by some bacteria in raw milk, while providing some of the protective effect.

In the last few years, there have been two major court cases in Canada challenging the sale of unpasteurized milk to the public. Michael Schmidt, a dairy farmer in Durham, Ontario, claimed Canada's ban on the sale of raw milk and mandatory

pasteurization laws violate his constitutional rights (“The raw milk trial,” 2009). Similarly, on a farm in Chilliwack in the Fraser Health Authority catchment area, the BC Supreme Court issued an injunction to the Home on the Range Dairy to stop the distribution of raw milk to 450 cow-share owners (Selick, 2011). The judge acquitted Schmidt of the 19 charges of distributing raw milk, and his business has grown since the trial (Nguyen, 2011). Schmidt has taken over the Home on the Range Dairy in Chilliwack while the former agister (person who has the care of livestock belonging to others), Alice Jongerden, has moved on to form the Raw Milk Legal Defence Fund (Nguyen, 2011). Lewis has quoted Jongerden saying that the issue “isn't just about raw milk, it's also about food freedom and knowing how your food is produced” (Lewis, 2011). Additionally, she has suggested the conventional milk industry may have a role in stopping cow-shares and raw milk consumption (Lewis, 2011).

Raw milk from cow-shares is roughly four times more expensive than pasteurized milk. It is not easily accessible, and therefore requires effort and commitment to get a weekly supply. There are no known cow-shares in the CRD. Those who are interested in this source of food assume a greater responsibility for their own health (assessing the risks and benefits) and to the agister who is housing the cow in which they hold a share. This case is both timely and essential to exploring the way that food security advocates and food safety professionals work through complicated issues to resolve tensions.

Intersectoral Coordination and Collaboration

According to Blas and Sivasankara Kurup (2010), addressing social determinants of health requires intersectoral coordination and collaboration. Recognized as an important part of the BC core functions programs, intersectoral coordination and collaboration is a

key area of focus, given the broad spectrum of individuals engaged in food security activities and those involved with food inspection and regulations. Both the food security and food safety model core program papers noted the importance of intersectoral coordination and collaboration for achieving effective outcomes (Food Safety Working Group, 2006; Food Security Working Group, 2006). Intersectoral collaboration is a joint working arrangement through which those working in different sectors unite to address an issue to achieve a common goal (Dowling, Powell, & Glendinning, 2004; O'Neill, Lemieux, Groleau, Fortin, & Lamarche, 1997). For example, the agriculture sector and health sector work together toward food security in some countries (Lawn et al., 2008). Health Canada (2000) developed an Intersectoral Action Toolkit that describes collaboration as a commitment to a common vision, creating new channels for communication, committing to planning together, determining authority and shared power, contributing both resources and reputation, and jointly sharing all risks, outcomes, and rewards. Lasker, Weiss and Miller (2001) identify collaboration as a means to identify new and better ways of thinking about an issue. One form of intersectoral collaboration is a coalition. A coalition is "a grouping of varied organizations in which the collective interests converge on a shared objective but whose member organizations have separate agendas and interests of their own" (Green & Kreuter, 2005, p. 270). Others identify collaboration as alliances, partnerships, or consortia but they all work toward a mutually agreed upon goal and come together voluntarily (Alexander, Christianson, Hearld, Hurley, & Scanlon, 2010).

Intersectoral collaboration is not new but evidence for successful partnerships is sparse (Dowling, et al., 2004; Green & Kreuter, 2005; Lawn, et al., 2008). The Alma

Alta Declaration on primary healthcare identified intersectoral collaboration as one of the five key principles, along with universal access for care, equity, community participation, and appropriate use of resources (WHO, 1978). Intersectoral collaboration is considered by some, to be the weak strand of primary health care because sectors such as agriculture and education do not generally see health concerns as their domain (Lawn, et al., 2008). The Canadian Nurses Association recognizes the link between health and wellbeing with economic and social policy, advocating for experts in various disciplines to work together through intersectoral cooperation to establish national health goals (Calnan & Lemire Roger, 2002).

Intersectoral action is a key strategy for reducing health inequities and improving health. In another primary healthcare document "Achieving Health for All", Epp (1986) identified reducing inequity as the most significant and challenging action to improving health of Canadians. Reducing health inequities cannot be solely the responsibility of the health sector, but requires collaboration with other sectors. Additionally, the Ottawa Charter for Health Promotion clearly states that health is not just the responsibility of the health sector (WHO., 1986). The core functions framework embraces intersectoral collaboration (BC Ministry of Health, 2005b). Intersectoral coordination and collaboration is necessary to achieve and maintain a state of wellbeing but the evidence on positive outcomes as a result of coalitions or intersectoral collaborations is weak (Green & Kreuter, 2005).

Stern (1990) wrote about the tensions and contradictions of developing alliances stemming from the 'Achieving Health for All' framework. This included competition for resources, competition for leadership between professionals, and mistrust by community

groups of professional associations and bureaucrats. Stern advises leaders of alliances to be aware of the need to develop credibility with potential partners, which takes time. Additionally, she encourages debate about different and similar agendas, noting the need for a combination of skills including political, analytical, mediation, facilitation and communication. Other challenges include mediating cultural differences, risk orientations, and decision-making styles (Alexander, et al., 2010). It can take considerable time and effort to develop trust and respect among a group, and there needs to be full awareness of the challenges that an alliance can present.

Intersectoral collaboration and the skills to achieve it can take some time to develop. Hawe and Stickney (1997) report that in forming a new coalition, direction setting and specifying goals can be a long and difficult process involving values clarification. These authors also issue a warning about the tendency of the health sector to slip into assumptions that others will follow their lead – that the community is working with the health professionals rather than that everyone is working together (Hawe & Stickney, 1997).

Food security and food safety represent different sectors within public health. Food security is a highly community-driven program with health authority staff working to support community activities. The food safety program, on the other hand is highly regulatory, with health authority staff more often seen as enforcers, rather than as professionals working with community members. Forming a new coalition between food security and food safety may help to balance perceived power differentials by creating space for community building where everyone is working together toward a safe and accessible food system. Benefits of any alliance or coalition could be increased

networking, information sharing, and access to resources, participation in decision making, and a sense of accomplishment (Cramer, Atwood, & Stoner, 2006). There is an advantage to early identification of problems and developing interventions together.

Food Policy Councils are examples of opportunities for intersectoral collaborations, but it is unclear whether they involve representation from EHOs who would be important partners to include in collaborations between food safety and food security. According to Webb, Hawe and Noort (2001), the right conditions for successful collaborations include the extent to which actions overlap with the core business of each collaborator, the resources, support and skill of each group, strong and stable relationships, an agreed way of working together and resolving conflict, and planned ways for working to monitor outcomes. Food policy councils exhibit these characteristics (Harper, Shattuck, Holt-Gimenez, Alkon & Lambrick, 2009). Successful food policy councils (those that have been established and maintained, implementing food policies) include Penrith in Australia, the Toronto Food Policy Council, and Hartford Food Systems (Webb, et al., 2001; Yeatman, 1994). The Toronto Food Policy Council is part of a networked movement that links small and large food agencies, social justice groups, community garden advocates, agencies and staff of local government, and municipal politicians (Wekerle, 2004). The achievement of Toronto's many community food security activities may be the ability for coalitions, alliances, task forces, or advisory groups to emerge and disband as needed; strength in the relationships and network that is responsive to change. An important aspect to intersectoral collaboration is maintaining positive relationships with a focused goal – in this case safe, accessible food for all.

Webb, Hawe and Noort (2001) identified a gap in the literature on the success of coalitions or intersectoral collaboration. There is a need to develop new and better methodologies to assess the impact of partnerships on the health of the community and impacts need to be better measured and documented (Dowling, et al., 2004; Lasker, et al., 2001). It is important to consider the extent and feasibility of a coalition between those working in food safety and community members working in food security by understanding potential limitations and constraints in order to recommend outcome measures.

Summary

This literature review was in preparation for conducting case studies and further analysis on community kitchens, urban chickens, farmer's markets and unpasteurized milk. The purpose of the study is to explore how professionals and lay people engage in food security activities that include food safety precautions, to ensure equitable access to safe food, and more specifically to define challenges and barriers to intersectoral collaboration. These cases represent food security initiatives that face unique challenges to food safety regulations, and food safety regulations that pose challenges for food security initiatives. Understanding how those involved in each case understand food safety risks and how they collaborate with regulatory authorities, can open up new ways of approaching collaborative work to enhance community food security.

The body of research to which I am contributing involves the process of negotiating interdisciplinary or intersectoral terrain covering multiple perspectives. Different cases noted here represent various perspectives on food security as it intersects with food safety. I explore how people who work from very different worldviews can

come together to support a safe and accessible food supply, considering the complexities of the global food system.

Chapter 3 – Methodology

This chapter on methodology begins with my philosophical perspective. A philosophical perspective in respect to knowledge development consists of a combination of ontology (what is), epistemology (how we come to know what is), and methodology (the way we learn about what we know) (Wainwright, 1997). In this chapter, I describe my philosophical assumptions, the conceptual framework for this study, and the methods used to collect and analyze the data.

Philosophical Assumptions

My philosophical assumptions come from values pertaining to pragmatist-feminist communitarianism. According to Christians, Denzin, and Lincoln, (2005), this approach puts the community before the individual since the community shapes our socio-cultural identity. It is the mission of social science research to enable community life to prosper and assist community members with identifying and acting on mutually held ideas (Christians et al., 2005). Pragmatist-feminist communitarianism comes from the work of Jane Addams and has a focus on strengthening a wide-ranging sense of community in which the individual is both creator and product of community (Whipps, 2004). While conservative communitarians focus on family and protecting traditions, pragmatist-feminist communitarians see interdependence of groups and individuals who have a mutual reliance on each other as part of a greater social organism, and it's diversity of voices that contributes to a shared truth (Whipps, 2004). Whipps (2004) explains how this philosophical approach invites diversity for multiple perspectives of reality, and how knowing is a social endeavour that can change and evolve as new perspectives enter the conversation. Whipps (2004) writes: "Addams expands the

meaning of community, and her communitarianism develops an understanding of interdependent community that necessitates multiplicity, even to the point of claiming that we each have a moral duty to seek out diverse experiences and opinions" (p. 120). This philosophical approach fits with both my view of knowledge development and the conceptual framework for this study, as described below.

Related to feminist pragmatist communitarianism is critical realism. In critical realist approach to ontology and epistemology the researcher recognizes there are non-observable entities that may be at play, and seeks the underlying mechanisms contributing to events under study (Wilson & McCormack, 2006). Realism claims there is a reality beyond what the mind recognizes as real (Crotty, 1998). Critical realism combines realist ontology with relativist epistemology (McEvoy & Richards, 2003). Relativist epistemology holds a position that knowledge must be evaluated in context in which the knowledge claim was produced or in the context of who is producing that knowledge (Rogers, 2005). That is to say that, although mechanisms of events may not be directly observable, they are real and known through their effects, and evaluated as 'true' mechanisms or causes within the context of the events (McEvoy & Richards, 2003).

Poland, Frolich, and Cargo (2008) describe critical realism as a way to link both objective and subjective experiences through a theoretical understanding of mechanisms that drive structures. There are observable traces of the mechanisms but the mechanism is not obvious; events and experience construct knowledge; theory is explained through underlying structures; methodology is based on theory and observation; and mixed methods or case studies are methods to study from this perspective (Poland et al., 2008).

Within a research study, there are properties that may emerge because of connections made by linking both objective and subjective experiences. According to Cilliers (2000), it is that linking of the objective and subjective experiences that leads to understanding, and therefore knowledge.

As with the idea from Jane Addams, that new perspectives found in a diverse community can change the conversation, critical realist researchers approach knowledge as being actively constructed from facts, events, and experiences known at the time (Poland, Frolich, & Cargo, 2008). New experiences or perspectives can change what is known or accepted as 'factual truth'. Objective and subjective experiences that are shared within a diverse community are essential for understanding the full scope of an event under study.

In an effort to understand the driving structures behind tensions between those in food safety and food security, I used a conceptual framework that relates to both critical realism and feminist pragmatist communitarianism. I have chosen complexity science as a framework to focus on relationships and interconnections as mechanisms that drive structures. Byrne (2001) describes a synthesis of critical realism as a philosophical ontology, and complexity science as a scientific ontology. According to Byrne (2001) complexity science is "to be used in context, in relation to a history of human social action and the realities of human social organization" (p. 70). He argues that by recognizing complex unobservable mechanisms that generate consequences, there are ways to map a system as a means for describing the systems direction or potential changes. I describe more about complexity science below.

Complexity Science as Conceptual Framework

The conceptual framework for this study is based on whole systems thinking. One framework to explore whole systems is complexity science in which there are multiple distinct frameworks. As a relatively new school of thought, complexity science is being taken up across numerous disciplines, from computational science to sociology (Castellani & Hafferty, 2009), public health (e.g. Best, Riley & Norman, 2007; Lindstrom, 2009; Trochim, Cabrera, Milstein, Gallagher & Leischow, 2006; Rickles, Hawe & Sheill, 2007; Zimmerman, Lindberg, & Plsek, 2001), and nursing (e.g. Turkel & Ray, 2001; Anderson, Crabtree, Steele, & McDaniel, 2005; Hodges, 2011; Chaffee & McNeill, 2007). Complexity science that I am drawing on consists of a trans-disciplinary approach to real-world problems with a focus on non-linearity and a new way of thinking (Jorg, 2011). Jorg (2011) describes the challenges of writing and thinking in complexity as something that is best understood once experienced. It may be similar with my work, as I learn to think and write from a complexity science worldview, I acknowledge it can be challenging for the reader to follow this thinking and ask you to bear this in mind.

A complex system worldview provides a vision of relational and dynamic life that is holistic, self-organizing, interconnected, nonlinear, and evolving (Castellani & Hafferty, 2009). Complexity science embodies a variety of theories and frameworks, many of which are continually evolving. Complex adaptive system (CAS) is one framework of complexity science. Capra (1996) describes CAS as a study of problems in adaptive, self-organizing systems not explained by methods of traditional science. Holland (1992) refers to CAS as systems that maintain coherence under change. By understanding a set of principles that rule CAS behaviour, opportunities open for solving

problems within the system (Holland, 1992). The focus is on relationship patterns, how relationships are sustained, and how outcomes emerge, with an emphasis on the whole and on synergy, rather than on individual parts (Zimmerman, Lindberg & Plsek, 2001). Many people working in public health resonate with these ideas, as noted by the interest in CAS by the CIHR Institute of Population and Public Health, and many are eager to apply this thinking to reduce health inequities, promote social justice, and advance public health (CIHR, 2009).

Complexity science is not the only approach to whole systems thinking. An ecological framework is a way to engage in systems thinking. Ecological models highlight broad contextual factors (Green & Kreuter, 2005). Ecology is about relationships between actors and their environment, and social ecology is about the nature of relationships between human actors and their institutional, social and cultural worlds (Young, 2002). In public health, an ecological perspective involves engaging not only the individual, but organizations, communities, and public policies that influence health (Green & Kreuter, 2005).

Furthermore, Gunderson, Holling, and Light (1995) introduced panarchy as a framework for describing hierarchical systems with interconnecting elements, and to rationalize the interaction between change and persistence. The focus of panarchy is on the source and role of change in systems from a socio-ecological perspective where dynamic interrelations among personal and environmental factors affect health (McLaren & Hawe, 2005). The key concepts in panarchy are resilience, adaptive capacity, adaptive cycle, and adaptive management. Resilience refers to the ability to withstand shock and prevent debilitating failure (Homer-Dixon, 2010).

Systems thinking is focused on relationships and interconnecting elements. It involves the understanding and appreciation of the various influences on health outcomes. Whether one considers CAS, an ecological framework, or panarchy, there is an understanding that relationships and interconnections influence health and well-being.

Complexity Science in Nursing

Nursing has thought in terms of systems thinking for some time. Ray (1998) identifies complexity science as similar to works of nursing theorists Rogers, Newman, Parse, Watson, Leininger, Davidson, and Reed who have recognized the importance of patterns and relationships. Anderson and McFarlane (2008) have developed a Community as Partner model with a perspective on systems thinking different than other nursing theories, focusing more on an ecological framework. Similarly, Edwards, Rowan, Marck, and Grinspun (2011) worked within the panarchy framework using a case study approach to identify ways to integrate the nurse practitioner role into the Canadian Health Care system.

Kleffel (1996) put an ecocentric paradigm forward, linking nursing to a concept of the environment that included the larger social, political, economic and global structures that affect health. Kleffel (1996) describes three environmental paradigms. Egocentric approach is where one assumes what is best for an individual is best for society; homocentric approach is grounded at a social level; and ecocentric approach is grounded in the cosmos (Kleffel, 1996). In ecocentric approach, the whole environment is assigned intrinsic value. It is rooted in a holistic world view. Ecocentric approach assumes everything is connected to everything else, the whole is greater than sum of parts, meaning is dependent on

context, biological and social systems are open, and humans and nonhumans are one within the same organic system (Kleffel, 1996). Exponents of the ecocentric approach include most traditional Eastern systems of thought, traditional Native American philosophies, Thoreau, Snyder, Rozak, Leopold, Carson, and Capra (Kleffel, 1996).

As an example of ecology in nursing, Laustsen (2006) proposed a new nursing theory, based on Commoner's ecological theory (1971). Laustsen (2006) expressed concern that a new nursing theory needed to be grounded in existing theory from another discipline. Therefore, he created this model based on the Commoner's four laws: 1. everything is connected to everything else; 2. everything must go somewhere; 3. nature knows best; 4. there is no such thing as a free lunch. Laustsen (2006) states the purpose of developing a new theory of nursing was to broaden the manner in which nurses consider environment and to incorporate expanded concepts of interrelationships from an ecological framework. Kleffel (1996) and Lausten (2006) have put forward ways to consider ecology in nursing. These authors demonstrate ways in which some nursing scientists are reconceptualising nursing toward a unity of human being, health, and environment. However, ecology may be only one aspect of the shift in thinking about nursing.

Marck (2004) applied an ecological framework to nurses in direct patient care. Using tenets from ecological restoration and case study design, Marck (2004) assessed the ecological integrity of the healthcare system relating to nursing practice. Ecological restoration involves assessing the integrity or the overall health of an ecosystem by gathering information on the diversity of life forms, the process and structure for birth, growth, death, and renewal, and the context for economic development (Marck, 2004).

Similar to CAS, the focus is on relationship patterns, history of the system, and examining the whole, not individual parts. As a framework for whole systems thinking, good restoration involves cultural, historical, social, political, moral, and aesthetic considerations (Higgs, 1997).

As an example of complexity theory in practice, Durie and Wyatt (2007), used case study design to highlight links between health inequities, housing and neighbourhoods, with community efforts toward self-organization, improving place, health, and education outcomes. These authors noted a single most important point to using complexity theory is in allowing understanding in conditions necessary for communities to create their own process for regeneration. As opposed to external public health interventions or attempts to empower communities, this study highlighted conditions to establish self-organization (Durie & Wyatt, 2007). Chaffee and McNeill (2007) also noted that leaders who adapt complexity theory will work toward creating conditions allowing systems to evolve and adapt over time. By understanding complexity theory, nurses are able to view various situations with a deeper understanding of the importance and impact of unity, embeddedness, and unpredictability.

Whole system thinking for knowledge development is a shift from traditional science, and it is a perspective that fits for many nurses[1]. Each of these frameworks offers unique perspectives but share the basic idea that the context of a problem is part of the actions and interactions that change or maintain the problem. Whole systems

[1] I contributed to a chapter for a nursing research book where I described complexity science and other systems thinking paradigms. (Schreiber, R. & Martin, W., New directions in grounded theory. In C.T. Beck (Ed.), Routledge international handbook of qualitative nursing research.)

thinking is developing as an approach to research, and complexity science can provide one view to focus on the context of a problem.

A complexity science framework is particularly appropriate to this study, given the focus on understanding intersectoral collaboration, which is highly dependent on relationships that can lead to unpredictable dynamics. Additionally, the way the term 'food security' has evolved over the past 15 years suggests a dynamic and evolving area best viewed as a CAS. A CAS is one that has an evolving structure, reorganizing to adapt to problems posed by the surroundings (Holland, 1992). The main characteristics of CAS, as defined by Anderson et al. (2005) include agents, interconnections, self-organization, emergence, and co-evolution. *Agents* can be either human or nonhuman (e.g. documents or computer systems) that are a mechanism to share information with others in their environment. *Interconnections* involve the exchange of information and can be local or global, and are nonlinear, restricting the predictability of cause and effect. *Self-organization* is affected by the nature of the environment and describes the manner of adjusting behaviours to cope with changes. *Emergence* happens when agents interact resulting in properties that are distinct from individual agents. *Co-evolution* involves activity beyond the system boundaries where interaction or exchange of information contributes to changes in the system. This also includes the link between the systems' past, current and future behaviour.

Additionally, Anderson et al. (2005) identified principles of complexity science that are suitable for a conceptual framework or what the authors term as a "complexity science blueprint" (p. 679) for case study design. First, it is important to uncover the patterns and interdependencies between agents at multiple levels in the system, and to

look for multiple dimensions in relationships, such as the quality and quantity of the relationships. Patterns are important to observe with a focus on non-linearity, where the size of an event does not necessarily lead to the same magnitude of outcome. There are patterns of relationships, behaviour, and processes over time. There are also patterns of interaction across different levels of a system. Second, unexpected events, extremes, and outliers are important. Cases that explore extremes are useful when looking for unexpected and unusual events and can show how decisions are made and how agents make sense in a situation. Third, dynamics are important to understand how information flows and ways in which self-organization happens. There are also dynamics of the effect of the researcher on the system. There can be a co-evolution of the case and the researcher, with the process of the research affecting how the case evolves. That is to say, the event or case can grow and change along with the research process and because of the research process. Finally, it is important to learn the system's history to see the interdependency between past and present, how the system evolved and to gain insight into current patterns of behaviour. Understanding patterns of behaviour and the way the system works helps in identifying places to intervene in a system. Meadows (1999) describes how identifying "leverage points" (p. 1) in a complex system can allow for a small change to have big outcomes. These points are not easy to identify, not intuitive, nor are a guarantee for an outcome. People who are interested in contributing to change in a complex system can benefit by understanding patterns and interdependencies, and the way a system is organized, looking for opportunity to intervene.

These characteristics and principles fit with a study of food systems involving food safety and food security. For example, food safety has multiple levels of interacting

systems – local health authority, provincial, and federal. There are extreme cases of raw milk, with multiple food safety challenges, and community kitchens with few food safety challenges. Additionally, there are dynamics within a food system causing changes in regulations, such as foodborne illness outbreaks.

Food security as a concept may not appear to be a 'system' but I would argue that food security has become a CAS. Locally, in BC and more specifically in the Greater Victoria area, there are numerous groups working together on food security, such as the BC Food Systems Network (BCFSN), Vancouver Island Food Security Network, Capital Region Food and Agriculture Initiative Round Table, and LifeCycles. These networks or groups are dynamic, living, social systems (Capra, 2002) and as such, evolve and adapt to meet their context. Provincially, the food security core program, operated through BC Health Authorities, is a very small aspect of this system and is a population health intervention. According to CIHR (2009), population health interventions are CAS that impact a number of people by changing the underlying risk conditions and reducing health inequities. Hawe and Potvin (2009) define population health interventions as programs or policies addressing social, economic, and environment conditions resulting in changes in the distribution of risk to health. Therefore, the food security core program that is designed to support communities in their food needs is both a population health intervention and a CAS. Nationally, Canada has over 100 food security and policy groups with at least one food security network in every province (Egbers, 2009). Globally, groups such as La Via Campesina have lead the way in developing a movement that opposes corporate food as a system that has contributed to food insecurity, to focus on food sovereignty as a complex system to support food security (Desmarais, 2007).

Similarly, food safety is a system with local, national, provincial and global components. Together, food safety and security fit within, but are only part of, the larger and more complex food system and have multiple systems nested within them.

Methods

Research designs that fit with my philosophical assumption, including my ontological and epistemological stance, include methods using open-ended questions and text data that support a dialogic process (Denzin & Lincoln, 2005). That is to say, as a pragmatist, it is important to learn the history of a situation and have some experience on which to reflect on the problem; as a critical realist, I want to understand the problem in context and look for the effects of unobservable mechanism that may contribute to the problem; and using complexity science as a framework, I focus on interdependencies, relationships and patterns to map the problem, providing a view for in-depth understanding of the problem. The methods I have chosen for this work begin with case study, to gain some experience, concept mapping to observe the depth of the divide between those working in food safety and food security, and situational analysis to reflect on the problem of tensions between the actors in context of the full situation.

I employed multiple case study design using situational analysis and concept mapping methods to explore the research objectives. I developed cases through interviews and documents as the basis for situational analysis. Concept mapping addressed one of the research questions and contributed to theoretical sensitivity in situational analysis. All of these approaches to research support the theoretical framework of complexity science by involving the interrelationships within the whole system. In this section, I describe these methods and the executed plan for data gathering

and analysis. I also summarize how case study, concept mapping and situational analysis complement the conceptual framework of complexity science.

As a reminder of the aims of the study as discussed in Chapter 1, the purpose of this research is to examine how professionals and civil society members engage in food security activities that include food safety precautions and how they work across differences to support a safe and accessible food supply. The questions are: (a) how are the intersecting areas between food safety and food security negotiated?, and (b) what are the facilitators and constraints to collaboration? The objectives are: (a) to explore tensions between those working in community food security and food safety (regulatory authority) and the source of the tension; (b) to explore how people experiencing these tensions can improve the way they work together; and (c) to explore potential opportunities for enhancing health equity through food security and food safety programs.

Case Study

Case study is the design for this research. A case study design serves descriptive, interpretive and explanatory intents. This is the preferred strategy when asking 'how' and 'why' questions (Yin, 2003). According to Yin, researchers use case study design when there is little control over events and they occur in a real life context, and the boundaries between the phenomenon and context are unclear. Such design allows for mixed method data collection at multiple levels. Anderson et al. (2005) argue that case study design is beneficial for illuminating the characteristics of a CAS.

There are three foundational writers on case study methodology: Merriam (1998), Stake (1995), and Yin (1984). They agree on the fundamentals of case study, that the

case is a bounded system or a unit with identifiable boundaries, and data collection involves multiple methods, including interviews, observations, and text (Brown, 2008). They differ in philosophical approach, however, with Yin using a positivist or logical approach, Merriam using a pragmatic approach, and Stake expressing an interpretive method (Brown, 2008). Van Wynsberge and Khan (2007) argue that case study is trans-paradigmatic, or suited not only to certain philosophical positions. Case study is adaptable to various perspectives. While I drew on the work of all three foundational writers, I primarily used the work of Stake (1995, 2006; Stake, Denzin, & Lincoln, 2005) to guide me because the more interpretive approach fits with complexity science more than a positivist or logical approach. Stake et al. (2005) describe cases as systems of patterned activities and the experience of other cases contributes to understanding any given case. The historical background is important, along with other contexts such as economic and political, to inform and understand the case (Stake et al., 2005). This approach fits well with complexity science. Stake's interpretative approach to case study may not fit quite so well with critical realism, but this is not an obstacle. Critical realism accepts mechanisms of an event may not be easily observable, and I suggest that the researcher's interpretation of events contribute to the extent to which mechanisms are observable. Stake has a strong focus on being critically reflective and considering the impressions of the case, recognizing that any reality is not easily evident and not as important as a socially constructed reality (Stake et al., 2005). It is experiential knowledge that is of value in case study research, and this does align with critical realism.

I chose case study because food security as a whole is too large and diverse an area to make sense of the interaction with food safety. Each selected case is an example of part of a food security system and are have a range of activities to allow for cross-case comparison. Similarly, food safety is a large field, covering restaurant and grocery store inspection to processing plants, to abattoirs and farms. Specifically, in this research project, the phenomenon is where food safety intersects with food security activities. Exploring food safety aspects of food security activities and comparing across cases helps to move from specific tensions between those involved in food security and food safety activities/programs, to a more abstract level, providing explanations and resolution to major issues. According to Stake (2006), each case is considered a complex entity and to be positioned in its own situation. I examined each food security case on its own but with a specific focus on food safety with a mind toward the attributes of a CAS.

Case selection.

According to Stake (2006), understanding one case comes easier when knowing other cases, and multiple case studies are most beneficial if there are between four and ten cases, allowing for an exploration of what is common and what is particular to one case. Case selection for this study dictated a diversity of food security activities, the activities needed to be popular enough to allow the researcher to have access to documents and participants, the case had to have a potential for tension with food safety regulations, and be accessible for data collection. I chose four food security cases that allowed for a broad look at experiences of the regulatory process. I considered community gardens, for example, but I am not aware of any potential tensions with food safety regulations. I chose community kitchens as a popular and accessible activity with

weak potential for any tensions. Urban chickens were very popular and controversial at the time of case selection, and I was interested to explore the extent to which tensions involved food safety. I chose farmer's markets because of the newly developed MarketSafe program, recognizing the changing environment of a new program might yield aspects of intersectoral collaboration. And I chose unpasteurized milk because of the extreme nature of this activity involving courts of law. These cases are relevant to the overall phenomena being studied, provide diversity across contexts, and good opportunities to learn about complexity and contexts (Stake, 2006). I selected cases to achieve the greatest possible variation. According to Flyvbjerg (2006), the critical case has the best fit with research questions and has strategic importance in relation to the general concern of the main phenomenon; in this study, it is intersectoral collaboration. Farmer's markets are the critical case, given that development and implementation of the MarketSafe Program was instigated through the Farmer's Market Association and involved food safety specialists from BCCDC. To offer maximum variation in cases, community kitchens and urban chickens are two examples of food security initiatives that are quite different from each other. The main commonality between the two is their value (or questionable value) for alleviating food insecurity. Unpasteurized milk has a rich history in public health, is technically illegal in Canada, and therefore captures some of the more complex issues related to collaboration.

Data Collection and Analysis

Prior to data collection, I obtained ethical approval from University of British Columbia, Interior Health Authority and the Joint University of Victoria/Vancouver Island Health Authority research ethics boards. I applied to these research ethics boards

because I was seeking interviews from EHO's working in Health Protection and Food Security Coordinators at IH, VCH, and VIHA. I chose only three of the six HAs in BC because of previously established research-based relationships that could facilitate data collection. You will find the consent form for interviews in Appendix B.

The primary methods of data collection were personal interviews (35 in total) and document reviews. Some respondents informed on multiple cases. Documents included as media stories, government reports, food safety regulations, and bylaws (see Table 1 for data sources). The document titles are listed in Appendix C. I also used observations and photos, particularly with urban chickens and farmer's markets, as a means to facilitate descriptions (with participant approval). I circulated an information letter inviting people to contact me if interested (see Appendix D). I also posted study information in urban coffee shops to find participants who kept chickens (see Appendix E). I interviewed EHOs on all cases at one time, to maximize use of their time.

Table 1 Data Sources

Informant Type	Number	Document Types	Number
EHO	8	Blog or websites	7
Dietitian/kitchens	10	Reports	4
Farmer	8	Listserv postings	2
Urban Chicken keeper	4	Guidelines/Protocols	2
Market Vendor	6	Regulations	1
Milk consumer	4	Meeting Minutes	1
Activist	2	Council Memo	1
Policy analyst	2	Presentation	1

For the case of unpasteurized milk, I approached publicly listed producers and cow-share operators who I knew through acquaintances. I requested community kitchen interviews through the Victoria Community Kitchens Network to interview organizers. I

explored the case of urban chickens through contacts at a local urban agriculture hub, and by posting requests for interviews through food security networks and community bulletin boards. I did purposive sampling by attending farmer's markets and generated interviews through the City of Victoria Downtown Public Market Society as well as through direct contact at local markets, and the BC Association of Farmer's Markets. I conducted interviews primarily with market vendors, but also with market consumers to identify any food safety concerns from their perspective. You will find a list of interview questions in Appendix F. Concept mapping data collection was done on a national basis through contacts at various professional organizations, seeking a balance between those working in food safety and food security.

Interviews were audio-recorded with permission of the participant, transcribed by me and with the help of a transcriptionist, and entered into NVIVO 9, software for qualitative data management. I also entered and analyzed observations, field notes, memos, and photos to NVIVO 9. NVIVO 9 software provides a mechanism to group similar ideas found in text and comments from observations of photos, to develop a general thematic framework. I created NVIVO codes for the data using constant comparative method for coding as initially developed by Glaser and Strauss (1967). I identified codes and themes for each case on its own, and then compared differences and similarities with the use of worksheets and procedures identified by Stake (2006) for multi-case study analysis. I constructed the cases based on historical, political, economic, and social aspects, and identified areas of tension and opportunities for coordination or collaboration. Additionally, I created specific NVIVO codes for the principles of complexity science as identified by Anderson et al. (2005) including adaptation,

emergence and self-organization. This allowed for a combination of inductive and deductive analysis. I coded and collected data simultaneously, to ensure maximum saturation of emerging themes (Glaser & Strauss, 1967). Once cross-case analysis began, I worked with Clarke's (2005) mapping techniques as described below. Simultaneously, I engaged in the concept mapping process.

Concept Mapping

I added concept mapping as a method to enhance situational analysis and to capture ideas of how best to ease tensions. This participatory mixed method also assisted with knowledge translation of study results by identifying concrete ways to move forward. Concept mapping offer a unique view of the primary question in this study and is a method specifically geared for systems thinking (Trochim, Cabrera, Milstein, Gallagher, & Leischow, 2006). It is a type of structured conceptualization that consists of six phases (Trochim, 1989). This method enables a group to describe ideas in response to a focused question, which translates to maps for visual representation (Trochim, et al., 2006). It provides insight to practical approaches from the participant's perspective on a focused issue. Participants not only contribute their responses to the research question, but also add to the analysis by sorting and ranking the responses provided by the group.

The Concept Systems software student license permitted a maximum of 50 people to log onto the system to participate in this project. The method itself does not have any limit to the number of participants, but it was initially developed for 40 people or less, to be done face to face (Kane & Trochim, 2007). According to Trochim (1993), with a greater number of participants, while potentially adding greater clarity to the results, there

are likely to be diminishing returns as the number grows. Therefore, the response rate is not of great concern with this method. The six phases range from preparing the question to utilization of the maps.

Phase 1 – preparing.

Phase 1 consists of establishing a focus question and choosing participants (Trochim, 1989). The focus question or prompt is a statement or question that participants completed in Phase 2 and provides the concepts for mapping. The purpose here was to engage the people who could best use the results and who had ideas on how to improve relations across the food system. The statement I chose for generating concepts was "A way to maximize understanding and collaboration between those working in food safety and food security is...". Participants for this method were different from those involved in the case studies.

For this preparatory phase, I prepared the question for participants who were engaged in policy formation and decision making, thinking they would likely have experienced tensions with counterparts in the other sector of the food system, and be in positions to resolve challenging issues that may have surfaced between food safety and food security. This included national representation of food inspection managers, food security activists, and interested academics. I created an initial contact list of 96 people known to be working in food security or food safety, or who represented networks and had access to list serves. That included people working in BC health authorities and provincial agencies, Toronto Public Health, provincial food security networks in Canada, Food Secure Canada, Canadian Institute of Public Health Inspectors, various academic institutions including the Canadian Association for Food Studies, CFIA, BC Food

Processors Association, and BC Association of Farmer's Markets. I invited people to share the link with anyone they thought would be interested in participating. I purposefully chose to circulate the concept mapping to different participants than the case studies, because those participants were very specific to the local context with specialized knowledge in the case subject.

Phase 2 – brainstorming.

Phase 2 involved asking participants to generate as many ideas as possible to answer the focus prompt (Trochim, 1989). This brainstorming stage occurred on-line using a secure site and 43 participants contributed to this phase. Throughout the phase, all ideas generated were visible to all participants to allow one person's ideas to spark another's. A benefit of on-line participation was that everyone was free to make their statement without fear of criticism or controversy (Trochim, 1989). There was potential for participants to generate an unlimited number of statements but Trochim recommends no more than 100 statements for Phase 3, to avoid serious practical constraints. There were 73 statements generated and this was reduced to 60 once duplicated statements were deleted. I reduced the statements with the help of Kathleen Perkin, project coordinator for Dr. Bernie Pauly. Having two people review statements and discuss changes allowed for a level of reliability. We went through the statements to remove duplicates and to edit for clarity and applicability to the focus prompt. Since data collection occurs on-line, there is no opportunity for clarifying statements directly with participants. Reviewing statements before they are sorted and ranked helps to eliminate uncertainty for participants in that phase. Forty-three participants generated 73 statements. We identified 60 unique

responses to the focus prompt (I have listed statements with the “go-zone” maps in Appendix G).

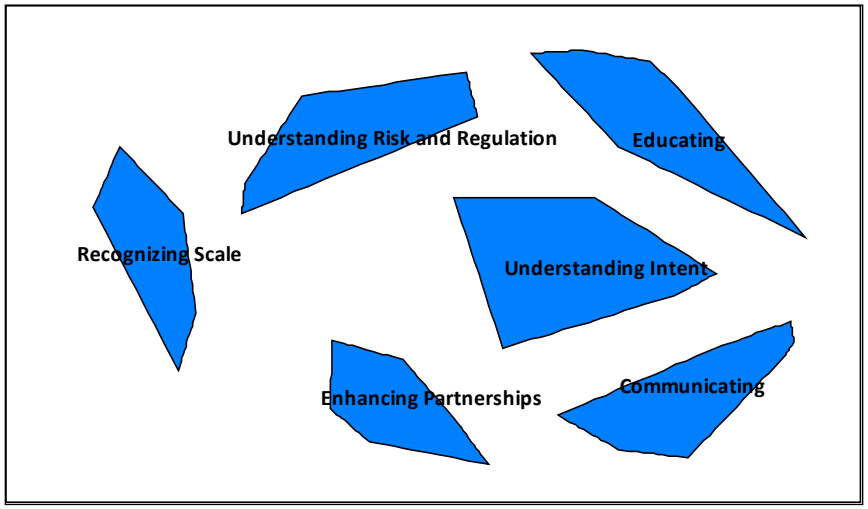
Phase 3 – sorting and ranking.

In Phase 3, a colleague and I distilled and clarified statements to maximize the meaning of each statement. That is to say, we reviewed each statement, removed duplicated ideas, and corrected the grammar of statements that were not clearly written. In this phase, I reconnected with all participants, asking them to log on to the website to sort the statements into themes or categories based on similarity of ideas (Trochim, 1989). They also ranked the statements on a Likert-type scale from 1 to 5, according to the dimensions of importance and feasibility, with 1 being less and 5 being more important and feasible. For example, in answer to the focus prompt “A way to maximize understanding and collaboration between those working in food safety and food security is...”, one participant answered “to find the common ground. Both are essential and mutually compatible, but this requires open communication and flexibility (versus strict rules)”. Participants ranked this statement high for both importance and feasibility. A statement ranked lowest in both importance and feasibility was “To remove the word 'regulation' from the discussion.” You can find more details on the statements and their ranking in the chapter on concept mapping.

The software provided space for five demographic questions in this phase used to generate sub-group analyses. The demographic questions were: 1) province participants are from, 2) occupation or professional designation, 3) whether primary work is in food safety or food security, 4) type of organization they work for or are involved with regarding food, and 5) gender.

The fourth phase involves the processing of data and production of the concept map, point-rating map, ladder graph, and go-zone map. The Concept System software does all statistics and creates maps. Starting with information from the sorting of statements, the program identifies two statements clustered together in the same category. On a similarity matrix of NxN statements (comparing the similarity between two points), the program assigns a 1 if the statements are placed together and 0 if not, allowing for the total across all participants for each statement pair to have a number between one and the total number of participants (Trochim, 1989). The computer software plotted the statements on the point map through non-metric multi-dimensional scaling (MDS) using two dimensions in a basic X,Y value configuration. Researchers use MDS for identifying similarities and differences in data and creating a scatter plot, also known as a point map (Kane & Trochim, 2007). Statements piled together most often are closer together on the map. The program then uses the point map output in hierarchical cluster analysis that partitions the configuration into non-overlapping clusters in two-dimensional space (called a cluster map – see Figure 2) (Trochim, 1989). The researcher decides the number of clusters. Starting with any number of clusters, the researcher considers the statements in each cluster to decide if they are better grouped together or if they make more sense when divided. Each concept (representing a cluster of statements) contributes to the overall framework to answer the focused question.

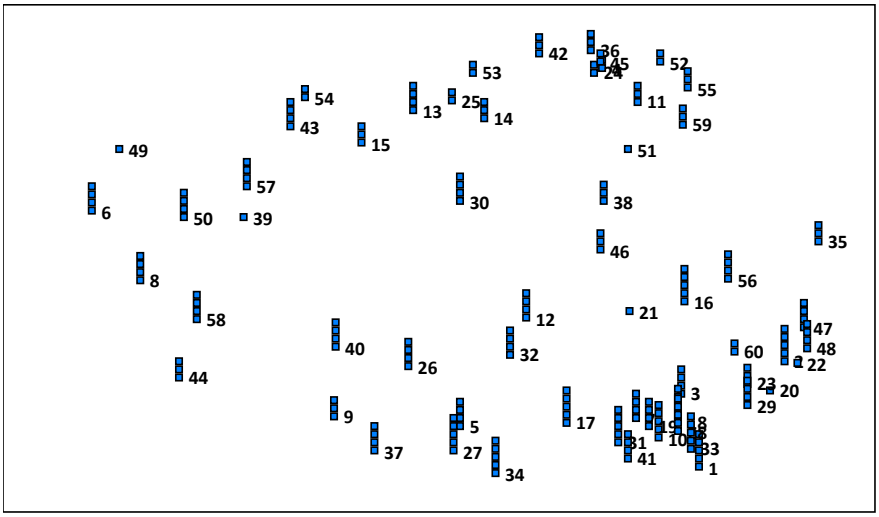
Figure 2 Cluster Map



The reported stress index is the statistic in MDS analysis to indicate goodness-of-fit of the two-dimensional configuration to the original similarity matrix (Kane & Trochim, 2007). A low stress value suggests a better fit. The stress value for this data set is 0.239. Trochim (2006) showed an average stress value of 0.285 across 33 studies, and approximately 95% of concept mapping projects have a stress value between 0.205 and 0.365. The stress value for this study fits in the lower range and therefore indicates that results were well within expected range.

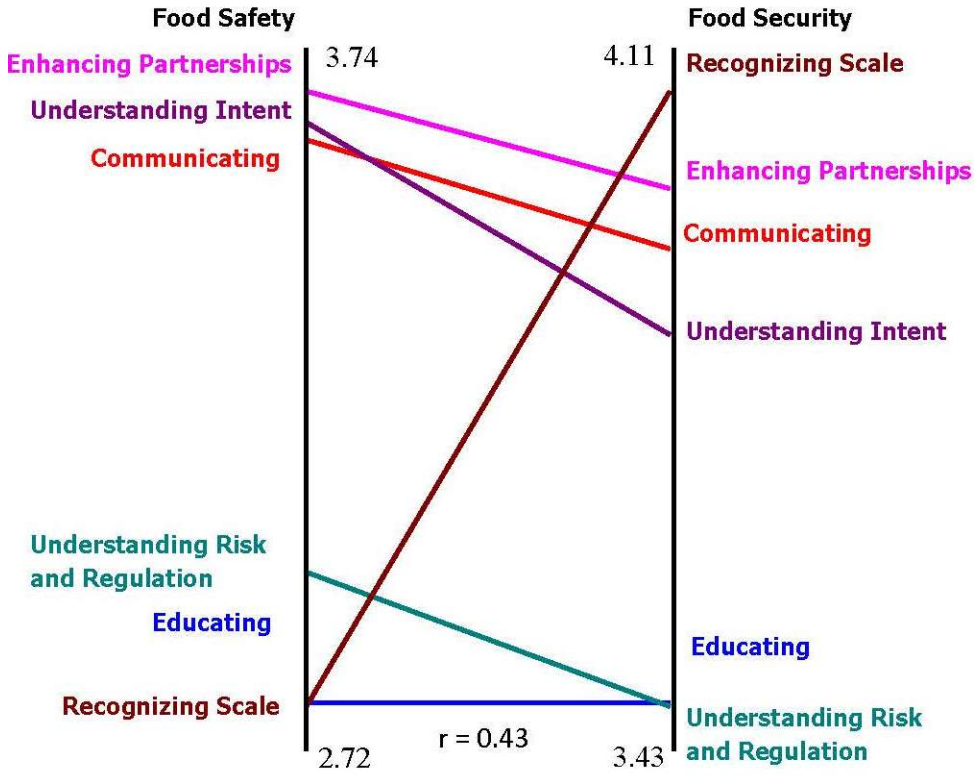
Additionally, the importance and feasibility ratings were averaged across participants for each item and for each cluster. This produced a point-rating map, which was generated for the entire set of statements and for each cluster. An example of a point rating map of statements for importance is Figure 3.

Figure 3 Statement Point Rating - Importance



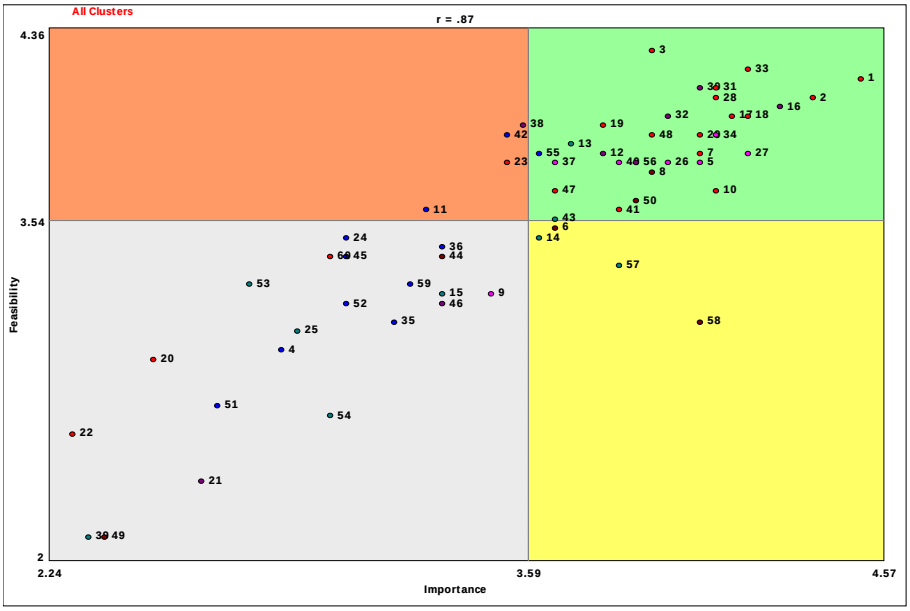
It is also possible to examine differences between two groups as set up in the demographic questions. For example, I compared the mean responses of the importance of clusters by food system group (i.e., food security versus food safety – see Figure 4). A ladder graph shows the extent of consensus on either the importance or feasibility of statements between group A and group B, giving a Pearson's r to suggest the extent of the correlation (Trochim, 1989). When there is strong agreement between the groups, the graph looks like a ladder. Given the distinct differences between those working in food safety and food security, this map has potential to identify common ground and highlight areas of difference where more effort could have a positive effect.

Figure 4 Ladder Graph - Importance of Clusters



The go-zone map uses the importance and feasibility ratings to produce a 2x2 table with the most important and most feasible statements or clusters in the top right-hand quadrant and the least important, least feasible in the bottom left-hand quadrant. The overall ranking of statements of importance by feasibility is in Figure 5. This map provides areas for action that the group of participants noted as most important to take action on, and their assessment of how feasible each idea may be. There may be some ideas that are very important but not the most feasible, yet still worth attempting. The map simply provides a visual to open discussion on ways to move forward. I provide more details below in Phase 6.

Figure 2 Go-Zone - All Statements



Phase 5 – interpretation.

Phase 5 covers the interpretation of maps. The software program shows the top ten cluster names assigned by participants. I reviewed those names, and along with reading the set of statements for each cluster, I assigned a name or short phrase to describe the set. The closer statements are located on the map, the closer they are conceptually. In other words, clusters of statements are used to structure ideas, producing what could be a conceptual framework for the issue or problem. The point rating and cluster rating maps show the height of a point or cluster, representing the average rating for that statement or cluster of statements (Trochim, 1989). Intuitively, it makes sense that higher rated statements or clusters are the most important concepts on the map.

Phase 6 – utilization.

The final phase, Phase 6, is the utilization of the maps. Evaluation and planning are common purposes for the use of concept maps because they are the result of collective thinking on a specific question. Strategic direction and action planning can

occur with the use of go-zone maps. Specifically, each identified cluster is mapped to identify statements that have the highest importance and feasibility (Kane & Trochim, 2007). Statements that sit within the green area, or the go-zone, are statements that many participants agree on as both important and feasible. These are the first issues to think about for action planning (Kane & Trochim, 2007). This could be a particular area of interest for the BC MOH as they work toward closer alignment of the two programs. That is not to suggest that other statements should not be considered. Statements ranked as most important but less feasible offer areas of reflection and deliberation on ways they could be achieved.

Situational Analysis

Situational analysis is an approach to research using a grounded theorizing methodology to frame basic social processes and by representing complexity through mapmaking (Clarke, 2005). Clarke (2005) has taken grounded theory beyond the more constructivist framing by Charmaz and Morse (2009) to a new approach to analysis that is situation-centred and focused on a social worlds/arenas/negotiations framework (Strauss, 1993). Situational analysis opens up data by providing a comprehensive framework for considering multiple connections and relationships that can influence activities (Clarke, 2005). Using explanatory maps, situational analysis provides unique visuals for knowledge translation activities.

Clarke (2005) writes that because epistemology and ontology are closely related, methods need to be understood in terms of 'theory/methods packages'. Therefore, she identifies the epistemological basis for grounded theory as pragmatism and symbolic interactionism and adds constructivist and post-modern framings for this analytical

method (Clarke, 2005). Pragmatism and social interactionism represent constructivist epistemology because with pragmatism truths are determined in relationship to human values, which means they are socially constructed (Audi, 1999). Symbolic interactionism also supports constructivist epistemology because it identifies humans as active contributors and architects of their reality (MacDonald, 2001). The idea of a 'package' is that theory and method work together, and that by understanding the epistemological basis, the context is set for understanding the possible 'truth' of social phenomenon. Clarke (2005) also relies on the work of Foucault in relation to power, disciplining, and discourses and how these are reflected in relational practices. The emphasis of situational analysis is on relationships and interconnections that constitute a situation, much like complexity science. Relationship and interconnections occur for human actors and non-human actors, and through narrative, visual, or historical discourses.

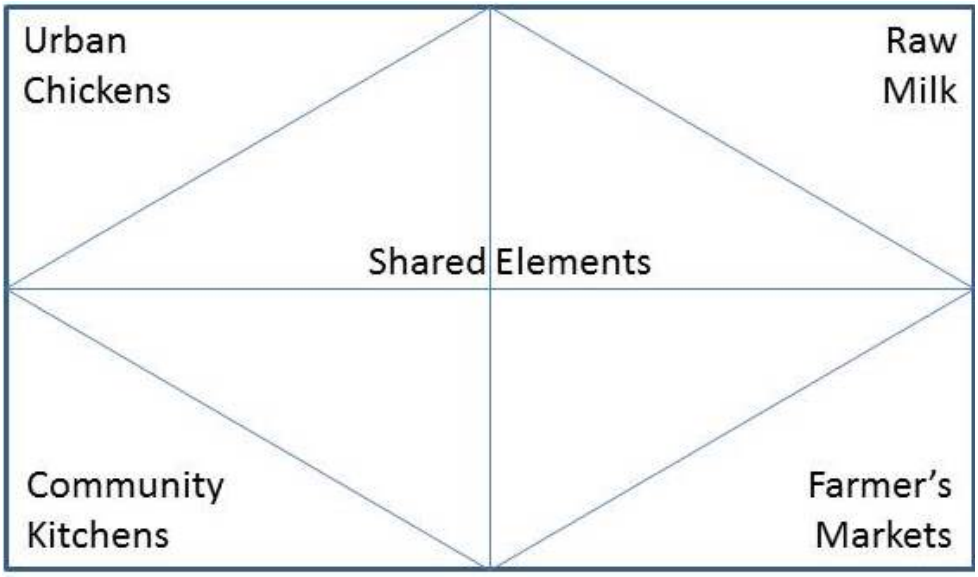
Wasserman and colleagues (2009) have been writing of ways to simplify the analysis process through a parsimonious framework, which is more congruent with traditional science, but Clarke's approach is more consistent with a complexity perspective. Clarke (2005) is embracing the complications of situations, including the differences, contradictions and incoherencies in the data. Differences, power, contingencies, and multiplicity are taken very seriously as approaches to research in situational analysis (Clarke, 2005). This applies to the situation of food safety in food security activities. There are numerous differences in power between the regulator and those being regulated. Embracing complication and mapping the situation helps to identify and explore issues and tensions in the situation of action (i.e., intersectoral

collaboration between actors working in food safety and food security). This kind of analysis can also help address complex problems.

Specifically, the methodology for situational analysis is substantive theorizing and storytelling using maps with a goal of critical analysis to produce a possible 'truth,' or the underlying structure or mechanism of action (Clarke, 2005). Situational analysis provides a means to specify and map all the important human and nonhuman elements of a situation, emphasizing relationships, positions, social worlds and discursive positions (Clarke, 2005). Clarke (2005) identifies three main types of maps to help understand the situation: 1) situational maps, 2) social world/arenas maps, and 3) positional maps.

Situational maps aid in articulating discursive and other elements of a situation and the relationships among the elements (Clarke, 2005). This begins with a 'messy map' created by descriptively laying out all human and nonhuman elements by asking ourselves: who and what are in this situation? who and what matters in this situation? and what elements make a difference in this situation? (Clarke, 2005). This map helps the analyst to frame the situation and consider what might be an invisible, or a taken-for-granted aspect of the situation (Clarke, 2005). To create the messy map, I divided a large sheet of paper into quadrants, assigning a case for each, with a shared space in the centre (see Figure 6). I placed elements that crossed cases in the shared space, and elements that pertained to a single case in the appropriate corner.

