A Study of the Impact of British Columbia's Meat Inspection Regulations and Amendment on Food Security in Select Rural and Remote Communities in BC

By

Sally Hodgson
B.Sc., University of Victoria, 2008

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Supervisory Committee

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Dr. Aleck Ostry (Department of Geography, UVic)
Co-Supervisor

Dr. Jutta Gutberlet (Department of Geography, UVic)
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Dr. Christiana Miewald (Centre for Sustainable Community Development, SFU)
Additional Member

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Food safety regulations have increased over the past decade in response to food safety scares, international trade and changing public demands. The purpose of this thesis is to determine the impacts of meat safety regulations and a subsequent amendment on food security in rural and remote communities in British Columbia. Case studies of three communities, Bella Coola Valley, Haida Gwaii and Powell River Regional District, were utilized to assess these impacts. Interviews with government officials and local farmers were combined with agricultural and socio-economic data. Though it is not possible to attribute impacts directly and solely to the change in regulatory structure, it appears that the addition of harsh safety regulations has damaged an already fragile local meat industry in these vulnerable communities. The regulation amendment solved some of these issues, but many rural regions are still struggling to maintain local self-sufficiency in food production.

Food security, food safety, rural, remote, meat regulation, social dimensions of health

Table of Contents

List of Tables

List of Figures

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Chapter 1: Introduction

In his 2005 report on food health and well-being in British Columbians, the Provincial Health Officer defined community food security as existing when:

"... residents can obtain a safe, culturally acceptable, nutritionally adequate diet through a sustainable food system that maximizes self-reliance and social justice" (Provincial Health Officer, 2005, p. 47).

In remote communities, however, the challenges of achieving food security defined in this way may be much different than in urban centres where large facilities and distribution and retail chains are typically concentrated. There is a growing body of literature which suggests that rural and remote communities are especially vulnerable to food insecurity and ill-health, (see: Pheley, Holben, Graham, & Simpson, 2002; Palermo, Walker, Hill, & McDonald, 2008; Mammen, Bauer, & Richards, 2009; Dixon & Welch, 2000; Andrews, Nord, Bickel, & Carlson, 2000). It has been argued that a community's health is strongly influenced by its wealth, and some poorer communities have been found to exhibit greater risks of food insecurity and lower levels of health status than their wealthier counterparts (Townsend, Peerson, Love, & Murphy, 2001; Sarlio-Lahteenkorva & Lahelma, 2001; McCally, Haines, Fein, Addington, Lawrence, & Cassel, 1998). In addition, residents of rural and remote communities are at greater risk for low wages, unemployment, and underemployment, maintaining their susceptibility to poverty and thus food insecurity (Berry, Katras, Sanyo, Lee, & Bauer, 2008). Regulatory changes to farming legislation are especially damaging to food security in these already

vulnerable low-income, rural populations as they further destabilize poor diets and health by limiting availability of healthy food at an affordable price (Pheley, Holben, Graham, & Simpson, 2002).

This thesis examines the impact of 2004 British Columbia meat safety regulations on food security in BC rural and remote communities. It describes the evolution of BC Meat Inspection Regulations and subsequent graduated license amendment intended to enhance both meat safety and community food security in these regions. Three communities where the special amendment was first piloted are used as case studies to understand this impact. These communities are Bella Coola, Haida Gwaii and Powell River Regional District (including the islands of Texada and Lasqueti). Until 2004 meat processing in these and similar rural and remote BC communities operated with some oversight but without licensing or on-site inspection. The 2004 BC Meat Inspection Regulation (MIR) mandated that all BC abattoirs be licensed and every slaughter inspected.

Although the 2004 MIR under the BC Food Safety Act was intended to improve consumer confidence in the safety of meat products and provide standardized slaughtering rules throughout BC, there has been much debate regarding both the timing and necessity of the regulation. The regulation may have restricted the ability of some farmers to legally provide local meat to their communities, threatening food security in those areas. Many of the processors who were negatively affected by the 2004 legislation owned small-scale operations, located in rural communities across British Columbia (Simpson, 2007). The announcement of the MIR was met by some meat farmers with confusion and resistance. While some operations may have seen the changes as an

opportunity to improve consumer confidence in their products, others predicted disastrous financial implications of the mandated upgrades (Boucher, 2008; Marr, 2007; McMahon, 2009). In 2010, to improve the situation in these communities, special graduated licensing was introduced by way of an amendment to allow small-scale producers to remain in business in rural areas of the province. Special licensing required farmers to complete a new Slaughter Safe training program. Although this special amendment has the potential to improve this situation, other demographic, environmental and economic barriers may limit the sustainability of local meat supply.