Figure 6 Messy Map Example

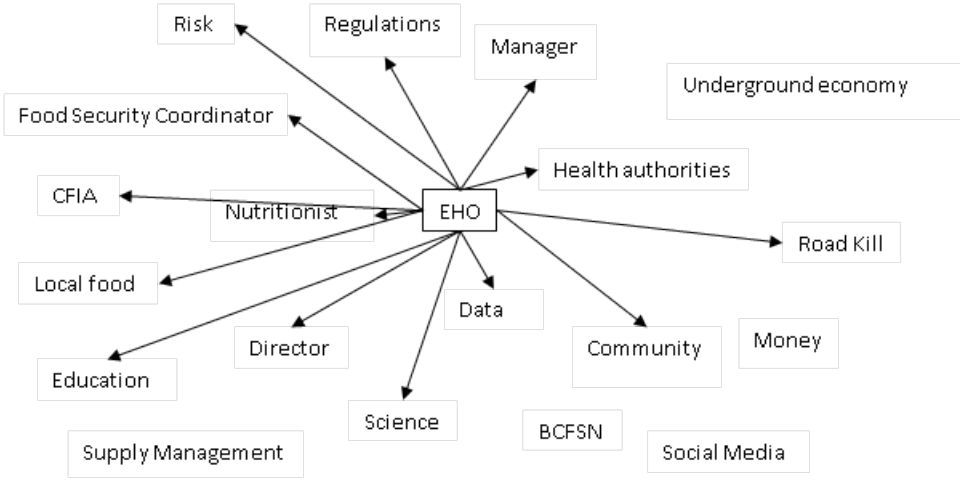


Derived from the messy map are relational maps and ordered maps. Situational maps grow and change and can inform theoretical sensitivity and drive further data collection. Once the elements of what matters are down on paper, they are grouped or categorized to make sense for this topic area. Thinking of the descriptions in terms of the categories stimulated analysis toward areas that may not be obvious otherwise.

In order to make sense of the messy map, I did a relational analysis on the elements common to all cases, to identify key storylines in the data and to assist with sampling strategies (Clarke, 2005). For example, considering the relationship between EHOs and education led to an interview with a food-safe educator. This was a process of identifying and articulating relationships between points on the messy map describing the nature of the relationship and what connects them (Clarke, 2005). In Figure 7 I have provided a partial example of a Relational Map of EHO's. I did the relational mapping by making a number of copies of the messy map, and focusing on each entry of the map,

drawing a line to other entries related to the focus point. That way, gaps in relationships as well as the connections are clear.

Figure 7 Relational Map Example



The ordered map (Table 2) classifies who and what are in this situation, roughly categorized by elements, actors, and discourses. Elements and actors are individuals, groups, or non-human entities. Participants mention implicated silent actors/elements but there is no direct information from individuals or groups in this category. This map was part of the analytical process moving from specific cases to develop and describe social worlds/arenas and is presented here because it is a precursor to the full analysis. The elements in the situation were placed in these groupings as a way to organize my thinking, and are not intended to be 'boxed in', but provide a beginning framework for analysis. I note the main actors and discourses at play by an asterisk (*), and it is these elements that are primarily reflected in the social worlds/arenas maps. My intention is to acknowledge the situation's complexity through the ordered map, and to indicate key elements in the situation. The reader may find it helpful to print the ordered map as a reference when reading the findings and discussion chapters.

Table 2 Situational Ordered Map

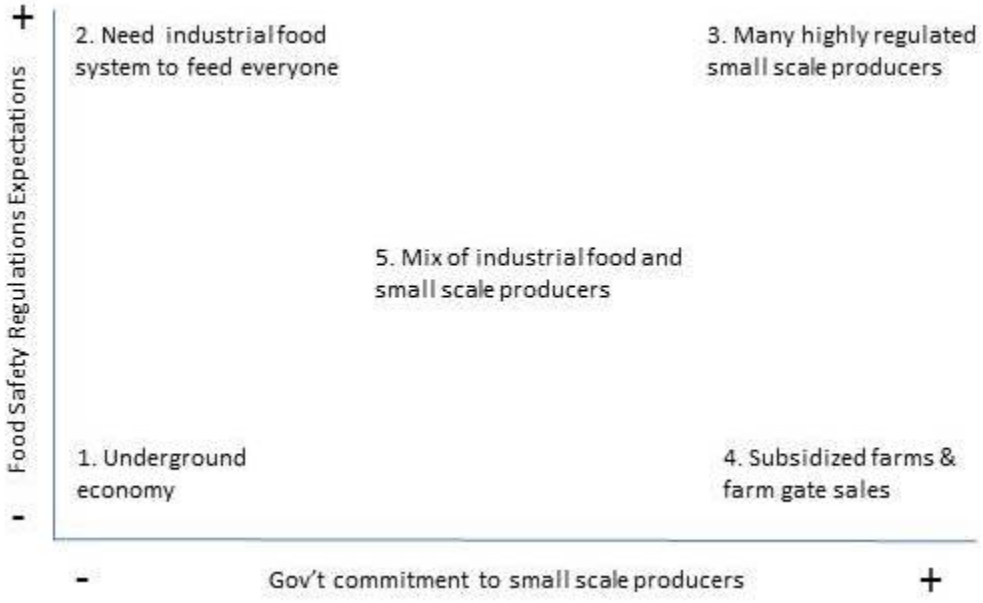
Individual human elements/actors Animal Control and Bylaw officers CFIA Inspectors City Planners Community Kitchen Leaders/facilitators Community Nutritionists * EHO * Farmers (Small-Scale Producers) * Food security coordinators Health Authority directors and managers Lawyers and Judges Market Coordinators and Vendors Michael Schmidt Milk Shareholders Municipal councillors People at risk (pregnant women, children, seniors, street involved) Public (Chicken owners, eaters)	**Nonhuman elements/actors** Animals - Chickens and Roosters, Cows and Goats Bacterial contaminants (*listeria, E. coli*, etc.) Public Health Act * Farm Markets & Grocery Stores Food Safety Act * FoodSafe Course Free range, free-run and caged eggs HACCP Kitchens Laboratories MarketSafe Course Meat Inspection Regulations * Mobile Slaughter Raw and pasteurized milk Social and Mainstream Media (Internet) Statistics and data
Collective human elements/actors BCCDC BC Farmer's Market Association BCFSN * CFIA * Food Banks Food Not Bombs Fresh Choice Kitchens Health Authorities * MOH * Provincial food safety/food security working group Public Health * Victoria Community Kitchens Network	**Implicated silent actors/elements** Agriculture Farm Land Antibiotics Avian Flu Canadian Institute of Public Health Inspectors Core Functions Framework Dietitians of Canada Food Secure Canada Industrial Food System * Marketing Boards * MAL * Municipal, Provincial, Federal Governments Underground economy (black market) *
Discursive constructions of individual / collective human actors Fear of inspectors * Food as a human right Food waste and how to get food to hungry people Healthy food system * Understanding the science behind causes of foodborne illness Understanding where food comes from, or the connection b/w farmer and consumer (distancing) *	**Discursive construction of nonhuman actors** Chronic disease prevention and healthy eating Climate Change affecting food production * Local food movement and food miles * Poor quality data on foodborne illness * Sustainable farming (Pesticide use, Sewage sludge) Terrorist Duck Traceability of food
Political/economic elements Conservative government cuts to food inspection Food as a human right & UN's Special Rapporteur's visit to Canada Protection of the public Quota system and Marketing Boards * Trade *	**Socio-cultural/symbolic elements** Food skills Health equity * Income level Food Labelling
Temporal elements BSE and avian flu crisis * Caged eggs changes in regulations Home on the Range and Michael Schmidt court cases Kildara Farm salad greens recall Maple Leaf foods *listeria* outbreak Right to food court case challenging backyard hens in Calgary	**Spatial elements** Distance between dairy farms and milk shareholders Distance between farms and abattoirs Farm Gate Sales * Food imports and Local food Provincial boundaries for trade * Rural and remote areas of BC
Major issues/debates (usually contested) Allowing urban chickens Can small-scale feed the population? * Meat Inspection regulation changes * Perceived risk and over-sanitization/dirt therapy Raw versus pasteurized milk Scale-appropriate regulations *	**Related discourses (historical, narrative, and or visual)** 100 mile diet Egg refrigeration and washing Global hunger Melamine contamination in pet food and China's food safety system

A second category of maps used to explore the situation is *social worlds/arenas maps*. You will find these maps in the situational analysis chapter. This is where social action or activity at the intermediate (meso) level of a situation is noticeable and discourses are active (Clarke, 2005). For example, the ordered map shows the micro level of specific actors and elements in the situation while the social worlds/arenas map highlight groups, such as departments in health authorities, food security networks, and regulatory agencies. Arenas are "a field of action and interaction among a potentially wide variety of collective entities" (Clarke, 1991, p. 128) and includes actors such as organizations, social worlds, new social movements, ideologies, and technologies (Clarke, 1991). Social worlds are "universes of discourses" (Strauss, 1978) in arenas, and include collective action and shared commitments that define the social world (Clarke, 1991). I used Anderson et al. (2005) complexity science framework with situational analysis to identify the agents and interconnections between the arenas and social worlds. Specifically, I was concerned with tensions expressed by actors working in food safety and food security and how those actors communicate and collaborate. I used the complexity science framework to analyze large patterns in the food system, thereby showing how tensions arising in the small arena between food safety and security actors are affected by the system as a whole. The questions asked of the data in creating this map are: what are the patterns of collective commitments of the actors and the salient social worlds?; who is participating?; why or why not?; and what are the characteristics of the social world? (Clarke, 2005). I created the social worlds/arenas maps by answering these questions and sketching out the spatial relationship numerous times until I decided on a combination and configuration of social worlds and arenas that depicted

the situation. The social worlds are fluid, there is no true boundary between them, and they can overlap since people often live in more than one social world at a time (Clarke, 2005).

The final category of map Clark (2005) uses to chart data is an abstract *positional map* which shows various positions within major discursive issues (see Figure 8). This map highlights positions on issues, not those associated with individuals, groups or institutions but positions in discourses as reflected in the data (Clarke, 2005). This type of mapping attempts to separate the politics of representation and helps to identify the complexity of emerging behaviours (Clarke, 2005). They are higher order conceptualizations of positions in the data, not linked to individuals. Clarke argues that positional maps, which are free of associations with individuals or institutions, help the researcher to see situations better because they are representative of the larger picture, where there is a broader view.

Figure 8 Positional Map



Clarke (2005) also describes the use of project maps that do not advance analysis but bring the three types of maps together: situational maps, social worlds/arenas maps, and positional maps. The project map is a visual aid to articulate complex situations. I produced a modified project map that only includes a combination of the four social worlds/arenas maps. The situation of food security and food safety is very complex with numerous actors, elements, arenas, and positions. The project map features a complex situation on one page, visually representing the complexity and framing the story of the broader situation. The result with situational analysis is not a substantive theory as with grounded theory, but maps representing substantive theorizing describing the story (Clarke, 2005).

Once I had identified the social worlds and arenas, I broadened analysis by grounding the situation in a brief overview of historical events. An historical view aids in identifying structural conditions that shape arenas, but because the history of the system is not the focus of this work, I have merely skimmed the surface. By structural conditions, I mean factors related to social and economic circumstances of how we live in western society (Link & Phelan, 1995). Structures are characteristics of situations that are expected to stay in place but change at a slower rate than other aspects of the situation (Clarke, 1991). The historical review is necessary to recognize interdependencies between past and present events in the four arenas, and to allow for insight into how historical conditions and interdependencies affect or influence present behaviour patterns. This important aspect of complexity science identifies patterns across time.

In summary, situational analysis is an analytical process that uses mapping to view the elements of a situation in order to capture complexity. Based on grounded

theory, situational analysis relies on the grounded theory coding process as a foundation of analysis, to go beyond traditional roots toward post-modern thinking. It is a method used to capture a sense of reality that is not static, but continuously shifting and transforming.

Conclusion

Overall, situational analysis and concept mapping offered a comprehensive approach to examine the intersection between food security and food safety. Situational analysis is congruent with Anderson and colleagues' (2005) complexity theory framework in that the focus is on the agents, relationships and interdependencies, patterns, and dynamics of historical change. This is similar to situational analysis in that the emphasis of situational analysis is on the relationships and the interconnections that constitute a situation. Anderson et al. (2005) provide a more comprehensive framework of a CAS than using situational analysis alone, but it is complementary to situational analysis. Identifying differences, power, contingencies, multiplicity and patterns of collective commitment are part of the situational analysis process.

Both analytical methods within a case study design complemented and supported each other as well as the theoretical framework of complexity science. Case study provided a framework to explore the history of the system, to consider interdependency between past and present when moving forward. By using a case study as the starting point for this project, I was able not only to address the research questions and objectives, but added important information on the use of complexity science and novel research methods being applied to public health nursing research. Concept mapping provided opportunity for interaction with participants who have recognized tensions between food

security and food safety, and had knowledge or opinions on mitigating the tensions. This method exposed dimensions in relationships, and the mindfulness and quality of relationships between the two groups. The maps I produced with situational analysis illustrate the interdependencies of participants and actants at multiple levels. Clarke (2005) notes the mapping process opens the data in a way that is not as easily accomplished with traditional grounded theory. This was helpful for finding the unexpected and seeing patterns across levels.

I could have chosen a number of other qualitative methods to address the question of intersectoral collaboration between those working in food safety and food security. Discourse analysis may have offered some insight in how the language used by both sectors may reveal certain ideologies, or how there is a similar discourse of risk and how that could be used to draw the sectors together. There is room for discourse analysis within situational analysis since a large component includes discursive constructions of the situation. I also considered using Sociology and Complexity Science Toolkit (Castellani, Hafferty, & Ball, 2009). This method would have complimented the complexity science framework, but it is very new and used to model a social system, and not to address a process such as intersectoral collaboration. I was therefore hesitant to approach this method without a local expert for advice. The final consideration was to use grounded theory (Glaser & Strauss, 1967). I used many techniques and approaches that come from this method, and it is the foundational method for situational analysis, but I do not feel it is necessary to develop a theory in addressing the research questions. I feel the proposed research methods offer ease of knowledge translation to policy makers

through the display and storytelling of the various maps. In the following chapters, I describe the cases, results of concept mapping and situational analysis.

Chapter 4 – Findings I: Describing the Cases

This research is about tension that can occur when food safety regulations force decisions negatively affecting food security activities. It is about how people who work from very different worldviews can come together to address these tensions and support a safe and accessible food supply. Through this research, I provide a view on how differing groups of people can work together across distinctive and sometimes contradictory positions. In this chapter, I describe food security cases I chose to examine with food safety regulations and I consider implications of those regulations on food security and health equity. After analyzing the data, I argue that food safety is about more than the prevention of foodborne illness, but is about securing a trustworthy food system that involves the full spectrum of food production and consumption. A trustworthy food system includes the process from seed to plate that respects the environment, animal welfare, small-scale producers, economics, and trade.

This chapter consists of six sections that explore and describe tensions between those working in food safety and in food security. The cases are urban chickens, farmer's markets, community kitchens, and unpasteurized milk. In the first section, I begin by describing the main actors in the food safety/food security tension situation, followed by four sections in which I describe the food security cases focusing on challenges and opportunities. In the remaining section I present a cross-case examination of negotiating strategies (See Appendix H: Cases Summary). In each of the four food security cases, I touch on historical, political, economic, and social aspects, and identify areas of tension and opportunities for collaboration. In this document I identify participant quotes with pseudonyms and the general position that situates them (health promotion, health

protection, or civil society) to give the reader an understanding of the context for that participant.

The first case on urban chickens briefly describes the state of the egg production industry, bylaws for having urban chickens, reasons for keeping backyard hens, and safety concerns. I discovered tensions in the egg refrigeration and washing activities, rather than keeping of urban chickens as I first assumed. In the case on farmer's markets, I describe the business of selling food and how that relates to BC farmer's markets, changes in market regulations and primary tension around egg selling. I also describe general tension between local farmers and food safety regulators, exemplified by a recall on salad greens. The analysis of opportunities for intersectoral collaboration in this section includes a description of the Market Safe program.

The description of community kitchens begins with an account of the evolution of communal cooking in BC to the organization of the Community Kitchen Network. In the course of data collection, the focus of community kitchens expanded beyond health authority-facilitated groups cooking together to communal cooking in general. This case includes the International Women's Co-op in Victoria, Food Not Bombs, and food waste reclamation activities. The raw milk case begins with a description of Canada's dairy industry, followed by a brief history of sub-standard milk. I then describe cow-shares and the cases of Schmidt and Jongerden as high-profile Canadian raw milk producers. Key tensions between those working in food safety and in food security involves different perspectives of risk and having flexibility to adjust regulations and practice to meet needs of local context. Opportunities for collaboration include need for risk data

and acceptance of an underground milk market. The final section in this chapter provides an analysis of negotiating strategies for any existing tensions across cases.

Main Actors

Before discussing specifics of each case, it is important to set some context in terms of who is involved with food safety and food security. Main actors in the food safety/food security tension situation (defined further in Chapter 6) are EHOs, community nutritionists, and civil society members. I provide a brief description of the actor's roles to understand better the diversity of informants who work toward a safe accessible food supply. I conducted 34 interviews of people ranging in ages from 23 to 65 years. Many participants were informers on one case or disciplinary perspective but 12 participants were informers for multiple cases or perspectives. The education level of participants was relatively high on average: 13 people have graduate degrees, 13 had undergraduate degrees, two had diplomas, and six had high school education. There were 23 participants from urban areas and the remaining 11 were from rural settings.

Table 3 Case Informants

Participant's area	No. informing per case or perspective
Chickens	9
Markets	13
Kitchens	5
Milk	10
Health Protection	8
Health Promotion	10

Within BC health authorities, those working in health protection use the title EHO most often, but the title is interchangeable with "public health inspector". EHOs oversee safety and regulations for food, water, air, and land. The health protection field changes

and evolves as needs change. For example, EHOs once inspected barbershops and beauty salons, a duty no longer considered necessary. Introduction of Public Health Core Functions resulted in a change to EHO practice. They now adhere to risk assessment strategies rather than strict enforcement of prescribed regulations. That is to say, regulations are set because of a risk assessment, and not to a generic standard. A large portion of EHOs work is responding to a wide range of complaints and doing routine inspection of licensed facilities, such as restaurants and health care facilities. Public health inspectors, or EHOs, work regionally in health authorities, at provincial level through the BCCDC, and at federal level with the CFIA.

Ryerson University in Toronto and Burnaby's British Columbia Institute of Technology are the primary educators for EHOs, but there are five educational institutions that provide programs in Canada. It is a four-year degree program, two years if the student has completed an applicable post-secondary degree. The scope of EHOs work is quite broad, and training programs include a very traditional public health approach to basics in health protection. As one person commented:

> The education of health protection is just that, you know, you're indoctrinated with the fact that there are bacteria and viruses and all these things as you go through school. So of course if that's what you're taught, then that's your belief system and I think it becomes very difficult to change that belief system when you leave your schooling, right? (Allan – Health Protection)

This quote reflects strength of influence that education has on the individual's belief system and suggests how important it is to understand where your beliefs come from to be able to grow and adapt to changes in the food system.

Community Nutritionists are registered dieticians working in health authorities. VIHA employs four community nutritionists to serve the south island area. They each identify activities that are of most interest to them to promote community nutritional health, and they share work as necessary. These activities include supporting community kitchens, urban agriculture, food banks, and emergency food providers. VIHA Community Nutritionists also collaborate with municipalities and the Greater Victoria Capital Regional District on food policy.

A dietician's training includes food safety, and some community nutritionists teach food safety courses. Educational preparation for a dietician is a bachelor's degree or master's degree in food and nutrition, including basic science (chemistry, biochemistry, physiology, and microbiology); social sciences and communications; and profession-related courses, such as food science lifecycle, diseases specific to nutrition, and food service management. Sixteen Canadian universities offer the degree program.

I have also identified civil society members as food system actors. These include farmers, consumers, producers, and activists who recognize the need for and potential of a healthy food system. In BC, the BCFSN connects parts of civil society involved or interested in food security. The BCFSN has an active e-mail list serve, website, annual gatherings, and working groups who take up projects to enhance food security throughout the province. There are also a number of food policy councils throughout the province, and a very engaged citizenry sensitive to regulations that affect their work in food production and food security. Food policy councils provide integrated policy advice to various levels of government to promote a healthy and sustainable food supply (Barling, Lang & Caraher, 2002).

Those who write and endorse food safety regulations, and decide on regulatory changes, are missing from this study, mainly because the focus of the study was on collaboration among those at the HA level; however, I interviewed provincial level environmental health officers, and it is this group who would be in a position to inform policy makers. Large-scale farmers are also in a position to inform policy makers, and are missing from this study because I never intended to include actors working at this level of the food system as they are not part of selected cases, but their influence on food safety regulations surfaced during an interview. Only in retrospect did I realize these actors could have contributed an additional layer to viewing the situation. This demonstrates the complexity of the situation.

This summary of main actors provides a starting point for an in-depth look at the cases. Additional actors surface throughout the remainder of this and in the following chapters. The next section is a description of each of the four cases.

Urban Chickens

> Eggs are hazardous
> (Norma – Health Protection World)

> We are all detached from our food, and chicken is something that comes on a Styrofoam tray with saran wrap over it.
> (Urban Chicken Workshop Speaker)

I chose urban chickens as a case because there were a number of Canadian news stories at the time, of citizens lobbying for the right to have backyard chickens in several cities. I was curious about the interest people have in keeping chickens as a food security

activity, restrictions that municipalities place on this activity, and how these conflicting aims could be worked out. To understand the conflict, I explored the state of the egg industry, bylaws, reasons people wanted to keep chickens, and any food safety concerns.

State of the industry.

Eggs are an important dietary staple found in many BC households. Fifty-one BC commercial egg producers provide the market with 55 million dozen eggs annually, with a total value at the farm gate of $78 million (Grow BC: *A* Guide to BC's Agriculture Resources, 2008*)*. The BC egg industry also imports 3.6 million dozen and exports to other provinces or out of country 580,000 dozen eggs annually. These producers are responsible for approximately 98% of BC egg production, with the balance coming from small backyard flocks, some of which are in urban settings. The Egg Marketing Board sets quotas for egg production (not including backyard flocks), and protects and promotes the industry. Average flock size for commercial producers is 15,000, with the largest flock having 55,000 birds (Grow BC: A Guide to BC's Agriculture Resources, 2008*).* Small flocks account for roughly 2% of provincial egg production and having more than 99 birds requires quota. Quota is part of the supply management system designed to match food production with consumer and industry demand, where farmers are allocated the number of animals they are permitted to raise (BC Egg Marketing Board, 2013). Egg producer data does not capture backyard urban chickens.

Economies of scale make industrial production cost effective. These highly regulated and inspected facilities are monitored to keep the Canadian food system at a high safety standard. With a well-monitored system, food safety problems are likely to be identified and dealt with quickly. There have been problems with industrial egg

production requiring action. BC's poultry industry suffered outbreaks of avian influenza in 2005 and 2009, resulting in quarantines and destruction of all birds in the quarantine areas, including small operations (Canadian Food Inspection Agency, 2009). In addition, in March 2010, a *Salmonella* outbreak in Iowa affected 2,000 people, leading to the recall of 380 million eggs (CBC News Health, 2010). The need for culls and recalls contribute to loss of confidence in the production system, and contribute to a cultural of fear in the food system. According to study participants, the fear stems from media reports, and there is a real need to be very aware of real risks and address real risks but also aware that we have to be careful about just creating an atmosphere of fear where there is no real risk.

While intensive production has some advantages, it also has many challenges that may result in some people looking to alternative food systems to the extent they are able. Outbreaks like avian influenza and *Salmonella* may make the concepts of home food production and urban agriculture more attractive. The irony is that the major threat to egg safety comes from industrial operations where there is an increased risk of outbreaks such as avian influenza. Yet, low-risk backyard flocks are not encouraged as an alternative, and urban chicken-keepers suffer from bird culls along with industrial level operations.

An increasing demand for easy access to humanely produced eggs fuels the broad, back-to-nature-food movement. Consumer demand has resulted in options for choosing eggs. Selection on the grocery store shelf has grown to include regular, free-run, free range, organic, and omega-3 enhanced eggs. As one person described:

> But I think that it can be very challenging for consumers to make the right choice these days in looking at these products. God, if you look at the selection of eggs,

> I consider myself pretty food savvy, but the other day I was looking at a selection of eggs and I saw that the same egg producer that I occasionally buy [from] has free-run eggs and free-range eggs. And I didn't realize there was a difference until I read the labelling. And free-run just means that the chickens themselves are being grown – never seen the light of day potentially – but in open indoor pens. (Paul – Civil Society)

For Paul, and many others, the choice of egg products is a welcome addition to mainstream markets, but for the public, there is a lack of understanding about the way food is produced. It can be challenging to make ethical food choices from the mainstream supermarkets.

Specialized products often come with a higher price. According to Brown (2007), the cheapest egg types are regular eggs coming from operations that house cages stacked in barns, with multiple chickens to a cage. Free-run eggs, also from barn-raised chickens that rarely see daylight, live in high population densities and are cage-free. Free-range eggs are from chickens that live in barns but have daily access to outdoors but usually on a limited basis. Omega eggs are from cage-kept chickens fed a special diet. Certified organic and BC Society for the Prevention of Cruelty of Animals (SPCA) Certified eggs are produced by chickens able to move freely, and have nest boxes, perches and dust-bathing areas. Certified eggs are available at some major grocery stores in BC but general access is limited.

People concerned about ethical food choices cannot really know how laying hens are treated unless they have access to BC SPCA Certified eggs, know the farmer, or raise their own. One study participant interested in increasing her flock size contacted a local

producer of free-range eggs to learn how to accommodate a large flock of free-range birds. She expressed surprise when the farmer indicated he has one to two thousand birds in an outdoor pen:

> "….You can't even get any grass in there." He says, "Yeah, I know." He says but technically they are non-caged and they're free running. And I went "Really?" I said, "So how do you wind up with such orange yolks?" He says, "Oh that's easy." He says, "We just up the chlorophyll content in their water." (Nellie – Civil Society)

Having a large number of birds in an outdoor pen is not a food safety concern, but the participant demonstrated how there is a lack of understanding of the conditions under which hens produce eggs. For Nellie, it provided additional evidence of a dishonest food system that cannot be trusted.

The move to a cage-free egg production system is in the beginning stages in Canada. The European Union (EU) banned conventional cages for intensive egg production on January 1, 2012. California will do so in 2015. Canada's egg production is 98% caged. When egg producers in Manitoba announced they were going to larger cages to allow for more movement within the cage, cohorts in other provinces protested:

> …because it is not in farmer's financial interest because they have to retrofit their barns, they can keep way fewer birds. It is really tangled up. It is possibly just that nobody has funded research [about the food safety of caged chicken's eggs]. I feel personally, pretty certain that actually the food safety associated with free-run or free-range systems is actually quite a lot better than what you are going to

> get with six chickens crammed into a little battery cage and they are festering with wounds, I mean these birds are not in good shape, right? (Megan – Civil Society).

This participant is assuming that birds with festering wounds living in crowded conditions would be more likely to produce unsafe eggs compared to hens with more space to move around. It may be an emotional reaction to the inhumane treatment of chickens, more than about food safety, since chickens in free-run systems are also crammed into tight living quarters. The practice of conventional caged production may not have resulted in massive recalls in Canada, but large US recalls show the risk. Pressure to change the conventional system is building, and it will be interesting to follow the ban in the EU for successes and challenges, and to see how the Canadian egg industry responds. The ban may be more about humane treatment of animals than about food safety pertaining to microbial contamination.

Bylaws.

Urban agriculture is a food security strategy that can help to supplement fresh food intake and connect people directly with food production. This includes vegetable gardens, fruit trees and berries, and small animal husbandry such as chickens and rabbits. Keeping farm animals in urban areas is not new, but with development of modern sewage and sanitation systems, city planners discouraged farming within city limits (Voigt, 2011). Most municipalities have bylaws regulating urban agriculture. Greater Victoria's Capital Regional District (CRD) includes 13 municipalities, and restrictions range from the Town of Sidney's ban on backyard poultry to the City of Victoria's non-regulation on the number of chickens (See Appendix I. CRD Chicken Bylaws). Bylaws determining both maximum numbers of chickens and density per unit area also vary greatly across the

CRD, with a ban on roosters[2] the only consistency. One CRD municipality requires a permit assuring proper placement of the chicken coop (Oak Bay), and one other request that flocks are registered so the numbers of flocks are recorded (Saanich). Lack of consistent regulations across the 13 municipalities is a challenge to gathering data on the number of urban chicken flocks in the CRD. Oak Bay clerks have issued two permits between 2009 and 2011, and they have no records prior to 2009. Saanich clerks have registered 11 flocks between 2010 and 2012 when the bylaw requiring registration came into effect.

According to a senior Animal Control Officer for the City of Victoria, there are 29 known Victoria locations of urban chickens with flocks ranging from one to 16 hens. Victoria's Animal Control Office receives approximately 12 complaint calls per year about backyard hens, and there were reports of roosters released in Victoria's largest municipal park. This is largely because people do not purchase chicks that are sexed and do not dispose of roosters properly. One study participant who lives in the City of Victoria has raised 25 meat birds at one time for personal consumption, and takes them to a slaughter facility in Mill Bay. This is a site that is unknown to the City of Victoria animal control officer, suggesting the number of city flocks may be greater than estimated by animal control.

People in communities across Canada are working on bylaw changes to allow urban chickens, with mixed results. The City of Victoria stands out as having some of the more relaxed bylaws on this activity. I was unable to obtain meeting minutes from Victoria City Hall about the creation of the bylaw pertaining to urban chickens.

[2] The absence of roosters keeps the noise level reasonable, and prevents egg fertilization.

According to an Animal Control Officer, whether or not a municipality allows chickens rests on the bylaw definition of “farm animal”. City of Victoria’s bylaw definition of "farm animal" does not include poultry and ducks. Some attribute the bylaw definition of “farm animal” to the Mason Street City Farm (Personal Communication I. Fraser, February 10. 2012). According to a story written by Frances Backhouse (1995), Brett Black established the Mason Street farm, known as “City Farm”, in 1989. To improve the soil, Black kept 120 chickens on 1012 metres square (.25 acre). A police officer challenged Black’s right to keep chickens, and contacted the SPCA. Although, the SPCA found no concerns with the chickens, they recommended that the City of Victoria enforce a cap on the number of chickens at six per household. In response, the neighbours gathered in support of City Farm, the media became involved, and 600 people signed a petition against the bylaw change. In the end, the City of Victoria withdrew its proposal to change the bylaw (Backhouse, 1995).

In Saanich, a municipal staff member suggested that because municipal decision makers recognized the desire of people to keep chickens on smaller lots, they are not included as "farm animals". Bylaws need to identify poultry separately from all farm animals to allow poultry on smaller lots and to identify a maximum allowable number of hens. The municipality does not permit farm animals, such as pigs, goats, or cows, as specified in the bylaw.

According to a city planner who has written chicken-related bylaws, food safety concerns do not influence bylaw decisions. Instead, restrictions on selling eggs are imposed to reduce the potential for complaints about traffic in residential areas, where buyers could create traffic issues at or near a producer’s residence. Municipalities do not

allow home slaughter because it could disturb neighbours. Officers enforce bylaws based on complaints, and not for any standard, or best practice reasons. It is important to understand this distinction because when it comes to food that is potentially hazardous, it can be easy to make assumptions that policies are in place to protect the public from possible health hazards concerning food.

Several participants expressed a concern regarding the purchase of unsexed birds for urban flocks. Farmers purchase chicks from local small-scale hatcheries, where a farmer has invested in an incubator, or from more remote large-scale hatcheries in Canada and the US, then delivered through the post. One large American supplier of heritage and exotic chicks ships only in-country, so some CRD farmers make a trip to Port Angeles to pick up chicks that have been sexed and have a veterinarian's health certificate for import into Canada. The extra cost of these chicks, with travel and veterinarian fees, means they are sold for approximately $15 per head to urban chicken-keepers. Other chicks that are of unknown or mixed breed, and are not sexed, are priced at approximately $7 per head.

A problem with unsexed birds is that approximately 50% will be roosters, which municipalities do not permit. When there are multiple roosters in a flock, it is likely that one will mature and the others will not "self-identify" as males until the dominant rooster is removed. According to an Animal Control Office, that is when they receive complaints to their office about noise or when owners release roosters to fend for themselves. Officers visiting a property to remove a rooster are often called back when the next dominant bird matures. This unfortunate consequence of ordering inexpensive unsexed birds is one source of tension in urban chicken keeping.

Why chickens?

Having chickens in the city is a popular trend that has emerged in the last few years. There have been numerous media stories nationally in 2011 of people attempting to change municipal bylaws to accommodate the keeping of a few backyard chickens. This has happened in Fredericton, Halifax, St Catherine's, Kingston, London, Calgary, Duncan, and Nanaimo to name a few. On Prince Edward Island, media reported a ban on the sale of non-federally inspected eggs (ungraded) except via farmer's markets or the farm gate. In Calgary, a bylaw infraction case concerning urban chickens evolved from a potential nuisance issue to a "right to food" issue, and went to trial. Court ruled on R. v. Hughes (2012) on September 5, 2012, rejecting the argument that bylaws against the keeping of urban hens infringe the Canadian Charter of Rights and Freedoms. More than ever, people interested in keeping hens argue their case based on "right to food".

When participants were asked, "Why have chickens?" the answers did not all relate to food security or nutrition. One participant mentioned wanting a chicken as a pet instead of a cat due to cat allergies, or a dog that takes a higher level of care. Others kept chickens more for fun than for food, and the opportunity to teach children about food production and giving the children some "chores". Another person was interested in what the chicken could produce, such as compost, and to see if fresh eggs taste different from eggs from the grocery store. It was important for this participant to know where food comes from, and to maintain his own source of food.

Safe chicken-keeping.

There is much to learn about the safe and humane keeping of any animal, whether it is a pet or poultry. Victoria's Compost Education Centre and Saanich municipality

both offered afternoon educational sessions on keeping chickens during the data collection phase of this study. Topics included food and housing, dealing with manure, egg safety, slaughter, and chicken illness. Some participants reported learning about keeping chickens on-line and by trial and error, suggesting there is not much to know about keeping them. One concern in terms of complaints that have reached the EHOs is that a chicken coop can attract rats; however, some participants contend that food scraps in compost bins can be a greater rat attractor than chickens.

There have been very few complaints to EHOs about backyard chickens. There are two public health matters that concern them: slaughter and manure. Most bylaws prohibit home slaughter, which means urban chicken-keepers need to know what they will do with aging birds, or when the birds stop producing eggs. The meat regulations require that a licensed abattoir must slaughter a chicken sold for food. Advertisements for live birds for sale or to give away could attract those who are prepared to slaughter the bird for personal consumption, and while this is not common, it was suggested as a possible way to dispose of birds at a workshop that I attended. Generally, bylaws indicate that owners are responsible for humane and sanitary disposal of hens, as they would be for any household pet. Health Authorities do not have the resources to monitor backyard chicken operations, while municipalities enforce their regulations via complaints to Animal Control Officers. There are very few problems with keeping urban chickens.

Urban chicken-keepers in BC may be affected by the experience of avian influenza in this province because it can be portrayed as a potential threat to human health. One organic farmer described his struggle of trying to convince large-scale

producers that their practice of having 20,000 birds in a barn was the problem contributing to avian influenza. Large-scale producers argued wild birds and urban chickens were spreading the disease. Another participant, with previous experience on the BC Farm Industry Review Board (BCFIRB), noted biosecurity concerns of having birds of multiple ages or multiple species in a barn, which can provide an opportunity for a virus to mutate across species. A small-scale diversified farmer, though, would regard keeping multiple species as desirable because it facilitates resilience in farming. In theory, in an urban setting, the exposure of backyard chickens to wild birds potentially increases the risk of avian influenza. In reality, due to small flock size and limited contact with people, there is little reason for concern. A massive increase in urban backyard chickens might create more potential for avian flu. Yet, according to Biswas and colleagues (2009) roughly 89 percent of households in Bangladesh have backyard chickens, but only one human case of avian influenza has ever been reported in that area. Compared to other potential harms from industrially produced foodborne illness, such as *Salmonella*, the urban chicken is a very low threat to human health and wellbeing. The bigger issue is the way the fear is out of proportion to the threat in relation to local food production.

Food safety tensions.

Salmonella is the main concern regarding eggs for human consumption. In some countries, *Salmonella* is present in chicken feed, so it reaches the eggs via digestion and feces. There are several ways to deal with this and other potential hazards, mainly refrigeration and washing. Participants held diverse views on cooling and cleaning eggs. All of the public health professionals favoured refrigeration and egg washing, while there

was less agreement among the other participants. Public health professionals value health protection from a broad perspective recognizing a general lack of knowledge of safe egg consumption, while some small producers may place more value on individual freedom not to wash eggs and the right to choose.

Workers at federally inspected egg grading stations process eggs for major retail outlets, assure there are no cracks, blood spots, or any sign of rot in Grade A eggs. At one time, ungraded eggs were not allowed for sale in retail outlets or restaurants on Vancouver Island. Today, smaller food outlets and restaurants, especially those that focus on local food, can carry washed and refrigerated ungraded eggs. Proper labelling is all that is necessary to ensure the source of the eggs. VIHA's EHOs have relaxed concerns about eggs over the past few years, stating:

> We basically have kind of become a little bit more relaxed in recent years on some attention that eggs have received. So what we do at the farmer's markets is we just ensure that the eggs are clean, been properly washed and they keep them basically refrigerated, they're not selling any cracked eggs, when they bring them to the farmer's markets, that sort of thing. But certainly there is, you know, quite a bit of concern with the difference species of *Salmonella* that are associated with eggs and that's why there's a requirement to keep them refrigerated so you don't have as much….you have control for the microbial growth on the eggs, right? (Adrian – Health Protection)

This type of flexibility VIHA EHOs demonstrate is essential to good relations between producers, consumers and regulators. EHOs assessed the risk and decided the sale of ungraded eggs was a low-risk activity.

BC EHOs require refrigeration of eggs for sale because cooling an egg to 4 degrees Celsius restricts the growth of potential hazards such as *Salmonella*. There are, however, a number of countries, such as those in the EU and South America, where eggs are not refrigerated. One participant (Kelli – Civil Society) claimed that refrigeration reduced egg quality. Another participant stated:

> Well I think that there's a very good argument to suggest that that is being over-cautious in many ways when we're talking about farm-fresh produce. Eggs don't have a quick spoilage rate based on temperature. So I think outside of, you know, keeping eggs on a super-hot sunny day where I think we'd all consider….we'd all have some concern, I do think that there's…. some policies and procedures right now that are in the books that are absolutely prohibitive to local food security. And I think that that's a good example of one that may need some reconsideration. (Paul – Civil Society)

While EHOs are concerned with microbial growth, the layperson is concerned with spoilage, a more obvious sign that the product is hazardous when consumed. Cooking at proper temperatures eliminates *Salmonella*, which is not obvious to the naked eye, so there is logic behind refrigeration to reduce the rate of bacterial growth. Health risk from consuming eggs increases when they are raw. Good animal husbandry, washing, and refrigeration substantially reduces the risk of *Salmonella.*

Reducing foodborne illness is not quite as simple as washing and refrigeration of eggs. A questionable practice required by EHOs is washing eggs in a chlorine solution. Undoubtedly, no one likes to see animal feces on the food they purchase. Washing eggs appears, on the surface, to be a good practice. Freshly laid eggs, however, have a

membrane coating that seals the pores of the egg to protect it from microbial contamination. Some participants suggested washing the eggs, particularly in hot water, can remove the membrane and open the pores, possibly reducing the quality of the egg by leaving it vulnerable to contaminants. Other producers use a chemical wash, rinse with a spray of hot water, then rack to dry, perhaps with the same unintended results of increasing risk of contamination. Some consumers preferred to make their own decisions on this matter. A more relaxed approach allowing for the legal sale of ungraded eggs has been a good step where there is a substantial demand, but refrigerating and washing eggs will likely remain as required procedures before selling eggs.

Opportunities for collaboration.

A primary tension I identified in the case of urban chickens is not a food safety tension. There is more tension among neighbours about having farm animals in urban settings. Urban agriculture is not always welcome, and aesthetics may have more to do with this than health promotion through a quality, accessible food supply or food safety concerns. In future, food safety may become a primary tension if flock size increases lead to outbreaks of *Salmonella* or avian influenza.

Promoting urban agriculture has a minimal impact on improving food security because of the limits to land access, although it could be argued that food production over lawn and flowers at individual home could have an impact. Urban agriculture has little effect on the daily work of EHOs, so opportunities for collaboration or communication between food safety regulators and food security advocates are infrequent. In April 2010, the City of Kelowna received a report from the Deputy City Clerk on the benefits and challenges of allowing up to four chickens on lots smaller than one-half acre. That report

included a document produced by IH EHOs, informing council of the health implications for residents raising backyard chickens for egg production. The report established that IH neither supports nor opposes the practice of raising urban chickens but indicated the potential benefits for food security. IH EHOs provided information and input into decisions by council on urban chicken-keeping, and stated they did not view the practice as a threat. A significant expansion of urban chicken flock sizes may be a future cause for concern with the threat of avian influenza, and that will require a clear assessment of risks and good communication with those who choose to raise urban chickens.

Farmer's Markets

> Farmer's markets are great. . . One day they're going to kill some people though. (Galen Weston, Loblaws Companies Limited, quoted at the Canadian Food Summit, February 7, 2012)

> … it makes sense to know people that are providing your food, to have a relationship with them, not the super….great supermarket entity, you know, that you don't really have any connection, any kind of personal connection to. (Lesley – Civil Society)

Farmer's markets are opportunities for farmers and producers to sell their products directly to consumers, often at a temporary location on a weekly, seasonal basis. The markets also put a face to the farmer and connect the food producer with the food consumer. I chose this case because of the newly developed MarketSafe program that was created through collaboration between producers and BCCDC. I was curious about

the small-scale producers' experience with food safety regulation and the strength of relationship between EHO and producer.

Business of selling food.

Brown (2001) describes the history of the US farmer's market as having a real beginning in 1943 when California pear growers defied authorities and drove truckloads of produce to central San Francisco, selling pears at 65% below market price. By doing so, growers resolved an excess supply issue caused by labour shortages and transportation challenges, and broke produce brokers' monopoly. Nova Scotia's Halifax market, founded in 1750, is the oldest, continuous North American farmer's market. Close behind it, the Kingston, Ontario market began in 1780 (Egbers, 2009). Since the 1970's, the number of farmer's markets continues to grow. BC markets grew from 60 to 100 in a span of 8 years (from 2000 to 2008) (Egbers, 2009). Farmer's markets sell a wide range of farm-fresh foods including fruits and vegetables, specialty cheese, eggs, meat, seafood, jams, artisan products, crafts, and plants or cut flowers.

Supermarkets, which are permanent daily food distribution centres and rivals to farmer's markets, became a dominant force in the food system in the 1920's (Reardon, Henson & Gulati, 2010). They have immense power with tight contracts and management methods directing what farmers grow for supply and distribution (Millstone & Lang, 2008). Grocery retail companies have grown so that by 2007, the 10 largest retailers, Wal-Mart Stores being the leader, make 19% of the global reported food sales (Millstone & Lang, 2008). Food retailers operate under food safety regulations and undergo regular inspections by EHOs. The CFIA regulates products distributed across provincial borders.

Supermarket recalls, listed on the CFIA website, are classified in three ways: Class 1 is high risk that could lead to serious health outcomes or death; Class 2 is moderate risk where there could be short-term or non-life threatening health outcomes and; Class 3 is low risk where a product poses no general health risk but does not follow the regulations. For example, Class 3 recalls include chemical residues, allergy or gluten alerts, extraneous materials in the product, or microbial contamination that is not harmful but affects product quality or shelf life.

Class 1 recalls are the most serious and, from January to December 2011, there were 255 Canadian Class 1 food recalls. Some products were removed from supermarket shelves, others from hotel/restaurant/institutional settings. These incidents included recalls because of the discovery of *E.Coli* 0157:H7, *Listeria*, and many other bacteria that cause serious illness. Farmer's markets have not been subject to product recalls, primarily because the scale is so small that distribution of the products would not be wide enough to justify a recall. According to study participants, there has never been a Class 1 recall incident in BC farmer's markets.

BC farmer's markets.

Most BC farmer's markets operate on a weekly seasonal basis. Some markets have permanent infrastructure, and some share infrastructure such as community centres or schoolhouse grounds. Other markets import all infrastructure needs for each market day - shelter, water, electrical power source, and toilets - to open fields, parking lots, or parkland. Farmer's markets are a popular weekend event, although smaller markets may operate on weekday afternoons or evenings. Both the Victoria Downtown Farmer's Market Society and Revelstoke Farm Market organize winter markets twice a month, and

Vancouver has a weekly winter market. A farmer's market is different than a public market, in that the farmer's market vendor is also the producer of the product being sold.

Farmer's markets are good business for the farmer and good for the economy. According to a national study released in 2009, the impact of farmer's markets on the Canadian economy is up to $3.9 billion (Connell, 2009). The demand for locally grown food is increasing and consumers want to know their farmer or food producer (Connell, 2009). Egbers (2009) identified 100 BC farmer's markets in 2008 and the number of markets has doubled between 2000 and 2012 (Hardy, 2012).

To be a BC Association of Farmer's Market (BCAFM) member, the vendor has to make, bake, or grow the product for sale. Some farmer's markets do not belong to BCAFM, such as small neighbourhood markets associated with community organizations (sometimes called pocket markets). Advertising and group rates on liability insurance are the main advantages to being a BCAFM member. Some vendors carry their own insurance on top of the BCAFM group policy, especially if they do business besides selling at a market. For example, the International Women's Co-op, which sells prepared food at the Victoria Moss Street Market, also offers catering services and has business insurance for that purpose.

Each market has its own criteria for vendors; for instance, the Moss Street Market in the City of Victoria prefers organic growers, and no manufactured good or imports are allowed. Emphasis is on local and community-based goods that are environmentally sustainable. The vendor needs to review the policy manual, complete and submit a vendor's application to the review committee, and purchase a market membership. Moss Street Market also restricts what can be sold:

> Except where they meet VIHA health regulations, those products that MAY NOT be sold include (but are not limited to) the following: dairy products (milk, cream, cottage cheese); meat, fish, poultry or products thereof; live animals, including fish and fowl; cakes, pies, tarts or bread products that have a syrup, frosting or topping on the surface or cream filling; and, under no circumstances, used or second-hand material including antiques, commercial products for resale or products which exploit humanity. (Moss Street Market Manual, 2011)

These restrictions align with the food safety regulations for temporary food premises.

EHOs manage market licensing for VIHA. Until 2010, there was an application process for all market vendors, and food could not be made in a person's home. Vendors could only prepare food for sale in approved food premises. Canned products underwent pH testing, and EHOs approved the product for sale after receiving good test results. As the number of markets increased, VIHA staff began to comment about the increased administrative workload. One VIHA EHO characterized the entire licensing process as too onerous. "This was really encroaching in our major work of Food Safety in the legit food premises." (Norma – Health Protection). Note the term "legit food premises" which suggests this EHO may feel the markets are either not a legitimate business or perhaps a nuisance. Many EHOs and small-scale producers believed farmer's markets to be a low-risk activity that was too time-consuming and challenging to regulate.

Program guidelines changed in 2011, and EHOs now only approve the sale of high-risk foods such as those containing dairy products or eggs. Testing the pH of jams and jellies or submitting recipes are no longer necessary. In line with the food safety core function model core program paper, the operational focus is on risk rather than a standard

regime of comprehensive oversight. Inspectors no longer visit markets, as they once did, but follow up on complaints. It is the market manager's responsibility to ensure vendors have the appropriate licence to sell food that is at higher contamination risk.

Changes to program guidelines are not well known. EHOs, at the time of the interviews (June 2011 to August 2012), were still receiving applications for "non-high-risk" food products. Market vendors have also noted that inspectors "always" come around to check the set up, that the presence of a sign with the vendor's name, and whether or not the product came from an inspected kitchen. One participant noted that "They are really good about it, you just bring your stuff to the show, and you treat them with respect and you work hard. It is pretty simple. That is pretty much the hardest part about doing markets." (Matt – Civil Society). The responsibility of checking each market vendor belongs to the market manager, who is paid by the market board and is not part of the formal inspection system. The manager is expected to confirm health authority approval for high-risk foods, inspect the water supply setup for hand washing if the vendor is giving out samples, and generally to ensure that the display meets individual market regulations.

Food safety tensions.

Market managers interviewed for this study recalled very few examples of food safety tensions with farmer's markets. Egg refrigeration was the primary challenge with vendors, because vendors prefer to have cartons piled on the table, rather than hidden in the cooler so the product is much easier to sell. EHOs consider eggs to be "high risk" and require health authority approval for sale at markets. Regulations call for eggs to be washed, and then stored at four degrees during market sales.

One incident was noted regarding the sale of a locally produced product. In the process of preparing the paperwork for selling at a farmer's market, one vendor's application was declined because the egg in her organic ice cream was not pasteurized[3]. This is a requirement for sale at larger scale outlets, but not for home-based sales. Although the applicant's recipe called for cooked custard cream, the CFIA also required her eggs to be pasteurized. So in effect, eggs sold at the adjacent stall could not be used in her product because they were not pasteurized. This was viewed by the participants as a puzzling lack of logic. It stems from an issue concerning the relationship between the local EHO office and the CFIA. When something new or unusual is flagged by an EHO, recommendation to the producer is to engage CFIA food scientists to determine product safety. According to an EHO when asked about a hypothetical situation, she replied:

> These are the things we would say – "You need to know about the shelf stability of your product. It might be that you need to lower your pH to make it more acidic to lengthen your shelf stability. But we don't do that. We're not food scientists. Talk to CFIA, give them your ingredients and they'll give you suggestions as to how to make it more shelf stable and they will also suggest you take it to a lab and have your shelf life determined on your product. (Norma – Health Protection)

The problem here really rests with the CFIA's lack of understanding of the difference in scales of production, and with the failure of the health authority's health protection branch to employ a food scientist to respond to the local context. Once the issue goes to

[3] Pasteurizing eggs is not a widespread practice in Canada. There are times when it is preferable to use this type of processed egg, which comes in liquid form. They are used for dietary reasons for immune-compromised patients and the elderly in care facilities. EHOs recommend that restaurants use pasteurized eggs in Caesar Salad dressing or as added protein in a fruit smoothie.

a national level, the impact of these regulations on the small producer who is trying to supply local product to local people, is not well understood.

Another reported incident involved a Vancouver Island farm that sells at farmer's markets, and to Thrifty's Foods (grocery chain now owned by Sobey's) on Vancouver Island. During random testing, CFIA identified *Salmonella* in salad greens produced by this farm. The farm was shut down for three months while rebuilding the processing station to meet CFIA standards, at a cost to the farmer of approximately $150,000. To remove the risk of contamination, the key is to find the cause and make changes to eliminate the source. In this case, where there are birds overhead and small animals in the fields, improved washing of the product was the best way to mitigate the risk. Although the incident happened over three years ago, with only the original sample testing positive, the farmer continues to get weekly testing of their produce for six common bacteria that are evidence of fecal contamination. This farmer's experience with the CFIA has created a culture of food safety hyper vigilance among Vancouver Island market vendors.

Testing for contamination has it challenges. Test results from a homogenous product, like a batch of soup, are likely to be more representative, where bacteria would be distributed throughout the product. In a product like salad greens, the test is on a randomly picked few grams, from hundreds of pounds of product. As one EHO noted, "A positive is a positive, but a negative doesn't mean it is negative. It means that 25 grams is negative" (Allan – Health Protection). From an inspector's point of view, testing is only part of the story. When people fall ill from consuming the same product, there is a fair chance that the product is the carrier even if the test is negative. For

example, in a case in the Maritimes of contaminated cheese, the source tested negative for contamination but all other indicators were positive. If there is a positive test but no illness, inspectors err on the side of caution in the name of illness prevention, without considering the potential effects on small-scale producers. For some, it becomes a case of science versus common sense. That is to say, erring on the side of caution when the risk of illness is low, but the risk to the business is high can create serious tension between EHO and producer.

One farmer commented on the public health officials' approach to recall situations. Suggesting that a farm has a lot of "dirt" and asking if birds fly over the farm, or questioning standard organic farming practices, leave inspectors open to ridicule from those who are closer to the ground with food production. Or, if a farmer perceives that inspectors are adopting an arrogant approach, saying they are there to help, but do not grasp the realities of farming, then inspector's credibility is eroded, and so is any collaborative effort toward health protection. One participant at another farm clearly expressed her distrust relating an incident with a request to test her flock for avian flu:

> I started asking questions and I wasn't getting answers. I was getting bureaucratic run-around. And I said "I want a yes or no and that's all I want out of you. Any of these 26 tests has the possibility of coming back with a false positive?" And he started….I said, "No. I want a yes or no." Well he had to say "Yes." I said, "You come on my property" I said, "You'll have the amount of time it takes me to load my shotgun to get off. Don't come on my property." They never did. (Nellie – Civil Society)

This farmer held a deep mistrust of regulatory authorities, and was adamant she would not be put in a difficult position regarding the safety of her product. A challenge for CFIA inspectors and EHOs is to protect the public and create an environment where they are not seen as "police". An additional risk to contaminated food is the creation of a working environment in which inspectors are not perceived to be either approachable or helpful because a producer will not ask for clarification if they are unsure of a practice or procedure. In the larger context, it is for everyone's benefit that tensions are eased and regulations are met through trust and building of relationships and not enforced strictly according to the letter of the law.

A small, but noteworthy tension in the farmer's market case concerned Hepatitis A. Rather than an issue between those working in food safety versus those in food security, this case pitted vendor against vendor. One particularly vocal vendor advocated mandatory Hepatitis A vaccinations for all farmers' market vendors in BC. It is his position that this is a simple strategy to prevent illness and protect the farmer's market's reputation as a safe place to purchase local produce. This idea, tabled at a farmer's market board meeting, then travelled the "grapevine", with transformations in story details. In the end, another participant expressed outrage at the prospect of the health authority suggesting mandatory Hepatitis C vaccinations for all vendors and was aware of petitions opposed to this action. Other than the original vendor, I spoke with no one who was in favour of the Hepatitis A vaccinations, including the EHOs, who actually had not proposed this action in the first place.

From a health professional's perspective, the risk of an outbreak of Hepatitis A from a farmer's market is so remote that cost of vaccinating all vendors would outweigh

benefits. It would be more beneficial to vaccinate all food service workers because they are in closer contact with the food for longer periods of time (40 hours a week versus 4 to 6 hours of a farmer's market). Finding balance is the key, as is respecting everyone's viewpoint. As one participant stated, "I think we need to be very aware of real risks and address real risks but also aware that we have to be careful about just creating an atmosphere of fear where there is no real risk" (Paul – Civil Society). The challenge, I think, is in determining what risks are real and communicating risks from a systems perspective.

The overtone of the Hepatitis A conversations illustrates how quickly a conversation generated from a vendor was turned to be the responsibility of the health authority. Someone along the line of communication misinterpreted the story because their values and beliefs lead to assumptions that only the health authority would suggest such protection measures. This clearly demonstrates how quickly a situation can move to "us versus them", and how the villain is perceived to be the enforcers.

Opportunities for collaboration.

Chefs' relationships with farmers are a prime example of collaboration between sectors. Specifically, Vancouver Island chefs have formed the Island Chefs Collaborative (ICC), a group that is determined to bring chefs and farmers together as partners in producing and preparing local food. Brent Warner, past Executive Director of Farmer's Markets Canada and a professional Agrologist, credits chefs for the increased interest and activity of the local food movement (Personal communication, March 14, 2012). Dwane MacIsaac from Pasioneat Foods is president of the ICC and has a stall at the Metchosin Farmer's Market, where he prepares and promotes local food. The relationship between

farmer and chef is important in the cultivation of *terroir*, the important cultural experience of connecting taste to place (Trubek, 2008). The chefs' positive collaboration with farmers can be used as an example of synergies between sectors.

In addition, the BCAFM and the BCCDC collaborated in the development of MarketSafe. Recognizing a potential knowledge gap, BCAFM approached the Ministry of Advanced Education and Labour Market Development to sponsor course development similar to FOODSAFE, which is a training program for the food service industry in BC. According to one participant, FOODSAFE started in 1985, along with Super-Host, in preparation for the 1986 World Exposition on Transportation and Communication held in Vancouver, BC. The FOODSAFE program is a food handling, sanitation, and work safety course for those working in the BC food industry and is now a requirement of the food premises regulation. Similarly, MarketSafe (MarketSafe Program Overview, 2010) is a one day course offered to farmers and producers who make, bake, or grow products to sell at local farmer's markets. The course is not a requirement for those selling at farmer's markets. In partnership with BCAFM, the BC FOODSAFE Secretariat created MarketSafe in 2010. The collaboration effort to create MarketSafe is another positive example of diverse groups working together.

Aside from one market vendor involved with course development, I did not interview anyone familiar with the course. One participant stated it was too basic because "we know all that stuff" (Rebecca – Civil Society), and suggested that those dealing in higher risk foods, such as chefs or bakers, would likely have FOODSAFE or a level of experience that would make the MarketSafe course redundant and unnecessary. From a regulatory viewpoint, the course, though not mandatory, is highly recommended

because education is a preferred to "looking over the shoulder of everyone who is preparing food" (Allan – Health Protection). It is a standardized way to assume adherence to safe food handling practices at farmer's markets, although passive participation in a workshop is an ineffective way to improve food safety performance (Burke, Sarpy, Smith-Crowe, Chan-Serafin, Salvador, & Islam, 2006). While it was created in a positive and collaborative way, there would be increased tension if were mandatory because it does not honour the knowledge and skills that exist with experienced farmers or vendors.

A farmer's market or any temporary food market offers a challenge to EHOs because environmental conditions are not constant, and the level of food safety awareness is unknown unless the vendor is well established. Most of the food at a farmer's market, however, is low risk and distribution of goods is limited, so the overall risk of foodborne illness is relatively low compared to grocery stores, for example. BC EHOs recognize this, and there are generally good relations between those working in food safety and food security.

Community Kitchens

> I'm not sure about what exactly you mean, like community kitchens?
> (Adrian – Health Protection)

> So it's disappointing that [Name of retired EHO] is gone because he was our link to the community kitchens. We didn't have that many questions that came up but he [was the person to go to]
> (Trudy – Health Promotion).

Community kitchens (CK) usually consist of a small group of people who pool their money and work together to cook economical meals to eat onsite or to take home (Engler-Stringer, 2005). They are seen as an opportunity to improve food security by re-skilling people in the art of cooking, and by taking advantage of bulk purchasing. As a case for tensions between food safety and food security, I was interested in exploring any link or impact that food safety regulations might have on community kitchens. I asked participants from each case if they hand any thoughts or involvement in other cases in this study. Those conversations broadened my original concept of community kitchens to include communal cooking in general.

Historical view.

Communal cooking has a long history, from 16th Century Elizabethan monks, to Sikhs in temple life, to North American Aboriginal peoples' ceremonial gatherings (Tognon, Barnaby, Collis, Robertson, & Corrigan, 2005). In Canada, Montreal nutritionist Diane Norman introduced the contemporary community kitchen, also known as collective kitchen, in 1986, and the practice rapidly spread across the country (Engler-Stringer, 2005). The idea gained popularity in BC in the early 1990's with both Nanaimo and Williams Lake starting CKs (Smith, 2008; Ellis, 1997). Community kitchens are part of the second type of food security programming, known as "participation/transition", as noted in the Core Public Health Functions for BC Model Core Program Paper on Food Security.

Cooking together in BC.

The main information and support for BC CK's is Fresh Choice Kitchens, part of the Vancouver Food Bank. Fresh Choice Kitchens started in 1996 as the Vancouver

Community Kitchen Project with support from Vancouver Coastal Health Authority, BC Gas, and the Greater Vancouver Food Bank Society. The project was a resource for people setting up CKs to improve nutrition in an economical way, while strengthening a sense of community. This focus has not changed. Employees identify kitchens where groups can work together at no or low cost, find equipment for larger scale cooking, train kitchen leaders, and provide workshops such as canning or proper food handling for food safety. In 2008, the Vancouver Community Kitchen Project changed its name to Fresh Choice Kitchens, to reflect its provincial scope. In 2013, Fresh Choice Kitchens is an important information hub for 329 CKs operating in BC.

On Vancouver Island, Fresh Choice Kitchens lists 56 CK's in the VIHA catchment area, 11 in Greater Victoria. In 2010, VIHA Community Nutritionists created the Victoria Community Kitchen Network as a way to link kitchens in this area. Kitchen leaders meet every second month and the network has roughly 30 members. Network participants share bulk purchases and distribute large quantities of donated food, thus reducing food waste. Some donations to food banks, such as large bags of flour, containers of oil or bulk spices, may be better suited to CK than for individual or family use. The network has a close relationship with the Mustard Seed Food Bank to receive products for a few local kitchens. This is similar to the relationship between Fresh Choice Kitchens and the Greater Vancouver Food Bank.

International women's catering co-op.

There are also communal cooking groups, not part of the more structured and organized CK network. These are groups who cook together. I have included them here because they provide instances of food safety tensions. The International Women's

Catering Co-op (IWCC) is an example. The IWCC grew out of a University of Victoria group called South Island Women for Economic Survival (SIWES). With a focus on women and poverty issues, SIWES worked with immigrant and refugee women toward the formation of a co-op as a business enterprise. SIWES' partner was the Intercultural Association, which at the time had a women's cooking group that met once a week. Several women in that cooking group and others from the international community made up the 10 women who completed the first SIWES skill enhancement program, and four women went on to form the IWCC. The IWCC currently has seven members and is a legally incorporated business operating under co-op legislation. It undergoes regular VIHA inspections, and at least one person in the kitchen has completed the FOODSAFE course. The Co-op runs out of the shared kitchen in the Fairfield Community Centre, which is VIHA certified and inspected separately from IWCC.

In contrast with CK's listed with Fresh Choice Kitchens, the IWCC sells its product. Wider distribution means a higher public expectation in meeting food safety standards. Tensions experienced by this group, according to one participant, are internal to the group and concern decision making on the language of choice spoken in the kitchen, the cultural tradition to adopt for a chosen recipe, and the level of economic risk the group is willing to take with equipment purchases.

IWCC members' experience of food safety inspections is intimidating. One member described the EHO this way: "She definitely is in control of us. I mean she's good to work with but she was pretty scary at first." (Rebecca – Civil Society). This perception certainly reinforces the reputation of health inspectors as "food police". It also raises questions about the best approach to food safety practices — through fear or

through education to create a desire to do what is considered best practice. In general, the use of fear is less effective than positive approaches to reinforcing habits through education (Soames Job, 1988). In this situation, there may have been a combination of fear and education as the EHO invoked fear to establish authority first, then worked more closely with the food producer using educational strategies to ensure a safe product.

Food not bombs.

Food Not Bombs, another communal cooking collective, is a global movement that started in the United States. The movement maintains a fundamental principle that society needs to promote life (McHenry, 2012). Though it is described as "a very political anarchist-informed group" (Jewel – Civil Society), Victoria's Food Not Bombs has had no conflicts with public health officers or police officials, unlike some of the American chapters. It has no formal leader, has autonomy from other chapters, and makes decisions by consensus.

Food Not Bombs is dedicated to nonviolent direct action for social change, and prepares and serves vegetarian or vegan food (McHenry, 2012). Locally, the group sources its food this way:

> …at farmer's markets they come and ask for donations but also dumpster dived and otherwise procured. So, and then that gets cooked up in a group. There's a list serve that does a call out, says a location, and then people show up and cook (Jewel – Civil Society).

McHenry (2012) provides information for local groups on how to approach food retailers for food that would otherwise be discarded. Although some food items are obtained directly from dumpsters, some retailers leave food that is no longer saleable in containers

next to dumpsters for ease of redistribution, knowing groups such as Food Not Bombs, or others will use the food.

Food Not Bombs uses home-based kitchens to prepare food, but occasionally if requested to cook for an event, they will access a community centre or church kitchen. A core group keeps up momentum within a loose structure of volunteers who participate when time and interest allow. There is a sense of responsibility to provide safe food and to maintain a consistent presence for people who routinely meet to share the food. As one participant commented: "….they're probably not up to the food safety codes but they're providing meals for people at least once a week at a reliable time and place" (Melissa – Civil Society). Participants recognize that home-based kitchens may not be ideal, but the group takes food preparation seriously and they consider it low risk for foodborne illness.

Food Not Bombs provides a service to those in need of food. At the same time, they work on the premise that there is enough food in the system to feed everyone when food safety regulations do not inhibit access. The group emphasizes people first, by providing discarded or donated food, and overlooking standards applicable to the commercial aspect of the food industry.

Food waste reclamation.

Knowledge of food safety is particularly important when food is reclaimed from waste products or waste disposal sites. In Victoria, the dumpster diving culture is an established sub-culture. One couple offers workshops on the art of dumpster diving. Some grocery stores now lock their dumpsters because of the mess that has been left from some divers who do not follow the "diver's etiquette". Participants expressed

conflicting feelings about acquiring food from a dumpster. One person relished the opportunity to eat expensive cheese, avocadoes or bananas because they are out of her price range, or food she would not purchase for ethical reasons concerning sustainability or human rights. Another person eventually learned that free food was not such a great deal because of the lack of nutrition in many industrial food products. She said:

> I think a lot of people's personal politics….like I used to dumpster-dive so much and now I just don't want to eat that food. It's nutrient void. For a time I thought it was really great because I wasn't spending money on my food. But now, I grow my food. I want to eat my food from my garden and the farm. (Jewel – Civil Society)

For this young dumpster-diver, food safety was a lower consideration than the quality, or nutrient value of the food she was eating.

One person's experience of dumpster diving, coupled with her concern about extreme food waste, had an impact on the way she perceives food safety precautions. The recognition that good food is wasted while people go hungry has contributed to her distrust in the food safety system. Melissa describes it this way:

> So in a lot of ways, I think, since I started dumpster diving, it's been a few years, I think my concerns about health and food safety have gone way back. I think I used to be more concerned [about food safety] until I started realizing that these things are maybe a bit overboard in a lot of cases. (Melissa – Civil Society)

In this case, the degree of waste due to the industry's inability to distributed adequately perishable food brings into question the reliability or utility of food safety regulations that require "best before" or expiration dates on products. In Melissa's opinion, the food

industry standards are over-precautious, with expiration or “best before” dates that are earlier than necessary. This contributes to food waste and therefore to food insecurity but greater industry profits is it causes people to buy more food.

A few programs are actively working to reduce food waste. The Give Food Get Food program is one effort to reduce food waste while meeting the needs of agencies providing meal services. Still in early stages in Victoria, this program includes grocery stores, and collects food from caterers or event coordinators, individual donors, and farmers. The program then distributes food to those who can use it before it reaches the dumpster. A community nutritionist organized Give Food Get Food, following the format of Shared Harvest in Vancouver, where charitable organizations can register and state their needs, and donors can easily find the best place for their soon-to-be-expired products. In addition, the Community Food Providers Network Information Exchange shares information about excess donated foods or specific food shortages, food storage needs or storage availability, food transportation needs or opportunities, and volunteer availability for specific work or where volunteers are needed. Programs to reduce food waste are important and more can be done to reduce the waste.

Those involved in CK’s, or any communal cooking and food waste reclamation strategy, are serious about maintaining safe food practices. As one person stated, “I don’t want somebody to be sick because of something that I failed to not be aware of. I’m trying to use as many precautions as I can” (Shirley – Civil Society). Shirley noted her “precautions” to be hand washing, using separate cutting boards for meat and vegetables, and keeping hands away from the face as examples. Participants in cooking groups express an added sense of responsibility to group members, those they serve, or others

who eat the food being prepared. The value in CK participation includes shared experiences, a common goal of putting people's food security concerns at ease, and information exchange on issues like food safety. Groups cooking together are mindful of their relationship to each other and are concerned with safe food handling practices.

Food safety tensions.

EHOs and community kitchens generally work independently of each other but there are occasions when EHOs restrict preparation of some foods for certain populations. Community kitchens are not within the scope of work done by BC EHOs unless there is "higher risk" food being prepared for public sale or for children. Community Nutritionists, well versed in food safety practices, can address most day-to-day questions raised in community kitchens. Yet, participants expressed a degree of mystification concerning food production regulations and guidelines in CKs. For example, a participant implementing a food skills program for 8-12 year olds expressed confusion with the way regulations were applied. The kitchen was approved as a low-risk food premises but the proposed menu for the food skills program included what was considered high-risk foods. The difference in the menu meant different kitchen requirements. The same community kitchen restrictions were not true for groups who were exempt from legislation, such as service clubs, faith groups, and Aboriginal groups and it is unclear why these groups would be exempt. It is a challenge to understand how a requirement for one group does not apply to another, and how "flexible" requirements can be enforced firmly and fairly. The participant explained the problem this way:

> And you know, the health inspectors, although in some ways very pleasant to work with and really wanted to see the program come to fruition, they were also

> very….they're very much bound by their legislation and were very focused on that. And I think, you know, were more about enforcing the legislation than working with the programs on how those changes could be made or how things could be done a little bit easier. (Diane – Health Promotion)

Community Nutritionists integrate food safety protocols as part of their community food security programs, while EHOs or health inspectors are less familiar with food security activities like community kitchens. Diane described how EHOs are too focused on the legislation instead of the underlying purpose for the legislation.

Another main tension between those working in food safety and food security is in the area of food waste reclamation and the way grocery stores deal with "best before" and expiration dates, or guidelines for product shelf life. People eat food found in dumpsters, food that no longer meets an industry standard. The food systems needs to be more streamlined to move soon-to-be expired food to venues where it can be prepared and/or consumed, rather than have it reclaimed from a dumpster or wasted in a landfill site. Food has become so inexpensive that it is cheaper to discard an "expired" product than to re-process and use it in a safe and effective manner.

Opportunities for collaboration.

More collaboration between EHOs and community nutritionists would lead to better coordination of community kitchens. The way some health authorities in BC are structured separates these two groups of professionals geographically and structurally in the organization: they have offices in different areas of the city, and report through different portfolios. This makes communication challenging when there are changes in

staffing that are not known to everyone. A deliberate effort is required for communication to be maintained.

Both groups need to consult each other at the early stages of planning and developing new programs. When everyone understands the vision and the goals, it is easier to identify the challenges and implement solutions. In the case of food waste reclamation, it is essential for a shared understanding of the goals to reduce waste and to promote health equity by providing good quality food to those most challenged in acquiring food.

Raw Milk

> I have raw milk and it's against the law. It's actually considered, according to the authorities, it's considered a bio-hazardous waste. And yet marshmallows and Twinkies and things that have shelf life of 20 years plus, are legal to eat, to feed to your kids.
> (Nellie – Civil Society)

> But milk is the same and has been proven over and over again, whether is it campylobacter, e-coli, salmonellosis, you drink raw milk and you have a high chance you are going to get sick. Plus there are all the things that are in there, the puss and the mucous that people are unaware of that are in raw milk, yuck! When you see the condition of some of the animals and the look of the udder, it is one thing to give a squirt in a bowl for the cat, but to be taking that on yourself....that one is a slam dunk for me.
> (Keith – Health Protection)

When it comes to the need to balance fears of unsafe food with fears of losing control over our food supply, raw milk is the most controversial. The health benefits of milk are a point of agreement between those working in public health and raw milk

producers/consumers. The need for pasteurization and homogenization of all milk available for sale to the public is where they differ. I chose this case because of the extreme views involved and because of the implications for rural and remote communities when regulations are applied without special consideration to ease of access.

Dairy industry in Canada.

By the 1920's, Canadians recognized milk as one of the most important foods for protecting the health of children (Ostry, 2006). In 2010, each Canadian consumed an average of 78 litres of milk, 2,950 million litres of both milk and cream (Doyle & Paul, 2012). Along with the increased consumption of organic food, the production of organic milk has more than doubled since 2005, to 87 million litres in 2009/10. The popularity of certified organic milk, imported and domestic, is growing, with a projected increase in sales of 14% from 2009 to 2014 (Organic Dairy Industry in Canada, 2011). Milk is well established as an essential component of the Canadian diet.

Canadian dairy production totalled $5.5 billion in net farm receipts and $13.7 billion in sales for 2010, with 80% of the raw milk being processed by the three largest processors in the country (Saputo, Agropur and Parmalat) (Doyle & Paul, 2012). In BC, dairy farm cash receipts added up to more than $490 million in 2009 (BC Dairy Industry, 2011), roughly 4.5 times greater than farm receipts for the egg industry (PricewaterhouseCoopers, 2010).

The typical Canadian farm has 72 cows. Most are in Quebec and Ontario, with 13% in the Western Provinces (see Table 1 for number of farms across Canada) (Doyle & Paul, 2012). The average BC dairy farm has 135 cows (BC Dairy Industry, 2011). Dairy

production in Canada operates under a supply management system that controls pricing and import of dairy products. While Canada produces a large quantity of dairy products, it is a net importer of dairy, primarily of cheese and milk protein ingredients (Doyle & Paul, 2012). Overall, dairy farms comprise a significant portion of the agriculture industry in BC and Canada. Overall, in Canada in 2011 there were 12,965 farms with milk shipments (Canadian Dairy Information Centre, 2013). Table 1 describes the size of the industry in Canada by province.

Table 4 Dairy Production in Canada by Province

Province	**Farms**	**Cows**	**Heifers**[4]
BC	529	70,500	35,000
Alberta	598	90,000	38,200
Saskatchewan	190	30,000	16,000
Manitoba	356	44,500	18,500
Ontario	4191	322,000	156,000
Quebec	6375	370,000	150,000
New Brunswick	234	18,700	9,500
Nova Scotia	248	22,500	10,400
Prince Edward Island	209	13,000	7,000
Newfoundland	35	5,800	2,500

By 1991, milk pasteurization was mandatory across Canada, and the raw milk dairy industry vanished. Raw milk is for sale in some states in the US. According to a 2010 phone survey by FoodNet, there were 9,385,864 American consumers of raw milk, or 3.04% of the US population (Beals, 2011). In developing countries, 80% of the milk industry is called “people’s milk”, sold by small-scale vendors who collect milk from farmers with only a few cows, but corporate control over this milk supply is increasing (Grain, 2011). Some EU countries view raw milk as “legal” and “safe for human

[4] Heifers are cows before they have had their first calf, and therefore not producing milk.

consumption" allowing it as a consumer product. Generally, European countries apply sanitary regulations and quality testing as mandatory conditions of sale (Vesna, 2012). In England, raw milk is only available at the farm gate, while in Italy and Poland there are raw milk vending machines. Labels on raw milk from both England and the US include warnings that the product may contain harmful bacteria (see Figure 9).

Figure 3 Raw Milk from England and Washington State

Milk is a popular food, and as interest grows in the purchase of food from local farmers, there are anecdotal reports of increase in raw milk demand. It is difficult to determine how many people consume raw milk in Canada. According to cow-share operators interviewed in this study, requests for raw milk increase as media coverage increases regarding the right to consumption.

A brief history of sub-standard milk.

One participant observed that Canadians have forgotten what it was like prior to a number of public health interventions such as animal vaccines and milk pasteurization. In the mid to late 1800's, milk was the most widely adulterated food in Canada (Ostry, 2006), often collected from uninspected and unsanitary barns where cows may have been

infected by tuberculosis. In the US, DuPuis (2002) describes “swill” milk from cows fed the by-products of breweries or distilleries. With industrialization and urbanization, milk was transported from the country farm through many vendors to reach the final customer. In that process, it was often “watered down” along the way and the fat skimmed from the top to sell as butter, so it was a poor quality product when it reached the city customer (DuPuis, 2002).

There were two strategies to deal with the issue of sub-standard milk: pasteurization and a certified milk system focused on sanitation problems along with the milk provision systems (Dupuis, 2002). In the certified milk system, a medical board composed mostly of doctors certified cows, the milking process, and barns (Dupuis, 2002). Compared to pasteurization as a food safety strategy, the certified milk system would cause milk production to become an expensive and labour-intensive activity. According to Dupuis (2002), in 1906 New York City government officials agreed that certified milk was of higher quality but they chose pasteurization as the better alternative to make all milk safe, considering the cost of the certified system and the large amount of milk required to supply the city.

Prior to pasteurization, laws were passed in Canada to regulate dairy barns in the City of Toronto, and Quebec City created laws regulating milk sale and distribution (Ostry, 2006). Toronto’s 1915 bylaw requiring the pasteurization of milk led to a significant reduction of children presenting with extra pulmonary tuberculosis (TB), a disease linked to milk from TB-infected cows (Edwards, 2008). Subsequently, a campaign championed by the Women’s Institute, and following the death of the leader’s son from a milk-borne pathogen (BC Women’s Institute, 2011), the Province of Ontario

made pasteurization mandatory in 1938. Similar laws passed in Colorado in 1944, after Florence Sabin "used the standard Progressive Era political technique of stirring up maternal outrage at the spectre of filth and disease in a fluid that was supposed to be white, perfect, health-giving and pure" (Dunn, 2011, p. 109). In spite of the significant reduction of foodborne illness because of pasteurization of milk in Canada, there have been ongoing challenges to pasteurized milk legislation since 1994 (Edwards, 2008).

Cow-shares.

Canadian raw milk producers have faced two major court challenges in the past five years; they involve the previously named "Home on the Range" Farm in Chilliwack, BC and Glencolton Farm in Durham, Ontario. These businesses are structured such that the agister tends and milks cows owned by shareholders. Gordon Watson and Alice Jongerden started Home on the Range in May 2007. Following a 2009 gastrointestinal emergency involving a shareholder's child, a Fraser Health Authority EHO ordered the owner to "cease and desist the distribution of raw milk for human consumption", then charged the agister with contempt of court when she continued to package and distribute raw milk (Fraser Health Authority v. Jongerden, 2010).

One participant described "Home on the Range" as an information source on running a dairy, and that Jongerden was "calm and careful and gentle in nature and gentle in speech and she got her point across concisely without raising anybody's back hair" (Karla – Civil Society). Jonderden left the cow-share but remains an advocate for raw milk. Her business partner, Watson, filed suit on December 14, 2011 against Fraser Health and VCH for $31,002,000, seeking compensation for seizure and destruction of

property, interference with civil rights, and the exemplary damages based on a recent similar case (Watson, 2011).

Michael Schmidt, from Glencolton Farm in Ontario, assuming Jongerden's role as agister, operates the Chilliwack cow-share as "Our Cows". The herd has 25 Jersey cows and provides milk to over 450 households under the label "Cleopatra's Enzymatic Bath Lotion". On February 17, 1994, at Schmidt's Glencolton Farm in Duram, a Public Health Inspector provided Mr. Schmidt with his first written order of not being in compliance with the Health Protection and Promotion Act because of improper storage and display of unpasteurized milk (R. v. Schmidt, 2010). In 2010, following a six-day trial, he was found not guilty of 19 charges stemming from a 2006 armed raid on his farm. Crown appealed the decision on April 14, 2011, and the judge overturned 12 counts as guilty verdicts, resulting in a fine of $9,150 and one year's probation (Tetley, 2011). Schmidt then began a hunger strike, which he ended after 37 days when his demands were met to talk with Premier McGuinty for a preliminary discussion on legalizing raw milk sales (Schmidt 2011). Schmidt remains a staunch supporter of raw milk. Distribution of raw milk remains illegal in Ontario.

Locally, the underground market for raw milk is alive and well. According to the US-based website www.realmilk.com, there are six raw milk dairies in both BC and Ontario, producing fluid cow milk, goat milk and raw milk cheese. Small-scale BC farmers make private arrangements with others to share the cost of owning a cow or goat. These arrangements vary from no initial payment for the animal to $150 per share. One local farmer offers initial shares of $60 plus a monthly animal boarding fee of $45, yielding approximately four litres of milk weekly for the shareholder. Another farmer

estimated she sells 20 shares for a cow that lactates 10 months of the year. A goat would provide considerably less. Both goat and cow milk are in demand locally.

Farmers and shareholders are not altogether happy with the herd-share arrangement. Most shareholders visit the farm and develop a relationship with the farmer, helping to establish trust if the shareholder sees that the milk is produced in a way that satisfies the shareholder about the safety of the product. One prospective shareholder decided not to purchase a share because the farmer's house and cows were too dirty, and she was unwilling to take the risk that the farm's milk would be treated in a more hygienic manner. I saw the same farm and did not come to the same conclusion. Many urban dwellers forget the hard work of farming expecting city standards of cleanliness in a country farmhouse. One farmer expressed her opposition to the herd-share because caring for the herd is not just about money. This farmer stated:

> They say "Oh, I've got a share and I'd like to see the farm." Well get out here and shovel shit. You want to have a share, get out here and do the work, put some fences up, put some fence posts in, go muck a barn, you know? Be here at 3:00 o'clock in the morning at kidding time. Then you'll have a share. Otherwise, shut the fuck up. (Nellie – Civil Society)

The hard work involved in farming may be lost from the memory of many urban residents, and the expectations of industrial standards may be part of our urban thinking. The herd-share arrangement requires good communication and management of expectations, understanding values and beliefs.

Some farmers, especially in more remote communities, resent the need to operate underground and skirt the laws. Access to milk is especially important for places that are

more remote, particularly in places that are vulnerable to weather conditions. As one participant suggested, people do not want to be sneaky or jump through hoops; they just want to buy milk, even when the road to the town is closed. Small community processing stations would function well in smaller locations but the costs and level of regulations are too much for small operations to bear. Necessary changes to meet a regulation standard that is intended for large scale operations are expensive and do not fit the context or the needs of rural and remote communities.

While the sale of shares is one method to work around regulations, it is not the ideal solution for dealing with the issue of legally distributing raw milk for money. It is a food that is in demand and advocates suggest that when collected with proper precautions, is consumed with no greater incidence of foodborne illness than with the consumption of many other foods (Weston A. Price Foundation, 2009). There is a need for regulatory changes to meet needs of those interested in consuming raw milk, especially for rural or remote communities who have issues of access to pasteurized milk supply.

Food safety tensions.

There are three main areas of concern between those working in food safety and food security concerning raw milk: a cleanliness standard, perceived risk of illness from milk consumption, and an inflexible regulatory system. The tensions are based on different worldviews in the way people from each sector approach risk and differences in what they value. They also generate more questions than answers.

Cleanliness standard.

Producing clean raw milk for human consumption requires meticulous attention to detail. The dairy farmers I interviewed knew the challenges of keeping their product clean, and were clear about their process of transporting clean milk from the animal to the refrigerator efficiently. Cow-share holders recognize their responsibility in assuring their food is not contaminated, and judge the farmer's approach to cleanliness, only participating in the cow-share if they trust the farmer to deliver a clean product. Farms can look quite messy and rough, and city folks might assume that the condition of living quarters reflects the farmer's milk production practices. This assumption may be a result of an industrial standard Canadian's have become accustomed to which they believe reflects safe practices, but does not guarantee them. That is to say, there is an overall trust by many in industrial food processes, but very serious outbreaks of foodborne illness have occurred in the past few years that demonstrate vulnerability of the industrial food system.

The expectation of a safe food supply has increased over years. It may be a reflection of a good public health system that so many people are concerned with being germ-free. It could also be a reflection of the marketing of products that kill germs, such as antibacterial soap. One participant expressed how this issue with cleanliness has evolved over the years:

> I have watched it steadily progress over the last 30 years or more where we have literally become a germ-focused society. And when you start calling things 'raw milk' and you put it across, like there's that whole monstrification of it. You know, you've got a farmer with dirty grubby hands grabbing on to the tit of a

> dirty, grubby cow or goat in a barn somewhere. And then you have the so-called clinical setting of a dairy. (Nellie – Civil Society)

For this farmer, our cultural expectations of producing food in a clinical setting is part of a bigger picture of being so focused on protection from germs that we miss the benefits and freedom of all that life has to offer. In the efforts of public health to protect the population from illness, we have ignored parts of the system that have value but open up the citizenry to risk of illness. For this farmer, we have vilified raw milk and the farmer without full consideration of the benefits of small-scale production, and the risk inherent in large-scale dairy production. The large-scale operation is not as clean as the public may perceive it to be. However, not all small farms are equipped to maximize cleaning potential. Some operate without hot running water in the barn area, so farmers carry buckets of hot water from the house twice daily to clean the animal and milking equipment. Raw milk consumers must trust that the farmer maintains a high cleanliness standard that is adequate enough to prevent foodborne illness. Tensions results from different definitions of cleanliness and an unrealistic expectation to be germ-free.

Perceived risk of milk.

The perceived risk of drinking raw milk is a sensitive issue in the public health community and among health care practitioners generally. When one shareholder was diagnosed with a parasite, the mention of drinking raw milk led to premature conclusions by health professionals that milk was the carrier. The farmer described her experience of being blamed for producing contaminated milk by the doctor of a shareholder:

> So he emailed me with an extremely serious situation that scared the pants off me. I currently, at the time, had two babies on this milk, OK? As well as 20 families,

> OK? So he said "I have developed a parasite, I've got a parasite, Blastocystis hominis." And he said "my doctor, I told my doctor I drink raw milk and he is pretty sure it came from your cow". Whooooo, holy crap. That was my big scare. (Karla – Civil Society)

The farmer promptly informed shareholders with children, yet the parents continued to supply the milk to their families with no ill effects. The farmer also contacted her veterinarian, who informed her of the low potential for this parasite to be in her cows' milk. The shareholder with the parasite had recently returned from a trip to developing countries where he ate raw food. The risk of acquiring a parasite under those conditions is substantially greater, thus presenting an alternative explanation for transmission. The parasite victim's doctor reacted to the consumption of raw milk without considering alternatives. Such a reactive response from the health community contributes to the distrust between producers and regulators, and drives raw milk production and consumption further underground, with producers relying on the internet or word of mouth for information on safe delivery of their product.

For some people, the perceived health risk is in not consuming raw milk. It is not only that the risk of drinking raw milk is low, but for some the benefits of raw milk are lost and therefore jeopardizing optimum health. For people who believe pasteurization destroys important enzymes, any risk of potential bacterial or parasitic contamination is dwarfed by the health benefits of this food. Public health professionals have always considered milk to have beneficial health effects and have emphasized the importance of pasteurization for reducing any negative effects. For some, the health risk is from "hyper hygiene", not from consuming raw milk. One participant's children suffered from

asthma until she eliminated all processed food, including pasteurized milk, from their diet, and began to use raw goat's milk. Another participant, who returned to Victoria after a number of years teaching in China, noted the increase in Victoria children with allergies and epi-pens, and questioned the sense of balance we have in our food supply: "So is our food supply, as often as we think it's safe, are we too clean?" (Shirley – Civil Society). For some, then, concerns about health are not only the benefits of an unprocessed diet but health is about the sort of society we have created and learned to accept. It is not necessarily about the consumption of raw milk for the sake of benefits, but it is about allowing for the risk, and allowing people to make decisions on taking up risky activities. This can lead to questions on a number of public health concerns including choosing to smoke, wearing bike helmets or seat belts. Ultimately, we have to ask if the activity is worth the risk and if we can live with the consequences.

Inflexible regulatory system.

The final broad area of tension is the flexibility that many believe is needed in the system for compromise, to allow for a certain level of raw milk consumption while protecting the larger population. As long as raw milk is distributed from farmer to friends, public health has neither the resources nor the interest in stopping these personal interactions. Health Authority interest in protecting the public increases substantially when an unregulated dairy reaches hundreds of customers. The consumption of any food bears a level of risk for foodborne illness. As one participant noted:

> I mean stuff happens. I think what you want to do is, you want to have a zero tolerance for lethal or potentially lethal foodborne illness and you want to have a zero tolerance for sort of systematize or systematic…I don't know what you'd call

> it exactly….widespread problems. So you know, something that's going to potentially affect thousands of people is more serious than something that's going to affect a dozen or two people. So you have to kind of build those kind of….so it's a matter of scale and severity and you have to have some kind of equation at least in your head that says you know, ten cases of upset stomach is no big deal but one case of botulism is a very big deal or a thousand cases of upset stomach is a really big deal. So where's the balance. (Eugene – Health Promotion)

It is unlikely that this flexibility or balance for a safe food supply is fully understood by those on both sides of the argument. Are we able to develop food safety regulations that allow for considerations of scale and severity? The real challenge is the flexible application of safety standards in an environment requiring context specific determination on how regulations apply. How do we write flexibility into regulations?

Furthermore, this inflexibility does not consider the special needs of geographically isolated areas. Some BC communities would benefit from a highly localized, small-scale food production. As one participant described:

> Because this community is remote, there are special challenges and having some way to keep production close to home would help the community with nutritional needs. Folks would rather not do it rather than be sneaky about it. What would a shared [milk] tank look like? Not to mention dealing with the milk marketing board. Too many hoops for small-scale operations. The owner of a goat herd went so far as to get a milk handling certificate. It cannot be the same person who milks the goats and makes the cheese. The regulation is for high scale and

> specialized labour but does not take into account a 30 goat herd for small-scale production and consumption. (Darlene – Civil Society)

This tension is similar to one concerning meat inspection regulations, where industry standards were set and applied without regard for either small-scale producers or potential impact on food security by making access to a healthy food supply more problematic.

These areas of tension are not specific to raw milk but are part of larger issues of the role of public health, personal choice, risk-based decision making, and flexible regulations. There is a pattern here of the special needs and considerations for remote communities. The changes to the meat inspection regulations, which led to the closure of small abattoirs throughout the province, highlighted the unique food challenges for remote communities. The same challenges can be seen in milk and potentially other food products. There is a need to identify clearly areas of tension to strategize appropriate actions that can contribute to improved public health.

Opportunities for collaboration.

Few opportunities for collaboration exist between raw milk advocates and those working in public health protection. This is in part because there are relatively few producers, and in part due to a general mistrust some farmers have of regulatory authorities. Any discussion to bridge the divide between raw milk advocates and public health practitioners is limited because of a lack of local information to perform a risk assessment. That is to say that many public health practitioners, particularly those in health protection, believe that all raw food of animal origin is a high-risk food and there are no local statistics to suggest the degree of risk from small-scale raw milk producers.

One thing that changed in the food safety program from the core functions process was a shift from following the prescribed regulations to completing a risk assessment before applying regulations. It is impossible to collect Canadian data on the actual risk of consuming raw milk from a small-scale producer that is accepted by both advocates and regulators because of the ban on sale of raw milk and the few numbers of known cow-shares. The lack of data means there is little to argue the point, beyond personal belief that the value of raw milk supersedes the risk. This forces producers and consumers (or "believers") into an underground economy because a proper risk assessment cannot occur.

EHOs and raw milk advocates share the common goal of having a safe and accessible food supply. Strategies and opportunities to discuss the risks and benefits of both pasteurization and raw milk are critical and important to support new producers and informing uneducated consumers who may not be aware of what to consider when choosing a raw milk cow-share. EHOs and raw milk advocates provide individuals and communities with the information needed to make decisions about consuming products but the consumers need to decide on a risk level they are willing to accept. Both sides need to be well informed of the various issues to engage in productive communication on this issue. Otherwise, the risk remains of a growing underground economy that contributes to friction between public health regulators and raw milk advocates because of the need to circumvent regulations. This risk of developing an underground economy is what separates raw milk from other public health practices such as smoking, seatbelts and bicycle helmets.

Alternatively, one might question the harm in an underground food economy if it is accepted as a natural part of a CAS. Small-scale operations have a self-limiting contamination range. So, the few incidents that may occur do not have the same capacity to cause illness as in a larger food system. Cow-share holders are aware of risks, so if one accepts that zero tolerance of foodborne illness is impossible, then the best route to more collaboration may be to accept cow-shares as they currently operate. The licensing of cow-share operations would allow for education and monitoring opportunities, keeping the lines of communication open between food safety specialists and raw milk producers. The acceptance of an underground food economy allows resources to target large-scale production, where more people could be affected by an outbreak.

Summary of Cases

In each of four cases of food security initiatives, I have touched on historical, political, economic, and social aspects, and identified areas of tension between those working in food safety and food security, as well as opportunities for collaboration. Discussions on tensions in food safety and food security did not stay within the boundaries of these four cases; food security participants talked about issues of animal welfare and caged eggs, use and abuse of antibiotics in conventional farming, the use of bio solids for field crop fertilization, the safety of crops from genetically modified seeds, soil contaminants in urban agriculture, the use of pesticides, meat inspection regulations, and irradiated food. There were also issues of agriculture exclusion zones due to plant diseases, such as in Central Saanich, where the Golden Nematode affects plants in the nightshade family, or Dwarf bunt affecting wheat in the Kootenay region. Participants also suggested that tensions are not solely about food safety; they also relate to domestic

and international trade, and marketing boards where food safety is often used as an excuse for regulations and decisions rather than health protection. These additional areas of discussion are important aspects of food safety and demonstrate how this is a CAS and cannot be considered separately from other influences in the system.

It has become clear that for those working in food security, food safety is about more than the preventing foodborne illness through food inspection programs, minimizing negative impacts of outbreaks, increasing knowledge, and providing surveillance of food safety. It is about having a trustworthy food system that involves the full spectrum from seed to plate that respects the environment, animal welfare, small-scale producers, economics, and trade. In the following sections, I identify ways of working across this complex landscape based on analysis of the data, and identify key challenges to easing the tensions.

Negotiating Strategies Between Food Safety and Food Security

> Cook together….I mean everyone has their own opinions, right, and some are more radical than others. But kitchens are unique in that way, right? People come together and share opinions in a really intimate way. All those tensions can be resolved, right, if you talk about them face to face. (Trudy – Health Promotion)
>
> … A Framework for Collaboration, so just in terms of you, yes, as a dietician, I'll respect the food safety component and promote food safety along with food skills and you know, keep the inspectors abreast of the work that I'm doing in the community. And on the flip side, they'll be respectful of our programming and will do their best to work with the programs well in advance and try to figure out how the programs can work. (Diane – Health Promotion)

By examining food security cases impacted by food safety regulations, I anticipated identifying ways actors can best work together to promote access to safe food. Additionally, I am interested in strategies that may be transferable to other public health areas where conflict may arise due to diverse worldviews held by public health practitioners. In the following section, I remind the reader who the actors are and provide examples of how groups have negotiated through barriers to improve program delivery, and identify challenges to collaboration.

Food safety and food security have a shared point of conflict: risk. Each group has a general perception of the level of risk that is acceptable in food production and distribution. That is to say, there is a risk of foodborne illness resulting from food production, and there is a risk in distribution or in access to healthy food. It appears from the data, generally speaking, both groups view their area to have the higher risk threatening health and wellbeing. Dialogue between the groups on differing perceptions of the level of risk may be central to finding a common understanding and focus, and perhaps to improved working relationships between those in food safety and food security. Understanding the nature of risk may be a common place to explore issues related to food.

Who is negotiating?

At the beginning of this chapter, I described three main groups represented in this situation: EHOs, community nutritionists, and civil society members consisting of farmers, producers, consumers, and activists. Missing are those who write policy that applies to or has an effect on food security, and mainstream or industrial farmers. Both

are considered silent actors who play an important role in this situation. It is important to remember that when I discuss food safety and food security, there are three main actors. The EHO personifies the food safety regulatory framework and the food safety model core program. Community nutritionists in the health authorities mainly deliver the Food Security Model Core Program. The other main group is those who are affected by the regulations and are advocates of food security. I identify them as civil society members. (See Figure 10: Actors in the Situation)

Figure 4 Actors in the Situation

How are they negotiating?

I asked study participants to identify ways to bridge the gap between those working in food safety and in food security. The food safety perspective is clear: deal with the facts by explicitly stating the benefits and risks to any food production or consumption scenario. For example, IH EHOs have explicitly stated the benefits and risks of keeping backyard chickens, trying to display the necessary information for

balanced decision making rather than committing to a position. In another instance, the provincial working group on food safety and food security committed to consultation. As one participant described:

> So if the food security folks wanted to set up a kitchen or food bank or whatever it is, that they would consult with the food safety folks and also vice-versa. If the food safety folks came across a community kitchen, you know, before coming down with a sledge hammer, they would talk with the food security folks in their HA and would say "Hey, we found this, or what do you know about this?" And try to work together. (Allan – Health Promotion)

For this participant, it is logical for mutual respect and communication prior to action. It resembles teamwork, or what could be call self-organization, because they recognize a need and make the relationship work without being mandated from supervisors.

The ability to negotiate challenging situations can be a combination of personal characteristics or qualities and professional conduct. A professional's manner often stems from how she/he was socialized in the educational process. If a health inspector's education stressed enforcement, then her/his approach to civil society can appear intimidating. As one EHO described:

> Whereas some of the other staff, young and old are much more supportive and believe in healthy eating and believe in community programming and working with the community to make things work, not come in and be the food safety police. But there is, you know, there are some inspectors that are like that, and that is the mentality, unfortunately. (Diane – Health Promotion)

For this participant, a personality trait lends itself to working with community members, and one that is focused more on regulatory power and control. She implies that the job allows for a supportive community-based approach, but the individual EHO has the choice to be seen more or less as the enforcer.

Participants suggested EHOs need to learn more about the whole food system, perhaps via practical experience with small-scale organic farms. One food safety participant did not encourage this option, primarily because the addition to the course load would not warrant the limited value he felt would be in the experience. Another suggestion involved cross-educational experiences between dieticians and EHOs, especially given the food safety component in the dietician's education. Opportunities for developing relationships early, along with shared foundational coursework, could contribute to significant change over time. The evidence for inter-professional education is weak, as reported by Reeves, Zwarenstein, Goldman, Barr, Freeth, Koppel, and Hammick (2010) in a systematic review. These authors identified six studies between 1999 and 2005 on the effectiveness of inter-professional organization with only four studies reporting a range of positive outcomes.

The history and demonstrated ability for EHOs to evolve their practice is a positive sign of flexibility and growth for a safe food system. Both changes in expectations of standards for farmer's markets and the EHOs demonstrated ability to work with industry, such as developing the MarketSafe program, indicate a willingness to listen and respond to the needs of civil society. This level of responsiveness is less likely to occur on the national level, where the CFIA enforces guidelines that are more rigid,

demonstrates less recognition of the needs of small-scale farmers, and appears to fail to understand the impact of rigid guidelines on farmers and rural communities.

Development of working relationships is an important part of negotiation. As mentioned in the quote at the beginning of this section, cooking together is a way to ease tensions. The social aspect of food preparation and consumption bridges cultures and contributes to a sense of community (Engler-Stringer, 2005; Kwik, 2009). Food security supporters often identify development of a good relationship with the farmer as an important outcome from attending farmer's markets, and buying raw milk or ungraded eggs. As one participant described it, "What people oppose about food safety regulations is sometimes they seem to interject on a relationship that's built between a farmer or a food producer [and the eater]" (Jewel – Civil Society). There is a trusting relationship that food purchasers have with farmers, believing the farmer they know would not take chances with their health. Knowing exactly where your food comes from provides a traceability mechanism to address any potential issues that may arise. It takes time spent together to develop that relationship.

Part of the tension between those working in food safety and food security may lie in public relations. Few food security participants had a relationship with an EHO, or even knew one. Cutbacks in public health, leading to increasing workloads, allow inspectors little time to build relationships in the community. Some producers fear approaching the health authority for advice because, as one participant who quoted Jo Salatin's (2007) book said: "Everything I did on the farm was illegal" and they do not want to take the risk of being identified as non-compliant. Others reported that CFIA inspectors did not care about the farm, and did not appreciate the impact of CFIA

decisions on either the farmer or the community. Trust and clear communication are key components of effective negotiating strategies.

A strong relationship between food consumers and farmers or producers is valued, and similarly it may be of value to have strong relationships between farmers and EHOs. That is, for optimal discussion of the risks and benefits of food production, it would be important to have a positive working relationship between farmers or producers and EHOs. That type of relationship is valued from some of the seller's perspective. As one participant described:

> Inspectors should become more involved in their communities. They should approach food safety from the farmer's perspective. Work with the farmers and be part of that community to help them to maintain the quality and diversity in the food supply so it is not tasteless. I don't want to live in a society where everything is sanitized for me and loses all flavour. (Charles – Civil Society).

Not only does this producer view EHOs as not involved in their communities, but also suggests that by not being involved, they contribute to a food system that is dead and flavourless.

When it comes to relationships, the reverse is also true. Of course, it is not only the inspectors who are responsible for creating positive interactions. When the producer knows the regulations and maintains a proactive approach with EHOs, there is potential for a relationship based on mutual respect. As one farmer's market vendor described:

> I want to be on the same page with the Health Department as well as with my customers and the rest of the community, okay, and that is food safety. And there

should be no fear here because we should know the rules of the game. (Roy – Civil Society)

For this producer, and others, it is beneficial for all producers to know the regulations and invite inspection. Fear of inspectors is related to issues of control and trust (Gray & Ropeik, 2002). EHOs have power to affect greatly the livelihood of producers and vendors. Gray and Ropeik (2002) describe how risk perception and fear originates from uncertainty, or not understanding or knowing regulations, particularly if they are new or if they have changed.

Challenges to negotiating.

Differences in communication style and professional norms among the groups present a challenge to effective negotiations. In contrast to EHOs focus on epidemiological evidence and regulatory frameworks, a community nutritionist relies on an academic background in social science and communication. In addition, food safety is only a small part of EHOs education (along with air, land and water), thus limiting the kind of food-relevant experience and training a student can obtain in a four-year program.

Farmers, food producers and food security activists have a practical, context specific approach to food production or distribution, and corresponding regulations. They know what works on the ground. They tend to be very context driven, with knowledge based on experience. In a complex system, practices come from specific contexts, so what works in one place, may not work in another (Anderson et al, 2005). Therefore, inconsistencies of the implementation of food security activities may be hard for some people to understand, for example, why urban chickens are banned in some municipalities while broadly accepted in other, or why raw milk is available in an Italian

vending machine while sale of raw milk is illegal in Canada. There appears to be a lack of practical consistency regarding the evidence, and little consideration for context specific needs for food production or distribution.

A structural divide exists in BC's public health sector, between EHOs and community nutritionists. For example, interviews with VIHA personnel were a source of information both for this study and for the participant. That is to say, community nutritionists learned of health authority personnel vacancies regarding food safety and food security via the interviews. Normally, the food security lead would be the link between community nutritionists and EHOs and to events throughout the health authority and the province. Information exchange, however, was lost when the food security coordinator position became vacant. This dilemma highlights a need for these actors to establish another line of communication, so that information flows even when vacancies occur. Break in communications shows a lack of resilience and a failure of system. All professional groups involved with food should also build in time for communication and networking. BC's working group on food safety and food security was an excellent start (but was not maintained), and EHOs should be encouraged to participate in municipal food policy councils, which present significant opportunities for dialogue with a diverse group of people.

Regulations designed for large-scale operations can have unintended adverse effects on small-scale operations, and this issue remains a significant challenge for negotiations between food safety and food security interests. This was highlighted particularly with farmer's markets in two incidences: the case of the ice cream business moving from a home-based business to market, and for labelling regulations for small-

scale canning. It also applies to municipal bans on backyard chickens, and community kitchens preparing higher risk foods. Many participants lamented the impact of changes to meat inspection regulations on small producers throughout BC. As this participant explains, a good idea in the office cannot really be applied until it is tested on the ground:

> So I think if we passed some policies that on paper seem to make sense, let's have small-scale, you know, let's have anyone producing canned goods go through food labelling laws. Let's make sure that if people are slaughtering cows that it's being done in big factories where we can have inspectors on site all the time to make sure that those factories are operating the way that they should, but that have had clear negative impacts on food safety and food security. And so when that one place that you can butcher animals on the Mainland ends up having a problem, it affects not just a few residents and a few pounds of meat or a few sides of beef, it affects hundreds of thousands of pounds of meat and it affects and potentially endangers hundreds of thousands of people. And so we've taken what I think from a bureaucratic perspective seems to make the most sense, but that on the ground, actually makes no sense at all. (Paul – Civil Society)

Paul describes how policy development needs to include the experience and ideas of those affected. The process needs clearly to identify values, so that regulations for industrial scale are created and implemented when big business is the priority of government. Conversely, when the priority is the needs of small producers and local economies, then the process needs to be flexible enough to implement "scale-adjustable" regulations. MOH demonstrated this with the pilot project for abattoirs in remote communities and the implementation smaller-scale licensing to try to address serious

food security issues in smaller communities. Scale-appropriate legislation allows local food production to complement the global food system.

Effective, scale-appropriate regulations have enough manoeuvrability to allow for interpretations in specific contexts, by a workforce able to make professional judgments on the safety or impact of any given event or procedure. As one participant highlighted:

> I think that, for one thing, I think sometimes they go overboard on that. So you get them closing down church basements who are trying to sell cupcakes to raise a little money. And that's just going over the top being silly. And I think that a lot of that food safety stuff is particularly important where you're dealing with an industrial food system because the potential for things to go wrong on a massive scale are very large. (Eugene – Health Protection)

If food safety regulations apply to industrial food systems, then it only makes sense to have a complementary approach to small-scale production. For example, VIHA permits the sale of clearly labelled, ungraded eggs in local food stores, unlike other provincial jurisdictions that only permit graded eggs in retail outlets. Differential application of regulations would reduce this kind of confusing inconsistency, and may ease tensions and facilitate relationship building between small-scale producers and regulators.

In summary, this chapter has described four cases where food production or sale created tension between food security and food safety interests, with an additional focus on opportunities for intersectoral collaboration, and finished with a general discussion on negotiating strategies to reduce tension between those working in food safety and in food security. In the next chapter, I describe results from concept mapping.

Chapter 5 Concept Mapping

As noted in the methodology chapter, concept mapping is a participatory mixed method focused on ways to ease tensions between those working in food safety and food security. To begin to understand how to address issues of tensions, I implemented a national concept mapping exercise by asking the focus prompt "The best way to ease tensions between those working in food safety and food security is…" As I described in the methodology chapter, concept mapping consists of six phases: preparing, brainstorming, sorting and ranking, data analysis, interpretation, and utilization. Participants generated statements in the brainstorming phase, then sorted statements and ranked each on dimensions of importance and feasibility to create visual representations of point maps, concept maps, ratings maps, ladder graphs, and go-zone maps. In this chapter, you find analysis and summary of the concept mapping exercise. The outcome of this activity aided with the situational analysis by providing theoretical sensitivity throughout my coding process of qualitative interviews that ran concurrently with the concept mapping exercise. I integrate findings of the situational analysis and concept mapping at the beginning of the discussion chapter (Chapter 7).

Demographics

The invitation to participate was sent via e-mail to list serves and personal contacts in every Canadian province along with a request to forward the invitation to anyone they thought might be interested (see details in the methodology chapter). The student license for Concept Systems software permits a maximum of 50 people to log onto the system. This can reduce opportunity for participation if people are curious and log on but are not interested in completing the exercise. Initially, 43 people completed

the brainstorming session. Once brainstorming was closed, I removed access for those no longer interested and added the remaining seven who had expressed interest to participate in sorting and rating phases of the project but were unable to log on initially. Thirty of 50 participants started the sorting process, but some contacted me to say the process was too involved, and stopped. Twenty-three participants completed the sorting, 22 completed the rating on importance, and 21 completed the rating on feasibility. The majority of participants were from BC, with two-thirds stating food security as their primary area of work. This may have slight implications for the findings to lean toward ideas of those working in food security, but results are averaged and therefore provide a balanced representation of ideas in the data. Most participants were engaged in advocacy work or public health practice in government or non-governmental organizations at the municipal or provincial level.