The population health framework examines inequalities in a population's socioeconomic status as a direct determinant of health. It argues that health risks are related to the complex interactions among economic, social, environmental, biological and genetic factors in a population (Marmot, 1994; Evans, Barer, & Marmor, 1994). Utilizing a population health framework for this research helps to highlight the specific vulnerability of the study communities by analyzing the above circumstances that put them at particular risk.

1.1 Research Objectives

The study aims to answer two main research questions. First, what impact did the rural and remote meat slaughter training program have on the regions' local food security and what are the wider implications of this regulation? Secondly, what barriers did the program creators face, and what changes still need to be made to improve the quality, outcome, and benefits of the program for farmers and their communities.

In order to meet these objectives, interviews were conducted with farmers and key informants to determine some of the regulation's perceived effects on food security in each region, and then to gauge how the amendment helped to improve the situation. Interviews followed the principles of grounded theory (see: Glaser & Strauss, 1967) to allow information and conclusions to be elicited from participants regarding their main concerns and how they were addressed, producing a theory that is grounded in data. Utilizing a population health framework in conjunction with descriptive statistics and socio-economic community profiles helped to understand the wider implications of these regulations for other vulnerable rural and remote locations.

This thesis is organized into seven chapters. The introduction describes the project and briefly introduces the connection between food security and health in vulnerable communities. Chapter two reviews the literature on the impact of more stringent meat safety regulations on small-scale meat processors and further examines the research on vulnerable populations, remote geography, food security and health. Chapter three describes the development of meat regulations in Canada and in the province of BC, and outlines the MIR in BC from 2004 to the present. This sheds considerable light on the situation facing producers and processors in many rural and remote communities in BC. The fourth chapter describes the methods and research design for the study. Chapter five outlines the detailed results of the descriptive agricultural and socio-economic statistics and semi-structured interviews, followed by the discussion of these results in chapter six. The final chapter of the report contains conclusions and recommendations.

Chapter 2: Literature Review

In this chapter the literature on population health and food security is reviewed. An introduction to the general literature linking food security and population health is followed by a detailed examination of the literature on food security in rural and remote communities. Furthermore, as this thesis is specifically about the impacts of changes in meat slaughter regulations on food security in these types of communities, and as these regulations were introduced mainly to deal with concerns about inadequate food safety in meat products, literature on links between meat processing regulations and food safety and food security in these communities is reviewed.

2.1 Population Health and Food Security

This section will outline the population health framework and examine the crucial role food security plays in addressing population health. It will highlight some of the populations that are specifically vulnerable to food insecurity and discuss some of the studies which have explored that connection.

In recent years, researchers have begun to pay more attention to the social characteristics of a population as an important predictor of the population's health. However, the relationship between health and one's socioeconomic status has been recognized for over a century (Humphries & Doorslaer, 2000). As far back as the 1930s there is evidence of the relationship between food, health and income as Sir John Boyd Orr surveyed the adequacy of diet in relation to income in Great Britain, stating that: *"as income increases, disease and death rate decrease, children grow more quickly, adult stature is greater, and general health and physique improve"* (Orr, 1936, p. 49). Fifty years later, the

Whitehall studies conducted by Marmot and colleagues in the late 1980s first analyzed the relationship between social position and morbidity and mortality, and later suggested a social-gradient in mortality. By considering the effects on health of social factors besides income, these studies have laid the foundation of the population health framework (see: Marmot, G, Shipley, & Hamilton, 1978; Marmot, et al., 1991).

Health Canada has defined population health as *"focussing on the entire range of individual and collective factors and conditions, and the interaction among them, that determine the health and well-being of Canadians"* (Division of Aging and Seniors, 1996, p. 5). The following twelve major determinants are often utilized to understand the health status and well-being of a population: income and social status, social support networks, education, employment and working conditions, social environments, physical environments, biology and genetic endowment, personal health practices and coping skills, healthy child development, health services, gender and culture (Public Health Agency of Canada, 2009).