Table 5 Demographics for Concept Mapping

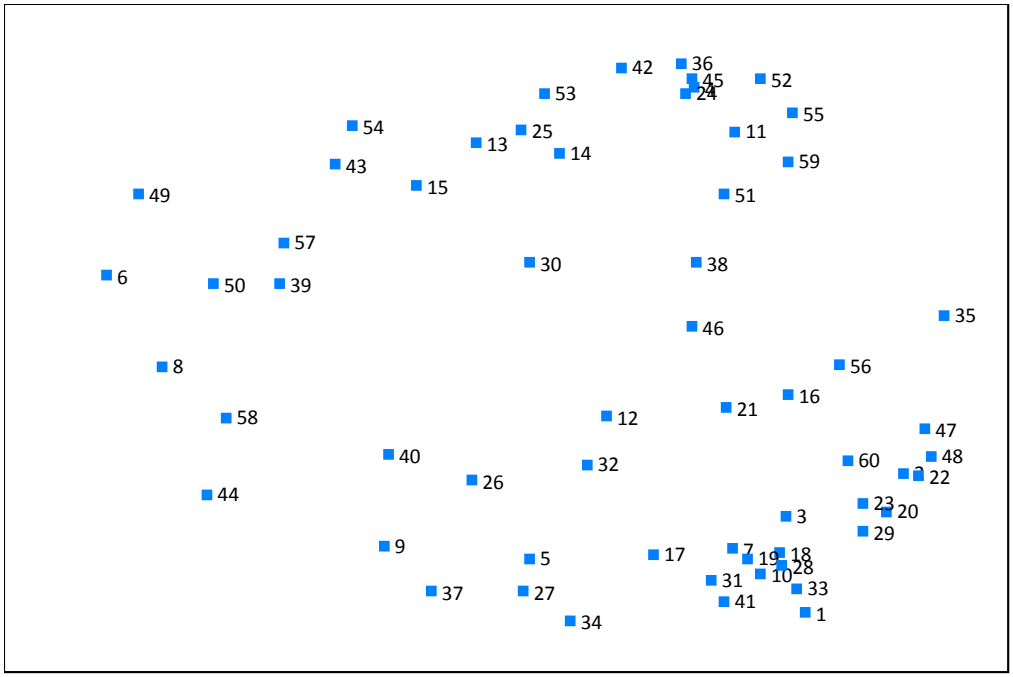
Question	Answer	Total 50
Province	Ontario	6
	Saskatchewan	4
	Alberta	2
	British Columbia	36
	USA	2
Work Area	Food Safety	17
	Food Security	33
Work level	Federal/National	3
	Provincial/Territorial	18
	Municipal/Regional	21
	Student	2
	Other	6
Work sector	Government	16
	Non-governmental organization	17
	Private sector	3
	Academic/University	4
	Health service delivery	10
Work Type	Public Health Practice	18
	Policy	1
	Administrative/ Management	5
	Advocacy	11
	Student	2
	Research	3
	Other	10

The Point Map

Twenty-three participants sorted 60 statements. Statements that participants most often sorted together appear closer together on the point map (Figure 1). Statements that participants did not consistently sort together are situated more centrally on the map. The relative aspect of the point map is to see the relationship between statements in terms of distance or proximity. Figure 11 shows a larger number of statements together in the bottom right-hand corner, indicating that a number of participants agreed to have these statements together. The rather dispersed nature of statements seen in the top left-hand

corner indicates less agreement between those statements placed together in the same category. I will explain this in detail in the following sections.

Figure 5 Point Map

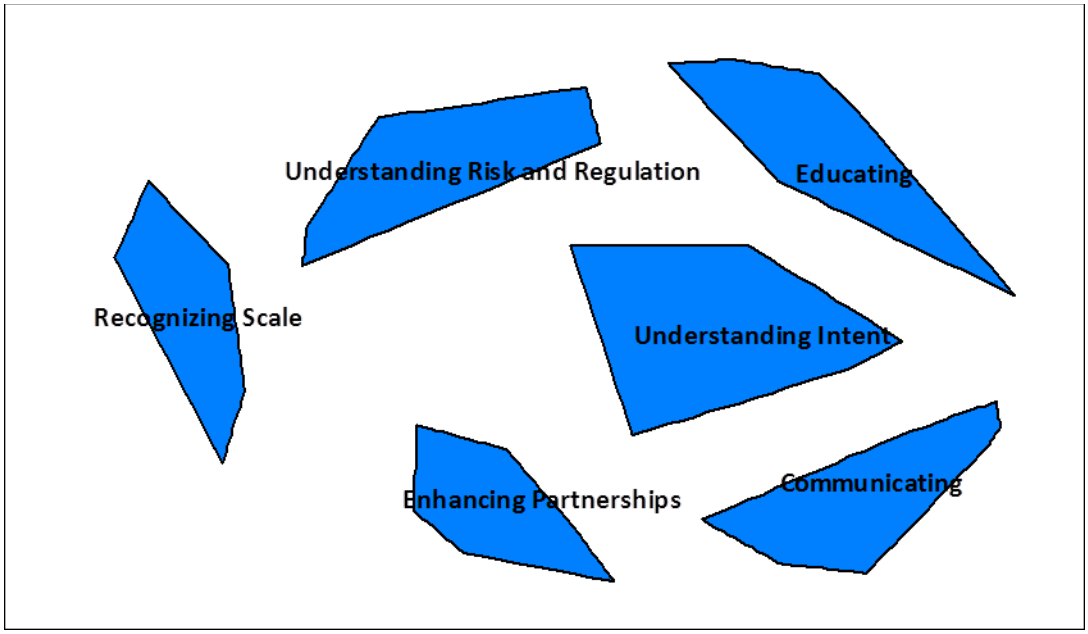


The Cluster Map

The Concept Systems program uses the point map output in hierarchical cluster analysis that partitions the configuration of points into non-overlapping clusters in two-dimensional space, called a cluster map (Trochim, 1989). I started with 15 clusters to begin, and examined each group of statements to make sense of the grouping or cluster. At 15 clusters, I found there was similarity in the concepts of statements, so I continually reduced and re-examined statements in clusters until two clusters join that are better interpreted together than if kept apart. For example, when the current cluster map (Figure 12) was reduced to five clusters, Enhancing Partnerships and Communicating became one cluster, but the statements offered a better conceptual understanding of the issue

when kept in separate clusters. Therefore, I decided six clusters were the best conceptual fit for the data to address the research question.

Figure 6 Cluster Map



Participants assign a label to each cluster of statements. The software program configures a list of label names based on those entries. I reviewed the top 10 cluster names assigned by participants, and along with reading the set of statements for each cluster, I assigned a name or short phrase to describe responses to the focus prompt. The entire process provided an easy to follow conceptual framework addressing the research question. A description of each cluster follows.

Communicating.

"*Communicating*" cluster consisted of 19 statements emphasizing importance of finding common ground and language to enhance communication between the two groups. Participants expressed the value of both groups meeting face to face to have direct dialogue, starting on a regional level within the health authorities, and then

broadening the discussion to include farmers and food security activists. Some participants noted that recognizing the interdependence of groups was an important and feasible way to move forward and to improve communication.

Here is the list of statements found in the communicating cluster. They are numbered corresponding to the numbers on the point map.

- 1. To find the common ground. Both are essential and mutually compatible, but this requires open communication and flexibility (versus strict rules).
- 2. To ensure a common language for communication so that true dialogue can occur. As someone with some involvement in both sectors, I have seen situations in which both 'sides' are essentially in agreement, but not necessarily realizing it.
- 3. For the employer (e.g. regional health authority) to host a meeting/conference so public health inspectors and nutritionists and/or dieticians can talk face to face and discuss common goals and how conflicts can be resolved.
- 7. To foster dialogue amongst the sectors, exploring the commonalities and differences and clarifying the rationale and evidence behind each.
- 10. To talk and really listen to each other so as to gain an understanding of the different perspectives from each field, then to come to an area of common ground and an agreement about where the two groups can work together.
- 17. To work on regional or community basis. Begin with facilitated dialogue between public health food safety staff and food security staff, reach a shared

understanding, and then broaden the discussion to include local farmers and community advocates. Document agreements.

- 18. To strengthen the relationship by recognizing common goals and values to create an image of what the future can look like if they work together, then those working in food safety and food security can make a plan to work toward specific goals.
- 19. To schedule a meeting to build relationships and explore common goals and values to imagine what the future would look like if those working in food safety and food security worked together (this method is called scenario thinking).
- 20. By building the relationship with each other by going for a walk together and enjoying a meal together then schedule a more formal meeting with those working in food safety and food security to explore their common goals and values around food.
- 22. To enjoy a meal together (specifically a picnic, outdoors, with the families of those working in food safety and food security present). After/during the meal talk about food safety and food security issues in an informal way.
- 23. To organize collaborative workshops and field-days where information and ideas are shared and a sense of common purpose can be developed.
- 28. To have an opportunity to share expertise and decide where they intersect and where the 'common'ness is, and also the gaps that create issues in the community.

- 29. For local food security activists to meet local food safety experts and build relationships.
- 31. To examine what each other are doing and show the interdependence of one on the other. Knowing that one's work is dependent on another area strengthens the need to understand, appreciate, and want to be involved in the other area.
- 33. Within public health, create opportunities for inspectors and nutritionists to dialogue and collaborate.
- 41. To secure shared goals and priorities between the two groups whereby the responsibilities of both interests are achieved.
- 47. Bring people together to explore the mandates of food safety and the advocacy entailed in food security.
- 48. By bringing people to work together - food literacy, food skills capacity building, and food safety go hand in hand. The silos should be broken down.
- 60. To establish or promote existing central interface on the internet, and yearly in person events, that allows for continued permanent conversations between individuals and organizations from different levels of involvement and different sectors.

Understanding intent.

"*Understanding Intent*" cluster consisted of eight statements. This cluster is more centralized and broadly dispersed on the map, and therefore the statements do not hang together as tightly as in the other clusters. This suggests that some participants may have also placed statements in other clusters, but reducing the overall number of clusters did

not make sense when examining all clusters together. For example, statement 32 reads, “identify where inspectors and nutritionists converge and diverge. Is food access as central to public health inspectors as it is to nutritionists when we talk about food security?” This statement sits close to the cluster called enhancing partnerships, and different participants placed it in either grouping of statements. The cluster of statements implies participants perceive that there is a lack of common understanding between the two sectors about what "food safety" and "food security" mean, or that each group feels the other does not fully understand the scope and purpose of their work. Participants suggest that understanding the intention of food security in an urban versus a rural or isolated setting, for example, would help to ease tensions. Statements indicate that those working in food security perceive a lack of understanding among those working in food safety about what it means to be food secure in a rural or remote setting. Additionally, to reduce tension between the groups, it is important that intentions of food safety regulations in promoting safe food handling is understood and applied across food security initiatives. There may be unique challenges in applying the same safety standard across a vast geographical area with different climate zones and population densities. Understanding the intention of each sector in relation to health protection and promotion could help to ease tensions.

The following list of statements form the cluster named “understanding intent”.

- 12. For food safety and food security professionals to understand the intent of and the perceived need for a focus on food security in various contexts (e.g. urban vs rural/isolated, developed vs developing areas, moderate climate vs long-winter areas).

- 16. To come to a common understanding of what "food safety" and "food security" mean.
- 21. To go for a walk together in a low-income neighbourhood. During or after walking, talk informally about what they see or observed related to food while walking.
- 30. To understand the intents of food safety regulations and safe food handling practices, so that the principles can be applied to food security initiatives; and such initiatives can be achieved.
- 32. To identify where inspectors and nutritionist converge and diverge. Is food access as central to public health inspectors as it is to nutritionists when we talk about food security?
- 38. To emphasize that food safety and food security are not mutually exclusive.
- 46. To have discussions about the relationship of food safety to food security/sovereignty so we can figure out the best balance. Paid service providers (inspectors) are the judge of local food events, processing and growing, and we need to discuss the separation that judgment creates between people and food.
- 56. To have a forum for food security initiatives to be discussed with food safety staff and public groups to assist with overcoming barriers rather that halting projects due to lack of regulatory compliance.

Educating.

"*Educating*" cluster has 11 statements stressing the need to educate the public for a balanced understanding of what constitutes safe and secure food. Participants expressed a need to recognize that there is no food situation totally without risk. More education is also needed on the meaning of food security and what different perspectives on what are considered acceptable food. This cluster, more than others, reflects the divide in the two cultures with some statements clearly focused on the need to educate for safety, while others clearly show a preference toward security. A very practical statement calls for more reader-friendly information on regulatory environments.

Here are the statements for this cluster:

- 4. To educate the public that local food is not any safer than imported food. It feels better to have local food but safety should be the priority.
- 11. For everyone to remember that local does not guarantee safety nor does greater than 100 miles, that neither home prepared nor commercially prepared guarantees safety, that neither raw nor cooked guarantees safety, that neither inspected nor uninspected guarantees safety.
- 24. By realizing that enough food doesn't necessarily mean 150 different types of items from the produce section of the grocery store in winter. Frozen and canned foods are also acceptable.
- 35. To use everyone's available resources to reach out to everyone, to meet them where they are currently in the food culture and help them along with resources, info and support, to improve the culture for themselves.

- 36. To engage all levels of populations around the importance of healthy accessible foods, and education around the benefits of eating, cooking, growing, and producing natural foods.
- 42. By providing more reader-friendly information on regulatory environments, especially meat processing. Creating easy-to-understand messaging around the differences between provincially and federally inspected abattoirs is key to food procurement decision making.
- 45. To educate and empower people to be responsible to research where their food comes from and decide for themselves if they will eat it - e.g. - label things that are genetically altered.
- 51. To communicate that without food, "safety" is meaningless; that safety is subservient to security.
- 52. To improve public understanding of their personal role in food safety, so they understand that the safest food comes from someone you know and trust.
- 55. By holding public information sessions to inform on the value of food security initiatives, the need for food safety to be in place, and what constitutes food safety.
- 59. To create a public awareness campaign that is directed at people in power and within administration of different organizations across sectors so that their knowledge of this issue is enhanced and they are able to identify the need to support initiatives.

Understanding risk and regulation.

"*Understanding Risk and Regulation*" has nine statements. A main emphasis in this grouping is on the protection of public health (broadly conceived) and the role of government. There are tensions evident between statements, between individual choice and protection of the public, a classic public health tension. There is an expressed concern that food safety will trump right-to-eat issues. The problem, it seems, is how to ensure an efficient, economically sound, and safe food system across multiple contexts. Participant suggestion of removing the word "regulation" from the discussion suggests negative connotations to the word, while still appreciating the need for broader health protection. This group of statements suggests that a better understanding of the benefits and limitations of broad-based regulations intended for health protection could be one way forward to ease tensions.

The statement in the cluster "understanding risk and regulation" are:

- 13. For food security professionals to understand the inherent food safety risks in some foods (e.g. raw sprouts, raw milk, dried and/or fermented meats, home canned) and that food regulations are intended to protect broader public health not limit individual choice.
- 14. For food security advocates to understand that broader public health is a priority for governments and food safety agencies, and that legislation to protect the general public from food-related health risks may be unacceptable to people focused on choice.

- 15. For food safety professionals to accept that some individuals want to take risks for themselves with respect to food choices and that these risks may be unacceptable when considering broader public health implications.
- 25. To realize that food, unless it is sterile, is not safe and when it is sterile it is not particularly healthy typically. Food that doesn't rot isn't food so we need to let go of our desire for guaranteed safe food.
- 39. To remove the word 'regulation' from the discussion.
- 43. Emphasize the economic reality of farm business. Both food safety and security folks make demands that require huge capital, knowledge, time, and liability risks from farmers, ignoring many of the business realities and underestimating market demand.
- 53. To engage the public in education that ultimately, food safety issues rest with the consumer, NOT the government.
- 54. To ensure that "food safety" issues do NOT intrude in "right-to-eat" issues.
- 57. To develop awareness of potential bylaws, policies, legislation, bills, and international trade agreements which affect producers and processors - e.g. liability insurance for community gardens, irradiation of produce before selling, or genetically engineered foods.

Enhancing partnerships.

"*Enhancing Partnerships*" is conceptually close to "Communicating" (discussed above) but separated out with seven statements specific to partnerships. The suggestions in this cluster are to work collectively to develop policy, programs, and guidelines that

apply to food activities, and to create working models illustrating common goals and objectives. A collaborative group, such as a provincial level food policy council consisting of people from agriculture, health, and grass-roots food security activists can help to identify needs and reduce tensions. Representatives from food safety should be on municipal food policy councils. It is important to have integrated, multidisciplinary working teams developing policies, recommendations and strategies for the food system.

Enhancing partnerships statements include the following:

- 5. Through enhanced partnerships. Both sectors (safety and security) need to work collectively to develop policy, programs, guidelines etc... I have experienced that food security is promoted to community sectors before the safety issues are considered.
- 9. To identify the level of focus for the understanding and collaboration. National level XYZ won't necessarily be able to understand and/or collaborate effectively with local level ABC because constituencies and purposes are so different.
- 26. To list issues and concerns from stakeholders in order to create working models illustrating policies and processes that recognize common goals and objectives. Identify some quick wins to support further action.
- 27. To form a collaborative group that has authority between food security activist, agriculture sector and health sector that can move this forward rather than the current ad hoc community/regional voluntary groups.
- 34. To increase opportunities to work together on food policy council and food system initiatives occurring at the municipal level.

- 37. To create integrated, multidisciplinary work teams that bring the skills and knowledge from both sets of expertise together when developing outputs (policies, recommendations, strategies).
- 40. To identify the greatest areas of concern and then to sort through those that have broad implications and those that involve the least risk or the least ties to real food security.

Recognizing scale.

"*Recognizing Scale*" is the smallest cluster consisting of six statements. It is the farthest to the left on the map, loosely joined and well separated from the other clusters, suggesting these statements were rarely, if ever, piled with other statements in the set, thus representing a unique and distinct cluster or strategies. The primary concern reflected in the statements of this cluster is that the same regulations are applied to both large and small producers and processors. Participants suggested a need to consider appropriate and separate regulations for non-industrial food production/processing and to sort out issues of locality and size. This would help to alleviate the tensions.

The statements by participants in this cluster are:

- 6. To look at the incidence data for small-scale food producers/processors as compared to large-scale producers/processers - i.e. what proportions of consumers have been sickened by small-scale producers vs. large-scale producers?
- 8. To look together at the various scales of food production and distribution and consider their impact on both safety and security. In

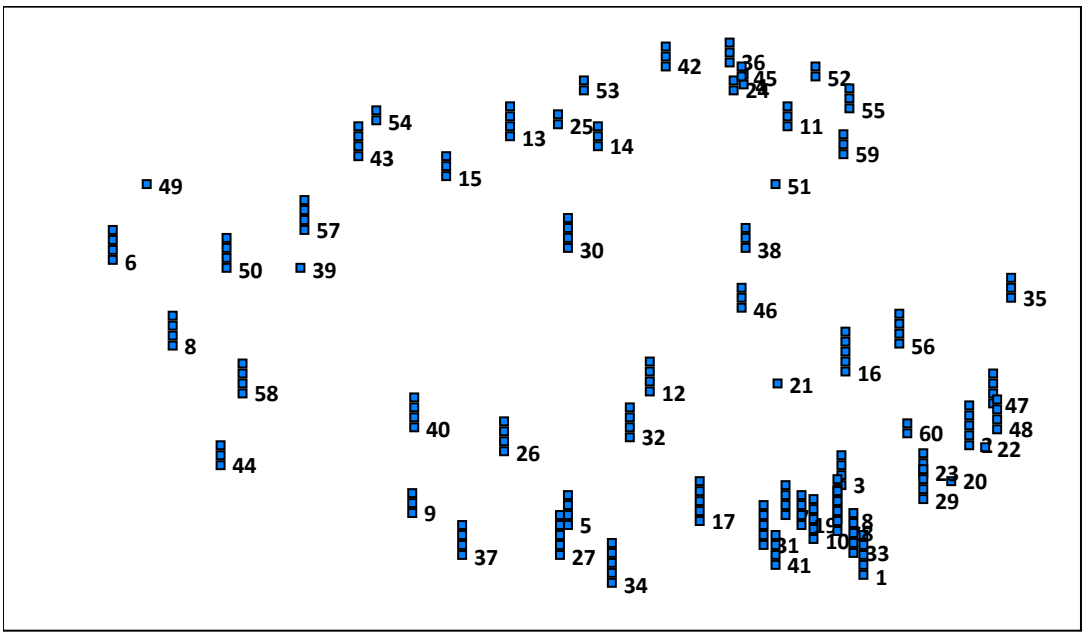
particular to consider what would be appropriate regulations for non-industrial food production/processing.

- 44. Get government agencies, hospitals, etc. to support local growers and help to strengthen local food growing - by example.
- 49. To bring an end to draconian food safety actions, such as the arbitrary shutting down of raw dairy herd-share operations.
- 50. To sort out issues of locality and size; to come to mutual understanding that small, local food producers have fundamentally different food safety needs than big industrial food producers.
- 58. To make food safety and security part of all areas of government... making food first in all decisions will increase peoples understanding and collaboration.

Ratings Maps and Ladder Graphs

Further to generating and clustering statements, participants rated each statement against the whole set of statements in terms of importance and feasibility. Ratings were averaged across participants for each item and for each cluster. This produced maps and graphs: a point-rating map (seen in Figure 13 for importance and Figure 14 for feasibility), and a cluster rating map (Figure 15) to identify the most important and feasible cluster, as well as ladder graphs. The following maps identify the relative importance and feasibility of each statement. The greater number of squares at each point on the map represents greater importance or feasibility of each statement.

Figure 7 Point Rating Importance

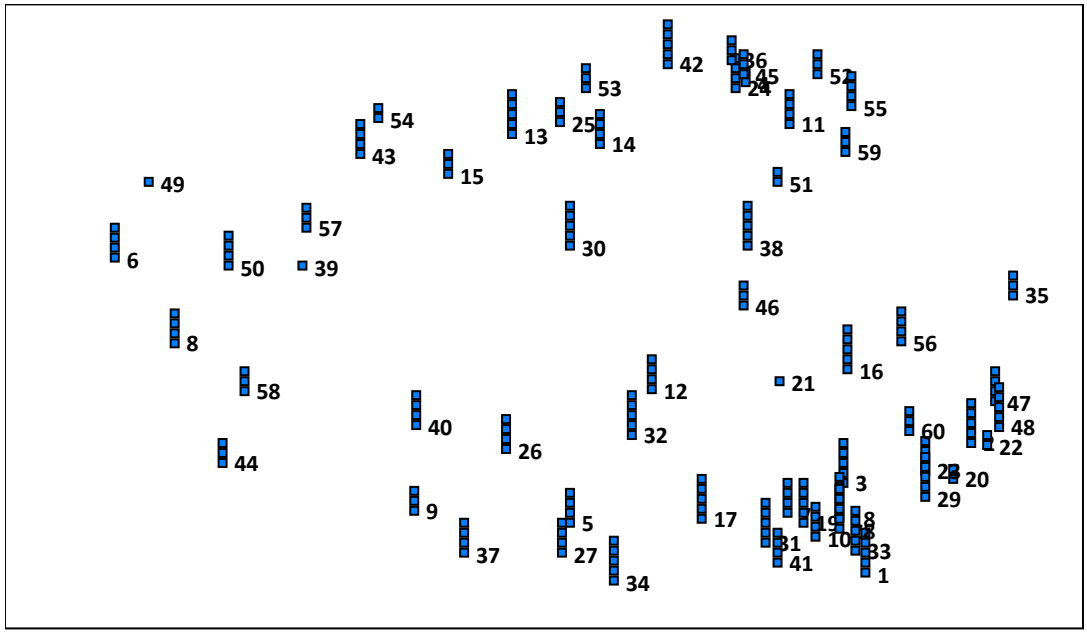


In terms of statements that are most important in maximizing understanding and collaboration between those working in food safety and food security, 18 statements were rated by participants at four or higher on a scale ranging from 1 to 5. The five most important statements are:

- 1. To find the common ground. Both are essential and mutually compatible, but this requires open communication and flexibility (versus strict rules).
- 2. To ensure a common language for communication so that true dialogue can occur. As someone with some involvement in both sectors, I have seen situations in which both 'sides' are essentially in agreement, but not necessarily realizing it.
- 16. To come to a common understanding of what "food safety" and "food security" mean.

- 18. To strengthen the relationship by recognizing common goals and values to create an image of what the future can look like if they work together, then those working in food safety and food security can make a plan to work toward specific goals.
- 27. To form a collaborative group that has authority between food security activist, agriculture sector and health sector that can move this forward rather than the current ad hoc community/regional voluntary groups.

Figure 8 Point Rating Feasibility



Thirteen statements were rated by participants as 4 or higher on a feasibility scale ranging from 1 to 5. The most feasible statements are those identified as being the easiest to address. The five most feasible statements are:

- 3. For the employer (e.g., regional health authority) to host a meeting/conference so public health inspectors and nutritionists and/or

dieticians can talk face to face and discuss common goals and how conflicts can be resolved.

- 33. Within public health, create opportunities for inspectors and nutritionists to dialogue and collaborate.
- 1**.** To find the common ground. Both are essential and mutually compatible, but this requires open communication and flexibility (versus strict rules).
- 31. To examine what each other are doing and show the interdependence of one on the other. Knowing that one's work is dependent on another area strengthens the need to understand, appreciate, and want to be involved in the other area.
- 30. To understand the intents of food safety regulations and safe food handling practices, so that the principles can be applied to food security initiatives; and such initiatives can be achieved.

The cluster rating map shows how important and feasible the clusters are, as a whole, in comparison with each other. This is illustrated by producing the number of layers in each cluster, which provides a visual cue to map interpretation. Similar to the point map, where a greater number of squares at each point on the map represent greater importance or feasibility of each statement, the cluster ratings average the ranking for statements in the cluster. In Figure 15, you can see the greater number of layers representing how “communicating”, “enhancing partnerships” and “understanding intent” are most important to all participants. The only difference between overall feasibility in Figure 16 and overall importance in Figure 5, is that “educating” is more feasible than

"recognizing scale", but "recognizing scale" is considered more important than "educating".

Figure 9 Cluster Overall Importance

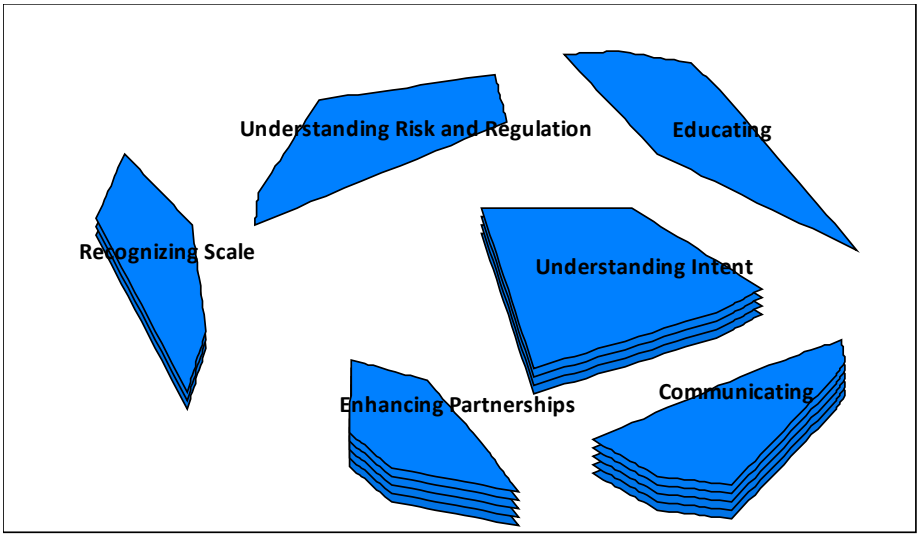
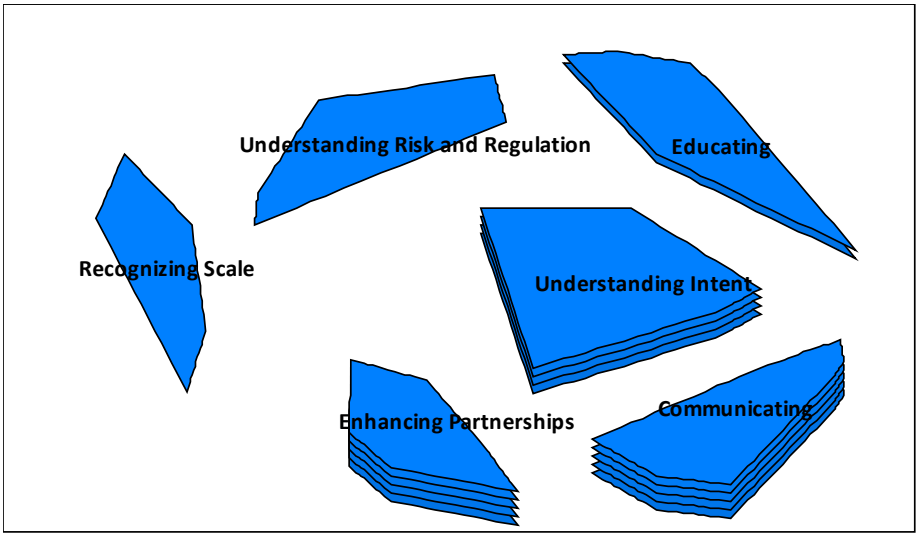


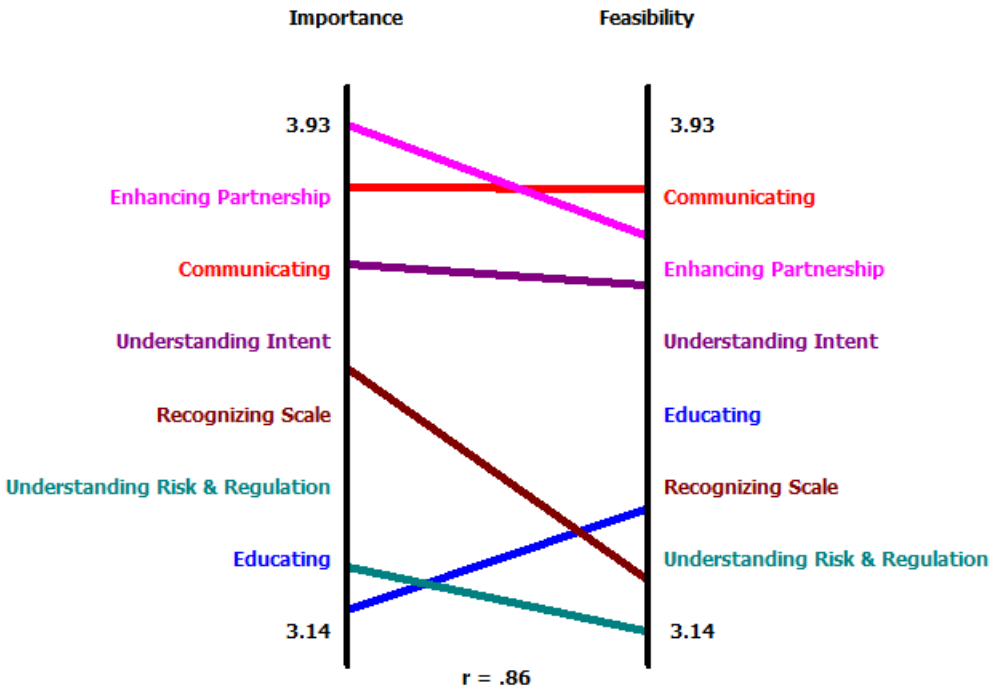
Figure 10 Cluster Overall Feasibility



A ladder graph offers a different view of the cluster ratings maps shown above and more detail for understanding the way the clusters relate to each other in terms of their ranking. Figure 17 displays the perceived differences for all participants among clusters with respect to importance and feasibility. In this graph, the concern is with the

ranking order, showing the difference in what is important compared to feasible. Clusters of "communicating" and "enhancing partnerships" are both considered most important and most feasible, while "educating" is least important, perhaps because many participants feel well informed already. "Understanding risk and regulation" is the least feasible overall, compared to the others, perhaps due to the challenges of balancing between individual choice and broader protection of the public. The greater slope seen for "recognizing scale" and for "educating" shows the differences noted above in the cluster map.

Figure 11 Overall Importance by Feasibility



By analyzing the data on feasibility and importance by sector (food safety in Figure 18 and food security in Figure 19), it is clear that “understanding risk and regulation” is more important for food safety than for food security participants, while “recognizing scale” is more important for food security than food safety participants.

Figure 12 Importance for Food Safety

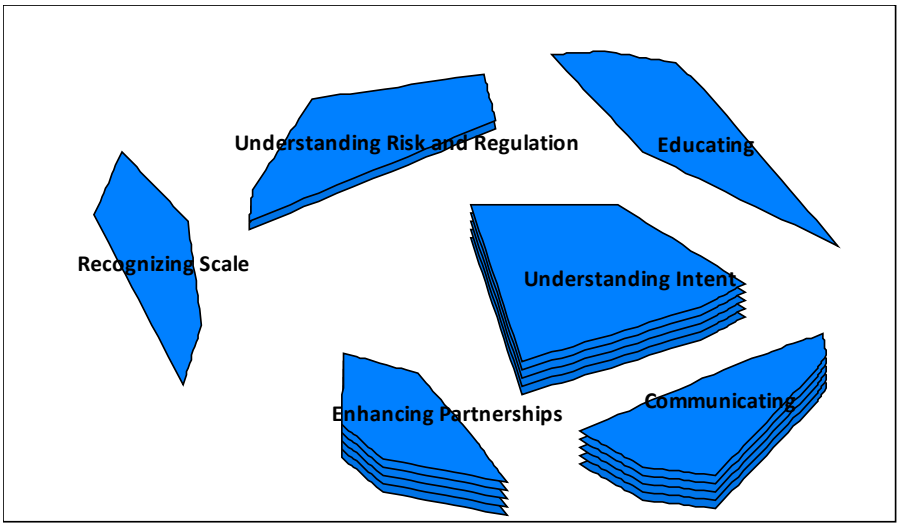


Figure 13 Importance for Food Security

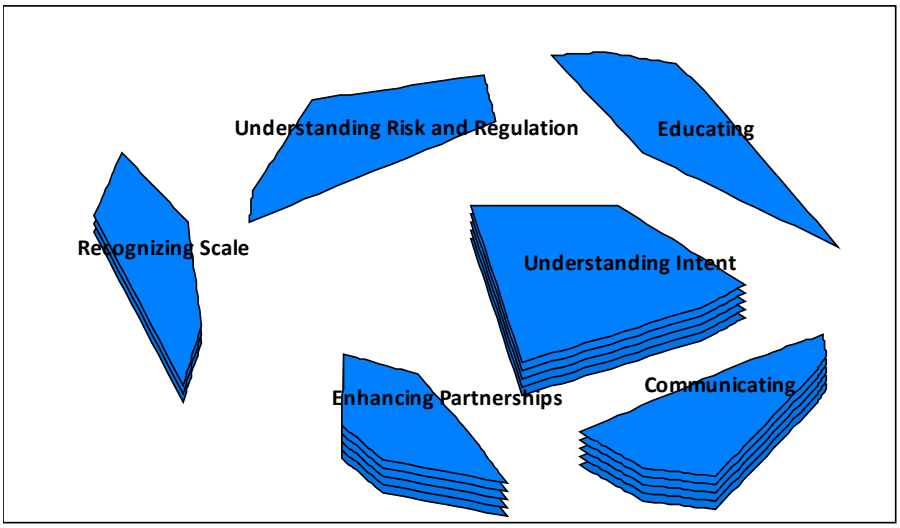
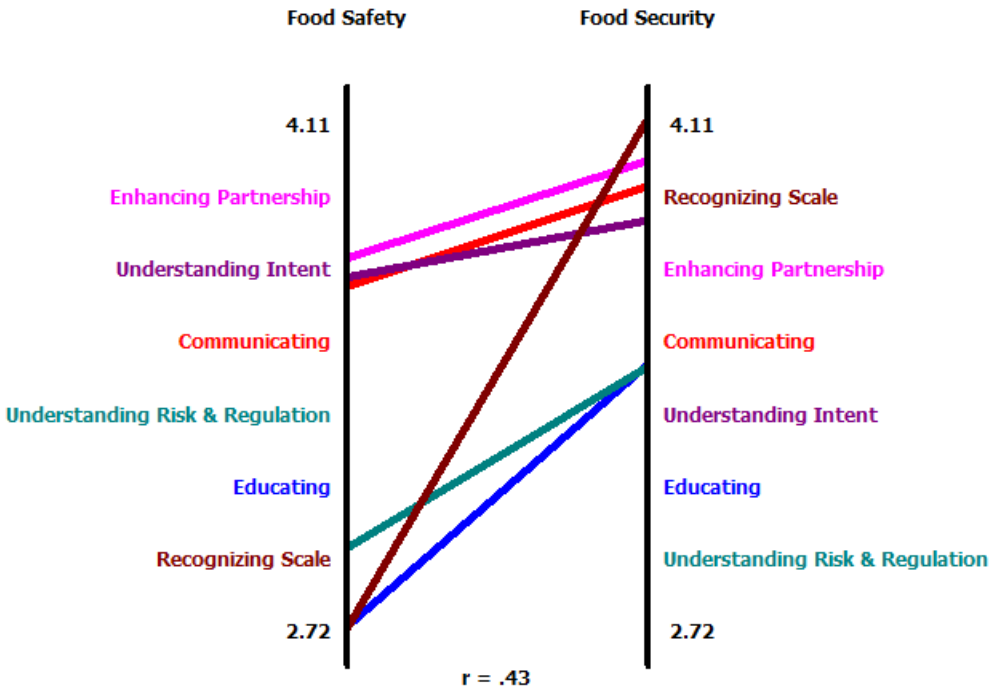


Figure 20 ladder graphs shows the ranking of important clusters by food safety and food security groups and makes differences between groups easier to see. The greater the slope of the line between the same cluster names, the greater the difference between sectors on the scale. Clusters “recognizing scale” and “understanding risk and regulation” illustrate the greatest difference in ratings of importance between food safety and food security participants. There is a more marked difference between groups rating the importance of “recognizing scale”.

Figure 14 Importance of Clusters between Food Safety and Food Security



In the feasibility cluster maps below (Figures 21 and 22) for the two groups, “educating” is shown as more feasible from a food safety perspective, having three layers, versus two for food security, while both groups identify “recognizing scale” as the least feasible option. The ladder graph representation of feasibility is shown in Figure 23. Here you can see that even participants from food security rank “recognizing scale” as moderately

feasible within the set of clusters, even though the same group ranked it as most important. This may be a key area to focus on because it is surfacing here as the greatest point of difference and may offer the greatest opportunity for easing tensions. In terms of the slope of the line in the feasibility ladder graph, "understanding risk and regulation" matches the slope for "recognizing scale", but in opposite directions. This would also be an area worth exploring between the two groups. Both of these clusters rank relatively low, compared to "communicating", so if that were set in place first, the other clusters could be explored more fully.

Figure 15 Feasibility Food Safety

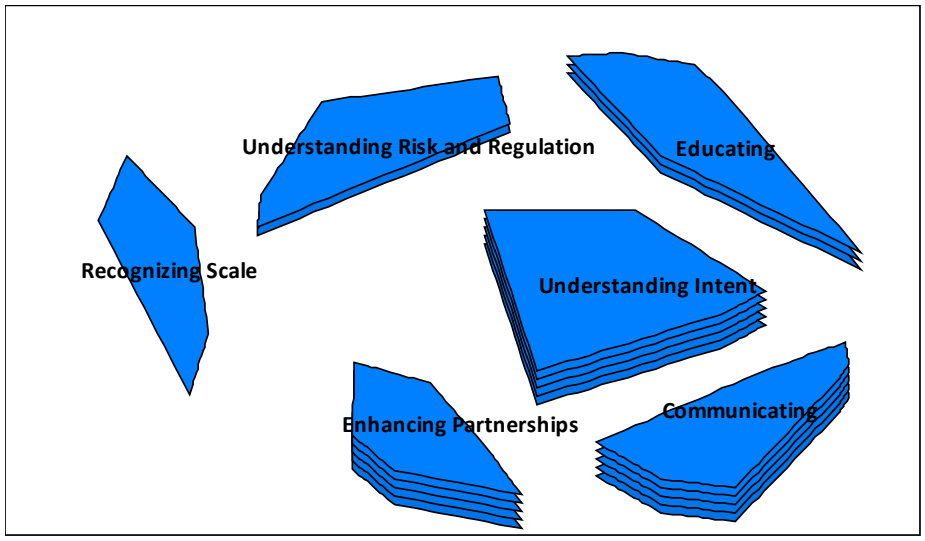


Figure 16 Feasibility Food Security

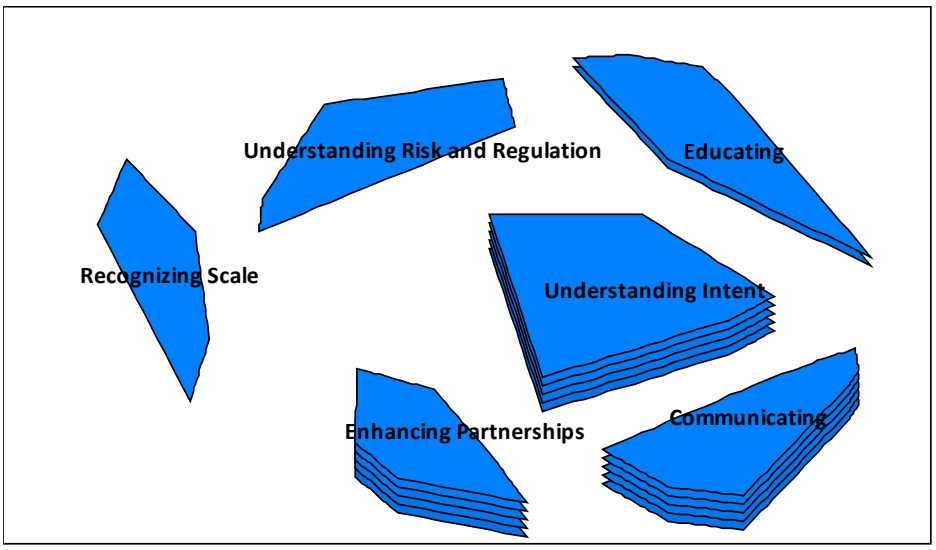
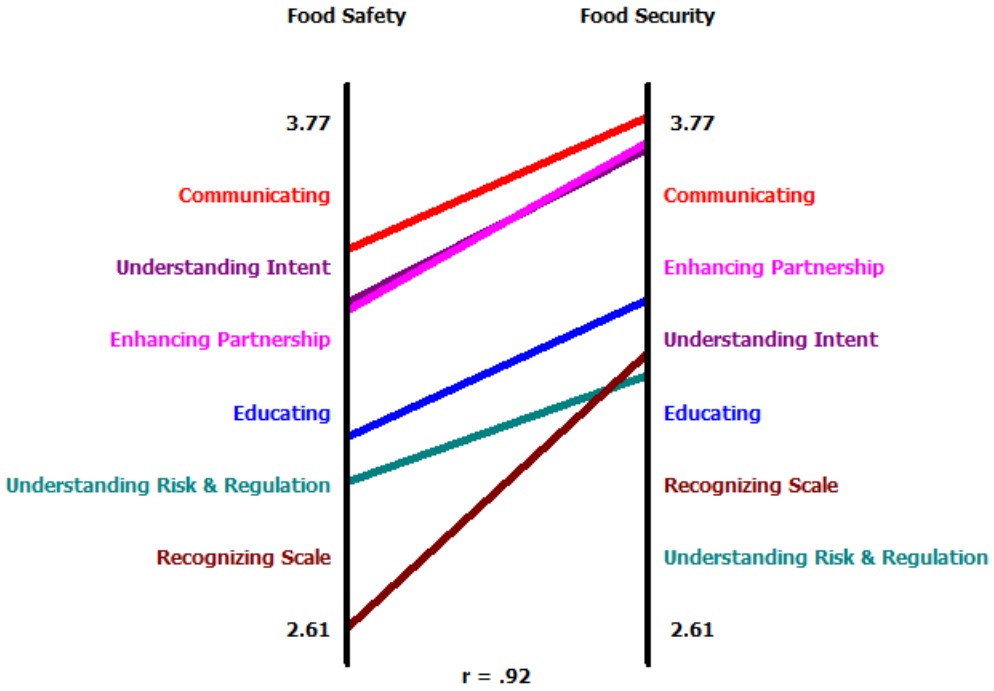


Figure 17 Feasibility of Clusters between Food Safety and Food Security



Go-Zone Maps

Go-Zone maps are a bivariate visualization of the relationship between statements that are most important and most feasible. Quadrants are created based on the mean importance and feasibility calculations. The range of ratings, and where the means of the ratings lie within that range, dictates the size of the quadrants. For example, in Figure 24, the importance ratings range from 2.24 to 4.57 (participants were asked to rate statements on a scale of 1-5), the feasibility ratings range from 2.00 to 4.36. Statements in the top right quadrant were ranked above average for both importance and feasibility. These may be areas of action to focus on first, but all statements are important to consider because they may stimulate new thinking, or they may be quick wins to help motivate and foster good relationships.

Figure 18 Overall ratings of importance and feasibility

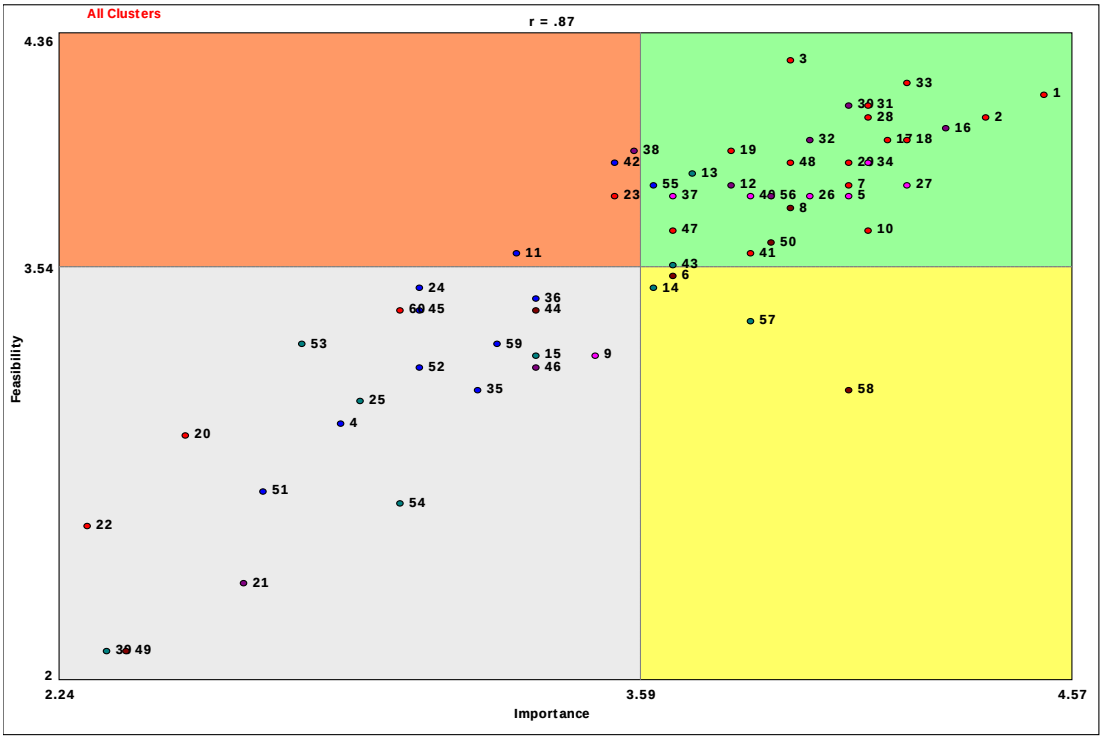


Figure 24 presents the overall ratings of importance and feasibility showing statements 1, 3 and 33 as the top-rated responses for feasibility and 1, 2, and 16 as the top-rated responses for importance to easing tension. These are the most important and feasible statements in completing the sentence “The best way to ease tensions between those working in food safety and food security is…”

- 1. To find the common ground. Both are essential and mutually compatible, but this requires open communication and flexibility (versus strict rules).
- 2. To ensure a common language for communication so that true dialogue can occur. As someone with some involvement in both sectors, I have seen situations in which both 'sides' are essentially in agreement, but not necessarily realizing it.
- 3. For the employer (e.g. regional health authority) to host a meeting/conference so public health inspectors and nutritionists and/or dieticians can talk face to face and discuss common goals and how conflicts can be resolved.
- 16. To come to a common understanding of what "food safety" and "food security" mean.
- 33. Within public health, create opportunities for inspectors and nutritionists to dialogue and collaborate.

Most participants agreed that taking action on communication and collaboration can help ease tensions between these two groups.

Four statements are not in the go-zone but rank higher than average as important. I considered the placement of statement on the overall map compared with the placement of the statement for the individual cluster map. This helped to identify what to consider first. Statements 14 and 57 are clearly above the mean in the overall map. When I

reproduce the maps as clusters, it is clear that these two statements are in the go-zone for that set ("understanding risk and regulation"). Statements 14 and 57 are as follows:

- 14. For food security advocates to understand that broader public health is a priority for governments and food safety agencies, and that legislation to protect the general public from food-related health risks may be unacceptable to people focused on choice.
- 57. To develop awareness of potential bylaws, policies, legislation, bills, and international trade agreements which affect producers and processors - e.g., liability insurance for community gardens, irradiation of produce before selling, or genetically engineered foods.

Similarly, with statement 6, in the cluster "recognizing scale", while on the border between the green go-zone and the yellow zone here in the overall map, shows as more important in the cluster group. Statement six reads "To look at the incidence data for small-scale food producers/processors as compared to large-scale producers/processers - i.e. what proportions of consumers have been sickened by small-scale producers vs. large-scale producers?" The only statement that is considered very important, but not very feasible in the overall map and in the cluster group, is statement 58: "To make food safety and security part of all areas of government... making food first in all decisions will increase peoples understanding and collaboration." This statement also sits in the cluster "recognizing scale". This may be an interesting area for further study, to sort out why participants considered it so important, and what it would take to make it a more feasible.

The remainder of the graphs are available in Appendix G, and give detailed views of each cluster, organized according to the number of statements each cluster contains. The statements are listed numerically, beginning with the go-zone (ranked as both most important and most feasible).

Summary

Concept mapping offers a unique means to involve a cross-section of interested individuals in a participatory mixed methodology project focused on a specific question of concern. In the course of this project, concept mapping provided a platform for two diverse groups to share ideas on ways to ease tensions between them as asked in the focus prompt. According to the participants, ways to maximize understanding and collaboration between those working in food safety and food security fall into three broad areas: relationships, education and context. In the following section, I describe each of the areas.

Relationships.

Communicating and enhancing partnerships are about building relationships; to be better informed about the work and values of the other group. Participants identified a need for a formal process of working together to recognize common goals and objectives, in which policy, programs, and guidelines can be developed. The collaborative group needs to have authority balanced between food security activist, agriculture sector, and health sector rather than ad hoc community/regional voluntary groups, as noted in statement number 27. At the municipal level, the environmental health officer or food safety specialist has a role on food policy councils with community nutritionists and food security activists. The relationships need to be encouraged in a systematic way locally,

regionally and provincially; this requires dedicated time to be allocated from the health authority so relationship building is recognized as important between these groups. It is as important to develop and maintain good working relationships across professions as it is between professionals and the community clients they work with on a regular basis. The cross professional relationships will enhance work done with the community.

The call for intersectoral coordination and collaboration has been clear from the outset of the core functions framework and core program process in BC, and is also a key health promotion strategy as reflected both in the Alma Ata Declaration (WHO, 1978) and the Ottawa Charter (WHO, 1986). This requires a deliberate strategy with a focus on action. Intersectoral coordination and collaboration are important aspects of a healthy food system, especially given the broad spectrum of individuals who are engaged in food safety and food security activities. The call by participants in this study for increased communication and enhanced partnership clearly indicates the need for improved intersectoral collaboration.

Intersectoral collaboration is a joint working arrangement through which those working in different sectors unite to address an issue to achieve a common goal (O'Neill, Lemieux, Groleau, Fortin, & Lamarche, 1997; Dowling, Powell, & Glendinning, 2004). Health Canada developed an Intersectoral Action Toolkit (Health Canada, 2000) that describes collaboration as a commitment to a common vision, creating new channels for communication, committing to planning together, determining authority and shared power, contributing both resources and reputation, and jointly sharing all risks, outcomes, and rewards. Lasker, Weiss and Miller (2001) identify collaboration as a means to identify new and better ways of thinking about an issue. Intersectoral collaboration is not

a new idea but evidence for successful partnerships is sparse (Dowling et al., 2004; Lawn et al., 2008; Green & Kreuter, 2005). Stern (1990) wrote about the tensions and contradictions in developing alliances stemming from the 'Achieving Health for All' framework (Epp, 1986). These included competition for resources, competition for leadership between professionals, and mistrust by community groups of professional associations and bureaucrats. Stern (1990) advises leaders of alliances to be aware of the need to develop credibility, which takes time. Additionally, she encourages debate about different and similar agendas, noting the need for a combination of skills including political, analytical, mediator, facilitator and communication. Other challenges include cultural differences, risk orientations, and decision-making styles (Alexander et al., 2010). It can take considerable time and effort to develop trust and respect among a group, and there needs to be full awareness of the challenges that an alliance can present.

Hawe and Stickney (1997) report that in forming a new coalition, direction setting and specifying goals can be a long and difficult process involving values clarification. These authors also warn of the tendency of the health sector to slip into a position of assuming others will follow their lead (Hawe & Stickney, 1997). The concern is that a community is working under the direction of health professionals, rather than everyone working together. This can result in increased tension between food security activists and regulatory authorities. Food security is a highly community-driven program with health authority staff working to support community activities. The food safety program is highly regulatory, with health authority staff more often seen as enforcers, than professionals working with community members. Forming a new coalition between food security and food safety may help to balance perceived power differentials. Benefits of

an alliance or coalition could be increased networking, information sharing, access to resources, participation in decision making, and a sense of accomplishment (Cramer, Atwood, & Stoner, 2006). There is an advantage to early identification of problems and developing interventions together.

Education.

Focus on education surfaced through the clusters of "understanding intent", "educating", and "understanding risk and regulations". Food security participants identified a lack of understanding of how food security needs are different for those living in urban versus rural settings in terms of access, and that there is a lack of consideration among those setting food safety policy toward developing a food-secure community in a rural setting. Physical and social environments impact food access. In rural areas, there is less access, in both a physical and economic sense, to the mainstream food system that supplies urban areas (Smith & Morton, 2009). Food available through a retail market is limited in rural areas. According to Morton, Bitto, Oakland and Sand (2008), rural low-income households have more frequent non-market food exchanges than urban low-income households, and small-scale food production is the most economical way to have healthy food available. Understanding food security needs in different settings is important for a comprehensive approach to the food system.