This framework helps to understand and justify the important role of food security in determining aspects of health and the connections between the determinants that make certain populations more vulnerable to ill-health. Marmot explains that, although there is a connection between a country's wealth and health, it cannot solely account for the dramatic variations in health status among socio-economic groups in wealthy, developed nations (Marmot, 1994). His work in 2005 identifies the Social Determinants of Health as indicators used to assess the effects of social circumstances on well-being, stating that the health of a population: *"is a measure of whether, in the end, a population is benefitting as a result of a set of arrangements."* (Marmot, 2005, p. 1103).

Despite the economic success, relative equality and affluence of our nation, for example, food insecurity is an issue faced by an astonishing number of Canadian families. In 2007-2008 over 7.7% of the population experienced some degree of food insecurity, translating to a staggering 961,000 Canadians (Health Canada, 2011). These statistics reveal the glaring truth that Canada is far from achieving food security for all its citizens and it is clear that systematic changes are long overdue. According to Health Canada, 42.8% of Canadian individuals in the lowest income bracket and 30% of those in the low-middle bracket experienced food insecurity in 2007-2008 (Health Canada, 2011). These statistics are evidence of the deep interconnectedness between poverty and food insecurity.

Food security is more than just the absence of poverty and hunger, however, making a clear and representative definition of food *insecurity* even harder to achieve. There are a number of widely-cited definitions that attempt to encompass the broad concept of food insecurity, which aim to express the far reaching negative effects beyond the simple lack of food. Anderson's commonly-accepted definition of food insecurity describes it as: *"the limited or uncertain availability of nutritionally adequate and safe foods or limited or uncertain ability to acquire acceptable food in socially acceptable ways."* (Anderson, 1990, p. 1598). Unlike food insufficiency, insecurity delves deeper into the uncertainty of the food source, looking beyond the physical absence of food (Scott & Wehler, 1998).

In their 2004 Canadian study, Vozoris and Tarasuk identify the effects of reliance upon welfare income on one's mental and social health. They found that welfare recipients in their study were more likely to report a lack of social support, poor health and depression when compared to households not relying on welfare income (Vozoris & Tarasuk, 2004).

In a later study, Tarasuk and Vogt identified a significant increase in food insecurity in relation to income inadequacy in a population in Ontario, Canada (Tarasuk & Vogt, 2009). Other studies have also suggested that families on welfare are more vulnerable to the perils of food insecurity (see: Che & Chen, 2001; McIntyre, Connor, & Warren, 2000; Tarasuk & Beaton, 1999). Similar statistics appear in the United States, with individuals and families on welfare exhibiting higher rates of food insecurity (Townsend, Peerson, Love, & Murphy, 2001).

Food insecurity has also been shown to have a negative effect on physical health as it affects food selection and nutrient intakes, and intake patterns can affect management of certain chronic diseases (e.g. diabetes), creating a vicious loop for these already vulnerable (Kirkpatrick & Tarasuk, 2008). Che and Chen (2001) discuss the increasing rates of disease and chronic conditions exhibited by food insecure parents, some as serious as heart disease and diabetes, and subsequently poor diabetes management (Lent, Petrovic, Swanson, & Olson, 2009). Basiotis and Lino (2003), Townsend, Peerson, Love, and Murphy (2001), and VanEenwyck (2003) also found a higher prevalence of overweight in food-insecure women, and paradoxically, found adults who reported concern over food security were more likely to be classified as obese as their nutrient intakes tended to be unbalanced and inadequate.

There is also evidence to suggest that food deprivation can lead to cognitive, emotional and behavioural changes (Olson, 2005). The constant stress over food uncertainty has been linked to serious mental health conditions ranging from increased levels of anxiety, eating disorders, depression, impaired cognition, isolation and irritability (Collins, 2009). The significant issues of mental health related to food insecurity play a large role in

maintaining the cycle of poverty and insecurity. Lent *et al*. (2009) suggest a three part explanation for the cyclical pattern. They posit that depression and its symptoms can directly interfere with and affect the ability of the dominant wage earner to maintain a steady job. The authors argue that this deficiency in stable income will feed back into patterns of food insecurity, ultimately reinforcing the vicious cycle of poverty-based food insecurity (Lent, Petrovic, Swanson, & Olson, 2009).