Similarly, there is a lack of understanding of those working in food security about what it takes to create and maintain a safe food system. Food safety guidelines are intended to prevent and reduce incidents of foodborne illness. More than knowing how to apply rules or guidelines, understanding what it takes to create and support a safe food supply is key. The regulatory environment is challenging to the average person working

in food security. Demystifying regulations is one way to bridge the gap between those who enforce regulations and those who work in environments being regulated. The use of plain language may be one way to demystify the process. Mackey and Metz (2009) and Mills and Valovirta (2004) have addressed the idea of food product labels being easy-to-read regarding safety, nutrition, and allergens, but there is no evidence that food safety regulations are being put into plain language. Participants suggest more work to clarify regulatory documents to assist in better communication between regulators and lay people.

The final education piece is the role of public health in protection of the public as well as the right to food and individual choice. This may be an issue of values. One participant wrote of concern that food safety would trump right-to-eat issues. This may be because there are those who value a precautionary principle approach and focus on the safety aspect of food, while others perceive the risk of foodborne illness as minimal, and the restraints on food access resulting from safety regulations as impeding the health and wellbeing of individuals and communities. These are complicated and value-laden issues requiring relationship building, trust, and respect to work out a balance.

Context.

The final cluster, which stands alone, is "recognizing scale". This group stands alone as a structural set of statements, and as being most important to those working in food security and least important to those working in food safety. I consider it context, because in the current system, the same regulations apply regardless of the context. The same regulations apply to large-scale food production as to small-scale food production, despite differing levels of risk associated with each. This one-size-fits-all regulatory

approach differentially affects the ability of small-scale producers to comply with standards that do not completely fit their context. Seed (2011) refers to the issue of scale, in terms of standardization of regulations, as a subject of power. According to Dahlberg (2001), standardization allows for a structurally simple society, and therefore more easily dominated. The tension here is clear; one group (food safety) strives for simplicity in a system that thrives on power, while the other (food security) is seeking flexibility in a diffused power setting, that adds a level of complexity beyond the capacity of the current system. Therefore, food safety system capacity would need to change to support the smaller-scale context rather than imposing blanket regulations that are applied for the sake of simplicity.

Conclusion

Overall, it is clear that trust and good relationships are important to ease tensions among those working in the food system. We need to identify ways increase familiarity between those who work in different areas of the food system, and demystify the process of decision making that goes into operationalizing food safety regulations. Additionally, structural conditions need to support communication, education, and relationship building. There also need to be recognition of power dynamic in the food system, and ways to minimize the power imbalance.

Concept mapping has provided a unique view of ways to address the tension between those working in food safety and those in food security. The maps have provided graphic illustrations of diverse points of view, leading to suggestions on how to negotiate intersecting areas between food safety and food security, and on how to improve collaboration. Concept mapping alone provides an adequate but limited view of

the problem, with a focus on ways to take action. Situational analysis, on the other hand, offers an in-depth understanding of the actors and discourses involved in creating and managing tensions. I discuss this in the next chapter. I address recommendations for action and future research in the final chapter of this dissertation.

Chapter 6: Situational Analysis

My research centres on the need to balance fear of unsafe food with fear of losing control over food supply. It is about how people who work from very different worldviews can come together to support a safe and accessible food supply, while balancing economic needs of small-scale producers with economic savings of an industrial food system. Through this research, I aim to provide a better understanding of how conflicting groups of people can work together across diverse philosophical positions. I illustrate the complex motives behind food safety regulations and highlight the neo-liberal agenda favouring market forces over health equity. I argue that food safety regulations are not set on protecting people from unsafe food, but on inspiring confidence among international trading partners at the cost of health and welfare of small-scale producers in rural and remote communities.

The situation I analyzed is the experience of tension between people working in food safety and those working toward food security. Using Clarke's (2005) situational analysis method, as described in Chapter 3, I produced a number of maps to capture visually the situation. The social worlds/arenas project map (Figure 25) is a compilation of the maps I used to describe the situation and to identify arenas of action and the work and commitments of each social world. This includes the identification of key actors and discourses, how the social worlds come together, patterns of collective commitments, and discursive positions in each of the arenas. The social worlds/arenas maps provide a visualization of a complex system. The goal is to embrace the complexity of this part of the larger food system, and identify leverage points to reduce tension and strengthen the food system for improved health equity. All maps aid the reader to understand the

diverse discursive positions of those working in food safety and food security. The positional maps in this chapter distinguish discourses in the situation and various positions held by actors in different social worlds.

In the project map (Figure 25), is a series of overlapping and nested ovals with different types of dotted and dashed lines. The lines are dotted and dashed to represent the idea that boundaries are not solid, but can shift and include more or less of what I have noted here. The solid dashed lines (— —) encompass the four arenas (economic, food safety regulatory, public health, and food movement). The dashed/dotted lines (– · · –) surround the social worlds that are within or cross over arenas, which are defined as "universes of discourses" or groups with shared ideologies and commitments to activities that build their interest (Clarke, 1991). Clarke (2005) explains that each social world is viewed as an arena, to further deconstruct the positions and constructions of ideas and actions. The text boxes are the main human and non-human actors and are positioned as closely as possible to be placed within or crossing over worlds and arenas they are involved with. For example, the EHO sits in the health protection world nested in both the food safety regulatory arena and the public health arena. Placement of each oval and text box represents the relationship, so items farthest apart on the map are also far apart in the situation. There may be some exceptions (FSC is a national level network but sits opposite the federal world), but generally the positions on the map have significance.

The project map is the overview, but I describe each arena in turn, with a map specifically for that arena. It is easier to follow the logic of this chapter by printing each of the social world/arenas maps (Figures 25, 27, 29, 31, & 33). This allows referring

back to the map while reading the description and analysis. I have also created a helpful glossary and list of acronyms.

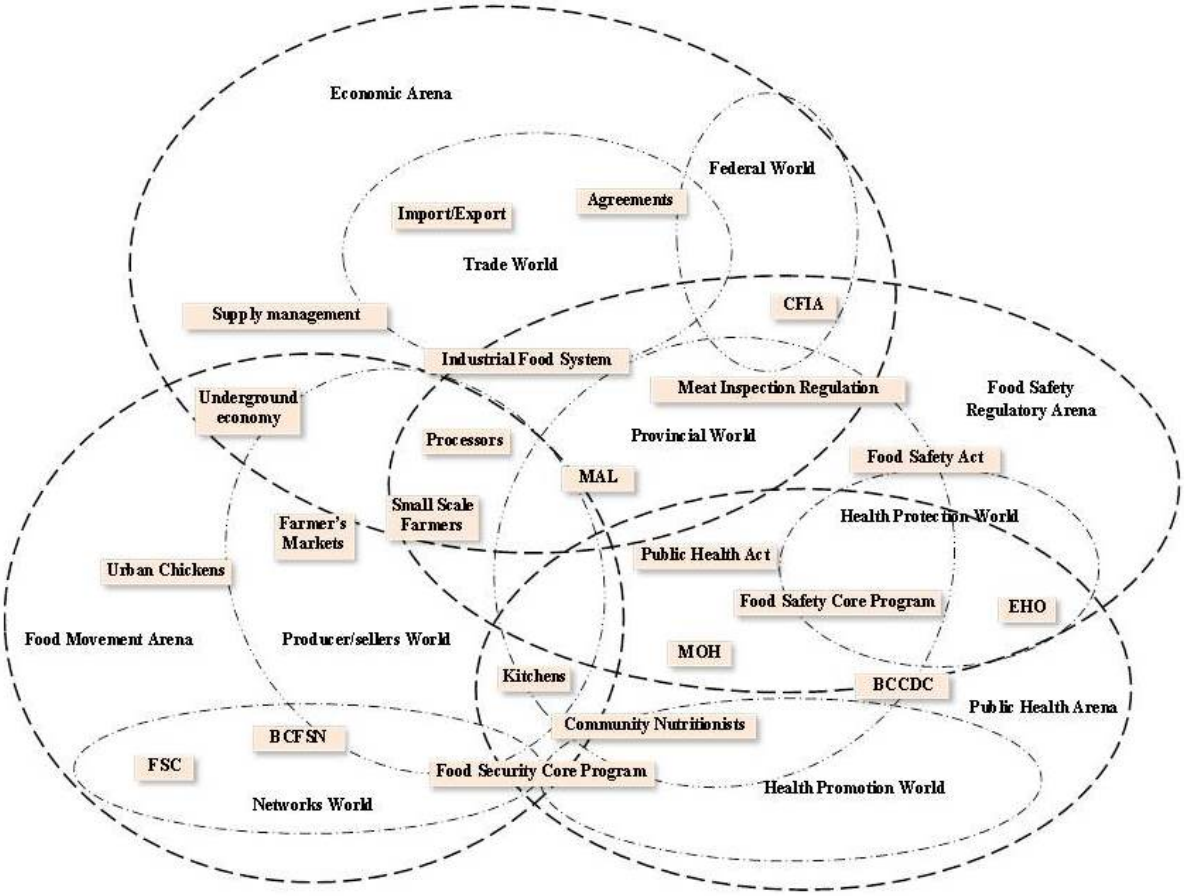


Figure 19 Situational Project Map

In this chapter, I describe the work and commitment of each arena and the social worlds. I discuss key actors and discourses and how they do what they do, patterns of collective commitments of the actors to work in the arena, and positions found in the data. It is challenging to break the situation into easily digestible and discrete sections because the worlds and arenas overlap and interact, creating a complex situation. I may discuss a social world or actor tangentially in a discussion of one arena but describe it in

detail in another. The goal is to understand the situation of tension that is often found when food safety regulations affect food security initiatives.

Learn the System's History

Before we dive into the arenas and social worlds, I provide a brief history of the four arenas identified in this situation: public health, food safety regulations, economics, and the food movement, to set the stage for the situational analysis. Anderson et al. (2005) suggest it is important to learn the system's history to highlight the interdependency between past and present. Historical occurrences I highlight are primarily Canadian events, reports, regulations, or incidents that help describe the structural conditions shaping the four arenas in this situation. The public health arena consists of health promotion and health protection social worlds and various organizations in which health of the population is the primary concern. The economic arena involves the business life of the population, and includes political ideologies that shape structural conditions. The food movement arena involves food security, but is broader to include the local food movement. The food safety regulatory arena contains the laws, regulations, reports, and organizations in which a safe food supply is prioritized. Events in this timeline are by no means exhaustive or in-depth, but are intended to identify some of the most influential historical events and to give an overall picture of patterns and associations or interconnections between events across arenas.

Pre-1950.

In all arenas, pronounced change began with the industrial revolution of the early 1800s in what we now identify as the developed world. Food became more easily produced, processed, and transported; public health was beginning to focus on infectious

disease and sanitary conditions, and the economy shifted from an agricultural base to an industrial one. Blay-Palmer (2008) describes the industrial revolution as having reduced risk of scarcity and mortality as machines worked to reshape nature with more speed and efficiency than human labour. Pre-industrial food production was challenging and not producing or finding enough food meant going without. Having machines to assist in food production helped reduce the fear of starvation. On some level, we still respond to that fear and continue to search for ways to reshape nature to human advantage.

The 1950s and 1960s.

Advancing to the 1950s and 1960s, this era offered an opportunity for experimentation and innovation in food production leading to the green revolution in which external inputs, such as petroleum-based fertilizers, greatly increased production at a cost of dependency on capitalist agriculture (Holt-Giménez & Altieri, 2012). This greatly increased agricultural yield and led to a reliance on fossil fuels in agriculture, by the time the price of oil quadrupled in 1973 in North America. Forty years later, when food movement actors express concern about the end of oil (Edible Strategies, 2007; Lang, 2005), it is because they recognize the dependence of modern capitalist agriculture on oil and fear we will not be able to maintain the necessary agricultural production to feed the growing population (Lang, 2005).

In addition, in the 1960s, the Food & Agriculture Organization (FAO) of the United Nations developed the Codex Alimentarius. The Codex set scientific food safety standards and guidelines that are still considered benchmarks against which national measures and regulations are evaluated, giving a common understanding of food safety across nations (Understanding the Codex, 2006). As globalization opened export

markets, changes occurred in the Canadian food regulatory process through international agreements such as the North American Free Trade Agreement (NAFTA) (Huff & Owen, 1999). International standards are not required for international trade, but the World Trade Organization agreement on Sanitary-Phyto-Sanitary (SPS) Measures (a science-based risk assessment), required a science-based rationale for food safety standards if there was no agreement on international standards (Huff & Owen, 1999). The SPS agreement relies on the Codex standards as the benchmark. Such standards, while important, can constrain governments in setting regulations because standards favour outcomes that are scientifically measurable with minimal impact on trade, ignoring elements that are difficult to measure, such as impact on human life or environment (Henson & Caswell, 1999). This sets up a tension between the trade world, safety regulations, and public health. There is a history of globalization negatively affecting health and health equity, which is intensified in the contemporary setting (Spiegel, Labonte, & Ostry, 2004). Today, we hear from groups who express concerns about the environment and chronic disease impact on human life but policy makers still do not address these concerns when developing international agreements.

The 1970s & 1980s.

Meanwhile, public health and health promotion progressed from a systematic approach of educating the public on sanitary conditions in the 1960s, to a flurry of reports on structural conditions that affect health starting in the mid 1970s (O'Neill, Pederson, Dupere & Rootman, 2007). The WHO report on Health for All by the Year 2000 (WHO, 1977) and the Alma Alta Declaration (WHO, 1978), promoted primary health care as a means of achieving health for all. Primary health care comprises community-based

health services for improved access to care with a focus on disease prevention and health promotion (MacDonald, 2002). Important features include social and environmental effects on health, and how intersectoral cooperation is necessary to improve health status and reduce health inequities (MacDonald, 2002). Although health promotion and primary health care share a broad-based approach to health, population health promotion was also adopted by Health Canada in the 1990s. Population health promotion is a strategy that takes a broad-based approach focused on health determinants, combined with comprehensive action strategies targeting underlying conditions that impact health (Hamilton & Bhatti, 1996). Population health promotion and public health in general can be defined as a commitment to social justice in which everyone is equally entitled to health protection and conditions that promote good health (Beauchamp, 1976).

Social justice and health equity have been longstanding Canadian values, though not always explicitly supported in federal or provincial policy. Social programs, for example, are an important social structure that affects people's health. According to Pinder (2007), the booming economic times of the 1950s and 1960s allowed for development of and commitment to social programs in Canada but the oil crisis and economic stagnation in the 1970s resulted in economic stress leading to decisions to cut funding across the board, including social programs. The result was an increase in the numbers of people who could not meet their daily needs. In 1981, food banks opened in Canada (Edmonton, Alberta) and there was a resurgence of community gardens, much like the UK war-time Victory Gardens that were promoted for individual food security at that time (Hansen, 2011). Charitable food assistance does not meet the needs of people

who are food insecure and community gardens are not an effective way to reduce food insecurity (Tarasuk & Eakin, 2003; Kirkpatrick & Tarasuk, 2009).

The 1990s.

In the 1990s, the Canadian government was driven by a deficit reduction agenda resulting in formation of the CFIA by consolidating inspection activities that had been housed in different governmental departments (Prince, 2000). The CFIA is a science-based food safety inspection and regulatory body focused on animal, food, and plant health, in addition to regulating food labelling and packaging (Prince, 2000). Formation of the CFIA was at a time of neo-liberal restructuring, consolidating the food inspection work of Health Canada, Agriculture and Agri-foods Canada, and Department of Fisheries and Oceans (Prince, 2000). The expectation of the agency was to improve effectiveness of service through consistent enforcement of regulations, efficiency through reduced duplication, and to reduce federal spending. Overall, the role of the CFIA is to provide the public with confidence that government is working toward a safe and healthy domestic food supply, and to ensure the availability of Canada-approved, inspected and certified food for trade purposes (Prince, 2000).

Formation of the BCCDC was in 1996. BCCDC is provincial in scope but also provides national leadership, policy advice, and research, to identify and respond to emerging public health threats including those related to food safety. Employees from both CFIA and BCCDC enforce food safety regulations and play a major role in conflicts identified by study participants.

In the food movement arena, the World Food Summit on Food Security in Rome took place in 1996, establishing one of the prominent definitions of food security: “Food

security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life" (FAO, 1996). At the time of the World Food Summit, the term "food security" was starting to broaden in meaning and not focus only on a stable food supply. Maximization of agriculture production was during the 1950s and 1960s but there was failure to link production to distribution and consumption, evident by the need for food banks and food stamps in the US (Allen, 1999). The post-war economic boom allowed agriculture markets to flourish, and governments stopped using farm surplus to feed the hungry, rather to encourage market growth (Allen, 1999). Economic slowdown and growing neoliberalism contributed to a new food security crisis.

The US-based Community Food Security Coalition[5] shifted the focus of food security from being a charitable food response for feeding the poor to including community-based programs and community planning, thus representing the societal responsibility to community members' food needs (Roberts, 2008). La Via Campesina, an international movement to support small-scale agriculture that started in the Global South, introduced the term "food sovereignty" into the food security discourse. This term refers to a process of expanding democracy to regenerate local, autonomous, healthy and ecologically sound food systems that respect the right of people to decent working conditions and incomes (Blouin, Lemay, Konforti, Imai, & Ashraf, 2009; Pimbert, 2010). It emerged in response to threats posed to small-scale agriculture resulting from the newly created World Trade Organization (WTO) that included deregulation (no

[5] In August 2012 the Community Food Security Coalition announced it would be closing current operations after 16 years, and transitioning programs and services to partner organizations and coalition members by the end of 2012. This is due to financial strain.

protection for local companies), privatization (allowing seed patents and selling public lands), and free trade that favours the global north (Roberts, 2008). The introduction of the WTO resulted in fewer trade barriers, thus reducing food prices but allowing cheaper imports that undermined domestic markets, making local farmers more at risk of food insecurity (Blouin, Hawkes, Henson, Drager & Dube, 2010). This trend of global trade having primacy over the needs of small-scale farmers continues nearly 20 years later, as I describe later in this chapter.

The links between the economic arena and public health and food movement arenas are strong because health needs of people are superseded by economic needs as determined by free market governments. The primary concern of public health and the food movement is for enhanced health and food security, while the concern of governments is a strong national economy first, sometimes at the expense of the nation's health, or at least health promotion. For example, Canada does not have adequate means for meeting the needs of people who are food insecure (Tarasuk & Eakin, 2003), yet provides subsidies for corporations (Green Party of Canada, 2013). Food safety regulations by government are not always set with a focus on protecting people from unsafe food, but are a vehicle for providing confidence in the market at the cost of health and welfare of people as shown by the Canadian government's investment of $100 million over five years in the CFIA through Canada's Economic Action Plan (Government of Canada, 2013).

Year 2000 and onward.

Canada began to experience a number of public health crises, including contaminated water in Walkerton, Ontario, a case of BSE, SARS, West Nile virus, and an

avian influenza outbreak leading to a massive cull of BC flocks. There was growing need to improve public health response to these crises. Public health emergencies over the years have revealed a glaring gap in the Canadian public health system, requiring renewal (BC Ministry of Health, 2005a). Health care reform had begun in BC with the shift from municipal level health care to 52 regional health authorities prior to 2002, to the formation of five regional health authorities and one provincial health services authority (Wong, MacDonald, Valatis, Kaczorowski, Munroe & Blatherwick, 2009). Public health is part of that system in the health authorities. Food security was not officially part of a public health portfolio except in the Northern Health Authority. Northern Health was well ahead of others, recognizing the food-related challenges in the north, and developed a program on HEAL. The remainder of the provincial health authorities took up food security work after the introduction of the Core Functions programs, as part of public health renewal in BC. The food security core program was born out of the work of the community nutritionists in conjunction with the civil society group, the BCFSN. The community nutritionists presented a paper to Trevor Hancock, who was a key player in the core functions process, forming the argument for having food security as part of the public heath renewal. From there, employees at the MOH and the Food Security Working Group developed an evidence review paper and model core program paper to guide health authorities in program delivery.

Federally, public health renewal included the creation of PHAC as recommended in the Naylor Report (National Advisory Committee on SARS and Public Health, 2003) and born out of Health Canada. Food is not high on the agenda for either of these departments, and the Government of Canada has yet to identify food security as a high

priority program area nationally. In May 2012, United Nations Special Rapporteur on the Right to Food visited Canada and identified systematic barriers to Canadian citizens accessing nutritious diets, and noted increasing health inequities between the rich and poor and between Aboriginal and non-Aboriginal people in this country (De Schutter, 2012). De Schutter strongly encourages participatory models of food system management, such as municipal level food policy councils (De Schutter, 2012). Some of this work has begun in the form of the People's Food Policy developed through Food Secure Canada, and other national food policy documents, such as work being done by the Canadian Agri-Food Policy Institute. The adoption of a national food strategy has yet to occur federally.

The successful bid to host the 2010 Winter Olympics may have driven, in part, the public health renewal process in BC. That event spurred the provincial government to boast that BC was the healthiest place to host the Olympics, creating the joint ministerial body called "ActNowBC". Many identified this joint body as a fine example of a multi-sector platform that can support and encourage food industry activities (Dube, Tomassin, & Beauvais, 2009). Through ActNowBC, funding was given to health authorities to operate the Community Food Action Initiative. This was money intended to support the food security core program in each health authority. Program delivery for the food security core program is different in each health authority, but in VIHA, the money is used to employ a program coordinator and to supply grant money for community groups to develop community food security activities. This funding was made part of the health authorities' core budget.

Simultaneously, the BC Ministry of Health (MOH) was in a process of modernizing six key public health statutes. This was the first significant overhaul of the Health Act since 1893 (Emerson, 2011). The Food Safety Act came into place in 2002, consolidating BC food safety legislation into one statute (the Meat Inspection Act and the Health Act). The Food Safety Act has shared administration: the MOH governs work at the food processing level, and the MAL governs at the farm level (Laws related to Public Health in BC, 2011). Public health statutes modernization was completed with the New Public Health Act in 2008.

As the province was revising these Acts, they were facing serious challenges to meat production. The avian influenza outbreak in BC in 2004 was a catastrophic blow to the poultry industry. That, coupled with the challenges from BSE, meant the meat export industry was suffering. There was need for confidence to be re-established in the industry. As one person who was involved in the provincial government at the time explained:

> When BSE and avian flu and others hit and people were dying, governments started to focus in on this because governments were [doing this] everywhere. Borders were shut; there was a whole bunch of issues here, not just how you are slaughtering your cattle. There were huge trade issues. It was interprovincial trade as well, it wasn't just Food Safety. Federal government was pushing big time. So one of the key, I think, concerns of the federal government, of the provincial government, and producers were that borders were going to shut unless we met a certain threshold [of safety]. And so for that and probably some other good reasons, and bad reasons, the meat regulation was brought into force.

> And so it set a consistent standard across the province for how you needed to kill your product if you wanted to sell it in retail. And that, at a high level, at a policy level, at a political level, at an international level, made it kind of a sentence. (Karl – Health Protection)

Karl explains how important it was to regain confidence in the meat industry to protect trade and the "sentence" was the unfortunate outcome of not allowing for context specific regulations for places that were rural or remote. He gives the impression in this quote that people were dying, but there were only two mild cases of human influenza from the avian flu outbreak (Tweed, et al., 2004), and no deaths reported from BSE (although the risk of variant Creutzfeldt-Jakob disease from BSE is a longer-term possibility). Given potential public health risks and definite risks to decreased trade, new meat inspection regulation was introduced without consideration of effects on small-scale agriculture and thus food security. Regulations were meant to create a standardized process across the province, so all meat produced in BC would be considered safe because of strict inspection guidelines.

New meat inspection regulation meant a number of abattoirs were shut down because they did not meet the minimum requirements. Transporting livestock to a regulated abattoir made the cost of processing meat prohibitive to small-scale producers. There were approximately 300 abattoirs prior to regulation changes but only 11 could be licensed under new regulations, so processors had to give up the business, go underground, or try to make it work (Personal Communications, K. Gibson, 3 July 2012). The result was reduced meat production in rural and remote areas, restricting access to local food and affecting income for small-scale producers and processors.

One person questioned the meat inspection regulation stating, “Is this really about food safety? Or does food safety just make an especially effective cover for neo-liberal restructuring?” (Megan – Civil Society). Megan is really questioning the values and principals of a government that is supporting trade as a primary concern, but that uses health protection as a political smokescreen. Provincial government decision makers faced changing regulations to support economic interests, without fully considering effects on small-scale producers. The implementation of the BC meat inspection regulations and subsequent outcry from food security activists and small-scale producers was a revelation for those in the MOH working on food safety and food security core functions. The revelation was that underlying tensions between these two public health programs existed and were surfacing. People with very different worldviews were faced with a challenge of how to come together to support a safe and accessible food supply.

Since the meat inspection regulations brought to light tensions between food safety and food security, there have been changes to address problems with the regulations. For example, the province introduced a graduated license allowing for some facilities in some areas of the province to operate with fewer restrictions according to volume of animals being processed (see Figure 26). Class A or B licenses allow for sale of meat within the province. Class E and D licenses are for smaller processors where sale is only allowed within a regional district, and they are not permitted in an area where there is a Class A or B licensed facility. Slaughter facilities are also required to comply with environmental protection regulations, marketing schemes, waste management, specified risk materials, animal health and welfare, livestock identification, firearms, municipal bylaws, and the Agriculture Land Reserve (BC Food Processors Association,

2011). The meat inspection regulation and graduated licensing program is unique to BC and fraught with complicated dynamics that are not within the scope of this study.

Figure 20 Graduated Licensing System adapted from BC Ministry of Health (2011)

Due to the tensions between food safety and food security sectors over the meat inspection regulations, a provincial Food Safety/Food Security Reference Group formed to open communication channels between these two core public health programs, but there are not regular meetings or public documents to assess effectiveness of this group. Additionally, public health core programs have undergone changes since their inception. There have been shifts from working in a core functions framework to different configurations of program delivery. As with most CASs, public health and health authorities regularly evolve and adapt to changes in the larger system. Established programs such as food safety remain in place, and food security work continues to a point, but public health programs within health authorities have changed and shifted since

the data collection period of this study. Regardless, there were tensions between food safety and food security before the core functions programs were put in place, so changes in health authority structure do not affect this study.

In recent years, changes on the world stage include an economic crisis that began in 2008, increasing acceptance of climate change, and food riots in Bangladesh, Haiti, the Philippines, Burkina Faso, Tunisia, Algeria, Morocco, Yemen, Mozambique and Egypt. There have been federal funding cutbacks to CFIA with inspections left to the provinces, and the federal conservative government has shut down the Canadian Wheat Board. It is increasingly clear that neo-liberal restructuring is ongoing, with less government involvement and private industry setting standards. There is an increasing fear discourse in the media of both food shortages and an unsafe food system, with profits a priority over public health.

In this section on the system's history, I have briefly sketched the main historical events influencing actions in each of the four arenas, identifying patterns and context for tensions between those working in food safety and those engaged in food security work. The intent of the remainder of this chapter is to illustrate the complex motives behind food safety regulations and demonstrate how people who work from very different worldviews can come together to support a safe and accessible food supply, while balancing economic needs of small-scale producers with economic savings in an industrial food system.

Public Health Arena

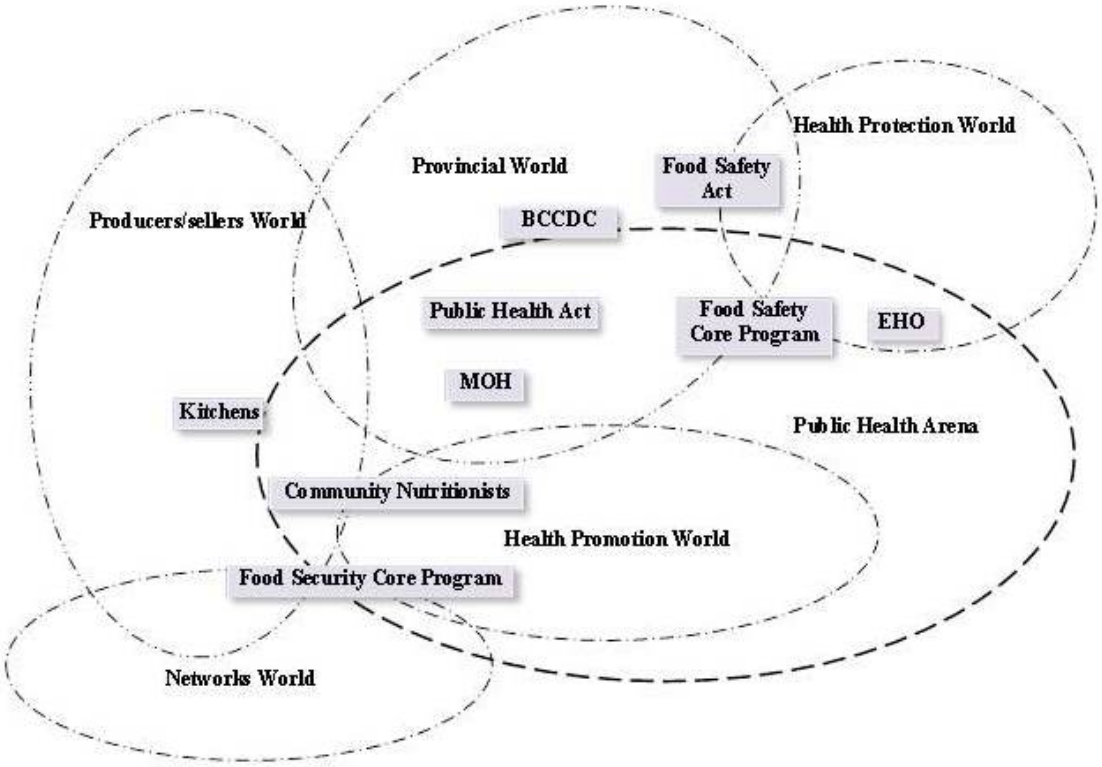


Figure 21 Public Health Arena Map

In this situation, the public health arena (field of action) involves the provincial world, health promotion world, health protection world and a small piece of the producer/sellers and networks worlds. Each of these social worlds has commitments to activities that build their interest. Traditionally, public health actors who worked with food were involved with chronic disease prevention, healthy eating, and inspection of food premises that cook and serve food for sale. More recently, food security discourse and action in public health has grown, expanding on traditional public health work to include agriculture, environment, and food systems policy. In BC, this is largely due to the introduction of the food security core program, as was described in the historical section. Promotion of healthy food consumption and access to food are part of the health

promotion world. In this world, professionals such as community nutritionists, community health nurses, or community developers work with populations to identify solutions to local health needs. Community nutritionists are educated as dieticians and regulated under the College of Dieticians. Their nutrition training includes food safety, and they work closely with community members on food security activities such as food banks, food reclamation (reducing food waste), community gardens and kitchens, food policy, and Indigenous food systems. Community nutritionists have a keen interest in health equity. The community nutritionist approach is one of being more of a facilitator than a regulator, as noted by this nutritionist:

> I'm more the convenor of this Network and [the health authority] is helping to support agencies to get kitchens going and promoting them, not necessarily being the police for them… I want people to feel really comfortable in the group and I want people to….I'm really clear about what a community kitchen is and what we're doing and it's for ourselves and develop skills around and empowerment around food security. So I can't recall spending like a couple of minutes talking about food safety ever in a community kitchen meeting. (Trudy – Health Promotion)

The shared commitment in the health promotion social world is to empowerment and skill development, not enforcing regulations, as is the focus of the health protection world. Practitioners in the health promotion world are supportive of gaining control over the food supply, and more specifically in food preparation skill development.

The introduction of the core functions framework in BC, and particularly the food security core program, was a welcome step for nutritionists and members of civil society

who were working in the food movement for years. Community nutritionists are key actors in public health who work in food security. One nutritionist described her work in food security this way:

> It's moving along that population level approach so that you're dealing with the individuals most at risk, so that you're able to move that entire population. But you have to address those most at risk as well. And so that's what we do within our program too. I do work with food banks and other emergency food providers within the community, but then also work with community kitchens, community gardens – and then as well, with the municipalities, with the [regional district], more at the policy level also. So it's all of those areas in order to have the impact that you're wanting around Food Security. (Jade – Health Promotion)

The food security core program made explicit the scope of work necessary to support healthy communities (Food Security Working Group, 2006). It is important for public health to be involved in health promotion activities that tackle obvious issues of hunger and poor quality diets, but also work in a systemic way, with vision to support producers and sellers. This includes reducing exploitation of farm workers in the agri-food system and working toward food justice for basic human needs (Allen, 2008). The Food Security Model Core Program paper does not explicitly name food justice as an objective, but does support the use of environmentally sustainable production and distribution methods, supporting the concept of food justice (Food Security Working Group, 2006).

The health protection world consists mainly of EHO as key actors, also referred to as health inspectors. They have four areas of work: air quality, land use as it affects the environment, water quality, and food safety. While land and water may affect food

production areas, the work is not in food production but mainly in sewer systems and swimming pools. Food safety work of the EHO is primarily inspection of food premises (restaurants or temporary food markets) and food production facilities where food is prepared for the market place. Work of the EHO relies heavily on understanding and applying the Public Health Act and Food Safety Act. EHO education and training provides them with a certain worldview of owning power and authority that may appear antagonistic to small-scale producers, as described by this person:

> The public health inspectors are what in the 19th Century were called the Sanitary Policy, and they still are. It's like "here's the rules, here's the regulations, do it this way and if you don't, we'll hammer you". And although people try and bring in education and all the rest of it, their gut instinct is that they're the Sanitary Policy and that's their job. And they do see their job, which I think is legitimate, as protecting people from what used to be a major source of death and disease which is unsafe food. And you know, we see enough issues around that and food recalls to know that's still important. (Eugene – Health Protection)

The difference between the health promotion and health protection world is in the approach to the food situation. Dieticians Trudy and Jade, described their desire for people (usually those who are most at risk) to feel comfortable in dealing with them, while the EHO is seen in the role of enforcer and protector. These are two very different styles of working with people and both professions have the same goal of a safe and accessible food supply, but at times get a very different response from people they serve. There is an approach to community that involves working collaboratively and in an egalitarian way with people ("doing with or power with"), and a more top-down approach

that involves power and control ("doing to or power over") people (Labonte, 1993). Although a number of EHOs do approach their work in a community development-like way, people in this study talked about the EHO's reputation of enforcer and protector getting in the way of relationships with producers and sellers.

The EHO is the face of food safety regulation but is not well connected to actors in the food movement arena. There were only a small portion of informants in the food movement arena who had an established relationship with an EHO. Those who did were less fearful of the outcomes of inspection. Rebecca, who sells at a farmer's market noted "She [the EHO] definitely is in control of us. I mean she's good to work with but she was pretty scary at first. So I guess that's how they establish authority." As "sanitary police," EHOs generated a mixed reaction from their clients. Some people are afraid of authority figures because of the power they have to affect the lives of people who are seen as non-compliant. Others see compliance with food safety regulations as good business. As this market vendor described:

> When I'm in Vancouver and the Health Department comes, we shake hands and ask how the kids are, okay? Because there's no playing around here. And I want to be on the same page with the Health Department as well as with my customers and the rest of the community, okay, and that is food safety. And there should be no fear here because we should know the rules of the game. (Roy – Civil Society)

Roy has a working relationship with EHOs and is not afraid of inspection because he knows the inspectors and food safety regulations. Nevertheless, some producers mistrust the regulations and this puts the EHOs in a difficult position. One farmer explained why she would not approach an EHO for information: "As a producer, you are scared to go

and ask a lot of questions to the health people, because, like Jo Salatin said in his book - Everything I did on the farm was illegal." (Laura – Civil Society). Salatin (2007) argues that the North American culture suffers with an industrial food system that disconnects parts of the food system, regulating each part in contradictory ways, making communication with the various parts challenging. If the EHO is not approachable, there are fewer opportunities for the EHO to educate and support producers or sellers in safe practice. The problem may be centred in the misfit of regulations for small-scale producers and the fact that the EHO has little power to modify regulations.

Some producers take a serious position against EHOs, as one farmer felt her livelihood was threatened by the presence of inspectors: "I said, "You come on my property" [and], "You'll have the amount of time it takes you to load my shotgun to get off. Don't come on my property." They never did. They never came back." (Nellie – Civil Society). The tension felt by producers/sellers in relation to EHOs is mainly related to fears about the outcome of interactions and their distrust of the regulations, but lack of a personal relationship between the two heightens that fear and tension. The EHO could better protect the public if there were more opportunities built into their role for relationship building in the community.

The tension comes from the EHO's authoritative approach, and a perceived lack of consideration by the EHO of health promotion aspects of a given food security activity. This authoritative or "by-the-book" style is not a universal way of doing business among EHOs, and there are EHOs who are discerning and interested in working out a logical and safe approach to business that considers health promotion. This point was not identified by those in the health protection world, but observed and noted by a

dietician. According to Jade, it is important to consider context and to have working relationships when possible:

> I think there's always room for those discussions and I always enjoy working with [the EHO] because he wasn't just about the regulations. He was about looking sometimes outside of the regulations and recognizing that maybe the regulations need to be looked at a little bit more closely. Maybe they can be altered for specific situations. (Jade – Health Promotion)

While the EHO is educated in a certain world view of owning power and authority, Jade recognizes the value of questioning regulations and looking at context or situation first. This also seems to be recognized by EHOs and is supported by a recent study in which 14 of the 15 EHO's interviewed identified health promotion as part of their work, but noted they can be limited by some very black and white prescriptive legislation (Campbell, Foggin, Elliott, & Kosatsky, 2011). By approaching specific situations as unique, the EHO is able to use the regulations as a tool to achieve a safe food supply.

The tension I am describing is primarily between producers/sellers and the EHOs or regulatory authorities. The middle actors in this situation are community nutritionists who work in the health authority and with producers and sellers. The relationship between the health promotion world and the health protection world is virtually non-existent, as one participant noted, "There is very little intersect" (Trudy – Health Promotion). Health promotion and health protection are in different portfolios in the health authority and the health promotion aspect of EHO work is not widely recognized (Campbell et al., 2011). This has an impact on the way tensions between the two worlds are managed.

There have been attempts to address the gap between health promotion and health protection provincially through the establishment of a joint provincial food safety/food security working group meeting on an ad hoc basis (I have not identified a meeting schedule). At health authority level, communication between these two worlds is hindered as they are in separate portfolios and different buildings. There is rare occasion to meet and few planned opportunities to build relationships. As one person noted about those working in food safety and food security:

> So the two, I think, can work together very well but it's a matter of not being siloed. I think it's a matter of bringing the two parties together and working through some of those questions and issues because I think both are very well intentioned but might not recognize where the other is coming from. So it's always bringing those parties together to have those important conversations. Because essentially you want to have food accessible to those who need it but you also don't want anyone getting sick. (Jade – Health Promotion)

This participant highlights shared goals of a safe and accessible food supply, and how important it is to engage with and listen to each other. The idea of working together is consistent with both the food security and food safety model core program papers. There is an emphasis throughout both core programs on intersectoral collaboration, and the importance of integrating food security principles into the food safety program (Food Security Working Group, 2006).

Some participants believe that as the food security movement developed, EHOs were not included. As one person noted:

> I think that the Environment Health Officers, who hadn't been part….a lot of them had had nothing to do with the early formulation of the food security movement, hadn't been part of that wonderful community dialogue, were just seen as the bad police officers in the corner. And yet they'd been working brilliantly to bring people into compliance in lots of gentle ways with good information. And so they had been left out of the solution and they had been left out of the celebration. (Matt – Civil Society)

The EHOs were perhaps caught a bit off guard and not included because the food security movement developed from grassroots. Since it was actors from the BCFSN, and community nutritionists who instigated the Food Security Model Core Program, the involvement of the EHOs was not considered. If the program had developed top-down, there may have been greater consideration of actors in other areas of the health authority who are concerned with food consumption. As Matt has described, there is some great work being done in the food safety area, and if mutual dialogue had occurred at early stages of the food security movement, there may have been less tension. Being involved in community dialogue might be important in changing the reputation of EHOs, and strengthen the food system.

The health protection world intersects with the provincial world in a couple of ways. The Acts and regulations that guide the work of the EHO are set at provincial level at the MOH and MAL. It was a team consisting of the MOH and health authority partners that developed the core programs of food safety and food security, and the MOH is the steward of the Food Safety Act and the Public Health Act, in which regulations and standards are set. There may be some policies applied at the health authority level, but

the majority of the regulations are standard across the province. One exception would be the sale of ungraded eggs in one health authority area. In the rest of the province, eggs are only available for sale in retail outlets if they have passed through a grading station. The desire for local eggs was so great in one region that the health protection department assessed actual risk and the regulation interpreted to meet local needs. This allowed for sale of ungraded eggs in small local retail outlets, provided they were properly labelled. As one EHO explained:

> Stores are regulated and we do inspections and one of our clauses in the regulations is "Foods have to be from an approved source."… So at one time a few years ago, we were looking at eggs from farmers, ungraded eggs. We said, well it's not from an approved source. It should be graded. We've changed on that ….*our direction is* if we find ungraded eggs in stores we just have to make sure that they're kept refrigerated at 4 degrees, not room temperature, and clean. So our direction to the store owner would be if you're buying from your urban chicken man down the road, the eggs have to be washed and they have to be free of cracks and they have to be stored refrigerated. That's our policy for food safety of eggs. (Norma – Health Protection)

This example demonstrates that there is some flexibility in the regulatory system, even if the regulations are set at provincial level. Norma did note, however, that they were given "direction", so provincial regulation was adjusted at the health authority level suggesting it was a decision for all of health protection within that health authority, not at the individual level of the EHO. That is to say, it is not as if every EHO is making personal interpretations of regulations. Similarly, the food safety model core program was

developed and agreed upon at provincial level, with the expectation that it would be operationalized within the context of each regional health authority. Interpretations of food policies are applied at the local level to be consistent across the health authority.

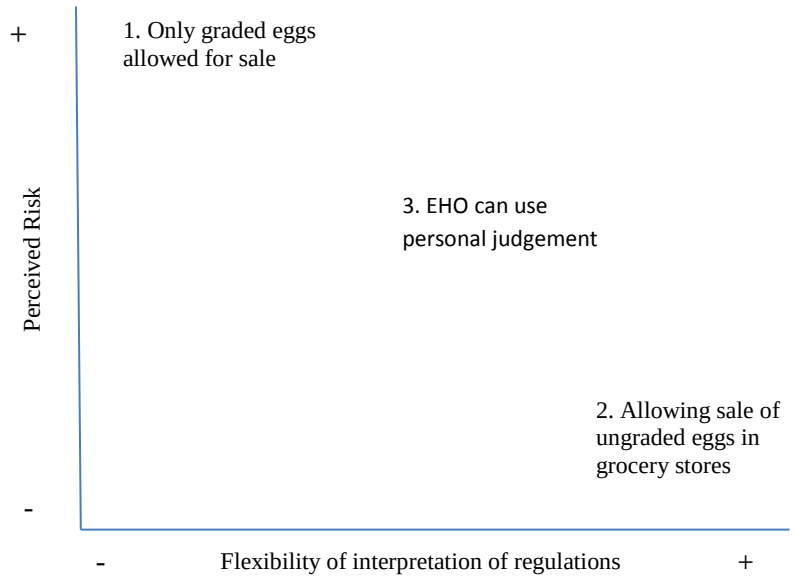
The inconsistent application of the regulations illustrates diverse positions in the data as seen in Figure 28. This has to do with sale and purchase of ungraded eggs. It is important to remember that with positional maps the positions do not necessarily represent individuals or groups, but are meant to offer differing views that can be held by different individuals or groups or by the same individuals or groups (Clarke, 2005). This map highlights positions on issues, not those associated with individuals, groups or institutions but positions in discourses as reflected in the data (Clarke, 2005). This type of mapping attempts to separate the politics of representation and helps to identify the complexity of emerging behaviours (Clarke, 2005). Positional maps help to see situations better because they are representative of the larger picture, where there is a broader view. The X-axis represents perceived flexibility of interpreting the regulations, and ranges from inflexible (-) to flexible (+). The Y-axis represents the perceived risk associated with the safety issue (in this case, the sale of ungraded eggs) and ranges from low risk (-) to high risk (+). The quadrant on the chart that represents high perceived risk and low flexibility in interpreting the regulation (1) reflects the situation in which only graded eggs are permitted for sale. The opposite quadrant represents a flexible or relaxed level of interpretation and low perceived risk (2) in which ungraded eggs can be sold at grocery stores. The middle ground reflects the mid-point on both the flexibility and risk scales leaving the local EHO to make decisions (3). This position creates uncertainty in the system because of inconsistency, but also shows flexibility and capacity to respond to

the public. On one hand, policies are in place because they help to reduce a known risk, and to some it seems fair and right to apply them consistently. On the other, if civil society lobbies for changes to policy, and individuals or groups are willing to accept the risk, then the food protection system needs to be able to respond. This is one way civil society can have some control over the food supply. There will likely be some confusion about why ungraded eggs or raw milk, for example, are permitted for sale in some areas and not others, but many participants believe that there needs to be a sense of control over food supply as an element of reducing fear of food insecurity. On person described it this way:

> So there's lots and lots of innovations happening and I think it speaks to our interest in taking back some control over the way we interact, whether it, you know, the whole idea of massive retail versus being able to go to your village or being able to go to your neighbour [to buy food]. (Susan, Health Promotion)

If we accept that complexity is a property of the food system, then local adaptation of food policies is unavoidable because there is a high degree of human involvement (Milton, Moonan, Taylor-Robinson, & Whitehead, 2011).

Figure 22 Positional Map Flexibility and Risk



Another actor in the provincial world is the BCCDC. While they work provincially, there is some interaction between provincial BCCDC inspectors, who inspect provincially regulated facilities, and local EHOs. BCCDC is engaged in public health through surveillance, detection, treatment, prevention and consultation services. BCCDC also provides analytical and policy support to all levels of government and health authorities. It is the provincial reporting centre for reportable cases and categories of communicable diseases. Food Protection Services is one part of BCCDC. At the time of interviews for this study, Food Protection Services was working on a Food Recall Database. The objective was to provide the ability to search for outbreaks by food type, location, number ill, number died, and other parameters. It would not, however, identify where the food was sourced from, or differentiate between large or small food producers due to the complex nature of food processing and distribution. For example, many

processed foods have ingredients that are sourced through a globalized industrial food system and complexity makes it impossible to gather data to track the operational scale of the producer. This is important because data are often assumed to be important in decision making. Yet, there are no statistics to suggest that small-scale producers put the public at greater or lesser risk of foodborne illness than industrial-scale producers. There is no clear evidence linking scale of production and food safety, but the notion of higher risk for large-scale industrial food systems was successfully argued for exemptions of small-scale producers to the US Food Safety Modernization Act (Hassanein, 2011). There was no data on food safety risks to support the need for regulatory changes in BC on meat inspection, for example, or that the scale of production is a factor in food safety. The meat regulation changes had more to do with confidence in the food system for international trade, as I have previously described.

The last world we find in the public health arena is the networks world. In interviews, participants discussed two main networks: the BCFSN, and Food Secure Canada (FSC). With BCFSN and FSC, there is a mix of civil society members and public health professionals. Many of the people who have joined these networks recognize the value of having a collective voice, and are not shy in expressing challenges they experience with food safety regulations. Networks can be a valuable means for public health professionals to understand what is happening in people's lives and to learn how to shape policy makers' decisions (Levoke, 2006). Through the BCFSN, community nutritionists and food security activists worked together to craft the proposal for a food security core program in BC, which led to provincial support for a number of food security initiatives in the province. BCFSN and FSC play a valuable role in

bridging the arenas of public health and the food movement but they lack connections to regulatory and economic arenas, which are central in this situation.

The public health arena has changed and developed greatly since the mid 1900's. "Health for all" has been a long-term goal for public health, as indicated in the Alma Ata Declaration on Primary Health Care, but is yet to be realized (WHO, 1978). Calls to renew and strengthen public health follow serious events such as communicable disease outbreaks, or foodborne illness events that could affect millions of Canadians. We see that pattern repeatedly. Governance for health, with a "whole of society" approach brings responsibility for improving population health to every sector in society (WHO, 2011). This is different from "whole of government" approach or intersectoral collaboration because the entire society is seen as responsible for health (WHO, 2011). Food is vital to good health but does not rest solely with those in the public health arena. With a focus on "health for all" and a "whole of society" approach, boundaries of the public health arena are not easily defined.

Overall, the public health arena plays a small but vital role in this situation of tensions between those working in food safety and food security. It is within this arena that action can take place to model good relationships, communication, and appreciation for other perspectives, especially between the health promotion world and the health protection world. It is also in this arena where there is need to find middle ground between distrust and inconsistent application of regulations on the one hand, and flexibility with capacity to respond to local needs on the other.

Food Safety Regulatory Arena

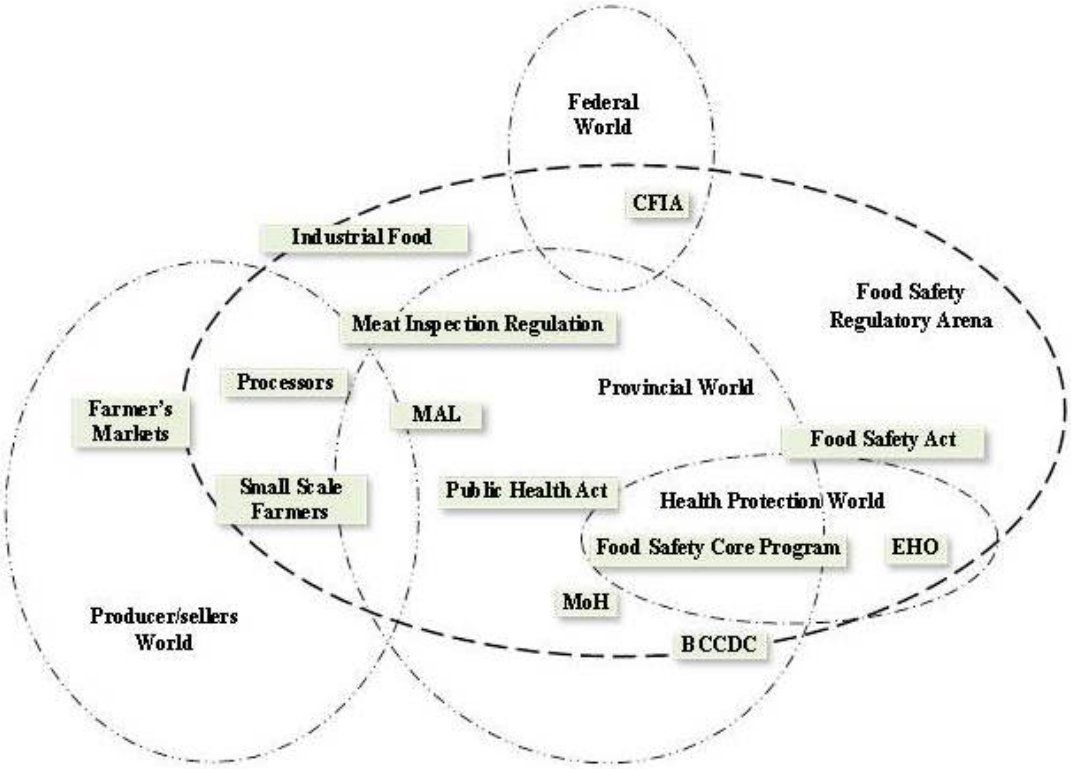


Figure 23 Food Safety Regulatory Arena

The food safety regulatory arena includes regulations and policies (non-human actants) that guide the work of EHOs and inspectors (human actors) in the Health Protection, Provincial (BCCDC), and Federal (CFIA) Worlds, and that impact working lives of producers and processors (human actors) in the producer/sellers world. The provincial world overlaps all four arenas but is largely located in the public health arena and also firmly in the food safety regulatory arena. In this situation, the work and commitment of the provincial world is to set the standard for health and prosperity of people in the province. The main actors in this world, in this situation, are the MOH, the MAL and the BCCDC.

The MOH is responsible for health service delivery and directed development of

the core functions framework and model core program papers on food safety and food security. Tensions between food safety and food security surfaced because of this framework, with food security, not traditionally seen as a function of public health, being introduced as a core program in public health. Participants particularly noted this regarding changes to the meat inspection regulations. One person described it this way:

> We certainly, within other areas of the ministry, had heard rumblings that there might be an issue with food security related to the new meat regs, but that wasn't our decision to make. And I think as the meat regs were put forward, there was a recognition that maybe, I think that was the impetus, but there was a recognition that food security and food safety really needed to work together and that this was a continuum of an agenda around access to safe and healthy food. It wasn't the only impetus. I think there were definitely those that worked within the program area that wondered if that wasn't how it should have been approached all along. And there were a number of meetings, certainly at the provincial level, and some with discussion with the health authorities to look at how in fact, could the objectives of both programs be met and yet work quite collaboratively. (Kathleen – Health Promotion)

Kathleen clearly identified that some people were aware of the potential effect of the meat inspection regulations on food security, and that there were other forces at play in the decisions about the regulations that were not under control of the MOH. The power was lying outside of 'health', suggesting the regulations were being driven by reasons other than food safety. Reflected in this quotation is that it took challenges with and opposition to the meat inspection regulations to identify the importance of food security

and food safety working together. Some people who worked with in both core functions programs thought food should be under one umbrella, but others were not keen on this because of the changes that would be necessary. Not only would changes be required to an already well-established program of food safety, but for food security to get off the ground as a new program there would need to be changes to the vision set down by community nutritionists and BCFSN.

Eventually, there were adjustments to the meat inspection regulations to introduce graduated licenses (greater requirements for greater volume) for some rural and remote areas of the province, but that was well after damage had been done. That is, small farms had already reduced meat production or began selling in the underground market. They did not have access to provincially inspected abattoirs within a reasonable distance that would allow for a humane transportation of animals. It remains unclear how decisions are made in response to tensions or issues that arise from policy changes. What is clear is that response time for changing the meat inspection regulations was too slow to prevent erosion of local small-scale agriculture in rural or remote areas of this province. Most recently (fall of 2012), food safety responsibility for abattoir inspection shifted to MAL. This means shared jurisdiction over the Food Safety Act with MOH. MAL has traditionally been responsible for food safety in respect to fisheries.