There are certain socio-economic segments within a population that are particularly vulnerable to food insecurity. These include single parent families, particularly single-mother families, Aboriginal peoples, individuals with limited education, those in the low income bracket and households on welfare or social assistance (Kirkpatrick & Tarasuk, 2008; McIntyre, Glanville, Officer, Anderson, Raine, & Dayle, 2002; McIntyre, Connor, & Warren, 2000; Che & Chen, 2001; Vozoris & Tarasuk, 2003; Vozoris & Tarasuk, 2004; Willows, Veugelers, Raine, & Kuhle, 2009).

There is a disproportionate representation of single-mother families amongst the Canadian food insecure, accounting for almost one quarter of the total (McIntyre, Connor, & Warren, 2000; Siefert, Heflin, Corcoran, & Williams, 2001; Kirkpatrick & Tarasuk, 2008). Statistics from Health Canada reveal that 25% of female lone parent households experience food insecurity compared to 11.2% of male lone parent households and only 6.3% of couple households (Health Canada, 2011).

It has also been shown that mothers in poor Canadian families sacrificed their portions to safeguard their children's and husbands' well-being as far back as the Great Depression (Ostry, 2006). Badun, Evers and Hooper's (1995) study of low income families in

Ontario, primarily headed by single-mothers, shows 52% of mothers depriving themselves of adequate nutrients in order to provide consistently nutrient-adequate meals for their offspring (Badun, Evers, & Hooper, 1995).

Education has also been shown to be a powerful predictor of health status as it creates *"...more life management skills, which in turn may predict both adult socioeconomic circumstances and health status."* (Marmot, 1994, p. 210). Health Canada found that:

"The prevalence of food insecurity was lower in households with post-secondary graduation as the highest level of education achieved in the household (5.8%), compared with those with some post-secondary education (14.0%), secondary graduation (9.2%), or less than secondary graduation (14.0%) as the highest level of education attained." (Health Canada, 2011).

Aboriginals represent another population that is significantly vulnerable to issues of food-insecurity and ill-health. They are also disproportionately vulnerable to food related diseases such as diabetes (Willows, Veugelers, Raine, & Kuhle, 2009; Thommasen, Thommasen, Martiquet, & Jin, 2004; Power, 2008). In 2007-2008 in Canada,

"among off-reserve Aboriginal households, approximately one in five (20.9%) households was food insecure, including 8.4% with severe food insecurity. These rates are approximately three times higher than among non-Aboriginal households where 7.2% were food insecure, including 2.5% with severe food insecurity." (Health Canada, 2011).

In their 2008 Canadian study, Willows *et al.* found that 33% of the Aboriginal households they examined were food insecure compared to only 9% of the non-aboriginal (Willows, Veugelers, Raine, & Kuhle, 2009). The cumulative effects of low-income, high rates of poverty, female lone-parent families, and low education were found to intensify the risk factors for food insecurity in Aboriginal households in the study (ibid). It has been suggested that a declining ability to access traditional food systems (such as wild meat, fish and berries) as a result of climate change, environmental degradation and

the changing global food system has further exacerbated levels of food insecurity and the prevalence of diet-related disease (Power, 2008).

Thommasen and Zhang's (2006) examination of diabetes rates in Bella Coola, a small coastal town in rural British Columbia, found that an estimated 127 of 2285 residents at that time had type II diabetes (Thommasen & Zhang, 2006). They found diabetes was positively associated with impairment in the health-related quality of life when compared to non-diabetics. Aboriginal participants with type II diabetes recorded the worst overall quality of life scores, making them especially vulnerable to ill-health (ibid).

2.2 Food Security in Rural and Remote Communities

This section will examine the limited literature on the vulnerability of rural and remote communities to food insecurity, and highlight some of the Canadian and international studies that have examined this issue. Given that the previous section has described some of the populations that are vulnerable to food insecurity, and rural and remote communities contain many of these population subgroups, this section will highlight the specific vulnerability of these regions.