An additional complication in the provincial world and at the MOH is frequent shifting and restructuring. At the beginning of this study, the ministry housing the core functions process was the Ministry of Healthy Living and Sport, which then merged with the Ministry of Health Services that ultimately became what is currently the MOH. Also, people move around within the MOH; for example, there have been four different people

heading the food security portfolio in the past four years. With each change, new relationships need to be forged and lessons of the past can be lost as new people are learning their new roles and responsibilities. This contributes to slow reaction time and adds frustration to situations that are already tense.

The food safety regulatory arena also includes or overlaps with the producer/sellers world. This world contains an interesting mix of people who hold a wide range of opinions on food safety regulations. There is a segment of actors who set up "us versus them" discourse as demonstrated in this quotation: "The regulatory life of Food Safety gets beaten up by the Food Security people because they think there shouldn't be regulations. So those two aren't compatible and I don't know how you make them compatible." (Norma – Health Protection). That Norma's experience led her to the view that "Food Security people" think there should not be regulations is unfortunate, because, by and large, it is not the discourse in the producer/sellers world. The majority of producers would like to have necessary food safety information in order to comply with food safety regulations. As one producer stated:

> People can't just do what they want. The government is there to protect people from themselves. You can have a bad egg but for the most part, people are eager to learn and those who are half-assed wouldn't bother. Government can just provide regulations and information so people can go to learn more about the safe way to proceed. (Beth – Civil Society)

As one vendor noted, compliance is undermined by the inability of regulation to capture various circumstances in local context. It would be challenging to write regulations that take into account the broad range of circumstance for food producers across the province.

It is complexity of real life that creates tensions between competing values. The issue appears to be less about food safety versus food security, but rather in the need for a more nuanced understanding of regulations and how they are best applied in different situations. Regulations are an attempt to apply simple rules to complex situations but that is not so easy, as this person describes:

> Maybe we are suspicious of regulations, generally and regulations are suspicious of us. It is not just on one side. It is not just market vendors that are suspicious of government but it is also the regulators that look at this type of behaviour and not know where to place it, they can't put it in a box, so there is an attempt to define and categorize it easily, and you can't do it. (Charles – Civil Society)

This producer's words reflect an ideological divide: on one side, government policies tend to be top-down and paternalistic, while on the other small-scale producers tend to be more grass-roots and believe in more community engagement in policy decisions.

When simple or tame solutions are applied to complex situations, the result can be limited to a subset of the overall challenge, not consistently addressing the whole issue (Signal et al., 2012). For example, regulation on the sale of ungraded eggs, as mentioned earlier, is not applied consistently across the province. A simple means of supplying eggs from an approved source is to pass them through a grading station, but that only addresses the subset of the challenge of safe egg delivery. The whole issue is to supply eggs from an "approved source" the consumer also approves of, which in this case is a local, small-scale free-range egg producer. While some accept there are minimal risks to eggs, others consider that only grading stations are an approved source for eggs. This is an important distinction because the public wants easy access to local free-range eggs.

Some inspectors would accept the risk of having them available at the farm gate, but not for sale in a corner store. To the average person, this might not appear logical and therefore adds to the growing distrust of the regulatory system. As one person put it: "there seems to be a lack of consistency and a lack of logic I would suggest, in our current regulation around farmer's markets and local food" (Paul – Civil Society). Another noted, "I think each of the inspectors has a slightly different take on the weighted importance of various regulations. It seems to be different with different people" (Rebecca – Civil Society). The food safety challenge is to allow for flexible regulation while appearing consistent and fair in context of the whole issue.

When it comes to fairness and consistency, it helps to understand where values originate and who is privileged. One person was particularly suspicious of the supply management system and use of food safety regulation to meet the needs of supply management farmers (large-scale farmers). She said:

> I think you should really look at that question around supply management. Was it involved in the whole banning of raw milk? Because I can see them doing that as a control thing. They are very nervous about anybody producing any milk unless it is within the supply management system. (Megan – Civil Society)

Regulations and their enforcement seem to have multiple purposes, and it is not clear food safety is the primary reason for some of the regulations.

The CFIA adds a layer of complexity to the food safety regulatory arena because there may be different standards depending on federal or provincial jurisdiction. A local ice cream maker, for example, who was interested in moving from a home-based business to the farmer's market, was prevented from selling her product unless she used

pasteurized eggs. This was a decision made at the federal level because the local health authority does not do the analysis necessary to determine shelf stability of products. The vendor was directed by the local health protection branch to contact CFIA, but they primarily deal with large-scale operations. Given that the producer was scaling-up production, CFIA gave her information as if she was moving to a "large-scale" operation, and the standard was to use pasteurized eggs. Since her product was organic, pasteurized eggs were not an acceptable solution because of inability to obtain organic pasteurized eggs. It took a great deal of time and effort to work out a solution resulting in this business now selling at farmer's markets and small-scale grocery stores. The complications were a result of different jurisdictional standards, and failure of federal regulations to be applied in local context.

CFIA is responsible for inspecting food that crosses provincial or national borders and enforcing labelling requirements. Their role on a local level is one of support and consultation. When asked about the relationship between EHOs and CFIA, Norma (Health Protection World) described it this way:

> We work parallel with them. They're the bigger picture. We're the first level or sort of the front food safety people. So we're doing the food safety locally. The Canadian Food Inspection Agency, they're responsible for manufacturing foods … food plants, and the larger food plants that distribute inter-provincially and internationally. (Norma - Health Protection)

CFIA is organized to relate best to the industrial food system that consists of large operations with substantial distribution area and numerous employees, while the EHOs do front-line inspection and enforcement, and deal with small-scale operations. One

farmer described CFIA inspectors as being inadequately informed on matters of farming and insulting at times. One farmer described it this way:

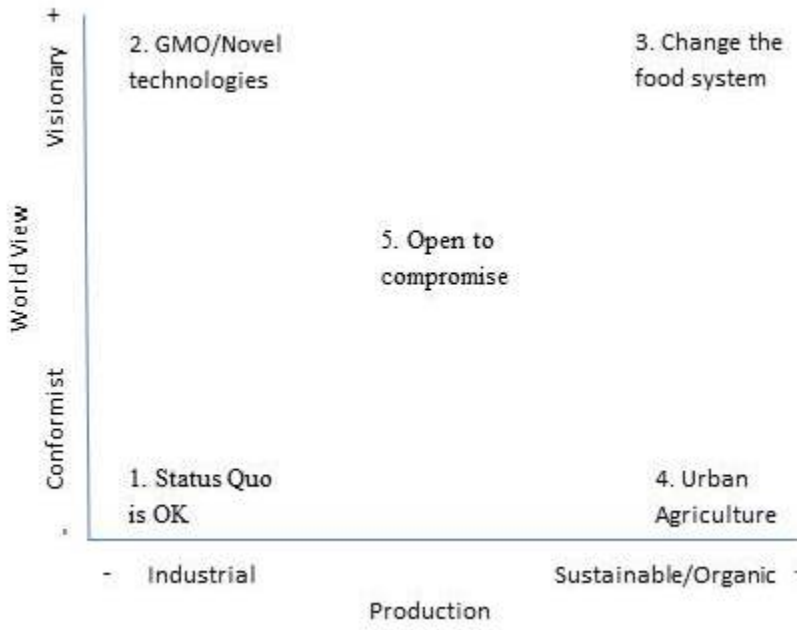
> CFIA sent, when we were doing the salad thing, they sent this farm specialist from the [Elkhorn] office over here to help us. And she gets out of her car and introduces herself and the other four girls are traipsing along with her; they'd been out before and finally they shut us down. And she says, "I'm here to help." And I said, "Fine." And it's like somebody when you're dealing with them in business and they say "I'm really honest", then you hang onto your wallet. … So we're walking out and it's dusty and whatnot and she said, "There's dirt everywhere." I thought, oh well, we're off to a good one here. And I said, "Well we don't call it 'dirt', we call it 'soil' actually. And that's what we grow in." And she was "Well, it's everywhere." … So then we proceed out to the field and she says, "Do you have many birds here?" And you know, I said, "Well no, it's a no-fly zone so they don't come in here." And she was just irate then. You could see the smoke coming out of her ears. That went on and on. It was ludicrous. (Chet – Civil Society)

This level of food safety oversight may be helpful and appropriate for large-scale industrial operations, but not when it comes to small-scale organic farms; it is not helpful to approach the situation with a "food plant" or industrial-scale mindset. Small-scale organic operations will not have the same approach to farming as large-scale farms, and will include birds, rodents, and bugs that may be discouraged on farms using pesticides. The farming piece of food production, particularly organic farming practices, may not be included in education of public health inspectors. The public in general may also be

unaware of these practices. Small-scale farmers may need to be more sensitive to an inspector's lack of education on organic practices, to avoid conflict and seize an opportunity to educate inspectors. People working in CFIA are part of a large federal bureaucratic institution. For an inspector to survive in that setting, he or she may adopt a somewhat restricted or linear approach, unable to think broadly about varied farming practices, and how to adapt regulations to local context.

The relationship between CFIA and small-scale producers is illustrated on positional maps that reflect differences in worldview and in participants' experience of production scale, ranging from large, industrial farms, to small organic/sustainable farms (Figure 30). The positional map in Figure 5 has two axes: worldview and production level. Along the X-axis is the type of production with conventional large-scale industrial agriculture on one end (-) and sustainable organic agriculture (+) on the other. The Y-axis represents worldview, and in this context, refers to two extremes on a continuum: conformist (-) and visionary (+). A conformist worldview is held by people whose thinking is conventional, traditional or unquestioning. They do not question the status quo and accept the world as it appears, lacking imagination or desire to influence societal change. At the other extreme is the visionary worldview, held by those who are far seeing or futuristic, imaginative, creative, and/or perceptive. People situated at this end of the worldview continuum engage in critical thinking and have a desire to work toward a better future.

Figure 24 Positional Map - Production and Worldview



The first position in the data is the 'status quo is ok' (1) position anchored by industrial production on the X-axis and the conformist worldview on the Y-axis. Those holding this position do not question current practices or the effect that industrial production practices have on food quality or availability, and they have faith in the food safety regulatory system. The second position is the 'GMO/Novel technologies position' (2) anchored by industrial production on the X-axis and a visionary world view on the Y-axis. Those holding this position feel large-scale processes promote food security, with the addition of innovative techniques such as genetically modified organisms or nanotechnology to increase yields and reduce foodborne illness. Little critical thought is given to potential effects such innovations may have on the system as a whole, the goal being to find new and better ways to increase safe food production.

The third position in the data is "change the food system" (3) anchored by

sustainable/organic production on the X-axis and visionary worldview on the Y-axis. Those holding this position believe the system can change to healthy, ethical and safe food production, that people have power and ability to shift policy and agriculture practices to produce enough safe food for everyone. Those holding the opposite, first position may consider this position unrealistic and unable to meet the food needs of a growing population because yield is greater with conventional farming, getting more value per unit of land, while organic production requires greater land area (Tuomisto, Hodge, Riordan, & Macdonald, 2012). When challenged by a colleague on the economic viability of organic practices, one participant described it this way: "I said respectfully, the economic reality, it is actually the policies that make the realities, and we are the policy makers and if we don't like this reality, we can make different policies and have a different economic reality." (Megan – Civil Society). Her position is that we have power to direct our course through the policies we make, and if we chose to, could create policies to support sustainable, organic agriculture with a production level that would meet our food needs.

The forth position is 'urban agriculture' (4) sitting where the conformist worldview on the Y-axis embraces sustainable/organic food production on the X-axis. Those who advocate for community gardens and urban agriculture for a safe food supply hold this position. This is a safe and conventional way of thinking that we just need to grow more food in households or community gardens. Generally, community organizers and urban agriculture practitioners recognize limitations of urban agriculture for providing nutritional support to lower income households, although it can reconnect urbanites to food production, and ignite appreciation for the work of the small-scale producer

(Thibert, 2012). The final position at the central intersection of the x and y-axes is 'open to compromise' (5). This is where there can be some compromise between industrial production and small-scale organic production. Consumers can make a choice and regulations do not need to be the same at both ends of the scale. With proper labelling, products can sit side by side on the grocery store shelf. As one person described:

> So two packages are sitting on the grocery shelf and they both look the same from the consumer viewpoint, the consumer thinks that from a food safety viewpoint, they are exactly the same. They have been inspected the same way, that the level of safety is going to be the same and one is not any higher risk than the other. So, we as government, we recognize that is the public perception and perception kind of becomes reality in a sense, it has to be from a government viewpoint, so we have to treat those two entities the same way, from a regulatory/inspection/ required standards viewpoint. Now, if you change how the two are seen by the consumer, change in terms of, let's say, for small-scale guy, the label would have to say "Not government inspected" or some information to the consumer say "no this is not the same as the big guy product". And this is kind of my personal belief….then the consumer can make an informed decision about what he or she wants to do. So if they think there is value from a food safety viewpoint to buy the big company's one, then they will do so. And if they think no, I prefer to, for whatever reason, I want to purchase the small-scale guy's, and I realize it is not government inspected, and I accept that as something I am willing to live with. My personal belief, that that is ok. From a regulatory viewpoint, treat them differently. So that is sort of what I…that is just me. I believe very much in

> informed consent. (Allan – Health Protection)

This position is not about changing the food system or accepting a system that is driven by industrial farming, but working within a system and responding to the desires of the public while maintaining a safe food supply. It is this position that may be obtainable as some policy makers, as explained below, due to the strong farm lobby and conformity within ministries are able to create policies that affect our food system, yet resist a compromise between extremes on both axes. As one person described:

> And I think a lot of people don't realize it. And I think a lot of people think this is the farmers versus the government thing. So it is like big government coming down and making these nasty regulations and you know it is all against farmers. But I don't actually think that is the case. I always say it is not about that, it is about farmers against farmers, because it is about the small farmers against the kind of mainstream, who are really, will go to war to have these policies a certain way. We have a very, very strong farm lobby in this country. And that is a large reason we get the policies we do, because the kind of mainstream body goes after things a certain way and so then they have the loudest and most organized voice and they have people who are already kind of sensitive to that. (Megan – Civil Society)

Megan is describing how the strong farm lobby, which consists of farmers engaged in conventional industrial-scale agriculture, can drive policy decisions because they are dealing with policy makers who are sensitive to the needs of industrial-scale agriculture, or what I am suggesting is the conformist worldview.

It is important to understand the origins of food safety regulations to see where

power lies, what it may take to shift thinking, and to identify leverage points in the system. One person noted that large-scale industry is driving food safety regulations: "So we're getting industry driving the regulatory bodies right now in order to meet their own needs. And it's amazing the, I'm going to say it, the general ignorance that there is amongst policy makers on these issues" (Paul – Civil Society). The relationship between industry and the federal and provincial worlds are shaping negative outcomes for small-scale farmers. There are various food safety agreements that have been set up over the years such as the Codex and the Agreement on the Application of Sanitary and Phytosanitary Measures, but they favour what is scientifically measurable to support trade, with little regard for health or environment, and little consideration of economic viability of small-scale farms.

Overall, this arena highlights different worldviews at play, and challenges in keeping an open mind to appreciate others' reality. Ministries are often shifting portfolios and priorities, making it challenging to respond to real problems of food producers. There is a sense of suspicion between both regulators and producers as mentioned earlier. The suspicion EHOs may have of producers might stem from the history of adulterated raw milk noted in Chapter 3, when milk was watered down on its way from country to city (Ostry, 2006), and even recent examples of melamine found in pet food in North America, and melamine in milk in China. A system driven by the desire for economic gain will provide opportunities for and advantages of short-cuts that increase food safety risks. It would be easier to have a simple regulatory regime, but challenging to apply fairly in a complex food system. Simple regulation is impossible given the various worldviews at play in the food system and extreme differences in how

food is produced. Data from this study suggests that to resolve tensions, we need to include both industrial producers and small-scale producers in food safety regulations that consider the different safety risks associated with each type of production. We need to consider overall impact of regulatory requirements on other societal values, not only restriction of foodborne illness.

Economic Arena

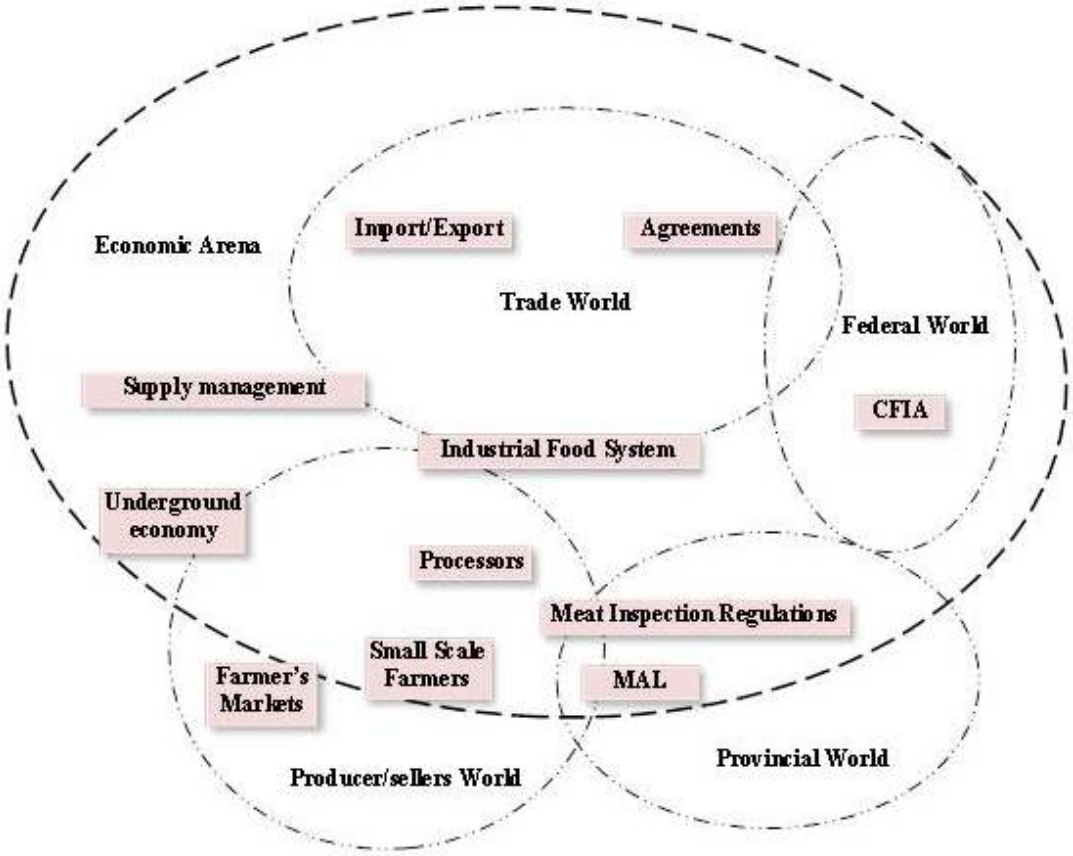


Figure 25 Economic Arena Map

The economic arena (Figure 31) consists of four main social worlds: federal, provincial, trade and producer/sellers. The work of the federal world is to govern the country as a whole, devising policies and programs for the health, wellbeing, and security

of the people of Canada. It is in the federal world that trade agreements and import/export food policies are set so relationships of policy makers and industry are very strong. Located in the federal world is CFIA, the safety oversight body for food trade. Trade agreements and national standards for food production and trade have a broad focus and do not always fit with local context or priorities of a local economy. For example, one participant described how in her rural community, society was built on valuing the provision of goods and services to the community, so that basic needs were met and people found their place in the system. The emphasis on food production as a commodity for trade does not fit well within that local context. This makes it especially important to work toward policy that is strong but not rigid and allows room for special circumstances at the local level. A main concern for those involved in local food security is to discern good public policy in the federal world and to develop strong arguments to combat pressure from trade agreements or the interests of industry. The distrust by local food security advocates of food safety policy for health protection at the federal and provincial level is strong. For example, Megan (Civil Society) noted:

> My conclusions after reading these kinds of policy documents were basically that looking at the way the BC meat regs were going down for example, it was just what they call food safety, it is just cover for re-institutionalizing the system that produces unsafe food.

She also noted that international trade is the "*raison d'être*" for food safety policy in recent years because the agriculture and agri-food sector is highly dependent on exports and confidence in the export market comes from sound food safety policy. For her, and many others in the food movement arena, federal and provincial agriculture and food

safety policy are actively constraining organic and small-scale farming movements in favour of the large industrial food system where the focus is on business and economics and not on feeding Canadians. The focus of those in the food movement arena is for food system sustainability to be balanced with local economy and safe food production, while those in the economic arena put food as a commodity first, relying on cheap industrial-scale food products to be part of a strong economy.

There were no informants in this study that represented the federal or trade world in the economic arena due primarily to my inability to access them. These worlds are implicated and silent actors in the situation, revealed through participants in other arenas and through other data sources such as media or public reports. My impression from the data is that at the federal and provincial level, there is an implicit goal to harmonize and standardize policies so they are consistent for the import/export and domestic markets — meat inspection regulations are an example, where all abattoirs were required to meet export market standard regardless of scope of distribution. This goal conflicts with the need for flexible and context specific responses to food safety policy to meet food security needs in general, and in particular, needs of rural and remote areas in Canada.

Supply management and marketing boards are also located in the economic arena. Marketing boards represent various producers of commodities, such as eggs, milk, hogs, and chickens, and are under general supervision of BCFIRB. The supply management system is a national commodity system that matches domestic production with demand and is organized by national bodies and by provincial commodity marketing boards that have been delegated powers by federal and provincial governments. The supply

management system is controversial as it both protects and opposes the interests of farmers. One person defined it this way:

> So it [marketing board] is a food sovereignty model at the national level, right? And farmers haven't done that well for a long time but supply management farmers do very, very well, it is a huge…it is a model of agriculture that does support farmers, it probably supports farmers more than we need to support farmers, you know? (Megan – Civil Society)

According to this informant, producers who have quota do very well because price is set and they have a protected market, but supply management is controversial. BCFIRB and the marketing boards set quotas to align supply with demand to promote a stable price for both farmer and consumer. There are a lot of issues and concerns around supply management and the power that is held within that system. It can support farmers and raise incomes, but also can freeze out competition and innovation. Another issue is the authoritative messaging that marketing boards can deliver to the public. As mentioned earlier, the BC Egg Marketing Board was against the sale of ungraded eggs, and along with CFIA, emphasized food safety precautions. It is important to remember that any messaging around food safety needs is predisposed to protect the marketing board's industry. As one person explained about marketing boards: "Their job isn't to do anything for the consumer, their primary job is to protect their members and you have to keep that in mind when they talk." (Allan – Civil Society). Another person noted, "I must say I'm always a little cautious with messaging and materials coming out from marketing boards from the health side of things because there's a slant there, there's a bias and they're trying to protect their industry." (Jade – Health Promotion).

A major problem with the supply management system and marketing boards is that large-scale farmers who are profiting from participating in the board have a great deal of influence on the standards and regulations that are set to protect the health of the public. According to Allan (Health Protection):

> I mean a lot of the supply managed food commodities, the oversight, the inspection, the regulation has been delegated to the marketing boards, themselves. So essentially there is no government oversight. Which is, maybe is not that bad a thing but at the same time, there is a fair potential for conflicts of interest because the same folks who are on the boards of these commissions are also farmers, so they could make certain decisions regarding policies that could affect them in a way that is maybe not best for public interest.

This supports what I noted earlier, that food safety regulations pit farmer against farmer, and that policy is driven by industry priorities instead of public health. There is also an argument that if strong special interest groups can direct public policy, a well-funded and coordinated civil society group focused on food security could do likewise. The main role of civil society organizations is to present new ideas and push issues onto the government policy agenda (May, 2008). For example, Idle No More, a recently formed group in Canada (October 2012), has raised Indigenous sovereignty issues. Additionally, anti-tobacco groups such as Action on Smoking and Health (ASH) have been part of the international movement to reduce tobacco use. Unfortunately, food security civil society groups are generally not well-funded in their quest for political influence.

The relationships between the food safety regulatory arena and food movement arena are complicated by the economic arena. It is largely the economic actors who

direct government regulations. It is not only having a safe food regime as determined by the health protection world, but as described earlier, it comes to farmer versus farmer, as in two very different paradigms of producing food. In one paradigm, food is a commodity and a business, where land is used to service customers. The other paradigm is growing food as a lifestyle in which there is a direct relationship between producer and consumer, with sustainability of the land equally important as economic viability of the farm. The business farmer has power through marketing boards and the supply management system, to lobby for and direct food safety regulations that promote the industrial food system, undermining the voice and business of small-scale farmers.

Without small-scale farmers, there is a limited supply of foods such as local organic meat, free-run eggs, local fruit and vegetables, and raw milk, and there is less opportunity for a personal relationship with one's food or the farmer that produces it. Without the small-scale farmer, there is no local sustainable food system, which is a rapidly growing societal value. A consequence of limited small-scale farming is that people, who have a strong belief in knowing their farmers and where their food comes from, will seek out alternatives. The underground economy or "black market" in food is alive and well in BC. Some customers are making pick-ups of raw milk in back alleys.

An internet forum post from a city resident mentioned that it is easier to purchase marijuana in BC than raw milk (Fluffy2002, 2009). One farmer who has a cow-share discussed the demand for her raw milk saying: "Oh, do you know how many people have asked me if they can just pass me some money under the table and buy my milk? It

is almost a weekly thing." (Karla[6] – Civil Society). There is significant demand for local food and for directly supporting local farmers. When it comes to milk, customers are very protective of their suppliers. On person commented, when asked whom they purchased milk from: "She sells it under the pretence that it's for animal consumption like cats and dogs, that kind of thing, or soap making. On the record, that's what we're buying it for. I don't want to incriminate anybody else." (Melissa – Civil Society). This may sound familiar to anyone who recalls stories from alcohol prohibition. There is a fair amount of demand for products from local, small-scale farmers, in spite of the lack of regulatory oversight for this level of production. Purchasing directly from the farmer contributes to a collective sense of control over food supply.

A few participants were reluctant to go on record with details of their knowledge of farmers who are not tied to standard economic practices. One participant did describe how farmers establish a buying relationship with people, not because they wish to circumvent regulations but because they have little choice due to lack of infrastructure for processing. She noted that the underground market is "quite large" and many operate on a barter system having trade agreements with other farmers. The culture of the health authority is seen as part of the problem; regulations are not always clear and because of fear of being shut down, many farmers or producers will not approach the EHOs for information or for clarity on practices or regulations. A militant approach to enforcing regulation tends to drive the producer further away from what can be a good and credible source of food safety knowledge. Another participant indicated that she is on a "hot list" as someone to watch in the area – even though she does advocacy work and is not selling

[6] This producer has reported never selling raw milk, only has partners in her farm who consume their own milk.

food. There is an atmosphere of fear of EHOs, even more so in larger communities where relationships have not been established because of a heavy-handed approach.

According to another person who requested not to be recorded, exchange of goods and services goes back in history, so it is not about the market, but about exchange. She suggested taking the financial paradigm out of discussion of the underground economy. She explained that exchange of goods and services is just how people live to meet their daily needs, and how life happens in small communities. Exchange of goods and services is a cultural reality, without having exchange of money.

Society, according to this informant, was built on valuing provision of goods and services to the community, so basic needs were met and people found their place in the system. That the exchange or barter system is alive and well in rural communities does not set a precedent for larger communities. This type of economic activity could be problematic in urban areas simply due to scale. It is a way of life in rural communities and not recognized so much as an economic endeavour, but as part of social cohesion. The underground economy does not exist in these terms, and when money exchange is removed from the equation, there is no market, and regulations do not come into play in the same way. Similarly, another person noted that farmers who have been working for generations just follow the way they have always worked. It is tradition to exchange goods, and they have not experienced food safety issues, so they carry on. This is congruent with how Allan (Health Protection) described regulations, that once a product hits the marketplace there is an expectation of government to protect the population through regulation. The expectation of protection by government does not exist in the relationship between friends (producer and user).

The positional map in Figure 7 illustrates this point. This map is based on familiarity with the producer and expectations for government to protect the population from foodborne illness. In an anonymous market, expectations rise for government-involved food safety protection. The X-axis represents expectations of government protection, ranging from no expectation (-) to full expectation (+). The Y- axis represents the familiarity of the producer and ranges from no familiarity or total strangers (-) to great familiarity (+). This positional map suggests that familiarity leads to trust, reducing the need for costly investments in safety monitoring or enforcements institutions (Lubell, 2007).

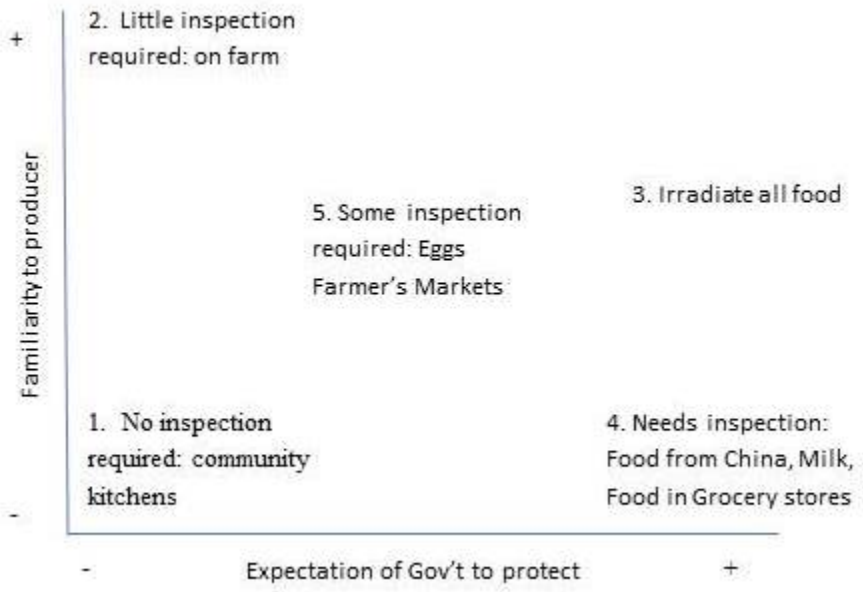


Figure 26 Positional Map - Familiarity and Protection

The first position in the data is 'no inspection required' (1), anchored by low public expectations of government to protect on the X-axis and a low degree of familiarity between producer and consumer on the Y-axis. This would include activities

such as community kitchens and urban chickens. These two cases had little marketability and there were no real expectations for regulations to ensure food safety. These are non-market activities for the most part and the person is the producer, so there is no place for familiarity with an outside producer. That is to say, most urban chicken-keepers do not sell their eggs, and the community kitchen model for home use does not require inspection, versus collective kitchens that are businesses.

The second position is 'little inspection required' (2) with low public expectation for government to protect on the X-axis and high degree of familiarity between producer and consumer on the Y-axis. This position involves active participation in acquiring food from a friend who is a farmer. There may be an expectation for meat to be prepared at a licensed facility, but there is trust and sense of control over the food supply that contributes to the eater's peace of mind. A local safe and accessible food supply, often involving an underground economy, allows the consumer to feel safe to obtain food from a local farmer with whom they are familiar, in contrast to the higher level of risk perceived by the EHOs or food safety policy makers for that source. As one person put it:

> I personally believe that the government has no business regulating small producers who sell directly to the people that are going to consume their products. And I think the person who raises my meat and chicken should be allowed to butcher it on their own property. Unfortunately, the stupid regulations set up by the BC government have driven many excellent small meat and poultry producers out of business. Which is probably why they put the regulations in place anyway, to get rid of small producers so large industrial farms will make bigger profits. I

> think it's the large meat operations are the ones who pushed for these regulations, not the people who were buying meat from small farms. Nobody was getting sick from it, unlike meat from large industrial-type operations. Same with raw milk. It is not the government's business if I want to drink unpasteurized milk from a farmer that I personally know. I have no idea how big this underground food economy is, but I will support it in every way I can. (Kim – Civil Society)

What Kim is describing here is a position echoed in the networks world; there is a distrust of policy makers in government to make evidence-based decision, as government primarily supports large-scale industry. She is suggesting that government has no business in health protection of food from small-scale producers, especially if it is one with whom she has a relationship. This quotation highlights a central issue in public health practice, that of autonomy versus public protection. The personal choice argument aligns with neo-liberal philosophy that promotes economic growth as a main system driver. Public health practitioners may have to ask how much protection the public needs.

The third position in the data on this map is to 'Irradiate all food' (3), grounded on the high end of expectation for government to protect on the X-axis and mid-level degree of familiarity on the Y-axis. Familiarity with a farmer is of no consequence for this position, believing all food is potentially high-risk for food borne illness: for a slight decrease in quality, society would gain a significant reduction in illness. This is a position highly contested by many local growers. There is a position, however, where a high degree of regulation is warranted. Position four, 'Needs inspection' (4), is on the high end of expectation for government to protect on the X-axis and a low degree of

familiarity on the Y-axis. This would include imported food, especially from China due to high use of pesticide and of melamine as a food additive, as well as food sold in grocery stores. This position favours regulations for large anonymous food systems and is not usually contested. I would include milk in this position because of the history of adulteration, because of shared milk tanks, and inadequate tracing of animal should there be a foodborne illness outbreak.

The final position for this map is number five: 'Some inspection required' (5), which is centred between both axes. I have included eggs and farmer's markets in this position. Eggs are primarily from large-scale producers and go through a grading station but there are also ungraded eggs for sale in smaller grocery stores and farmer's markets. The public expects a certain regulatory oversight on eggs, but too much restriction is undesirable. Similarly with farmer's markets, there were a number of patrons I spoke to who were happy with the extent to which they were regulated, and felt more regulation would affect the vendors and therefore decrease scale and quality of the markets.

A central point is what level of economic activity matters to each of the actors in this situation. As with the 2012 case of Alberta's XL Foods national recall of E. coli tainted beef, the need for regulation and protection is great when the scale of production is so large and distribution level so significant that it affected all of Canada and a number of US states. This processing company handled approximately 35% of all Canadian Beef. A main challenge with the XL Foods recall has been the trace-out of secondary and tertiary distributors. The industrial food system is so large and interwoven that it is neither easy nor economical to execute a recall when a problem occurs. There are no data to indicate outbreaks from small producers but the recall range would be negligible

compared to XL Foods. A high level of economic activity for industrial-scale production may produce food at a quantity that can contribute to reduction of food insecurity, but potential for harm is considerable, simply due to size. On the other hand, small-scale production may be more expensive per calorie produced, but the scope of an outbreak is significantly smaller.

We do not know, at this point, the extent of economic impact that small farmers and the local food movement have on industrial-scale producers. We could anticipate that with large-scale recalls, more people will source food, and particularly meat, from small-scale farmers. Too early to tell, there may be a growing trend of regulation used to silence and eliminate the small-scale producer, as the local food movement grows. If small-scale producers are seen as an economic threat to more powerful industrial producers, there may be a need for government protection for small farming businesses.

Overall, the economic arena is a major stimulus for generating tensions between food safety and food security. There is another tension between discourse of 'the right to food' and 'food as a commodity' within the economic arena. The historical timeline in this arena clearly indicates the emergence of a neo-liberal agenda in which interests of agri-business and trade are promoted over health and welfare of the Canadian population and the right to food. Big-agriculture farmers with power through marketing boards have great advantage in directing food safety policy. Therefore, the 'right to food' and 'food as a commodity' discourses are part of the food security/food safety tensions. This contributes to challenges faced by EHO's and health protection, in which food security activists paint them as enforcers of unsound policies. If there were a place in society for economy that is more sharable and exchange of goods and services based on relationships

and good will, perhaps tensions between food safety and food security would be less, with more emphasis on regulating industrial production. Not everyone expects government to provide protection from all potential foodborne illness, and many are interested in exercising personal judgment on food. This is a central tension for public health ethics, balancing individual autonomy with the common good – the bigger problem is defining the common good.

The essential issue in the economic arena is power. When dealing with food as an essential determinant of health, and the potential challenges of future food production, we need to examine closely power structures that affect sustainable food systems.

Food Movement Arena

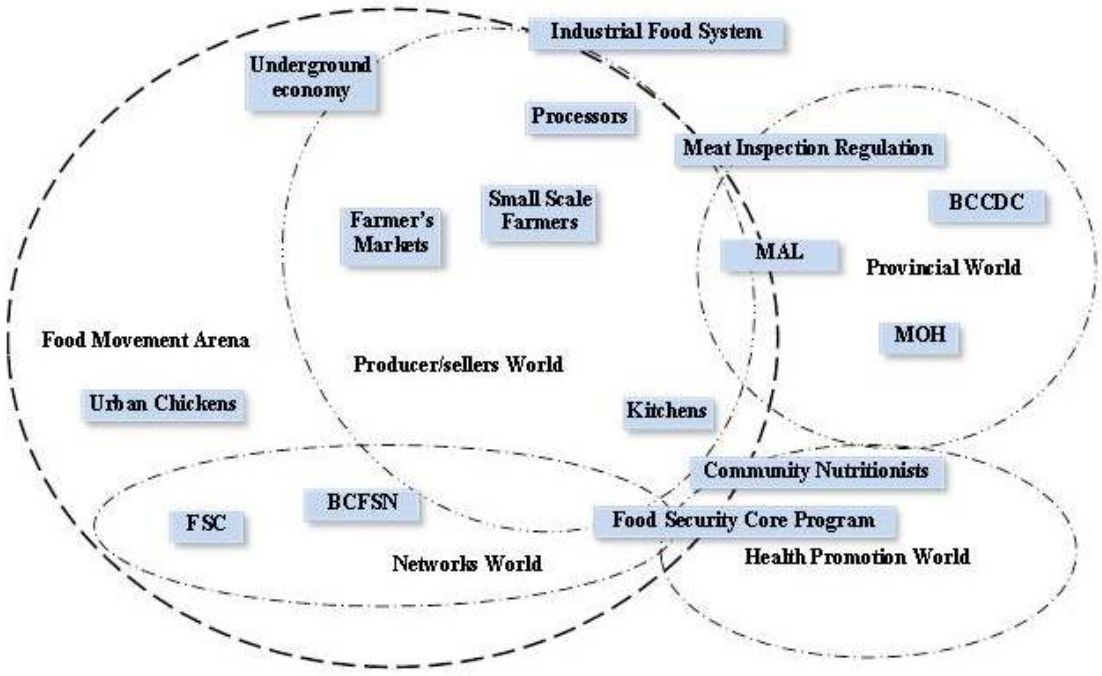


Figure 27 Food Movement Arena

The food movement arena is a space where people are engaging with ideas about the origins of their food, ecological impact of food production, and growing health inequities resulting from food insecurity despite ample supply in Canada. The food movement has a long history and developed out of fear of scarcity and as a reaction to the relationship we have with food. It is also concerned with how far society has drifted from food basics to a diet of more processed food particularly high in salt and sugar. The popularity of and growth in the food movement has been partially due to a plethora of books and video productions that address the social, physical, and environmental impact of the industrial food system, directing attention of the general public to local food, small-scale farms and farmer's markets. Part of this food awareness is reflected in the growing trend toward keeping urban chickens and desire to participate in a food system in which there is knowledge about and control of production. There has been a change in the foodscape of some communities and an erosion of food literacy. One person noted:

> The fast-food restaurants are everywhere. You don't see many backyard gardens anymore and everybody used to have them. And if we could kind of strike a balance. I think we've gone a little too far. If we could have more backyard gardens and I really do love the idea of backyard chickens. It's awesome. Now it will create some, you know, some sanitary issues and probably some food safety, all that stuff, but if we don't get stupid about it, we can manage it and I think we can strike a nice balance. (Karl – Health Protection)

The trend toward backyard gardens and keeping chickens is a popular notion for many in the food movement arena, along with supporting local farmers. It is not that backyard

gardens will solve issues of food insecurity, but they contribute to knowledge of food linked to good food choices that promote health and wellbeing.

The food movement arena (Figure 33) has two main worlds: producer/sellers world and networks world. The networks world has two main actors: the provincial level BCFSN, and the national level FSC. These network groups are civil society organizations that work together to support each other in community level action related to food. The BCFSN began in 1999 with a perceived need to respond with one voice to a government select standing committee. The network grew to having annual gatherings to share insights, initiatives, strategies, and critical analysis of the food system. It is a volunteer-run network with a number of active e-mail lists. The BCFSN supports local food production and community development. According to the network website (bcfsn.org):

> The dominant food system in North America is industrial: that is, it emphasizes mechanical over organic and a capital-intensive rather than labour-intensive production, processing and distribution methods. It is oriented toward global trade rather than the satisfaction of local needs, and is controlled by a handful of large transnational corporations.

The BCFSN expresses outrage on their website at the level of food insecurity in Canada and share a belief that community groups should have a voice in policy making to address this growing problem. According to the network website, Canadians are losing essential arts of farming, gardening, foraging, cooking, preserving and storing foods, as well as the culture of community sharing. Network members work to challenge the dominant food system through supporting each other and by writing and promoting

public policies that foster economic viability, ecological health, and social justice. It is important for members to be connected and to be part of discussions. As one member commented:

> I think that an integrated approach in local means having the network, like BC Food Systems Network being a component of those discussions. Because they have a lot of… Like the discussions that are on those networks are amazing, just through the e-mail, and that is without having a full discussion with some of those people. You can tell that they are activist in their own local area. (Matt – Civil Society)

The network members are well-informed community members who want to contribute to public policy. Marketing boards, mentioned earlier, share this desire. The difference is in the nature of the policy. The focus of the BCFSN, for example, includes ecological health and social justice, along with economic viability whereas economic viability is the dominate discourse with marketing boards.

Food Secure Canada has a vision for zero hunger, a sustainable food system, and healthy and safe food. The mission of FSC is to advance dialogue and cooperation for policies and programs that improve food security nationally and globally. The network is a vehicle for provincial and local food security groups to share resources and ideas on how to tackle food insecurity. The BCFSN is a member of FSC and both networks have broad representation that includes activists, academics, farmers, health care workers such as community nutritionists from the health promotion world, and policy makers from the provincial world, to name a few. The People's Food Policy for Canada was organized through FSC – a document consisting of ten policy discussion papers derived from

kitchen table talks across Canada. Those in the networks world are working toward system change by providing advocacy training around activities such as connecting with politicians, particularly in pre-election periods. The networks are attempting to unite people to create a force for change in the food system. The power structure lies not in economic strength, but in the number of grass-roots supporters who are actively engaged, and in the ability of network leaders to organize and motivate individuals to be engaged in the political process to ensure a sustainable, safe and adequate food supply.

As with many non-governmental organizations in recent years, financial support is low for networks. The BCFSN has not been diligent about collecting membership fees and struggles with funding their annual gathering, but is working to garner financial support from various avenues. FSC is funded through membership fees, profit from biennial assemblies and recently obtained a grant from the J.W. McConnell Family Foundation who approved a three-year grant of $325,000 for national learning and action work. Given the struggle for funding and the largely volunteer base, the networks are at a power disadvantage compared to the industrial food system when it comes to money and political influence.

There are very different worldviews at play in this study that can lead to a lack of understanding between actors. The networks world has little connection with the health protection world. Both the BCFSN and FSC have safe food as a priority, but there is an obvious lack of contact or input from the health protection world into the decision making of the networks world. Business is also not well represented in the food security networks, although there have been some small industry sponsors of network gatherings. The Conference Board of Canada is in the process of creating a national food security

policy document with a strong industry bias – this is problematic for many in the food movement arena, who recognize conflicting agendas between large-scale industry and food security focusing on ecological and social justice.

The producer/sellers world mainly consists of farmer's markets, small-scale farmers and food processors. This is the world where tensions between food safety and food security first surfaced as a serious issue in BC, due to meat inspection regulations and the impact that regulatory change had on small-scale processors, small-scale farmers, and rural/remote communities. The actors in the producer/sellers world are trying to make a living by providing a service that has some value to the public. The farmers tend to love what they do; at least that is a general assumption because income is so low and labour so difficult for many small farmers. However, the love of the land and the lifestyle are important components for the small-scale farmer.

Andrea, from the networks world, voiced her concern with the public perception of farmers. Her primary complaint is lack of understanding about cost and commitment to food production on a small-scale farm. When people talk about food security, they look to farmers to give away food, as if food insecurity is a problem of low production or high cost of food. According to Andrea, the hunger card always trumps ways to support farmers. That is to say, society holds little economic value for food, even though it is essential to daily functioning, and there has been a trend toward spending less on food. For example, between 1961 and 2005 Canadians decreased their percentage of household expenditures on food and non-alcoholic beverages by nearly 10% (from 19.1% to 9.3%) (Treidlinger, N.D.). As Andrea describes, when we talk about the homeless situation, there is no expectation for relators or housing contractors to give away housing, or if

people need clothing, that manufactures should give away clothes or shoes. However, with food, she feels there is an expectation that farmers can support communities by giving away food. There is little recognition of costs involved and needs of farmers to obtain a living. It is as if food as commodity is not truly viewed as such until it is processed into an added-value product. It is a social justice issue of how we expect needs to be met – there is social enterprise and there is the charitable model and we are stuck in this place of contradictions. The discourse is about the tension between the right to food and food as commodity.

There appears to be an expectation by some that farmers will feed us out of a love of humanity and food should not be tainted by commerce. Therein lies the contradiction in the food movement arena, that producers and sellers need to have space in the economic arena yet some people do not fully appreciate that. This likely comes from an expectation of cheap food that is available through the industrial food system. There is a basic lack of understanding of what it takes to produce good food in an ecologically sound way, and why the dominant food system can produce food so cheaply and ship it globally. The economic arena has a reputation of being unjust, and as the BCFSN noted the industrial food system is "oriented toward global trade rather than the satisfaction of local needs". There is a need for a balance in both arenas, where actors in the economic arena become more environmentally and socially just in policies and practices relating to food production, and the actors in the food movement arena understand true costs of food production and financially support small-scale farmers.

The producer/sellers world and the networks world share patterns of collective commitments that are consistent with a CAS. They wish to promote high quality,

healthy, and safe food that supports the farmer while meeting needs of people who are food insecure. Repeatedly, participants in this arena remarked on importance of relationship. The discourse is the relationship people have with their farmer and food, how important it is to know where our food comes from and the work of people who have made that happen. The tensions in food safety and food security are often talked about in terms of relationships as well. Food safety regulations are important for people who do not have the relationship or are not knowledgeable about their food production, but the risk of foodborne illness is lower for those who are engaged with the production process because they have greater awareness of the people and the process to judge risk. One person described it this way:

> I think what people oppose about food safety regulations, is sometimes they seem to interject on a relationship that's built between a farmer or a food producer and someone who's purchasing or trading that food. It's like to say that these people can't honestly deal with that agreement and judge the food; you know that there is this other regulation that doesn't have the connection or the relationship – so there needs to be a policy set in place that govern that very intimate relationship with food and what people are choosing. When people develop a relationship with the farmer, it's pretty….just with the way the industrial food system is right now, that's a pretty intentional act right now. So I think that for someone to have such intention in order to be… like food safety regulations that say that that is an inherently risky scenario, I think that's what people react against. This is me actually pretty involved in my own food consumption. (Jewel – Civil Society)

Jewel is saying that people who are involved with their food consumption choices to the extent that they seek out personal connections with local farmers are likely to have the wherewithal to assess the food safety aspect of the food they are consuming. Therefore, regulations need to allow for personal relations. For example, on-farm slaughter practices for farm gate sales may be a regulation that could satisfy what Jewel is looking for in her food consumption values. It is the relationship with the farmer, and the social contract that dictates the safety, not a government enforced regulation.

The commitment to small-scale farmers in the food movement arena is quite strong, but outside this arena, there is need for improvement. The main driver of collective action is to address this lack of commitment to small-scale farmers. Access to land, new farmer support and mentoring, promoting BC-grown food, improved capacity for production and processing, and local food procurement policies are some of the actions thought necessary to support small-scale farmers. The BC food security core program does not directly name supporting small-scale farmers as a strategy for decreasing food insecurity, but does promote system redesign and linking local food producers with consumers (Food Security Working Group, 2006). One of the main recommendations in a 2012 policy brief written by the BCFSN Food Policy Working Group was to “Develop a 'small farm lens' for all ministries and use it to assess the implications of new and existing regulations on small local producers”. This recommendation is a direct response to events that occurred after changes in the meat inspection regulations.

In the food movement arena, the main discourse is a change in the food system for safe, healthy, high quality food, at a reasonable cost that supports small-scale producers.

The level of government commitment to small-scale farmers is a primary concern for actors in this arena to achieve those goals. At the same time, the actors in this arena are concerned with the production of a safe and healthy product, and with having a strong sense of community. Figure 34 shows positions in the data that involve government commitment to small-scale production in relation to safety expectations.

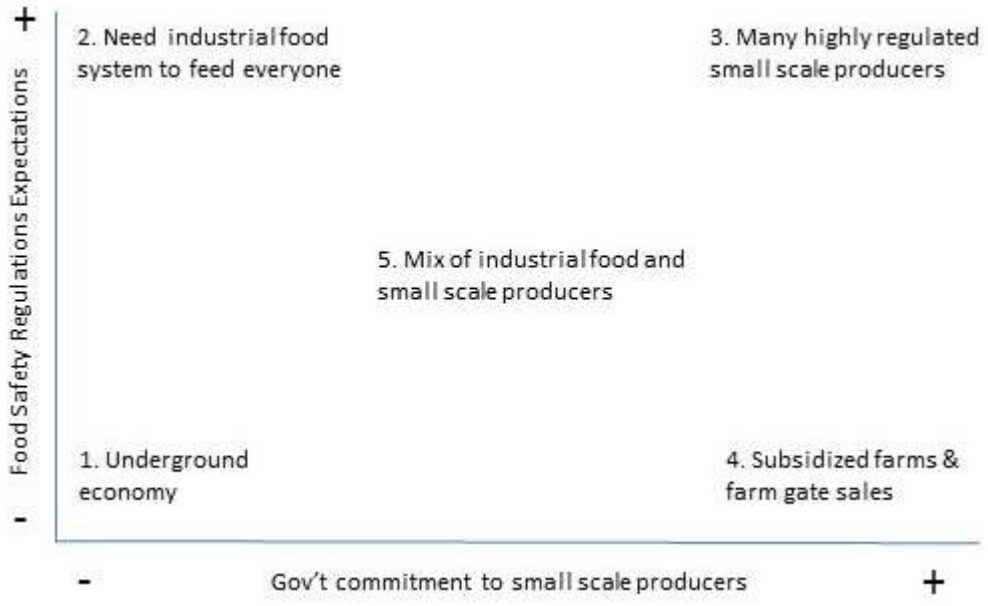


Figure 28 Positional Map - Expectations and Commitments

The X-axis represents 'governments commitment to small-scale producers' and is the degree of government commitment toward supporting and promoting small-scale farms ranging from no commitment (-) to high commitment (+). The Y-axis represents 'food safety regulations expectations'. On the Y-axis there is the expectation that food safety regulations will be in place to some degree ranging from a low level of expectation (-) to a high level (+). When there is little commitment or support for small-scale producers and expectations for food safety regulations are low, people are happy to engage in a barter system or underground economy (1). We see this with raw milk, eggs,

and even with meat in some areas. In these cases, expectation for regulations is low because farmer and consumer have developed a trusting relationship. With little government support but high food safety expectations, the industrial food system is thought to be the best choice for a safe food supply (2). This is the anonymous food system. If there were strong government support for small-scale producers it is likely there would also be a high level of regulatory oversight, because sales would be a high proportion of the market and food safety expectation would be high (3). It remains anonymous but would be a localized product. If food safety expectations were low, we might see more prosperous farms and farm gate sales (4). It remains to be seen if farmers and consumers could develop a trusting relationship if the number of consumers were greatly increased, but if the number of small-scale farms increased, then the social contract would be part of the regulatory mechanism for safe food production. The balance, at least until more value is set on small-scale food production, is to have a mix of industrial food and small-scale producers (5). Recognizing that not all consumers will be interested or able to develop a relationship with a farmer means there will always be a need for large-scale anonymous operations and a regulatory system to keep the food supply as safe as possible.

When it comes to government involvement in the food system, food safety regulations are a major factor for protecting the public. Government also promotes jobs and a healthy economy by supporting business, whether it is large-scale agriculture or small-scale producers. Actors in the food movement arena are interested in a balance between business and safety and do not want to see small-scale producers sacrificed to

demands of the economic arena. There is economic, cultural and health value in the work of the small-scale producer. One person described it this way:

> They [regulators] are not taking into consideration the taste and quality of the produce and cultural value. It is more of a scientific, cold approach. I agree that works when you are dealing with gigantic factory farms and supermarkets, but not when you are growing carrots out of somebody's back yard, which is how they are meant to anyway. I actually think it is a safer way of producing than the larger operations are where the problems are. We have seen that over and over again with Maple Leaf Foods, and big cattle runoff. So I think using regulations for those types of smaller operations is ridiculous because the smaller guys are not going to run into that. They are not going to run into runoff from the field next to them like they would if they had 1500 cattle, so why would they be set to the same standard? (Charles – Civil Society)

There is need for greater government commitment to small-scale farms because the "ultimate food system" has a lot of diversity. Actors in this arena expect that different policies should be set for different scales of production. They also suggest there is a business case for helping small-scale farmers to prosper. Megan is passionate about improving our food system and described it this way:

> I think the interesting thing about those two goals [food safety and food security] is that in our current food system, they can sometimes be really at cross-purposes with each other. What a lot of us think of as the ultimate food system that would provide food security that would involve a lot of small-scale farming and diversified farms has trouble dealing with food safety policy, as it is. This is

> really, kind of one-size-fits-all. It's designed for really large, really specialized farms. …in our current policy climate, there's a lot of stuff that is ostensibly done in the name of food safety that cuts into our food security, I think. Because it makes it very hard for small-scale farmers, because you know the meat regs… is a real classic point in that, because it makes it so difficult for small farmers, and farmers that were not kind of producing for mainstream commercial channels, who lived outside and wanted to produce for neighbours and local restaurants, that sort of thing. (Megan – Civil Society)

For Megan and many others in the food movement arena, it is really about valuing diversity of small-scale farms, and recognizing that all food is not created equally. Commercial, mainstream production requires a separate set of regulations than small farmers who are passionate about food, land and the environment where they work and live.

The food movement has a long history that developed out of fear of scarcity and a reaction to the relationship we have with our food, and how far we have drifted from the basics. Overall, the food movement arena has advanced in BC, much more than in other Canadian provinces. The main reason is the strength and longevity of the BCFSN, and the work they contributed to the food security core program. The actors in the networks world are the strength behind the small-scale producer. Most actors in this arena do not see food safety risks in small-scale production as a threat to the population, believing in the power of social expectations and relationships between farmers and their local community to keep production safe. Government involvement in protection from foodborne illness is not as necessary in this arena as government protection for

agriculture land, and subsidies to support and encourage small farm growth. This arena is highly values-based, while the food safety regulatory arena has a more scientific approach.

Summary of Arenas and Social Worlds

A purpose of this chapter was to explore the space between food safety and food security. I quickly discovered that the arenas of discourse were broader than these two core functions programs. The arenas in this situation consisted of: Public Health (Figure 27), Food Safety Regulation (Figure 29), Economic (Figure 31), and Food Movement (Figure 33). Within each arena, I described social worlds and the work and commitments that are contained within or cross into multiple arenas, including the key actors and discourses, patterns of collective commitments, and positions found in the data. The patterns of interconnections show that more can be done to bring the food movement arena and regulatory arena closer together. Fear and control over the food supply are some dominant drivers in this situation.

Public health arena discourse was framed around relationships between food safety and food security, flexibility in regulations, and perceived risks of foodborne illness. The main challenge in this arena is to have flexible regulations to meet the needs of small-scale producers who produce low-risk foods, without creating distrust due to inconsistencies in the application of regulations.

Discourse in the food safety regulation arena highlighted the differences in worldviews between those working in food safety and those in food security and the general level of distrust that runs between the two worlds. There is some very linear, cause and effect thinking in this arena where complexity is not fully appreciated. The

ultimate challenge in this arena is to find a balance between industrial food production and support of small-scale producers.

The Economics Arena discourse is on business, trade, and supply management insofar as industrial-scale farmers lobby for regulations that support business and trade. Distrust surfaces here as well, with increase in alternative food markets and the fear small-scale farmers have about communicating with EHOs who have the power to halt production. An important discourse in this arena is the exchange of goods and services, and how a shareable economy is a traditional way of life for many people who live in rural and remote areas of BC.

The discourse in the food movement arena is the value of food. It is not only value in economic terms, but in quality, taste, and as an element of community wellbeing, including the right to food. Building relationships is important in this arena. There is also a discourse of systems thinking, with an understanding of the far-reaching effects of actions and the unsuitability of a one-size-fits-all model of food safety regulations.

Trust and relationships are the common threads across all arenas in this situation. Trust in fair and equitable application of regulations, that people will practice safe food handling, and that reason will prevail over policy. Fear is related to trust or lack thereof, and the fear discourse threads throughout this situation. Improved relationships are critical to promoting trust and reducing fear.

Chapter 7: Discussion

People working in food security in Canada are sometimes challenged by what they may interpret as 'road blocks' or unnecessary complications to achieving their food security goals. For example, participants have noted food skills programs as one area where there have been inconsistent or unclear food safety regulations that have affected delivery of such programs. Additionally, there have been small-scale producers whose livelihoods have been threatened by the application of regulations intended for large-scale production. Not only were there examples of this in the data, but in 2013, a small-scale Manitoba farmer received a provincial government award for pastured pork prosciutto, yet months later had the product confiscated by health inspectors from the Manitoba Agriculture Food and Rural Initiatives, claiming it was unfit for human consumption (Anderson, 2013). These experiences of the application of food safety regulations create a feeling of anger in food security actors, and distrust of the regulatory system.

In BC, the challenge with the relationship between established food safety and new food security core programs became evident with tensions that surfaced primarily due to changes in meat inspection regulations (Miewald, Ostry & Hodgson, 2013). The tension between these programs brought to light a broad and complex situation with negative implications for health equity in the province, particularly in rural and remote areas. As I looked more closely at these two program areas in the context of the local food system, I discovered that tensions extended beyond the core programs. What had emerged from interactions between staff in food safety and food security core programs at the provincial level was a small example of tensions in the larger food system between

regulators and food security activists. Additionally, as I explored tensions I recognized that inherent within them were differences among groups in diverse values and principles that define who we are as a society. How society responds to providing basic needs in life for the population, such as food and shelter, demonstrates values and principles embedded in the culture. In Chapter 4, in descriptions of the case studies, I highlighted tensions and opportunities for collaboration between those working in food safety and food security, and the health equity implications. In Chapter 5, I described concept mapping and created a conceptual framework that helps identify ways to ease tensions between those working in food safety and those in food security. In Chapter 6, I took a broad view of the situation examining agents and interconnections among social worlds and arenas to begin to recognize patterns, dynamics, and properties that emerged related to trust and relationships in the food system. In this chapter, I review the major findings related to the study questions and objectives, discuss these findings with respect to the literature, identify what this study adds to the knowledge base, and explore the implications of these findings for research, policy and practice.

Summary of Major Findings

The objective of this research was to explore tensions and power differentials between food security and food safety actors, and to examine potential opportunities for enhancing health equity through these two core programs. In this section, I have summarized the main findings from each method I used in this study. I follow this with a discussion on the research questions.

Case studies.

The participants in the case studies revealed that tensions between those working in food safety and in food security are not solely about the prevention of foodborne illness, but relate to domestic and international trade and marketing boards. Food security advocates focus on having a trustworthy food system that includes the seed and soil, through to food processing and consumption. For this set of actors, the regulatory environment includes protecting the integrity of the land, animal welfare, and small-scale producers. Food security advocates have interpreted regulatory decisions as not supporting small-scale agriculture, but supporting trade and industrial-scale agriculture, and using food safety as a reason or excuse for imposing penalties on small-scale producers.

Facilitators for collaboration, found in the case studies, primarily rest on developing trust and clear communication. Participants noted that willingness of regulatory authorities to listen to and respond to needs of civil society groups builds good relationships. Fostering the ability to work with community members is more important than exercising enforcement, power, and control. Having a shared understanding of the whole food system is important to understand the context and approach of each group involved.

Challenges to collaboration include the differences in communication style and professional norms. For example, EHO's are focused mainly on epidemiological evidence and regulatory frameworks, while community nutritionists have a background in social science and communication. Farmers, food producers, and food security activists tend to have a practical, context specific approach to their work, with knowledge

based on experience. These are three very different ways of being in the world and it can be challenging to understand the approach taken in a situation by the others. There is very little cross over between those working in food safety and those in food security, so little opportunity to build relationships and better ways to approach potentially contentious issues. An additional challenge noted in the case studies is the development and application of regulations that are meant for large-scale producers, yet applied to small-scale operations. There is a lack of flexibility in these regulations and little opportunity for interpreting regulations for specific contexts.

As for the application of an "equity lens", this is very different for food security and food safety. Food security initiatives are focused very much on providing opportunities for access to and knowledge of quality food that contributes to healthy outcomes. This can often mean targeted interventions toward disadvantaged groups, but also includes larger interventions that can affect entire communities, and not only those who are considered disadvantaged. For example, municipal bylaws for chickens, or supporting urban agriculture, are food security actions that contribute to a culture of connecting with food production, or what is known as 'food literacy'. Improving food literacy is a way to reduce health inequities by providing a "scaffolding that empowers individuals, households, communities or nations to protect diet quality through change and support dietary resilience over time" (Vidgen & Gallegos, 2012, p. vii).

Food safety also has a role to play in reducing health inequities, but equity is not often included in the conversation when implementing food safety regulations. The discourse in food safety revolves around equality rather than equity. According to food safety study participants, regulations are an opportunity to level the playing field, or to be

equally applied, because there is an assumption that they are in place to reduce known risks to the food supply. While this assumption is true most of the time, it is not what some participants consider the whole truth. Some participants think the food industry needs to appear to be doing everything possible to protect the food supply in order to promote international trading in Canadian products. This position can lead to an unjust application of regulations that can have a negative impact on small communities that rely on small-scale operations. The resulting economic disparities and lack of high quality food available from small-scale operations could lead to increased health inequalities.

Concept Mapping.

Participants in the concept mapping answered the focus prompt "The best way to ease tension between those working in food safety and in food security is…" This resulted in a map, or conceptual framework, consisting of six clusters in three broad areas: relationships, education and context. 'Relationships' includes improving communications and enhancing partnerships. Participants expressed the need to have a formal process of working together to recognize common goals and objectives. This sort of intersectoral collaboration is important for early identification of problems and to develop interventions together that can suit everyone's needs. The need for 'education' is about understanding the whole food system. One aspect is recognizing differences between food needs in urban versus rural settings. Another piece is in knowing what it takes to create and maintain a safe food system, and demystifying regulations and the regulatory process. Participants also expressed a need to understand the role of public health and government in protection of the public, as well as the right to food and individual choice. The cluster that stands alone in concept mapping is what I have

identified as ‘context’ but is about recognizing scale. The basic issue with regulations is that they need to be applied according to local context. The important finding with this concept is that standardized regulations allow for a structurally simple society, which, according to Dahlberg (2001), can be more easily dominated. Flexible regulations that are context- specific would require greater system capacity to support more EHOs who have time to build relationships, engage in educational activities and understand context of the food production/processing unit in order to apply the appropriate level of food safety oversight. In a time of economic constraint and Conservative government policies, we are unlikely to witness improved system capacity.

Situational Analysis.

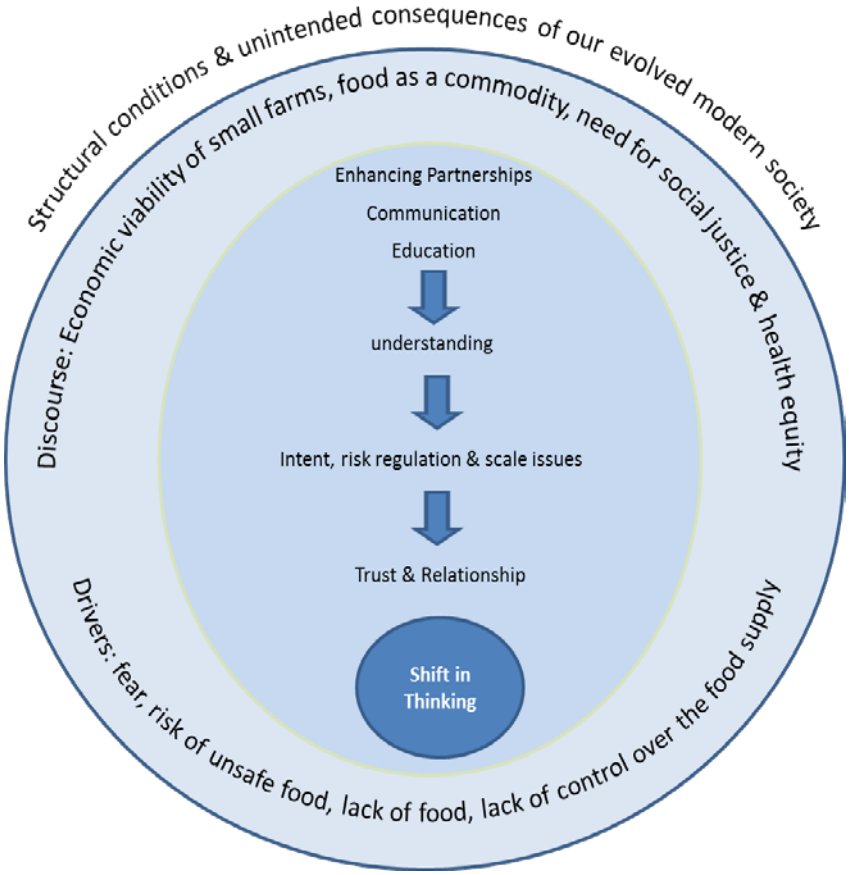
The process of doing situational analysis brought together the case study analysis and concept mapping. This method helped to articulate the major discourses in each arena to begin to understand common threads contributing to tensions in the food system. The discourse in the public health arena was framed around flexibility in regulations, perceived risks of foodborne illness and relationships between those working in food safety and in food security. In the food safety regulation arena, the discourse was about differences in worldviews, and general level of distrust that runs between the food safety world and the food security world. The economics area discourse was on business, trade, and supply management. The idea of distrust surfaces here as well, with increase in alternative food markets and fear of communication with EHO’s who have power to halt production. An important discourse in this arena is the exchange of goods and services, and how a sharing economy is a traditional way of life for many who live in rural and remote areas of BC. The discourse in the food movement arena is about the value of

food: economic, quality, taste, and as an element of community wellbeing. Relationships are important in this arena, as is systems thinking – that small actions can have far-reaching effects, and there are no regulations that can apply to every situation. Overall, the common threads are trust and relationships. Trust in fair and equitable application of regulation, that people will practice safe food handling, and that reason will prevail over policy. Fear is related to trust and the fear discourse is present throughout this situation. Improved relationships are critical to promoting trust and reducing fear.

Addressing the Research Questions

The research questions were: how are the intersecting areas between food safety and food security negotiated, what are the facilitators and constraints to collaboration, and how do both programs include a health equity lens? Below I provide a framework that brings together case study analysis, concept mapping, and situational analysis. In Figure 35, I present a framework that explains how food safety and food security tensions arise and how they and the intersecting issues are negotiated. In the following description of Figure 35, I have italicized keywords in the diagram for easy reference.

Figure 29 Tensions Framework



How are the areas negotiated?

The situation begins with the drivers of the tensions between food safety and food security: *fear, risk of unsafe food, lack of food and lack of control over the food supply.* The drivers are influenced by food system discourses on values related to the *economic viability of small farms*, *food as a commodity*, and *social justice and health equity*. The economic viability of small farms refers to the discourse in the economic arena and food movement arena where the struggle is between food production as a business and as a value, and how strict regulations can have a serious impact on the financial situation of small-scale producers. Food as a commodity discourse, again, comes up in the economic arena and contributes to the tension between values of food as a right, and food as a unit

of production. Social justice and health equity discourse relates to food as a right, and how we can promote good food and economic livelihood of farmers but at the same time provide sufficient quantity of quality food to meet the needs of those who are most disadvantaged.

The situation sits within the *structural conditions* of modern society, such as the industrial-scale food system that we now rely on to feed the growing population, and the *unintended consequences* when the developed world relies on intensive food production. Industrialization of the food system has developed to a point that it may now be causing more foodborne illness than providing benefits because of scaling-up of food production. Part of the modernization process has resulted in a global food system involving trade; international trade negotiations have an impact on regulations that are aimed at mitigating risks involved in industrial production. The tension arises between small and large-scale producers with regulators appearing on the side of industrial-scale production and is a result of a difference in values. On one side, there are values of food as a human right to be produced and consumed with respect to the needs of everyone. On the other is food as a commodity, to be use used for private economic gain at the expense of community and environmental wellbeing. To bridge this gap, there is a need to develop shared understanding through *partnerships, communication and education.* Recognizing the *intent* of food security activities, the *risk* of foodborne illness, need for *regulations* and issues *of scale* will require a *mental shift* by those in the economic arena who are more interested in maximizing profit than in public health, and by those working in food safety and food security. *Trust and relationships* are central to that shift in thinking because it involves trusting each other as actors in the food system but also trust in the food system

to be safe and abundant. The economic paradigm is a key component to the problem because it lacks space for social justice. No one is opposed to food safety regulations and oversight, or to economic prosperity, but conflict occurs when there is unjust application of safety regulations that favour economics over social justice. This means that groups such as small-scale farmers are disadvantaged in a systematic way.

Relationship refers not only to relationships among actors in the situation, but also to how we relate to food. Part of the tension is between values of the right to food in the food movement arena, and food as a commodity as part of the economic arena. This tension, in combination with food safety regulations that do not consider needs of small producers in rural and remote areas, leads to an underground or alternative economy, where people bypass regulations to achieve what they need or desire. The barter system has a tradition in rural and remote areas as a form of sharing resources. This can be identified as adaptation in a CAS, and what we are witnessing in the growth of the sharing economy. The sharing economy is grounded in traditional barter-like systems but is expanding due to the ease of connecting through internet use. It is a growing grass-roots movement where people are choosing to share rather than own. According to Gorenflo (2010), sharable culture is a basic part of human life and can include skills or knowledge, used goods, and social reach as currency.

Tensions between those working in food safety and those in food security are negotiated by building trusting relationships and by having an open mind to consider other ways of being in the world. Actors in the situation need a view of the whole food system, and beyond, to consider constraints or limitations to collaboration.

What are the facilitators and constraints to collaboration?

At the start of this work, I considered intersectoral collaboration essential to easing tension between food safety and food security actors because it was a prominent component of the core functions process and this has been confirmed in this study. As detailed in the concept mapping chapter, participants in both sectors believe enhancing partnerships and communication are important steps toward improved collaborations. The introduction of the core functions program was a great facilitator to collaboration because it defined food security actors in a new way. With the food security core program, the opportunities arose for better communication between the food safety regulatory arena and the food movement arena because of the more formal standing of the food security core program in the MOH and health authorities. The food safety core program shifted the work of the EHO from a regulatory, by-the-book system to a risk assessment system, to allow for more flexibility in their work, applying personal judgment to a certain degree. This allows space for working differently. There is still room to improve on communication and to collaborate across programs. In this process of getting good information, communicating and working cooperatively in partnerships, food safety and food security actors might begin to recognize the need to understand the position of the other person, and the values and principles that are most important for them. This is part of a shift in thinking, of questioning regulations or understanding the full scope of risk. It is an opportunity to educate each other on the importance of work that is done in both areas. It is important for people holding each worldview to understand the intent of the other, whether it is enforcing or challenging regulations. It is the shift in thinking that allows for new alliances and respect for what others holds as a

priority value. This opens up new possibilities to improve the system for a safer and more secure food supply.

Constraints to collaboration between food safety and food security actors include physical and structural conditions. Actors working in these areas are schooled in very different ways. For example, EHOs are not generally educated on organic food production practices or ways to consider health equity implications of policies or programs. Physically, actors working on each program in the health authority have been located in different departments, reporting through different structures and working in different buildings or in different cities. There are few opportunities, outside the inspection process, in which civil society food security advocates are able to build relationships with public health inspectors or those working in food safety policy. This physical lack of exposure contributes to a general lack of trust because, as Lubell (2007) states, “familiarity breeds liking” (p. 237).

Another constraint is the structural condition of being situated in a society dominated by values that prioritize economics over public health. When economics are driving health regulations, there is potential for a clash of values between those who are focused on the individual versus those concerned with the collective. According to Szreter (1997) “economic growth should be understood as setting in train a socially and politically dangerous, destabilizing, and health-threatening set of forces” (p. 649). The path that society has taken toward industrialization is subject to the law of diminishing returns. That is to say, that the benefit of economic growth and industrialization are limited, and western society is facing a health-threatening set of forces. We need a strong public health regulatory system to stand up against forces such as economic pressures,

and to align with principles of health equity. This would require a tremendous shift in thinking by society as a whole, to vote for a government that values public health over economics. While this is highly unlikely, there may be a case to promote the value of public health equally with economics, as they are both components of a healthy society.

There is a lack of collective thinking in the food system, and lack of an integrative approach to population health promotion, with no coherent food and nutrition policy that encompasses health, agriculture, safety, and the environment. We have followed the market and industrial food system to the point where it dominates over health needs of the population. I elaborate on these challenges later in this chapter, in light of what we know from the literature.

How do the programs include a health equity lens?

The core function process introduced food safety and food security core function papers early in the public health renewal process, and did not include the application of an equity lens, as was intended for all the core programs. Since the release of these two model core program papers, the MOH has completed an evidence review paper on health equity, and all BC health authorities have considered implementing strategies to reduce health inequities in their regions. In addressing the question of how food safety and food security core programs include a health equity lens, I broadened the scope to explore how equity applies more generally in these arenas, and not just to the core programs. Health equity is imbedded in food security work, but it is equality that is more prevalent in the food safety arena. In the food safety arena, equality means that to be fair, the same set of rules or regulations applying equally across the board, with little allowance for context specific deviations for special situations and thus, no allowance for fairness. Health

equity is promoted by addressing social determinants of health (Braveman & Gruskin, 2003). Health equity in food security is related to values and principles concerned with ethically sound choices; respecting the environment, farmers, and farm workers; and providing safe food in a dignified manner. These principles or values promote health equity by not placing people in a situation of disadvantage that can affect their health. For example, by respecting the environment we are not creating areas with pesticide runoff or contaminating water supply; by respecting farmers and farm workers we are ensuring a living wage and proper working conditions that affect health, and by providing safe food in a dignified manner, we are ensuring quality food for those who are socially disadvantaged. Society has become more dependent on a mainstream industrial food system that, by design or by necessity, is profit driven, not health-driven, that results in challenges for segments of the population who have restricted financial means for obtaining sufficient high quality food (Stuart, & Worosz, 2013). This problem extends to the global food supply, and it is movements such as La Via Campasina that argue for food sovereignty where food should be used for nutrition first and for trade only if the people's nutritional needs are met (Allen & Wilson, 2008). Allen and Wilson (2008) identify how the local food movement can resist neo-liberalization by promoting ethical food choices that put people before profits, and thereby promote social justice. The underground food economy, or local barter system, is another way to promote social justice and improve health equity by working outside the industrialized food commodity system.

Drivers & Discourses

Drivers, discourses and structural conditions are the context within which tensions occur between food safety and food security actors, and where strategies to address tensions develop. Fear, perceived risk, lack of control, and trust are drivers of the tensions and key elements to understanding facilitators and constraints to collaboration. This section refers to these findings in more detail.

People engaged in either food safety or food security work all share a sense of fear and perceived risk related to food – one is a fear of contamination while the other is a fear of scarcity. There is also a fear of "other" which arises from not understanding different worldviews between actors in these arenas. A facilitator to collaboration is overcoming and understanding that sense of fear. According to Grey and Ropeik (2002), the more we trust people the less afraid we will be. Sabatier and Jenkins-Smith (1993) describe, in the Advocacy Coalition Framework, that trust comes from similarity between policy-core beliefs[7] of the actors. There is a wide gap in relationships between food safety and food security resulting in a lack of trust. Trust is an important component to collaboration. The stressed relationship between these food actors is largely a result of neo-liberal policies such as meat inspection regulation that supported trade and large-scale farming over needs of small-scale producers. The result of these policies undermine optimal health, particularly for those in rural and remote areas of BC because small farms in these areas play a large role economically, socially, and in food production, all of which are determinants of health. The following section describes the concepts of fear and trust relating to food, collaboration, the concern of health equity and

[7] Policy-core beliefs are fundamental preferences for the process and goals of policymaking (Lubell, 2007).

social justice in the food system, and issues of power in a complex web of economics, health protection, and basic human need relating to food.

Fear and perceived risk.

Study participants noted that it is important to identify common ground as a facilitator to collaboration. Fear and perceived risk are underlying components of "security" and "safety" and are common across the food system. Food safety and potential risks are of concern to the public. For example, through media the public may hear of lack of food safety standards in other countries, believing that personal risk of consuming contaminated food is quite high. This can result in a desire for safety and increase in government protection and surveillance against foodborne illness. Much of that fear is not grounded in actual data but is a perceived risk driven by media communications (Frewer, Raats, & Shepherd, 1993; McClusky & Swinnen, 2011). To complicate the situation, we have little evidence, as I noted in the literature review in Chapter 2, that an increased degree of surveillance will prevent harm. There is need for good information and understanding of risk so we know best where to take action to reduce fear and perceived risk related to food.

The food security movement highlights vulnerabilities in access to and production of food. For example, due to unpredictable weather patterns resulting from climate change, scientists anticipate that produce imported by BC from California will diminish as the state's long-term drought worsens (Ostry, Meiwald & Beveridge, 2011). Additionally, agriculture dependency on fossil fuels in this time of decline means a need for greater structural diversity and decentralization of modern industrial society to ensure adequate food production (Dahlberg, 2006). That is to say, developed countries have

structured a centralized food system that relies on fossil fuels, and if decentralized, relying on more localized food production, will be less vulnerable to threats of large system collapse. Poland, Dooris, and Haluza-Delay (2011) describe the need to develop supportive environments for health as we face ecosystem collapse that will affect food production and hit poor and marginalized people hardest. The global industrial agri-food system is accelerating social and ecological crisis, and contributing to economic inequality worldwide (Allen & Wilson, 2008). The vulnerabilities in food production appear real, and to some people, this may be an alarming and fearful state. This fearful state is a driver behind tensions. Risk of illness from unsafe food and vulnerability of production are very real. The resulting conflict is in balancing fears of unsafe food with danger of losing control over the food supply.

Over the years, human response to unstable food supply has resulted in industrial processes that provide approximately 1.5 times the production of food we need to feed the world population today (Miller, 2012). Food insecurity is real, but more of a structural problem of democratic distribution of food than a production problem (Allen, 1999; Allen, 2010; Friel & Baker, 2009; Miller, 2012). Similarly, the industrial food system has resulted in a "structural risk" (Dahlberg, 2006, pg. 143) in which challenges of food safety are actually more the system rather than the product of the system. Food safety risk assessments are highly focused on the product and not on the system that creates conditions for increased microbial and chemical contamination.

Fear is a discourse common to both food safety and food security actors but methods to mitigate that fear is where these two areas diverge. It would be easier for food safety regulators to have a simple regulatory system in which enforcing regulation is

generally straight forward, i.e., an industrial-scale food system. Food security actors are more concerned with production methods that are ecologically sound and with the humane treatment of animals. The system of food production is the primary sticking point that needs to be worked through for food actors to work together. In order to have a safe and nutritious food supply to meet everyone's needs for a healthy and active life, solving problems with structural conditions of food production and distribution is key.

Trust and relationships.

According to Van Boxstael et al. (2013), when people feel they are highly susceptible to a food safety threat, and have a low level of trust in government to protect them, they have an increase in fear. Trust and relationships are key concepts that surfaced in the situational analysis. Trust underpins a number of the concept mapping clusters, such as 'enhancing partnerships and communication.' For food security actors, there is a lack of trust that the application of regulations will be fair and equitable, and a lack of trust that reason (as these actors see it) will prevail over policy. For example, food safety actors did not trust food security actors to use safe food handling practices. The distrust on both sides relates to power in the application of regulations: one is the power of regulation over actions and the other is the power of noncompliance to regulations.

Lack of trust in the food system is related to the anonymous face of the food producer and the resulting missing relationship, or lack of connection that many consumers have with food production. There is a focus in the food movement on building and maintaining relationships that reduce distance between producers and eaters (Rideout, 2012). I suggest the desire to reduce distance is partly due to a fear of scarcity

that is inherent in the food movement. This fear comes with our diminishing relationship with farmers and food. There is a sense of trust in local food supply; if you know your farmer, food will be safe (regardless of regulatory oversight). There is no hard data to suggest that local food from small-scale producers carries less risk of contaminants contributing to foodborne illness than large-scale producers, but Hassanein (2011) demonstrates that direct social relationships between producer and eater results in a producer who is more accountable and a product that is easily traced, suggesting a safer product. Additionally, Lubell (2007) explains how trust reduces need to invest in expensive monitoring and enforcement bodies. Therefore, easing tension between actors in food safety and food security requires a focus on familiarity of processes, personalities, and product; and that familiarity extends to relationships between eaters, enforcers, and producers.

Structural Conditions

Structural conditions or the factors related to the social and economic circumstances of how we live in Canada influence relationships between food actors. These conditions or circumstances shape the values we place on economic viability of small farms, on how we accept food as a commodity, and values of social justice and health equity. The food system, as with public health, still relies very much on individual or community progress, and not on structural changes needed for improved food security or improved relations between food safety and food security actors. Specifically, for the situation I described in Chapter 6 (situational analysis), three main structural conditions contributed to tensions between food safety and food security. First, there is no mechanism to improve communication and collaboration among actors who are working

toward food safety and food security; second, the industrial food system dominates food production; and third, the neo-liberal agenda favours market forces over health and health equity. I describe these conditions below.

System support for intersectoral communication.

We live and work in a system not designed to facilitate shared information. The capability is available through electronically available platforms, but there needs to be a will and an effort to bring groups together. As proposed in Chapter 2, the root of the tension between actors in the two food sectors was a lack of intersectoral communication and collaboration. Both share the common goal of having a safe and healthy food supply, but there is a lack of communication between the two food arenas, within government, and between government and civil society to achieve that outcome. Intersectoral collaboration is clearly identified as important for health promotion and a common recommendation for improved health and wellbeing in the 21st century, and a way to reduce health inequities (O'Neill, Lemieux, Groleau, Fortin, & Lamarche, 1997; WHO, 2011; Howard & Gunther, 2012). This is because all areas of government and sectors of society have an impact on health status, and interconnections and interdependence allow for synergistic solutions (WHO, 2011).

ActNowBC was touted as an exemplar for intersectoral action (Health Council of Canada, 2010; Seed, 2011). It was not so much a government program but a label that embraced a variety of policies and programs rooted in the MOH and health sector. It was set up to form alliances with other sectors with a goal of improving health in BC. The incentive for other ministries to participate with MOH in ActNowBC was the potential to reduce healthcare spending, allowing for more funding for other ministries (Seed, 2011).

By identifying projected increased health spending, there was enough incentive to have multiple ministries participate in ActNowBC in an effort to keep spending in check. While there was some progress reported with ActNowBC, such as reduction in tobacco use, it did not show positive overall results or reduce health spending (ActNowBC, 2010). Global economic challenges since 2009 led to spending cutbacks for all ministries. Without economic incentive, there is no enticing reason for groups such as food safety and food security to work together.

The provincial government's change in leadership resulted in termination of ActNowBC, replacing it with three pillars of the Families First Agenda - family affordability; supporting vulnerable families; and safe communities, strong families (Province of BC, 2012). This agenda continues in the spirit of intersectoral collaboration, and perhaps improves on the ActNowBC model in an attempt to have the appearance of joined-up governance (personal communications, W. O'Briain, Nov 21, 2012). According to O'Briain, a difference between ActNowBC and the Healthy Families piece of the Family First Agenda is a change from engaging individuals to an explicit focus on communities by strengthening community networks. While this could be a positive change, it has not been identified as an opportunity to strengthen civil society food security associations, such as the BCFSN. Furthermore, if government adopted health-in-all policies as an approach to provincial governance, there would need to be real change to involve civil society in decision making, and a concerted effort to reach out to the food industry for common orientation and action on public health issues. The Family First Agenda does not appear to provide any incentives for this type of intersectoral action.

Intersectoral action is a challenge for three main reasons: sectors have different priorities and worldviews; competition is fierce for resources; and employees have a lack of knowledge on issues beyond their position (Benson, 2008). Since there has been an attempt at intersectoral collaboration with the ActNowBC program and with the Family First Agenda, with limited health impact, perhaps a different approach is in order to address challenges with the food system. Benson (2008) identifies policy champions as a key advocacy strategy. We have already witnessed this as effective, with the introduction of the food security core program led by Dr. Trevor Hancock, a food security champion. Dr. Hancock's range was limited to the MOH, but he was well connected and able to advance discussion about food security in BC through the creation of the Food Security Model Core Program. The next step would be to identify a food security champion who is well connected with a number of ministries and able to identify regulatory and policy challenges to food security.

Benson (2008) suggests a national advocacy coalition to foster action and support food security champions. FSC fits that role. FSC published the People's Food Policy (Food Secure Canada, 2011) consisting of 10 discussion papers. Prepared through kitchen table talks across Canada and based on research evidence, the policy discussion papers outline recommendations for improving food security. Food security champions in government can use this type of work to stay informed on issues that are important to the grassroots. An opportunistic approach maybe more effective for supporting food security initiatives in the face of unjust food safety regulations (Benson, 2008). It would be important to have an advocate to identify policy development activities that could be influenced by an orchestrated civil society campaign.

Regardless of the best approach to policy for improving population health and wellbeing, it is essential for those working on food issues to communicate and collaborate. Different worldviews, lack of resources and lack of knowledge on the issues will only be overcome through successful partnerships. A number of dimensions are involved in how well partners work together: enthusiasm; agreement about the purpose and need; high levels of trust, reciprocity and respect; institutional support; and adequate leadership or management of the partnership (Dowling, Powell & Glendinning, 2004). The provincial Food Safety and Food Security Working Group was an excellent example of a developing partnership to ease tension and build collegial relations, but at the time of writing, the group had not met for over a year (Personal Communications, E. Bocskei, December 5, 2012). There is no publicly available information on this partnership. Another potential partnership would be between the MOH and MAL. As opposed to working jointly, across ministries, the MOH gave shared jurisdiction over the Food Safety Act regarding the meat file with MAL (the primary cause of tension between food safety and food security) so both ministries have responsibilities with the Act, but do not actually work together (Personal Communications, D. Coney, October 29, 2012). There is no indication of further partnerships regarding food across ministries.

Modernized industrial food system.

Tension between food safety and food security parallels tension between small-scale and industrial-scale agriculture. Industrial food production is an amazing human endeavour that has reduced the toil and strain of heavy labour. The industrial revolution reshaped nature, controlled risk, and reduced fear of hunger (Blay-Palmer, 2008). The problem with industrial agriculture is that it has grown beyond the ability of regulation to

control risk of foodborne illness. Antibiotics are added routinely to animal feed to decrease the spread of disease in confined spaces. This contributes to development of microbes with antibiotic resistance, increasing risk of not only foodborne illness, but zoonotic diseases as well (Sibbald, 2012). There need to be better methods of mass food production to decrease levels of microbial contamination in food and reduce risk to population health. Small-scale agriculture could be part of the solution. In this section, I argue that we have reached a point of modernization causing more harm than good, losing control of safe food production and increasing fear of hunger.

I do not suggest society returns to a pre-industrial era of hunters and gatherers nor abolish large-scale food production methods entirely. But there is a need to consider agriculture practices differently. Stuart and Worosz (2012) describe how the food system has grown and modernized, now causing harm as current production models contribute to cross contamination and widespread outbreaks of foodborne illness. The government develops increasingly complex and expensive regulations to try to deal with modern production models. For example, BSE was a result of feeding cows (herbivores) food consisting of animal by-products. In Canada, there is a regulation to deal with BSE prevention that requires a permit for transporting, accepting and disposing of certain cattle tissues capable of transmitting BSE, known as specified risk material (SRM). Of the 1.7 million cattle slaughtered from January to July 2012, the worst-case scenario would be 14 animals with BSE[8], yet it cost farmers $62 million to comply with the regulation so BSE is not in the food supply (Brynne, 2012). If we did not make

[8] According to Brynne (2012) there have only been 18 known cases of BSE in Canada since 2004, making the projected number of 14 highly unlikely.

herbivores into cannibals, there would be no BSE. This is a costly regulation that is a result of modern industrial agriculture practice.

Western society continues to evolve and respond to fears and perceived risks. Beck (1994) describes how we are in a second modernity he calls "reflexive modernization". According to Beck, the rise of western modernization has reached a level where progress has turned into self-destruction and one kind of innovation undercuts or changes another. Reflexive modernization is a time of self-confrontation, where society begins to recognize risks from modernization and reacts (Beck, 1994). I suggest the emergent food movement is a reaction to the perceived risk and fears of depleted food production due to climate change and decreasing fossil fuels. The development of the food movement is a reaction to mass industrial food production and the food safety implications from cannibalizing livestock resulting in BSE, and over-crowding of animals leading to avian influenza, *Salmonella*, and *E.coli* problems (Blay-Palmer, 2008). More people are aware of industrial food production practices – especially regarding meat and eggs – and some are responding with changes in diet and purchasing.

Beck (2009) states that the clash of risk cultures is developing into a fundamental problem of global politics in the 21st century. "It is increasingly difficult to make a clear and binding distinction between hysteria and deliberate fear-mongering, on the one hand, and appropriate fear and precaution, on the other" (Beck, 2009, p. 12). According to McMahon (2011), we live in a culture of fear where affluent societies expect authorities will eliminate risk even though for most, life has never been safer. There is an irrational cultural attitude where feelings of perceived risk are proportionally high compared to real

danger, while great threats are ignored (McMahon, 2011). This may be fueled by media. Of the 47 media stories I collected on food safety and food security between April 2011 and February 2012, 30% used the term “risk”. McCluskey and Swinnen (2011) agree that food risk is heightened by media reports but scientists, politicians and public interest groups can also influence public perception, primarily through the internet. We are embedded in a risk culture.

Food safety regulations are a mechanism for detection of infectious material, poor food handling practices, and microbial contamination. This is much like cancer screening, or a routine doctor visit. Nothing is done to prevent the problem, but if a problem is there, we hope to catch it before it spreads. It would be more beneficial to have prevention at the source and not simply tighten regulations or increase the number of inspectors. In a human context, we know we can reduce risk of cancer or chronic disease through improved diet and exercise as well as environmental interventions. Food production practices also can be improved to reduce food safety risk. Those affiliated with both food safety and food security are reacting to the risk of food shortage, and of food that is unsafe to eat. They are responding to fear in an era of reflexive modernization, which on the food security side, values less industrialization and sustainable farming practices, while the food safety side is committed to greater modernization and industrialization to deal with food safety risks.

Health equity and power.

The structural conditions that put disadvantaged groups at increased risk of ill health include neo-liberal policies that favour market forces over public health (Miller, 2012). Health inequity is the result of unjust structures, and inequities are a result of how

society distributes wealth and power (Wilkinson & Pickett., 2009). Health equity is about making opportunities available, and decreasing obstacles to achieve the best possible level of health. It involves fairness in distribution of resources, access to care, and support during illness (Whitehead & Dalgren, 2006). Fairness is what is at question here. When large-scale corporations are in place, economic power is such that they influence politics to form a "ruling elite" (Knutilla, 2012). The ruling elite have the power to direct regulation in the name of food safety that favours industrial food production, even at the cost of rural and remote communities that rely on small-scale local food production.

Providing opportunities for optimizing healthy outcomes is a key element to reducing health inequities. The core function process introduced food safety and food security core function papers early in the public health renewal process, and did not include the application of an equity lens, as was intended for all the core programs. An equity lens is an approach to policy and program development accounting for disadvantages suffered due to social positioning (Pauly, McDonald, Hancock, Martin, & Perkin, 2013). Since the release of these two model core program papers, the MOH has completed an evidence review paper on health equity, and all BC health authorities have considered implementing strategies to reduce health inequities in their regions.

Issues of power surface in a complex web of economics, health protection, and basic human need. Power has been defined by McCullum, Pelletier, Barr, Wilkins, and Habicht (2004) as "the capacity to produce intended foreseen and unforeseen effects on others based on the ability to control access to valued resources" (p. 207). In the context of this study, power relates to structural conditions that support corporatization and the

relentless push toward technological advances to address issues that emerge from our evolved modern society. That is to say, tensions between those working in food safety and those in food security are a result of political and economic practices seeking an uncomplicated regulatory framework to mitigate issues of risk of foodborne illness that exist because of complicated food production methods. Therefore, in the case of meat inspection regulations, the application of the same regulations to all abattoirs was the cause of uproar from small-scale producers, resulting in the call for scale-appropriate regulation. This power of setting broad-based regulations can be interpreted as neoliberalism of food politics that support corporate control over small-scale producers.

The impact of food safety regulations on food security extends beyond concerns around illness or hunger. There is a large impact on the local economies when restrictions, designed for large-scale operations and outlets, are applied to small-scale operations. Regulations that have a negative impact on small-scale operations cause undue hardship, contributing to farm closures. These farms might otherwise contribute to the local economy. A local food economy can be a large part of economic stability in rural areas. The implementation of recent changes to the meat inspection regulations imposed financial and emotional hardships in rural communities, putting people at risk of poor health outcomes. In addition, the reduction of the small-scale farm industry leads to a de-skilling of the workforce, with fewer opportunities to learn how to grow food, safely prepare animals or animal products for human consumption, or preserve fruits and vegetables. Society becomes more dependent on mainstream food systems that, by design, are profit driven, not health-driven.

Regulations are not meant to address the safety of food production, but they provide the perception of safety to protect economic markets. This is a driver of Canadian food safety standards. Science-based decision-making is not a main part of setting food safety standards and there are concerns about the ability of risk assessors and managers to translate risk management into practice in a manner that reflects an open, democratic process (Hatt & Hatt, 2012). So, if the science of risk is not effective in setting food safety standards and regulations, then sharing power of decision making and agenda-setting is one way to ease tensions in the food safety/food security arenas (McCullum et al., 2004). One way to share power and consider health equity implications is to have food policy networks or councils where civil society organizations are full participants, along with government (McRae & Abergel, 2012; Seed, 2011). An integrated provincial food policy framework could promote economic viability of farming, along with ecological and social justice. This framework could include the promotion of a sustainable agro-eco system, a safe food supply (with emphasis on scale-appropriate regulations), healthy eating environments, enhanced social experience, and economic development. Intersectoral collaboration is essential for a democratic process promoting improved health protection and to meet basic human needs and improve health equity.

Like many developed nations, Canadian society emphasizes economic growth. Quality of life and good health are rarely measured as indicators of how well we do as a nation. If they were valued more, we would more likely see a mechanism to include health-in-all-policies. I argue that a greater focus on quality of life and good health would provide common ground for those concerned with health protection and health

promotion. The WHO has a policy framework aiming to improve population health and wellbeing, reduce health inequalities, strengthen public health, and ensure sustainable people-centred health systems (McQueen, Wismar, Lin, Jones, & Davies, 2012). This framework focuses on four areas — intersectoral governance, joint ministerial budgets, involving civil society in decision making, and reaching out to industry for common orientation and action on public health issues. In Canada, and more specifically in BC, we are a long way from adopting such a framework but that or something similar would contribute to reducing tensions between food safety and food security actors.

Intersectoral governance and joint ministerial budgets would promote communication and allow for balanced regulatory decisions that do not place small-scale producers at a disadvantage. Involving civil society, even multiple disagreeing sectors, in decision making helps to build trusting relationships so clearly identified as necessary in the concept mapping. True consultation and engagement with diverse groups can strengthen society. As well, reaching out to industry helps build improved understanding of the differences in communication style and professional norms, to work toward a shared understanding of how to create a healthy society.

Dahlberg (2001) describes what is needed to transform government, beyond health-in-all-policies or intersectoral governance, claiming a need to re-embed culture and society in nature with a goal of democratizing the food system. Specifically, Dahlberg (2001) proposes a set of goals, one of which is to re-establish economics in society and nature, which means putting economic power and decision making in larger social and value frameworks. This would involve including social and environment costs of economic activities so that health of individuals, groups and habitats as well as multi-

generational effects would be considered in the value of trade. As I identified in the situational analysis, the food movement arena considers four connecting values of food: the economic value, the quality of food produced and consumed, the taste of food, and the community connection that food provides. By embedding culture and society in nature, we can achieve a better balance in the food system. This type of structural change goes well beyond improving communication across sectors and demonstrates the challenges of power and politics in addressing issues of health equity.

To meet these challenges, we need to build capacity in public health ethics. Public health ethics is a relatively new field and involves concepts of social justice, health equity, and empowerment (Carter, Rychetnik, Lloyd, Kerridge, Baur, Bauman, et al, 2011). There are multiple schools of thought in ethics and a competing values-base make ethical decision-making challenging, both in public health specifically, and in all of health care (Carter et al, 2011). Difference in values-base is what we may see playing out between food safety and food security work. Roberts and Reich (2002) describe three main approaches to ethics in public health: outcomes-based or utilitarian, rights-based or liberalism, and issues focusing on character or virtue (communitarianism). MacDonald (2012) presents a range of public health ethical frameworks that help to describe the differences of approach to public health ethics for those working in food safety and in food security. People working in food safety may lean more toward a utilitarian view and the work of Upshur (2002) with a focus on reducing, controlling and eliminating risk. Those working in food security may have more of a tendency toward the work of Baylis, Kenny and Sherwin (2008) where there is more emphasis on relationships with a focus on acting in response to vulnerability and lack of power to promote common good.

Understanding the differences is important for working together and to appreciate the value systems at work.

Chapter 8: Recommendations and Conclusions

In summary, it is clear that much of what I have identified in this research is not new. Power, intersectoral collaboration, improved communication, risk and fear are part of the public health discourse to address social determinants of health and to improve health equity. The effects of neo-liberal policies on the food system are well documented by such authors as Allen and Wilson (2008), Miller (2012), Dahlberg (2001), and Hatt and Hatt (2012). McMahon (2011) and Miewald, Ostry, and Hodgson (2013) have documented the impact of the Meat Inspection Regulations. This is the first study, however, to interrogate the public health regulatory system in light of food safety's impact on food security initiatives and to consider the effect on health equity.

Contribution to the Knowledge Base

The results of this research support the idea that there is a need for shift in thinking. Seldom do we talk about the need to balance fears of unsafe food with fears of losing control of the food supply. Through the process of doing this research I have come to realize the moral imperative to come together to support a safe and accessible food supply while balancing needs of small-scale producers with economic savings of an industrial food system. Food safety regulations are bred out of complex motives and need exposure as tools for supporting a neo-liberal agenda of favouring market forces over public health and health equity. Careful consideration of how we structure society is necessary to work toward resilience as we face multiple challenges in this time of rapid change.

Implications and Recommendations

I am suggesting change not only in how we view and understand personal motives or worldviews of food and market forces, but also a shift on a larger scale, to change structural conditions to promote health and to encourage a moral obligation to reduce health inequities. In the following section, I highlight implications and recommendations at a core program level in practice, at a structural level for policy, and suggest future research for addressing tension between food safety and food security arenas.

Implications and recommendations for practice.

Recommendations at the practice level apply to the food safety and food security core functions programs. Already in these programs, there is no disputing the goal of a safe and accessible food supply. What is missing is a shared value framework on how to achieve that goal. There needs to be an increased understanding of how others view the world. From a practice perspective, there are some very practical recommendations that I have highlighted in the descriptions of the cases in the section on opportunities for coordination. This is a key aspect of the core functions programs and an area that the MOH and HAs can take action. These include: 1) improving educational opportunities for Environmental Health Officers on urban agriculture and organic agriculture practices; 2) improving food safety awareness in places such as farmer's markets and community kitchens; 3) providing more opportunities for collaboration between EHOs and community nutritionists; and 4) improving food safety data to better predict risk of foodborne illness.

Additionally, there are recommendations that stem directly from the concept mapping exercise: 1) there is a need to form a provincial level collaborative group that shares authority among the food security activist sector, agriculture sector, and health sector; 2) food policy councils at the municipal level should include an environmental health officer or food safety specialist along with community nutritionists and food security activists; 3) relationships among those working in food safety and food security need to be encouraged in a systematic way locally, regionally and provincially and this requires dedicated time to be allocated from the health authority; 4) there is a need to provide reader-friendly information on regulatory environments in order to facilitate food procurement decision making; and 5) there is a need to increase food safety system capacity to allow for flexibility in regulations to match the context of the small food producer.

Concept mapping also provides recommendations for working together: 1) find common ground through open communication; 2) recognize that context matters and that being flexible, not being strict with rules, may be necessary; 3) recognize that the language being used is not always clear to others, so it is important to define concepts and not make assumptions that there is shared understanding between parties; and 4) familiarity is important so time is needed to get to know one another and to discuss common goals and resolve misunderstandings. There are other suggestions for easing tensions in the concept mapping statements in Appendix G, but these are the most highly rated and agreed upon recommendations for practice by study participants.

Implications and recommendations for policy.

The findings of this study have a number of implications for society that would contribute to easing tension between those working in food safety, those in food security and contributors to health equity. There are two main implications for policy that I describe below in further detail. First, the public health regulatory system needs to be strong in health protection, not in industry protection. Second, there needs to be an integrative approach to population health promotion.

Public health regulatory system.

Public health regulations affect everyone and shape how we conduct our lives on a daily basis. According to Senzilet (2010), a "regulation is a principle, rule or condition that governs the behaviour of citizens and organizations" (pg. 7). It is legally binding and one of many instruments that governments use to achieve policy objectives (Senzilet, 2010). There is a need to improve the public health regulatory system. For example, created in 1953, government intended the Food and Drug Act as a consumer protection statute (Health Canada, 2007). Federally, Canada has been going through a process of regulatory modernization, starting in the mid 1990's. The Health Canada (2007) "Blueprint for Renewal" calls for a more efficient and responsive framework, addresses food contributions to chronic diseases, and promotes an integrated system for food safety and nutrition with collaboration between Health Canada, CFIA[9], PHAC, and food safety authorities in provinces and territories. The "Blueprint for Renewal" authors also have an objective concerning a stronger post-market surveillance system and an objective for

[9] In October 2013, the conservative government moved CFIA from the responsibility of Agriculture and Agri-Food Canada to Health Canada. Some suggest this is putting the health of Canadians above needs of industry, while other have suggested this is a smokescreen, and not providing the needed resources for inspectors to do the job (Heppner, 2013).

more emphasis on specific populations such as children, seniors, or those who are immune-compromised, to improve management of health product and food safety risks (Health Canada, 2007). This hints at a concern for health equity although not explicitly. There is an emphasis on reducing the burden on industry and harmonizing regulation with other provincial jurisdictions (Hamilton, 2010). Evidence that informs Health Canada includes scientific evidence, but it more often takes a marketplace event to trigger action — decisions are made on the basis of interests of international trading partners, the overarching approach of the government, Supreme Court decisions, and public opinion (Hamilton 2010). There has been an erosion of Canada's regulation system since the 1988 Free Trade Agreement led to pressure on government by lobbyists, corporations and developers to cut regulation (Hennessy, 2010). Federal government departments are now required to do a cost-benefit analysis for any proposed new regulation (Hennessy, 2010). The changes in the regulations are congruent with a neo-liberal agenda of streamlining and reducing regulation (Lawrence, 2009). It is not surprising then, that there is withdrawal of federal food safety inspectors from the province, and a greater emphasis on industry self-inspection.

An example of government supporting industry over public health is Bill S-11 "Safe Food for Canadians Act" which came into law 22nd November 2012. The Act establishes standards for food commodities and production establishments, including inspection, safety, labelling and advertising, import, export and interprovincial trade. It consolidates the Meat Inspection Act, the Canadian Agricultural Products Act, the Fish Inspection Act, and the food stipulations of the Consumer Packaging and Labelling Act. According to Ruth Ellen Brosseau (2012), the New Democrat Party representative for

Berthier-Maskinongé, QC, the bill lacks whistleblower protection and favours industry over the defence of public health. As the structural conditions shift to favour the economy, the health of the public is at greater risk.

In an effort to reduce spending at the federal level, the CFIA will no longer be doing meat inspections in BC provincially-licensed operations as of January 2014 (BC Ministry of Health, 2011). With a loss of federal level food inspectors, provincial food safety inspectors will be in greater demand, at a higher cost to the province. The public health system overall suffers from continuous cutbacks and restructuring, and without stability and a priority placed on health protection and promotion, there is little opportunity to resolve tension between those working in food safety and food security.

The public health regulatory system is broader than safe food, and the Public Health Act (2008) guides public health in BC. There is no mention of nutrition in the Act, but there is an order for health authorities to establish plans to "identify, prevent and mitigate the adverse effects of health impediments," which include factors that cause chronic disease or cumulatively have an adverse effect on health (Ries & von Tigerstrom, 2010). Nutrition and food security fit within that order. The only mention of food in the Public Health Act is the Food Premises Regulation that simply guides the inspection and food safety management of a food service establishment. The public health regulatory system lacks guidance on food security as well as on broader aspects of nutrition and consumption concerns relating to obesity. Both provincially and federally, we are lacking a coherent food and nutrition policy and there is little indication of community nutritionists working with food law experts to make that shift (Lawrence, 2009).

Nutrition policy has a long history of being overshadowed by food safety and agriculture policy and there is a need to work together to strengthen public health (Ostry, 2006).

How do we strengthen public health at the systems level to ease tensions between food safety and food security at the local level? Multi-pronged strategies are necessary to promote safe and healthy food. To begin, there needs to be greater education on the regulatory process, especially for those working in the area of food security. Food security activists need to understand the process of creating laws and regulations, places to intervene in the system, and ways to introduce flexibility in regulation. Food law experts are missing from the situation described in the situational analysis chapter, yet the regulatory arena contributes to shaping the structure of our lives. Second, there is a need for joint educational experiences for those working in agriculture, nutrition, and food safety, to begin to recognize complexities in each field. Business and industry are also important to understand in terms of economic growth and the consumer's power and place in shaping structural conditions in which we live. Third, there is a need to connect food production and consumption with community economic development, agriculture, health promotion and protection, environment, First Nations, labour and poverty (BCFSN Food Policy Working Group, 2012). A comprehensive food strategy would accomplish this, implemented by a provincial food policy council to advise the Premier on food issues, or a coordinating body in government at Cabinet level that can bring people together on cross-ministry food issues.

Population health promotion.

A second structural condition contributing to tension between food safety and food security is the lack of an integrative approach to population health promotion.

Population health is concerned with a broad range of factors that determine health. According to PHAC, "the overarching goals of a population health approach are to maintain and improve the health status of the entire population and to reduce inequities in health status between population groups" (Chomik, 2001). An integrated approach to population health is not a new idea. PHAC describes an integrated population health promotion model that stems back to 1996[10] (Hamilton & Bhatti, 1996, 2001). Simply put, it involves comprehensive action on all social determinants of health where health organizations analyze possibilities, take action, and influence other sectors. Health-in-all-policies would also be an integrated approach, as noted above. It is not clear why government has not taken up and fully implemented population health promotion as integrated government policy, except that it would require a shift in thinking from the current neo-liberal approach. For example, by not being territorial, sharing limited budgets and resources, and perhaps giving up some power and authority in a shared governance model may ease the path to better population health outcomes. How do we help shift thinking? Looking for unlikely alliances may help. Skogstag (2012) describes the possibilities of effecting a paradigm change in agriculture and food by aligning with programs designed to advance health and environmental sustainability. Similarly, civil society groups who are advocating for change can work with other groups in the areas of agriculture and environment to mobilize the citizenry to influence policy directions. Partnerships with the business community could be an unlikely and effective alliance if practitioners can retain public health values.

[10] This was before formation of PHAC. The work was part of Health Canada.

Implications and recommendations for research.

We have research to support the relationship between food and health but there is an implementation gap between what we know about food and how the food system affects population health. For example, there has been some movement toward a sodium reduction plan, but government has not put regulations in place to reduce sodium in the food supply despite significant advocacy by public health and health care organizations. Tobacco control was a similar conundrum where industry had a great impact on population health. Best, Moore et al (2003) applied systems thinking to the dissemination gap between health promotion research and practice in the area of tobacco control to demonstrate how systems thinking can lead to success in population health promotion. Tobacco and food are two different issues but similar in having powerful industry actors that focus on profits over health. We need more research in how to translate the tobacco experience to the food system. Reddy, Yadav, Arora, and Nazar (2012) recommend that civil society groups in tobacco control, food security, human rights and environment exchange staff members for internships in order to assume connections and identify common concerns.