Rural and remote communities have been found in some studies to exhibit greater risk factors to food insecurity and ill-health than their urban counterparts (Andrews, Nord, Bickel, & Carlson, 2000; Dixon & Welch, 2000; Bickel, Carlson, & Nord, 1999). Although the literature is limited, researchers have identified that issues of unemployment, low-education, lack of access and poverty are disproportionately affecting rural regions (Dixon & Welch, 2000; Mammen, Bauer, & Richards, 2009). In Australia, rurality has been associated with inferior health status, higher rates of mortality

and morbidity, diabetes and infant mortality when compared to the metropolitan areas of the country (Dixon & Welch, 2000). These rural populations also exhibit higher rates of unemployment and low-income and lower levels of education (ibid). In the United States, statistical data indicate that rural populations have since the 1980s been more economically disadvantaged and thus at greater risk of food insecurity than those living in metropolitan areas (Mammen, Bauer, & Richards, 2009; Pheley, Holben, Graham, & Simpson, 2002). This research supports the data from Australia showing low-income families in rural communities are more likely to experience unemployment, and unstable incomes (Mammen, Bauer, & Richards, 2009; Berry, Katras, Sanyo, Lee, & Bauer, 2008; Lichter & Jensen, 2002; Dolan, Seiling, & Glesner, 2006). Andrews *et al.* (2000) and Bickel *et al.* (1999) found that rural areas of the country exhibited higher rates of food insecurity than the suburbs, metropolitan and non central city areas. Pheley *et al.'s* (2002) study of food insecurity and health in rural Appalachia demonstrates the intense role of food related issues in shaping rural American health. Poverty, barriers to food access, lack of variation and higher food costs are all cited as contributors to the significant differences in functional health status amongst this study population (Palermo, Walker, Hill, & McDonald, 2008; Pheley, Holben, Graham, & Simpson, 2002).

The rising costs of quality food products are exacerbated by the increased cost to transport food to rural communities, difficulty of transportation due to weather and road closures, and a lack of grocery stores that makes accessing some products difficult. This reliance upon imported food products is not only unsustainable in periods of bad weather and seasonal road closures, it also increases the pollution, pesticide and packaging use from increased food miles, hidden costs that Caraher (2004) argues are passed on to the

overall health of humans and the environment. The quality of those food products also suffers from the impacts of transportation, potentially affecting consumers' willingness to purchase those products, and increases their likelihood of opting instead for unhealthier, pre-packaged food items. Conversely, local food products tend to offer superior taste and freshness, less damaging environmental effects, and the preservation of local farm economies (Ling & Newman, 2011).

2.3 Links Between Food Insecurity in Remote and Rural Communities and Regulations Governing Local Slaughter

Food safety regulations vary across countries and can have unintended consequences that go beyond just addressing the safety of the product. This section will examine some of the food safety literature in Canada and internationally and assess some of the broader effects of regulatory changes to food safety legislation on the small scale meat sector and overall food security.

2.3.1 National and International Food Safety Regulations

This subsection will explain the general concept of food safety, and explore some of the regulations in place in Canada and internationally designed to address the issues surrounding food safety scares. According to Mensah and Julien (2011):

"Food safety is the concept that food will not be injurious to the consumer at the point of consumption, when it is prepared and/or eaten according to its intended use" (Mensah & Julien, 2011, p. 1216).

Food safety also includes concepts such as:

"nutritional value and production methods…food-related issues such as animal health and veterinary drugs, chemical contaminants, food additives, food allergies and intolerances, food-borne illness, packaging, and food handling"(Rondeau & McIntyre, 2010; Health Canada, 2008).

The monitoring and regulation of food has become increasingly important within the competitive landscape for international trade in food. At the same time as many countries are removing trade barriers, they are implementing more stringent measures to ensure the safety of food. There is also growing pressure for increased controls on the food supply as a means to support consumer confidence in food safety following numerous "food scares", including contamination of meat by both biological (e.g., bacteria) and chemical (e.g., dioxin, melamine) agents and, in May of 2011, the large E.coli outbreak centered in Germany.

Food producers and processors in Canada have been affected by a number of established and emerging food safety threats including Bovine Spongiform Encephalopathy (BSE), Salmonella, E.Coli 0157:H7, Listeria monocytogenes, and avian influenza H7N3, which have had a negative impact on human health as well as the public's trust in the meat supply. These outbreaks have also had severe economic implications for meat producers (Manson, Cancellotti, Hart, Bishop, & Barron, 2006; Sofos, 2008). For example, when BSE was discovered in a Canadian cow in 2003, more than 40 countries, including the United States and Mexico, banned imports of beef originating from Canada, resulting in a loss to the industry of 6.3 billion dollars (LeRoy & Klein, 2005; Mitura & Di Pietro, 2004). The American border was closed to Canadian imports and the beef industry, particularly in western Canada, was severely disrupted. The spotlight returned to the Canadian meat industry in August of 2008 with the discovery of a Listeriosis outbreak in over 200 processed meats and meat combinations from the Maple Leaf Foods plant in Toronto, Ontario (Conly & Johnston, 2008). The threat of recurrent food-borne disease forced the Canadian government to take action to minimize potential sources of

contamination. In addition, concerns about animal health pandemics and potential cross-over to humans from animals (e.g., avian influenza, swine flu) caused concern for producers and the general public (Sofos, 2008).

There are also a number of emerging issues that suggest that food safety concerns are likely to increase in coming years globally and in Canada. For example, research has indicated that there is ongoing adaptation and development of resistance by pathogenic microorganisms to antibiotics and traditional food preservation barriers such as low pH, hot and cold temperatures, dryness or chemical additives (Sofos, 2008). In addition, societal changes, including shifts in consumer food preferences, lack of adequate safe food handling education for food handlers and consumers, increasing populations at risk for microbial food-borne illness (e.g. the elderly or those infected with HIV), and increasingly complex food distribution systems including the growth in international food trade, further increase the risk of food-borne illness (Sofos, 2008).

In response to both established and emerging food safety issues, existing frameworks for the governance of food safety globally have undergone reforms. Mensah and Julien (2011) outline the major developments in food safety regulation at the global level including i) the proliferation of standards, ii) more stringent approaches to food safety, a move away from voluntary inspections and an increase in mandatory legal frameworks, iii) an increased use of laboratories for testing food safety and iv) an increasing role for consumers to ensure that food is properly handled to reduce the risk of food-borne illness. For example, the American meat industry now requires Country of Origin Labelling to

ensure traceability for all meat products sold for human consumption (Ferrier & Lamb, 2007).

2.3.2 Food Safety and Regulation in the Small-Scale Meat Sector

This subsection examines the literature surrounding food safety in the small-scale meat sector by exploring some of the challenges faced by small-scale producers, exploring the benefits of small-scale local production and examining the costs associated with food safety regulation compliance.

Consumers have become increasingly distrustful of the industrial food system, and have developed a growing interest in, and demand for, locally produced food and alternative agri-food networks (Goodman, 2004; Blay-Palmer, 2008; Murdoch & Miele, 1999; Winter, 2003). Using local facilities for food processing can shorten the distance between the consumer and the producer. The role of local food processors, including abattoirs, in supporting food security and rural economic development is critical in creating short supply chains (Worosz, Knight, Harris, & Conner, 2008; Carter-Whitey, 2008; Renting, Marsden, & Banks, 2003). This increases producers' profits, builds resiliency in the local food system and promotes food safety, as food can be traced back to source more easily (Dieticians of Canada, 2010).

Alternative food networks must also include sites where local food can be sold to consumers. This can include farmers' markets and sales at farm gates, all developed within a local food security and community supported agriculture (CSAs) framework (Goodman & Goodman, 2009). Unlike the conventional retail market, alternative markets allow for greater profits for producers as the food chain is shorter with fewer

middlemen, allow for more face-to-face interactions between consumers and producers, and provide markets for small-scale and non-standard produce and meat (Griffin & Frongillo, 2003; Ling & Newman, 2011). Farmers' markets and farm-gate sales may offer producers a high rate of return on their product. For example, one study from the UK found that selling at farmers' markets provided a 50% greater return than selling wholesale. However, they are also costly in terms of time away from the farm and transportation (Morris & Buller, 2003). Farmers' markets may be particularly difficult for producers who live in remote communities to attend due to transportation costs which are likely to rise as fuel costs increase (Ling & Newman, 2011). In contrast to "industrially produced meat", alternative or "specialty" products capitalize on consumers' demand for a range of quality attributes including knowing:

> *"a) who produced it (e.g., family farm, trusted producer), b) what was produced (e.g., minimally processed vs. highly processed), c) when it was produced (e.g., fresh vs. frozen), d) where it was produced (e.g., local, regional), e) how it was produced (e.g., chemical free, humanely), and f) why it was produced in these ways (e.g., sustainability, ethical values)."* (Worosz *et al*., 2008, p. 173).