We need more research on how to integrate and evaluate systems thinking at the policy level. Connecting food production, consumption, economics, agriculture, health, safety, environment, labour, poverty, and First Nations concerns would require a systems map to identify common concerns and areas that overlap. Knowledge synthesis on comprehensive food strategies would help to identify areas of strength in the system. Applying systems thinking for a healthy food system would involve considering all

aspects of the food system and beyond, including how food safety regulations affect food security initiatives.

It would be helpful to have research that focuses on regulation in general. One of the major problems that surfaced from the experience of BC meat inspection regulations was the lack of flexibility that regulations have to address issues of scale. Can we have policies and regulations that bolster global trade without supressing local agriculture activity? Can regulations be flexible? On the other hand, do they become so vague that they are ineffective for both large and small-scale producers? Additionally, what is the role of regulatory policy design in promoting health equity? These questions would be appropriate for realist synthesis of the regulatory policy literature. There is need for implementation and evaluation research on new regulatory policies to trace what works in promoting health equity and under what circumstances.

Similarly, as we identify and work through tension or conflict between food safety and food security programs, it is important to research and document successful integration of these public health core functions. For example, there is a food skills employability program at Toronto Public Health with public health inspectors and community nutritionists working together. In addition, BCs Northern Health Authority has held canning workshops with Fresh Choice Kitchens and Bernardin (canning supply company) involving EHOs and community nutritionists. EHOs have been involved in reviewing Fresh Choice Kitchens manual for up-to-date food safety guidelines. These types of integration of food safety and food security initiatives can be used to model successful collaborations.

Finally, it is important to study the impact and extent of the underground economy in food, including any food safety risks that may occur in the informal food economy. What is the role of the barter system in our social framework, how does it relate to the sharing economy (where people choose to share rather than own), and can we make space for a barter system without having to regulate it? How do these types of alternative economies relate to social justice and health equity, and what sort of impact do they have on the business of big-agriculture?

Overall, I feel it is important to engage in research that will contribute to a shift in thinking and supports social justice and health equity regarding the food system. That will require work on multiple levels, creating untraditional alliances, and working with novel methodologies to expand nursing research in addressing determinants of health.

Reflections on the research process

Each research study offers opportunities not only to expand understanding about the topic, but also about the process of doing research. In this case, I used two methods and a conceptual framework that were new me. This was an engaging opportunity to recognize how much there is yet to learn, especially in operationalizing systems thinking in research. In this final section, I consider my role in the research, how this applies to nursing, and the limitations of this work, including challenges of using a CASs framework.

My role in the research.

According to Anderson et al. (2005), the researcher is an intruder into the case study and can have an impact on how the CAS evolves. Throughout the course of my studies, my role in the situation has evolved from being a nurse researcher/gardener in the

Health Promotion World of the Public Health Arena, to adding a role as a Board Member in a civil society organization in the Networks World of the Food Movement Arena. My thinking and activities evolved from being a concerned eater to supporting action on food system change. Similarly, within the situation, the notion that food safety affects food security was beginning to take hold, and by drawing attention to the situation, I have provided a space for dialogue, which can only help to improve communication and enhance partnerships. Participants were enthusiastic to share their views on a topic that was not widely explored. In this way, there was co-evolution between myself and the situation because of interactions.

My philosophical position of pragmatist-feminist communitarianism did not shift, but was strengthened throughout the course of this research process. The involvement in civil society organizations allowed me to see the research problem from the perspective of people on the ground who are most affected by regulations that favour market forces over health equity. This has strengthened my view of wide-ranging sense of an interconnected community, working toward an improved food system and social justice.

How this applies to nursing.

For me, nursing is about promoting and facilitating wellness of individuals, groups, communities, and society. Many professions can promote wellbeing, and complex systems require different kinds of knowledge to address social problems (Suarez-Balcazar, Hellwig, Kouba, Redmond, Martinez, et al. 2006). This research can contribute to nurses' knowledge of the complex food system so they are able to recognize how taken-for-granted structural conditions negatively affect wellness of individuals and groups. Throughout this work, I expand the practical application of how to think about

intersectoral collaboration, social justice, and the social determinants of health, all of which are inherent in the work of nurses and others in public health and health promotion.

Limitations

There are, of course, limitations to all research, and this work is no exception. It was challenging to understand the full scope of the cases until the research was well underway, and I felt that two of the cases offered less than I anticipated. While I purposely avoided the MIR as a case, it may have been better to dive directly into that area, since it was so prevalent in the interviews. The MIR had the potential to overshadow the larger picture of food safety regulations in general and had already begun evolving toward an adequate solution when I started collecting data.

In terms of data, this research is lacking the food industry perspective. While not a central focus to the situation, industrial-scale production is the bulk of the food system and greatly affected by food safety regulations. A discussion with industry representatives may have provided a different perspective than what I have here. I acknowledge my bias for small-scale food production while I recognize the need for industrial-scale production. I anticipate that actors in industrial food production would have a strong bias against small-scale production and exaggerate the risk of foodborne illness as alluded to by study participants who suggested food safety risk was used as a marketing strategy. When I retained the study the title “Food Gone Foul”, it was in reference to an industrial food system that has seemingly limitless growth, focusing on economic gain over public health. I feel this is an area is that largely overlooked. Interviews with industry representatives may have contributed to my understanding of the

inevitable development of industrial production and speculation on ways to work with industry to promote public health.

In addition, I have limited knowledge and exposure to economics, food law, and trade negotiations, which are components of this work. I have limited interviews with provincial level policy makers, and they are primarily in health protection and health promotion, not in MAL, or other ministries where intersectoral collaboration would be a benefit to promoting food security in BC. Input from these areas may not have skewed my results but would add to the bigger picture. I am also lacking interviews at the federal level with actors from CFIA, or informants on federal level trade negotiations. Some of these limitations are beyond the scope of this research, but on reflection, I can see how I can expand this work to capture greater detail. Recommendations at the policy level would be more concrete and substantial if I had included these actors.

One might argue that what I am identifying as "food security" is actually "food sovereignty". Food sovereignty is concerned with the removal of agriculture from the international trade system and favours local food production and the protection of rural livelihoods across all nation-states (Lee, 2007). The food sovereignty movement recognizes the political and economic power in the food system and is a critical alternative to the neo-liberal model favouring market forces over health equity (Wittman, Desmarais & Wiebe, 2010). My results in this research strongly reflect the food sovereignty movement. Many of my study participants come from a food sovereignty perspective, as do I. Therefore, the interpretation of the results reflects a food sovereignty perspective. I did not realize this was my perspective at the start of this work.

There are also limitations regarding methods. Situational Analysis is a relatively new method stemming from grounded theory. Published works using this method are limited and therefore few examples were available as a model of how best to report information. Other members of the research team are also using this method, but it can be challenging to have limited expertise in this area. In addition, concept mapping is a newer method for use in social science research, but organizational development and strategic planning researchers have used it for 20 years. In this case, it contributed to the theoretical sensitivity for interview analysis and to strategic planning ideas for easing tensions. The on-line process is far-reaching, but lacks opportunity for questions and clarification of participant's comments. It may be more suitable to use this process in focus group settings. Relying on one new method for this research would have offered enough detail for a critical view of the situation.

Similarly, using a CAS framework for research is uncommon and something I will build on over time. Viewing the world from a systems perspective is not new but there is limited applied research that uses CAS as a theoretical framework. Methods such as situational analysis and concept mapping are a good fit with a CAS framework because they focus on self-organization, interconnections, relationships, and patterns. Adding Anderson et al. (2005) principles and characteristic of CAS was helpful in this situation, but not particularly well done. Considering the framework now, at the completion of the project, I would think more in terms of identifying examples of emergence and discuss more about co-evolution as ways to understand the situation better as a way to identify leverage points is a system. A challenge with CAS is to provide a linear description to a non-linear situation. That is, writing in a logical way is a linear

process, but when I am trying to describe the interdependencies and interconnections between social worlds and arenas, there is not a clear systematic process to guide the reader.

Overall, through this work I have provided a better understanding of how conflicting groups of people can work together across diverse philosophical positions. I have illustrated the complex motives behind food safety regulations and examined the neo-liberal agenda favouring market forces over health equity. I have argued that while there is concern for protecting the public's health, food safety regulations are not set with a primary focus on protection from unsafe food, but are a vehicle for providing confidence in the market and with international trading partners, at the cost of health and welfare of small-scale producers in rural and remote communities.

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Appendix A

News Stories on Urban Chickens

Date	Newspaper	Title & Reporter	Main Points
26-Feb-08	The Gazette Montreal PQ	Freedom to grow; Urban chicken farming is environmentally sustainable but illegal - Covert	"Some urbanites worry about smell when it comes to livestock, others worry about noise, or about mice and rats being attracted to the feed. Levenston says the smart thing to do would be to work with experts - say at a university agricultural program - to set standards for housing livestock and storing feed, and then issue permits to keep livestock based on those standards."
21-Mar-08	Kamloops Daily News Kamloops BC	TRU student fails to convince council to OK urban chickens - Young	"Brought forward by an agriculture student, the motion to accept the draft bylaw was defeated. Main concerns were smell in the summer, but if you want chickens and no one complains, then you can have chickens."
25-Jul-08	National Post Toronto ON	Urban Chickens divide readers - Lawee (Letter)	"Chicken coops stink. Hens cackle loudly when they lay an egg daily; roosters are even louder and crow in the early morning. Outdoor chickens are, contrary to the opinion of "Toronto Chicken," very much at risk for avian influenza through contact with wild birds. Remember, families with backyard pet fowl had children die of avian influenza in Asia."
25-Jul-08	National Post Toronto ON	Urban Chickens divide readers – Scarfo (letter)	"Today, people are concerned about the toxins in our food and want to control what they eat and want to raise their own food. So instead of having immigrants trying to maintain their lifestyle, we have environmentalists raising the healthy food issue. I wonder if this issue would even be raised if the ethnic groups of Toronto were the ones trying to reopen this discussion."
02-Mar-09	Vancouver Sun Vancouver BC	The Pros and cons of urban chickens – Fung (letter)	"From the public health perspective, it's a crazy idea for the City of Vancouver to allow city-dwellers to raise chickens in their backyards or on rooftops. We just culled hundreds of thousands of chickens at a biologically controlled poultry farm in Abbotsford. The risk of avian flu increases exponentially with the urban rearing of poultry and close contacts with poultry. The virus can mutate without being detected. Transmission to human takes a long time to be confirmed, by which time it can be too late to contain an epidemic. The cost to health care of an avian flu epidemic will cripple the already fragile economy."
04-Mar-09	Vancouver Sun Vancouver BC	Urban Chicken's wellbeing is missing from the debate - Heslin	"Ignorance is being further demonstrated by proponents who speak glibly of fresh eggs every morning, ducks taking care of their slug problems and chickens cleaning up kitchen scraps, with the motivation being self-reliance and "going

			green." I don't see a real awareness being demonstrated of the animals' needs."
29-Apr-09	Kamloops Daily News Kamloops BC	Honour Thy Urban Chickens - Klohn	Invitation to panel discussion and debate on urban hens
06-May-09	Kamloops Daily News Kamloops BC	Chickens return to council; still no roost -Young	Resident has been taken to court three times to remove his hens and he refuses. $4000 fine put on his property taxes. Council said he has never had the right zoning for chickens, even though he has had chickens for the most of 30 years. One neighbour has complained. Mayor tired of the topic.
06-Oct-09	Winnipeg Free Press Winnipeg MB	Urban Chickens coming to roost in Bozeman - Hill	Referring to Bozeman Montanta. "It's thanks largely to a group of food-minded locals calling itself the Community-Led Urban Chicken movement -- that's right, CLUC -- that persuaded city officials to lift restrictions on the increasingly popular practice of keeping backyard birds for eggs or meat."
27-Oct-09	Saanich News Saanich BC	Council moves ahead with chicken bylaw - Vass	"The idea didn't meet much resistance. Coun. Judy Brownoff said regulations are needed to address concerns such as noise, mistreatment of the animals, disposing of dead birds and worries over impacts on property value."
05-Nov-09	Campbell River Mirror Campbell River BC	Will council chicken out on backyard hen bylaw? - msostler@telus.net	"If Victoria, Vancouver, Burnaby, Richmond, Esquimalt, Oak Bay, Ladysmith and New York City have urban chicken bylaws, do we need to squawk over a few hens? Ask Esquimalt about their bylaw. A spokesperson for Esquimalt says they have not received a single complaint since the bylaw was approved 18 years ago. Chickens provide healthy, pesticide-free eggs. They consume kitchen waste, produce great compost for the garden, make great pets. Times have changed and we have to think about being environmentally smarter and being sustainable."
08-Apr-10	The Globe and Mail Toronto ON	The Vancouver Mayor's chicken and egg problem - Mason	This reporter is not fond of the idea. He point out the 32 page report and notes the $20,000 for the animal shelter. He thinks is not contributing to food security or food sovereignty and is a craze.
13-Apr-10	The StarPhonix Saskatoon SK	Vancouver not all it's cracked up to be - MacPherson	"By one estimate, the cost of keeping four hens is about $400 a year, enough to pay for 70 cartons of eggs. There is also a risk of urban chickens spreading pathogens to people, including the West Nile virus and the avian flu. That's why urban henhouse owners are urged to comply with CFIA biosecurity hazard standards, whatever those are."
29-May-10	Calgary Herald Calgary AB	City hatching plan to allow urban chickens; Council to consider trial of legal backyard coops - Markusoff	"A lot of people are feeling inclined to have chickens because they're concerned about nutrition and being closer to the food chain," "If all these regulations and rules and boundaries are drawn up, it just becomes too much to handle. I would like to see it made easier for people to own chickens."

04-Jun-10	The Ottawa Citizen Ottawa, ON	Councillor intends motion for urban chicken pilot; plan would suspend bylaw for one year - Cockburn	“Bay Councillor Alex Cullen gave notice Thursday to the community and protective services committee of a motion that calls for the city to suspend its animal control bylaw for one year in urban areas to allow residents to raise hens”
11-Jun-10	Vancouver Sun Vancouver BC	Are your backyard chickens up to scratch? Here's what you need to know to keep hens around the home - Shore	“Smith joins a community of about 200 or more chicken owners in Vancouver, according to Ross Moster, a spokesman for the sustainable living organization Village Vancouver. The group is helping chicken owners connect through Coop Co-ops, neighbourhood networks of chicken owners. Moster also organizes Village Vancouver's popular Backyard Chickens 101 workshops, which give would-be egg farmers the basic knowledge they need to succeed.”
09-Sep-10	The Ottawa Citizen Ottawa ON	Chicks in the City - Cross	They worry the hens will attract predators, spread disease like avian flu, smell and make noise. Hen owner is worried about the centralized food system, traces of antibiotics and medications found in factory eggs and feels the quality is higher from his hens. Believes the bylaw impedes his right to access safe and healthy food. Some are worried people will get in over their head. It is too much for people to become chicken experts.
21-Sep-10	Leader Post Regina SK	Council weigh in on status of pigs, chickens - Benjoe	Question of pot-belly pig as pet or livestock. City not ready for urban chickens. "The onus falls back on the community and ultimately on the corporation of the City of Regina to look after them," said O'Donnell. "So while there are costs involved there are also, in my view, some public health issues about the types of animals that come in. The smell, the odour and the neighbourhood conflict."

Appendix B

Sample Participant Consent Form Interviews

Convergence of food safety and food security: Situational analysis on collaboration

You are being invited to participate in a study entitled **Convergence of food safety and food security: Situational analysis on collaboration** that is being conducted by Wanda Martin.

I am a doctoral student in the School of Nursing at the University of Victoria and you may contact me if you have further questions by e-mail: [email address]. As a graduate student, I am required to conduct research as part of the requirements for a degree in nursing. It is being conducted under the supervision of Dr. Marjorie MacDonald. You may contact my supervisor at [email address and phone number]. This research is funded by the Canadian Institutes of Health Research.

The purpose of this research project is to examine how people engage in food security activities that include food safety precautions, and specifically to define challenges and barriers to intersectoral or interdisciplinary coordination and collaboration. Research of this type is important because it can be challenging to provide full access and full safety of food at the same time. This research is about providing safe and accessible food for everyone.

You are being asked to participate in this study because you participate either in food security or food safety activities or in employment. If you agree voluntarily to participate in this research, your participation will include being interviewed approximately one hour consisting of both open-ended questions and more structured questions. I may also ask to take a photo of your food security activity, with your permission, and a waiver will need to be signed specifically for that purpose. Interviews will be audio-recorded with your permission at a place you prefer. I anticipate a minimum of 40 participant interviews.

Participation in this study may cause some inconvenience to you, as it will require some time commitment. There are no known or anticipated risks to you by participating in this research. The potential benefits of your participation in this research include better understanding of food security and food safety issues and enhancing the public health service delivery of these two programs. This research is about improving the access and safety of food for everyone, but especially for those most in need. Additionally, I hope to add some insight to novel research methods for applying complexity science to public health intervention research.

Your participation in this research must be completely voluntary. If you do decide to participate, you may withdraw at any time without any consequences or any explanation. If you do withdraw from the study your data will be used only if you give permission to do so.

In terms of protecting your anonymity, I will be asking you to identify others who may be interested in participating, so they will know you have participated and recommended them to me. However, they will not know what you have said in your interview.

Your confidentiality and the confidentiality of the data will be protected by removing your real name and assigning a code name to your information. Contents of quotes will not reveal individual identities and no one will be identified in any reports or papers emerging from the project. All the study data will be stored on a password protected computer and an external hard drive and saved for an indefinite period. I may use the data in the future for secondary analysis. Only I will have access to the personally identifiable data, and I will transcribe the interviews and assign the code names.

It is anticipated that the results of this study will be shared with others in the following ways: directly to participants; published articles; dissertation; presentations at scholarly meetings, and on the web. If you would like a copy of the final report, I will require your e-mail address.

Electronic data from this study will not be disposed of but paper copies will be shredded upon completion of the dissertation or at the time of withdrawal if the dissertation is incomplete.

In addition to being able to contact the researcher and supervisor at the above phone number and e-mail addresses, you may verify the ethical approval of this study, or raise any concerns you might have, by contacting the Human Research Ethics Office at the University of Victoria at [email address and phone number] and the VIHA Research Ethics office at [phone number].

Your signature below indicates that you understand the above conditions of participation in this study and that you have had the opportunity to have your questions answered by the researchers.

_____	_____	_____
Name of Participant	*Signature*	*Date*

A copy of this consent will be left with you, and a copy will be taken by the researcher.

Appendix C

Documents Used in Analysis

Type	Title
Blog or websites	Egg regulations and things to think about – The Farmstand. http://thefarmersstand.blogspot.com/2011/04/egg-regulations-and-things-to-think.html Bovinity – Gordon Watson. http://www.freewebs.com/bovinity/ Date Labeling – CFIA http://www.inspection.gc.ca/food/information-for-consumers/fact-sheets/labelling-food-packaging-and-storage/date/eng/1332357469487/1332357545633 History of Supermarkets http://www.groceteria.com/about/a-quick-history-of-the-supermarket/ International Women's Catering Coop http://www.intwomenscateringcoop.com/casestudy Deconstructing the Locavores Dilemma – Lenore Newman http://sandandfeathers.wordpress.com/2012/07/08/deconstructing-the-locavores-dilemma-a-response-to-pierre-desrochers/ Wild Things Organics: http://wildthingorganics.com/
Reports	Annual Progress Update: Core Public Health Program 2010-2011, PHSA (March 2011) Community Food Skills & Employability Pilot Project, Toronto Public Health Food for Thought, PHSA Imagine, NH. http://www.northernhealth.ca/YourHealth/HealthyLivingCommunities/HEALNetwork.aspx
Listserv postings	Fresh Choice Kitchens Victoria Community Kitchens Network
Guidelines/Protocols	Moss St. Market Policy Manual Diarrhea Guidelines, MoH
Regulations	Dairy Products Regulations
Meeting Minutes	Victoria Community Kitchen Network
Council Memo	Kelowna City Council
Presentation	'Terrorist Ducks' and Tainted Salad Greens: On the Need for Critical Geographies of Food Safety in Canadian Food Systems – Sommerville (2007). http://meridian.aag.org/callforpapers/program/AbstractDetail.cfm?AbstractID=12540

Appendix D

Recruitment Information Letter

You may be interested in participating in a research study entitled: Convergence of Food Safety and Food Security: A Situational Analysis of Collaboration.

It is a study for my dissertation work to achieve my PhD in Nursing. You are being asked to participate because of your involvement in food security or food safety activities, specifically farmer's markets, unpasteurized milk, community kitchens, and urban chickens. Participating in the study will involve being interviewed and answering some questions about your food networks. Interviews should take about an hour and we can meet where every you are comfortable sharing your experiences with me.

The purpose of this research project is to examine how people engage in food security activities that include food safety precautions, and specifically to define challenges and barriers to intersectoral or interdisciplinary coordination and collaboration. Research of this type is important because it can be challenging to provide full access and full safety of food at the same time. This research is about providing safe and accessible food for all.

Please feel free to contact me to discuss your participation by e-mail: [email] or you can leave a phone message at [phone number] and I will return your call. My supervisor is Dr. Marjorie MacDonald, Associate Professor in the School of Nursing at the University of Victoria. You can also contact her at [email and phone number]

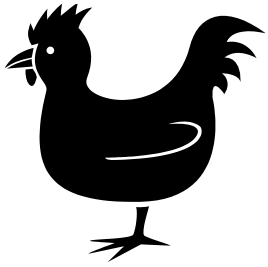
Wanda Martin, RN, PhD(c)

School of Nursing, University of Victoria

Appendix E

Recruitment Poster

Do you keep city chickens?



You may be interested in participating in a research study entitled **Convergence of Food Safety and Food Security: A Situational Analysis of Collaboration**.

It is a study for my dissertation work to achieve my PhD in Nursing. You are being asked to participate because you keep backyard chickens in a city. Participating in the study will involve being interviewed and answering some questions about your food security and food safety networks. Interviews should take about an hour and we can meet in your backyard (with the chickens), or where every you are comfortable sharing your experiences with me.

The purpose of this research project is to examine how people engage in food security activities that include food safety precautions, and specifically to define challenges and barriers to intersectoral or interdisciplinary coordination and collaboration. Research of this type is important because it can be challenging to provide full access and full safety of food at the same time. This research is about providing safe and accessible food for all.

Please feel free to contact me to discuss your participation by e-mail: [email address] or you can leave a phone message at [phone number] and I will return your call. My supervisor is Dr. Marjorie MacDonald, Associate Professor in the School of Nursing at the University of Victoria. You can also contact her at [email address and phone number].

Wanda Martin, RN, PhD(c)
[address]

Appendix F

Interview Questions

Urban Chickens

1. Can you briefly describe how you got into raising chickens?
2. How long have you had them?
3. What is it like? How much work is it and how many eggs do you get in a week?
4. What is the cost? Is it an affordable thing to do?
5. Do you think keeping chickens relates to health equity? How?
6. What do you know about the food safety side of chickens and eggs? How do you know your eggs are safe?
7. Do you have any personal experience with food inspectors or the food inspection system? What makes the relationship good or bad?
8. Sometimes there can be tension between food safety and food security folks. What advice would you give to ease any tensions?

Community Kitchens

1. Can you briefly describe how you got involved with the community kitchen?
2. What is the cost? Is it an affordable thing to do?
3. Do you think community kitchens relate to health equity? How?
4. What do you learn about food safety when you join a community kitchen? Who explains what about food safety?
5. Has the kitchen that your group works in been inspected?
6. Do you have any personal experience with the food inspectors or the food inspection system?
7. How is the relationship between those participating in community kitchens and food inspectors?
8. Sometimes there can be tension between food safety and food security folks. What advice would you give to ease any tensions?

Farmer's Market Vendors

1. How long have you been a farmer and selling at farmer's markets?
2. It is a good marketing venue and financially worth your while?
3. Have you ever considered a farmer's market in relation to health equity? How do you think they relate?
4. What do you know about the process of inspections for farmer's markets?
5. Do you know about or have you taken the Market Safe Course?
6. What is your experience with food inspectors and food regulations?
7. What are some of the issues with food safety when it comes to farmers and selling their products?

8. Sometimes there can be tension between food safety and food security folks. What advice would you give to ease any tensions?

Farmer's Market Consumers

1. How long have you been attending farmer's markets?
2. What attracts you a farmer's market?
3. What do you know about the process of inspections for farmer's markets?
4. Do you ever think about food safety when at a farmer's market?
5. Do you have urban chickens, cow-share, or are you involved with a community kitchen?
6. If no – thank and terminate interview. If yes, offer a flyer and ask for a further interview on the case(s) mentioned.

Unpasteurized Milk

1. How would you describe your history with unpasteurized milk? How did you get involved?
2. How long have you had a share in your current cow?
3. What is the process? Can you tell me what is involved with a cow-share?
4. What is the cost? Is it an affordable thing to do?
5. Do you think of unpasteurized milk as a health equity issue? How?
6. What do you think of the food safety regulations regarding milk? How do you ensure your milk is safe?
7. Are you familiar with the court cases last year in Ontario and Chilliwack? What is your reaction or opinion to those cases?
8. Do you have any personal experience with food inspectors or the food inspection system? What makes the relationship good or bad?
9. Sometimes there can be tension between food safety and food security folks. What advice would you give to ease any tensions?

Environmental Health Officers

1. How long have you been an EHO? Do you currently do food inspections as part of your job?
2. How do you define food security?
3. What are some of the issues involved with kitchens used for community kitchen groups?
4. What can you tell me about inspecting at farmer's markets? Have you been involved in the Market Safe Program?
5. How involved are you, or have you been with backyard or city chickens? What are some of the issues to do with urban chickens and home egg production?
6. What do you think of the food safety regulations regarding milk?

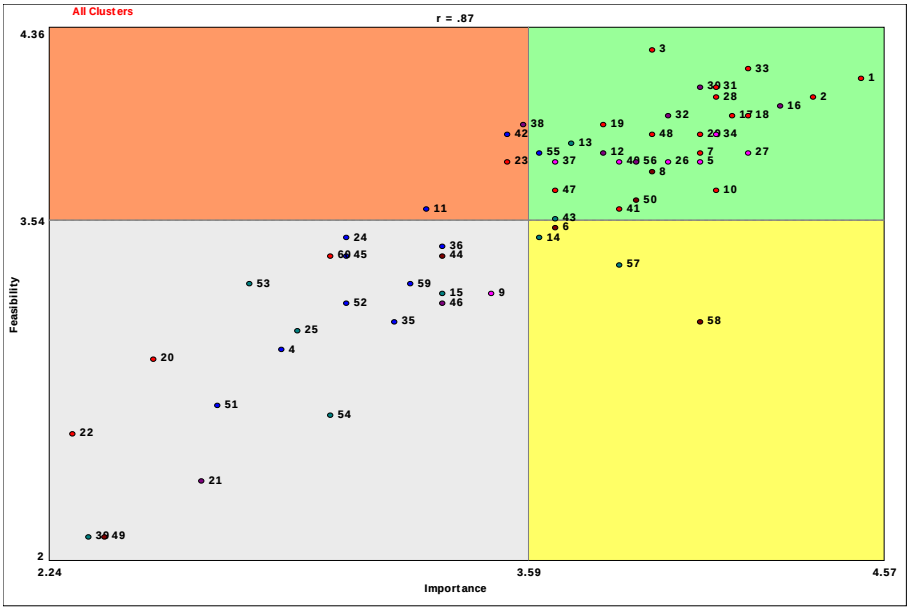
7. Health equity is part of all the public health core programs. How do you see health equity as part of the food safety core program?
8. Sometimes there can be tension between food safety and food security folks. What advice would you give to ease any tensions?

Appendix G

Concept Mapping Go-Zone Maps

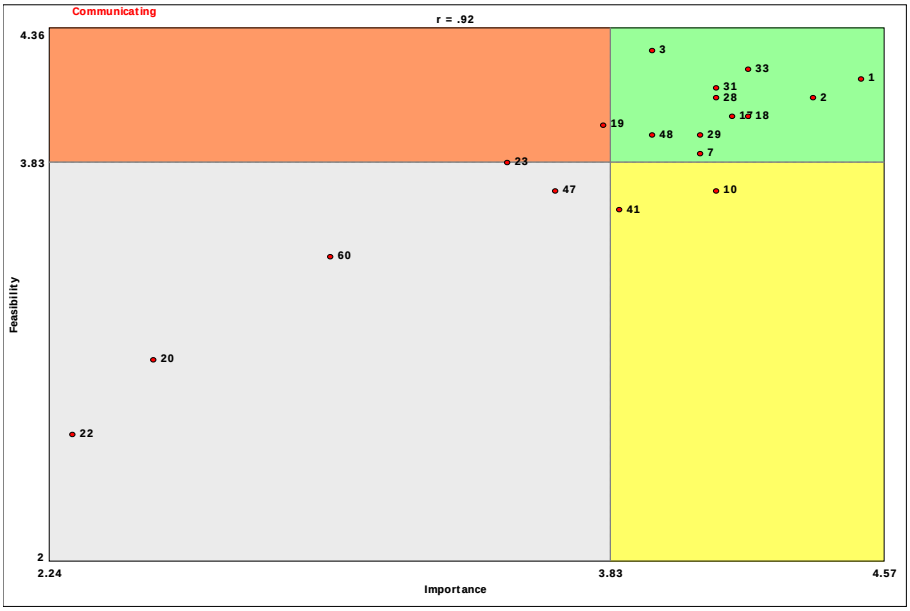
Go-Zone maps are a bivariate visualization of the relationship between statements that are most important and most feasible. Quadrants are created based on the mean importance and feasibility calculations. The size of the quadrants is based on the range of ratings and where the mean of the ratings lie within that range. For example, in Figure 36, the importance ratings range from 2.24 to 4.57 (participants were asked to rate statements on a scale of 1-5), the feasibility ratings range from 2.00 to 4.36. Statements in to top right quadrant were ranked above average for both importance and feasibility. These may be areas of action to focus on first, but all statements important to consider.

Figure 30 Overall



The remainder of the graphs are detailed views of each cluster, organized according to the number of statements each cluster contains. The statements are listed numerically, according to what is in the go-zone or ranked as both most important and most feasible, and then the remainder of the statements for that cluster.

Figure 31 Communicating



Focus prompt: A way to maximize understanding and collaboration between those working in food safety and food security is...

Go-zone Statements:

1. To find the common ground. Both are essential and mutually compatible, but this requires open communication and flexibility (versus strict rules).

2. To ensure a common language for communication so that true dialogue can occur. As someone with some involvement in both sectors, I have seen situations in which both 'sides' are essentially in agreement, but not necessarily realizing it.

3. For the employer (e.g. regional health authority) to host a meeting/conference so public health inspectors and nutritionists and/or dieticians can talk face to face and discuss common goals and how conflicts can be resolved.

7. To foster dialogue amongst the sectors, exploring the commonalities and differences and clarifying the rationale and evidence behind each.

17. To work on regional or community basis. Begin with facilitated dialogue between public health food safety staff and food security staff, reach a shared understanding, and then broaden the discussion to include local farmers and community advocates. Document agreements.

18. To strengthen the relationship by recognizing common goals and values to create an image of what the future can look like if they work together, then those working in food safety and food security can make a plan to work toward specific goals.

28. To have an opportunity to share expertise and decide where they intersect and where the 'common'ness is, and also the gaps that create issues in the community.

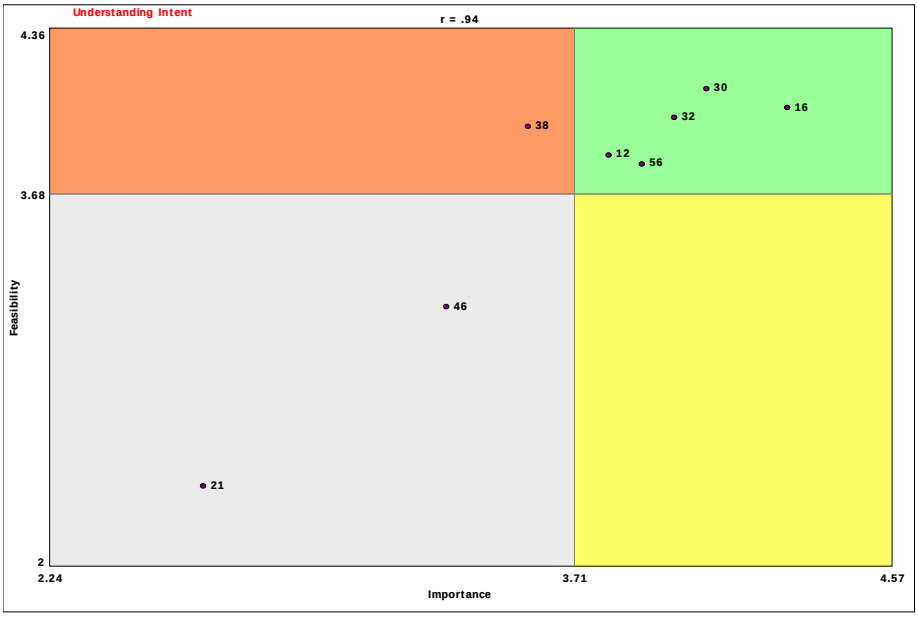
29. For local food security activists to meet local food safety experts and build a relationships.

31. To examine what each other are doing and show the interdependence of one on the other. Knowing that one's work is dependent on another area strengthens the need to understand, appreciate, and want to be involved in the other area.
33. Within public health, create opportunities for inspectors and nutritionists to dialogue and collaborate.
48. By bringing people to work together - food literacy, food skills capacity building, and food safety go hand in hand. The silos should be broken down.

Statements not in the Go-Zone

10. To talk and really listen to each other so as to gain an understanding of the different perspectives from each field, then to come to an area of common ground and an agreement about where the two groups can work together.
19. To schedule a meeting to build relationships and explore common goals and values to imagine what the future would look like if those working in food safety and food security worked together (this method is called scenario thinking).
20. By building the relationship with each other by going for a walk together and enjoying a meal together then schedule a more formal meeting with those working in food safety and food security to explore their common goals and values around food.
22. To enjoy a meal together (specifically a picnic, outdoors, with the families of those working in food safety and food security present). After/during the meal talk about food safety and food security issues in an informal way.
23. To organize collaborative workshops and field-days where information and ideas are shared and a sense of common purpose can be developed.
41. To secure shared goals and priorities between the two groups whereby the responsibilities of both interests are achieved.
47. Bring people together to explore the mandates of food safety and the advocacy entailed in food security.
60. To establish or promote existing central interface on the internet, and yearly in person events, that allows for continued permanent conversations between individuals and organizations from different levels of involvement and different sectors.

Figure 32 Understanding Intent



Focus prompt: A way to maximize understanding and collaboration between those working in food safety and food security is...

Go-Zone Statements

12. For food safety and food security professionals to understand the intent of and the perceived need for a focus on food security in various contexts (e.g. urban vs rural/isolated, developed vs developing areas, moderate climate vs long-winter areas).

16. To come to a common understanding of what "food safety" and "food security" mean.

30. To understand the intents of food safety regulations and safe food handling practices, so that the principles can be applied to food security initiatives; and such initiatives can be achieved.

32. To identify where inspectors and nutritionist converge and diverge. Is food access as central to public health inspectors as it is to nutritionists when we talk about food security?

Not in the Go-Zone

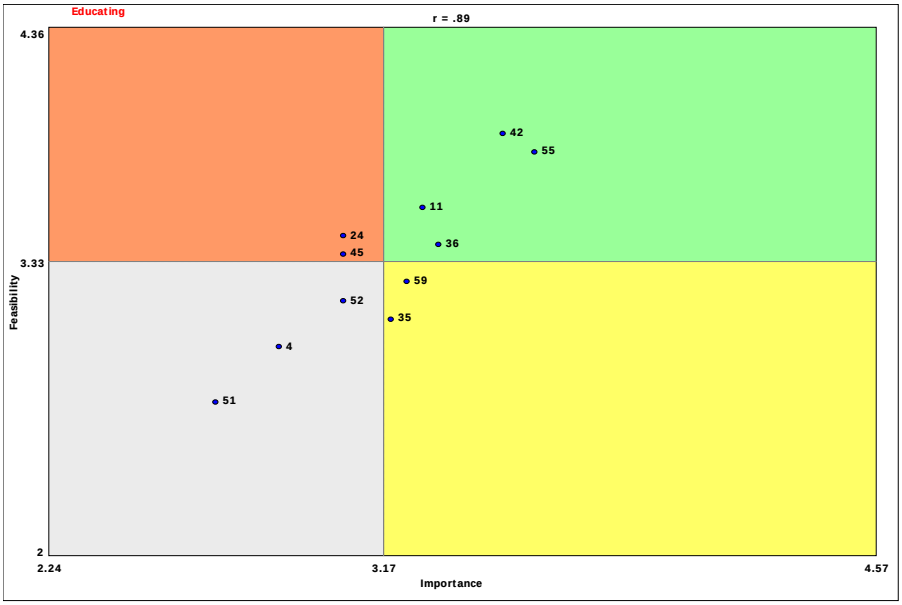
21. To go for a walk together in a low-income neighbourhood. During or after walking, talk informally about what they see or observed related to food while walking.

38. To emphasize that food safety and food security are not mutually exclusive.

46. To have discussions about the relationship of food safety to food security/sovereignty so we can figure out the best balance. Paid service providers (inspectors) are the judge of local food events, processing and growing, and we need to discuss the separation that judgment creates between people and food.

56. To have a forum for food security initiatives to be discussed with food safety staff and public groups to assist with overcoming barriers rather that halting projects due to lack of regulatory compliance.

Figure 33 Educating



Focus prompt: A way to maximize understanding and collaboration between those working in food safety and food security is...

Statements in the Go-Zone

11. For everyone to remember that local does not guarantee safety nor does greater than 100 miles, that neither home prepared nor commercially prepared guarantees safety, that neither raw nor cooked guarantees safety, that neither inspected nor uninspected guarantees safety.

36. To engage all levels of populations around the importance of healthy accessible foods, and education around the benefits of eating, cooking, growing, and producing natural foods.

42. By providing more reader-friendly information on regulatory environments, especially meat processing. Creating easy-to-understand messaging around the differences between provincially and federally inspected abattoirs is key to food procurement decision making.

55. By holding public information sessions to inform on the value of food security initiatives, the need for food safety to be in place, and what constitutes food safety.

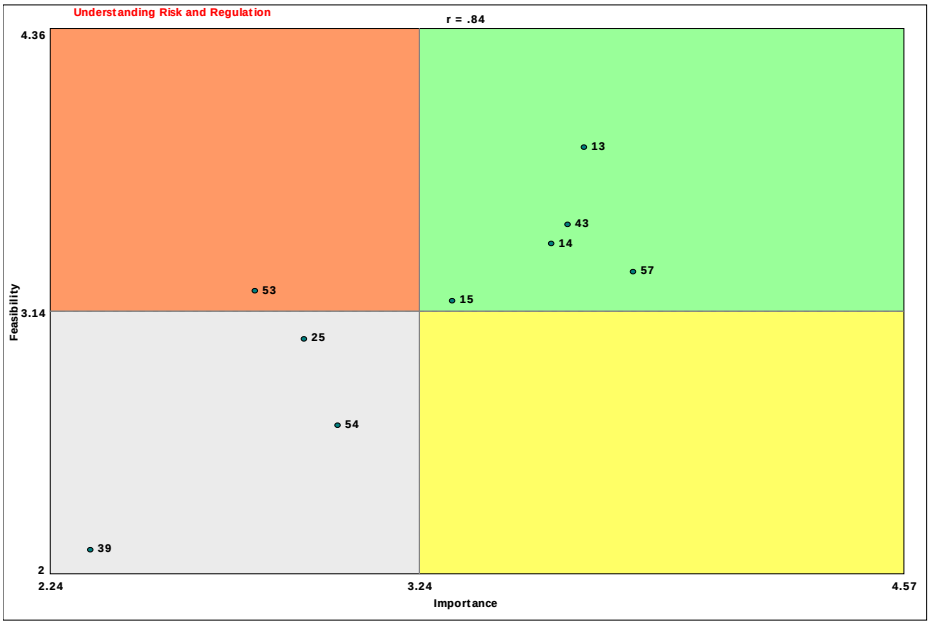
Not in the Go-Zone

4. To educate the public that local food is not any safer than imported food. It feels better to have local food but safety should be the priority.

24. By realizing that enough food doesn't necessarily mean 150 different types of items from the produce section of the grocery store in winter. Frozen and canned foods are also acceptable.

35. To use everyone's available resources to reach out to everyone, to meet them where they are currently in the food culture and help them along with resources, info and support, to improve the culture for themselves.
45. To educate and empower people to be responsible to research where their food comes from and decide for themselves if they will eat it - e.g. - label things that are genetically altered.
51. To communicate that without food, "safety" is meaningless; that safety is subservient to security.
52. To improve public understanding of their personal role in food safety, so they understand that the safest food comes from someone you know and trust.
59. To create a public awareness campaign that is directed at people in power and within administration of different organizations across sectors so that their knowledge of this issue is enhanced and they are able to identify the need to support initiatives.

Figure 34 Understanding Risk and Regulation



Focus prompt: A way to maximize understanding and collaboration between those working in food safety and food security is...

Statements in the Go-Zone

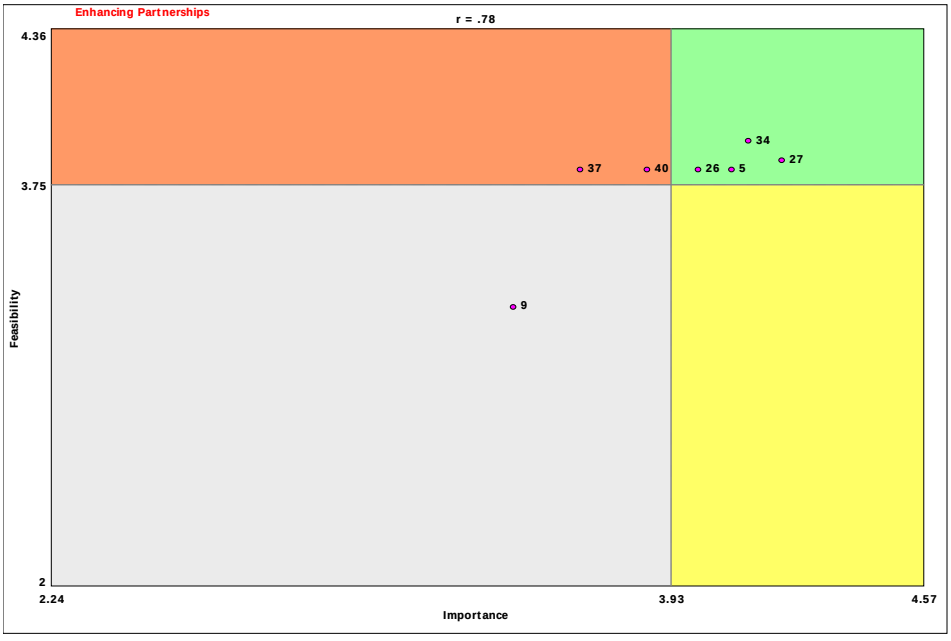
13. For food security professionals to understand the inherent food safety risks in some foods (e.g. raw sprouts, raw milk, dried and/or fermented meats, home canned) and that food regulations are intended to protect broader public health not limit individual choice.
14. For food security advocates to understand that broader public health is a priority for governments and food safety agencies, and that legislation to protect the general public from food-related health risks may be unacceptable to people focused on choice.

15. For food safety professionals to accept that some individuals want to take risks for themselves with respect to food choices and that these risks may be unacceptable when considering broader public health implications.
43. Emphasize the economic reality of farm business. Both food safety and security folks make demands that require huge capital, knowledge, time, and liability risks from farmers, ignoring many of the business realities and underestimating market demand.
57. To develop awareness of potential bylaws, policies, legislation, bills, and international trade agreements which affect producers and processors - e.g. liability insurance for community gardens, irradiation of produce before selling, or genetically engineered foods.

Not in the Go-Zone

53. To engage the public in education that ultimately, food safety issues rest with the consumer, NOT the government.
54. To ensure that "food safety" issues do NOT intrude in "right-to-eat" issues.
25. To realize that food, unless it is sterile, is not safe and when it is sterile it is not particularly healthy typically. Food that doesn't rot isn't food so we need to let go of our desire for guaranteed safe food.
39. To remove the word 'regulation' from the discussion.

Figure 35 Enhancing Partnerships



Focus prompt: A way to maximize understanding and collaboration between those working in food safety and food security is...

Statements in the Go-Zone

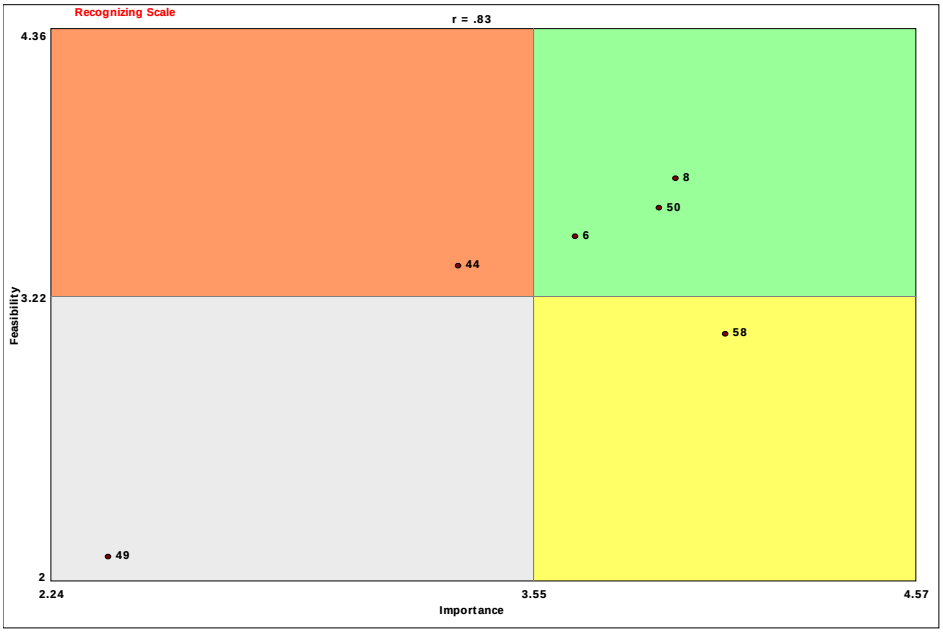
5. Through enhanced partnerships. Both sectors (safety and security) need to work collectively to develop policy, programs, guidelines etc... I have experienced that food security is promoted to community sectors before the safety issues are considered.

26. To list issues and concerns from stakeholders in order to create working models illustrating policies and processes that recognize common goals and objectives. Identify some quick wins to support further action.
27. To form a collaborative group that has authority between food security activist, agriculture sector and health sector that can move this forward rather than the current ad hoc community/regional voluntary groups.
34. To increase opportunities to work together on food policy council and food system initiatives occurring at the municipal level.

Not in the Go-Zone

9. To identify the level of focus for the understanding and collaboration. National level XYZ won't necessarily be able to understand and/or collaborate effectively with local level ABC because constituencies and purposes are so different.
37. To create integrated, multidisciplinary work teams that bring the skills and knowledge from both sets of expertise together when developing outputs (policies, recommendations, strategies).
40. To identify the greatest areas of concern and then to sort through those that have broad implications and those that involve the least risk or the least ties to real food security.

Figure 36 Recognizing Scale



Focus prompt: A way to maximize understanding and collaboration between those working in food safety and food security is...

Statements in the Go-Zone

6. To look at the incidence data for small-scale food producers/processors as compared to large-scale producers/processers - i.e. what proportions of consumers have been sickened by small-scale producers vs. large-scale producers?

8. To look together at the various scales of food production and distribution and consider their impact on both safety and security. In particular to consider what would be appropriate regulations for non-industrial food production/processing.
50. To sort out issues of locality and size; to come to mutual understanding that small, local food producers have fundamentally different food safety needs than big industrial food producers.

Not in the Go-Zone

44. Get government agencies, hospitals, etc. to support local growers and help to strengthen local food growing - by example.
49. To bring an end to draconian food safety actions, such as the arbitrary shutting down of raw dairy herd-share operations.
58. To make food safety and security part of all areas of government... making food first in all decisions will increase peoples understanding and collaboration.

Appendix H

Cases Summary

	Tension	Intersectoral Collaboration	Negotiating Strategies	Health Equity
Urban Chickens	Between Municipalities and community members; perceived risk for pathogen transmission (washing, refrigeration of eggs)	EHO can inform municipalities for bylaws and provide educational material on how to mitigate risks	Explicitly stating the benefits and challenges; not committing to a position	Low-income housing co-operative to have community chicken coop; Allows for access to good food and to feel good
Farmer's Market	Keep to basic foods and not be food facilities; supporting farmers, not added-value products; need to categorize something that has no category; egg refrigeration; farms are "dirty"	MarketSafe Program	Changes in regulations for high and low-risk foods; streamline the licensing requirements	Expensive but the food is worth it; voucher program; donating left over food; farm worker employment
Community Kitchens	Perceived need for HA-approved kitchen; bound by legislation and focused on that; more enforcing the legislation than working with the programs; subjective as to how the food safety legislation is interpreted; inconsistency because certain groups are exempt; lack of communication within the HA; food from dumpsters	Inviting a Food Safety Specialist to talk; partnering on events like canning; having a consistent food safety resource person	Have an objective point of view; cook together	More support for kitchens that are struggling; women's cooking group became co-op SIWES; cooking sometimes does not get done because there's so many other issues that they're facing, the community kitchen becomes a place of trust and support and maybe not in the food but of a personal nature
Raw Milk	Pasteurization; lack of flexibility in the system; degree of the perceived risk	None – firm belief from Public Health that all raw milk is too risky, some dietitians are less reactive.	Court cases in BC and Ontario – there appears to be no middle ground	People do not have equal access – needs to be regulations so there is equal access

General	Regulation over needs of people, especially disadvantaged populations; suspicion on both sides; scale of regulations; food waste; CFIA competency level; safety inhibiting access; corporations versus small producers; regulation versus common sense; one-size-fits-all regulations; institutionalized mindset; farmer against farmer	Community events around food security need to include EHOs; Food policy councils should include EHOs; food security core program has been a bridge between civil society and public health professionals	Communicating details and needs; evolving as needs change; more exposure to each side; allowing for more flexibility and context specific decision; educate EHO and nutritionists together for some courses; training in risk assessments; training EHOs in food systems	Food banks, do we take what is no longer suitable for a market and make it available to people who may already be compromised in some way; Dumpster diving; everybody has the right to have access to safe food

Appendix I

CRD Chicken Bylaws

Capital Regional District 13 Municipalities	Maximum No. Of Chickens	Size of land1 acre is 4047 m^2 or.4 Hectare (ha)	Notes
Saanich	5 10 30 99	557 to 1,114.8m^2 1114.8 to 1,858m^2 Over 1.858m^2 to .4ha Over .4ha	Smallest land size must register flocks. Not more than three cubic metres of chicken manure shall be stored on the land at one time
Sidney	0		None allowed
View Royal	4	Not specified	Over the age of 4 months; no roosters; no egg sales
Victoria	99	Not specified	Poultry allowed but no roosters or other farm animals. Number not specified but anything over 99 would require quota.
Esquimalt	4	Single family zone property	No roosters and .4 m^2 enclosed space per hen
Oak Bay	5 8 10	745 to 1858m^2 1858 to 4047m^2 Greater than 4047m^2	All land sizes require permit
Colwood	24	Greater than 4,000m^2	The following seven municipalities are largely agricultural areas.
Highlands	-		No mention in bylaws
Langford	20	Greater than 4,000m^2	
Metchosin	24	4,000m^2 or prorated for less	
Sooke	6	600 to 2000m^2	No roosters on lots less than 2000 m^2
North Saanich	10 20 30	1,114.8m^2 Over .4ha but under .8ha Over .8ha	
Central Saanich	5 8 10	1858m^2 Between 1858m^2 & .4ha Greater than .4ha	Except in a designated agriculture zone.

Appendix J

Glossary

Agents are either human or nonhuman (e.g. documents or computer systems) that are a mechanism to share information with their environment.

Agrologist provides expertise in agriculture and hold professional designation in Canada.

Arenas, a term used in situational analysis, are fields of action comprised of different social worlds (Clark 2005).

Collective commitments are what we can see in a social world/arena that the group of actors are doing. The social world is defined by how it talks about what it is doing and what it is committed to.

Food justice is related to social justice with a focus on the food system. It includes not only concerns that people have enough to eat, but that agriculture workers are paid a living wage and there is significant concern and respect for environmental sustainability and animal welfare (Allen, 2008).

Food literacy is a term that encompasses what you know about your food and the food system. It includes food skills, how to follow a recipe, read labels, how to source food and how to produce food. It also includes knowledge on the way food is produced and processed.

Food Sovereignty is "the right of nations and peoples to control their own food systems, including their own markets, productions modes, food cultures and environments" (Wittman, Desmarais, & Wiebe, 2011, p. 2).

Foodscape is what you see of food production and consumption in an area. For example, it would include production such as urban agriculture including chickens, backyard or community gardens and fruit trees. It can be what you see for food purchasing opportunities such as grocery stores or fast-food restaurants.

Implicated silent actors are a category in a Situational Analysis ordered map and refer to human or non-human actors in the situation who are not directly involved in the situation under study, but come into play because they surfaced in the data.

Panarchy is a framework for describing hierarchical systems with interconnecting elements and to rationalize the interaction between change and persistence. It is focused on the source and the role of change in systems.

Sharing economy is also called collaborative economy, and is a growing grass-roots movement where people are choosing to share rather that own. According to Gorenflo (2010), a sharable culture is a basic part of human life and can include skills or knowledge, used goods, and social reach as currency. Examples include car-shares, open software, and more traditional bartering of goods and services.

Social worlds, a term used in situational analysis, are "universes of discourses" or groups with shared ideologies and commitments to activities that build their interest (Clarke, 1991)