Furthermore, independent and smaller-scale farms often generate more local economic activity than do larger farms (Worosz *et al*., 2008).

While the market for specialty meat (animals that are hormone-free, pasture-raised, and raised locally and/or on family farms, and meat slaughtered in particular ways (e.g., Certified Organic, Halal, Kosher) has been increasing, food safety regulations, crafted mainly with the large industrial food systems and international trade in mind, may threaten their economic sustainability (Food & Water Watch, 2009). An example is the

cost of implementing Hazard Analysis and Critical Control Points (HACCP) at very small plants in the United States where:

> *"making few products was estimated to be roughly $12,000 to $13,000 for initial implementation and $6,000 to $7,000 each year thereafter"* (Ibid, p.44).

Meat safety standards developed in the US (and largely adopted by Canada) are based on industrial production methods and commercial qualities, which run counter to small-scale, family farm production. Current meat regulations:

> *"promote the dominant ideas, technologies, activities, and practices that … can be evaluated based on objective criteria, criteria measured with precision and inspected, certified, and enforced by experts"* (Worosz *et al*., 2008, p.294).

Yet, industrial and commercial production undermines the qualities associated with specialty meats, such as trust in the seller, use of ecologically sound production practices and promotion of rural economic sustainability. Food safety is of particular concern for small-scale operations as their business and consequently their livelihood rely entirely on quality production, and local sales of their product ensure direct traceability. This traceability may act as a very strong and direct motivator for local producers to ensure high food safety standards, as they are uniquely dependant on local consumers. This contrasts with large-scale operations where the push to comply with increasing consumer demands has led to increased technological efficiency and faster moving line speeds (Hennessy, 2005). It can be argued then, that the fast-paced environment of many large operations is actually having a negative effect on hygiene and food safety compliance, and workers are provided minimal incentives to ensure effective hygiene or focus on food safety (Hennessy, 2005).

In small rural and remote communities the costs associated with food safety regulation compliance can often outweigh the potential benefits for the producers. The assumption is often made that increasing food safety regulations will lead to a decrease in pathogens, yet there is very conflicting and limited evidence connecting pathogens at the manufacturing stage to those present at consumption (Antle, 2000). Many governmental upgrade cost estimates do not account for the variability in production cost, the increased staff required, or the productivity loss from regulation implementation (Antle, 2000; Simpson, 2007). Gaylene Simpson's Canadian Food Inspection Agency (CFIA) Report Card (2007) estimates that the average Canadian business spends over $19,000 and over 29 days a year to comply with CFIA regulation. The report indicates that much of the expenditures go towards staff salaries, consultant fees, lawyer fees, and upgrades to equipment and facilities. Employers must also devote a number of hours filing paperwork, meeting with CFIA inspectors and complying with existing regulations. Worosz *et al*. (2008, p. 188) note that in the US:

> *"the current arrangement of statutes and regulations governing the safety of red meat facilitates the resilience of large-scale red meat production; it also perpetuates a stable fragility by hindering the development and expansion of a small-scale specialty sector."*

Thus, the growing proliferation of monitoring and control may place additional responsibility on small and medium enterprises (SMEs), which in turn may threaten their survival (Mensah & Julien, 2011).

Long-distance transport of animals to comply with safety regulations may have humane, cost, and health implications. For example, shipping animals long distances has been found to increase the spread of infectious disease among animals confined for the

purposes of transport (Greger, 2007). Mobile abattoirs have been successfully used in Washington State to alleviate some of the barriers for small-scale livestock farmers (Benedict, Garitone, Embleton, & Collins, 2009). However, mobile operations are also subject to a number of regulations from various levels of government and it can be expensive to operate a mobile facility (Johnson, 2008; Lee, 2011). Licensed mobile units require approved docking stations with amenities such as an impermeable surface, animal holding area, access to electrical power, potable water, and so on. The owner of the docking station must incur capital and operating costs for these enhancements. These are significant costs, given that upgrades would provide no direct additional revenue (Johnson, 2008). In addition, mobile abattoirs are not a feasible solution for all small-scale producers, as they necessitate a daily minimum volume of livestock for slaughter, a minimum that cannot be met by many small operations in rural and remote communities (Marr, 2007).

2.3.3 Effect of Safety Regulations on Food Security in Rural and Remote Communities

This subsection briefly introduces some of the food security issues faced by farmers and households in rural and remote communities, further highlighting their vulnerability to legislative food safety changes.

The loss of small-scale meat producers in rural and remote communities can affect access to food as well as food costs for local consumers and a potential loss of quality. According to the 2009 Cost of Eating Report, food can cost 117% more in small remote communities in northern BC for the same food items purchased elsewhere in the Province (Dieticians of Canada, 2009). This statistic suggests that rural and remote communities

are more vulnerable to food price increases for certain items and to food system disruptions than other communities in the province.

Additionally, many rural communities in North America have become “food deserts” or regions where access to healthy and affordable food is made difficult due to a lack of grocery stores (Beaulac, Kristjansson, & Cummins, 2009). This lack of access to food may have implications for both the health and economic viability of rural communities. In many rural communities in BC, increasing food and fuel costs and potential shortages have community members concerned about food access (Kimmett, 2011). At the same time, alternative sources of food, such as farmers’ markets, hunting, and u-picks (a farm where customers can harvest their own produce and receive a discounted price) have been found to enhance food security for rural residents who lack easy access to grocery stores (Yousefian, Leighton, Fox, & Hartley, 2011). Access to affordable and healthy food is a critical element, along with health care and other social services, in maintaining the sustainability of remote and rural communities (Miewald, et al., 2011).

Chapter 3: Evolution of Meat Regulation in BC

This chapter describes the evolution of meat safety regulation in BC. It begins by outlining the legislative landscape for meat slaughtering in British Columbia prior to the introduction of the new regulations in 2004. Next it discusses the transition phase after the announcement of the new meat slaughtering regulations in 2004, and briefly describes the assistance programs established during that time frame. Finally, the 2010 amendment graduated meat slaughter licensing structure, allowing slaughter in specified rural and remote locations, is described in detail, followed by a brief outline of background reports from other communities facing the legislative change.

3.1 BC Meat Regulation Prior to 2004

The slaughter of livestock to produce meat for human consumption in British Columbia used to be regulated under the federal 1985 Meat Inspection Act and federal 1990 Meat Inspection Regulations (for interprovincial sale across Canada) as well as by the 1960 BC Meat Inspection Act and the 1993 Slaughterhouse Regulation under the BC Health Act (for intra-provincial sale in BC) (Bradley & Taylor, 1993).

Under these laws, inspectors from the Canadian Food Inspection Agency examined animals ante and post-mortem in federal and licensed provincial plants using techniques of organoleptic inspection, relying particularly on visual cues of abnormalities such as lesions (Bradley & Taylor, 1993; Canadian Department of Justice, 1990). Federally licensed plants are inspected and licensed by agents from the Canadian Food Inspection Agency (CFIA) as mandated by the 1985 Federal Meat Inspection Act. Provincially

licensed facilities are licensed by the BC Centre for Disease Control which contracts out these inspection services to the CFIA.

The province was divided into two categories: Meat Inspection Areas (MIAs), where meat products had to be inspected, and Non-Meat Inspection Areas, where inspection standards were not mandated (Figure 1. Meat Inspection Areas Prior to 2004). The Meat Inspection Areas typically consisted of urban centres across the province (see Figure 1. Meat Inspection Areas Prior to 2004 and Appendix A Meat Inspection Areas Prior to 2004). BC's abattoirs fell under one of three levels of regulatory jurisdiction: federal, provincial and un-inspected (i.e. unlicensed facilities operating legally outside of the Meat Inspection Areas).

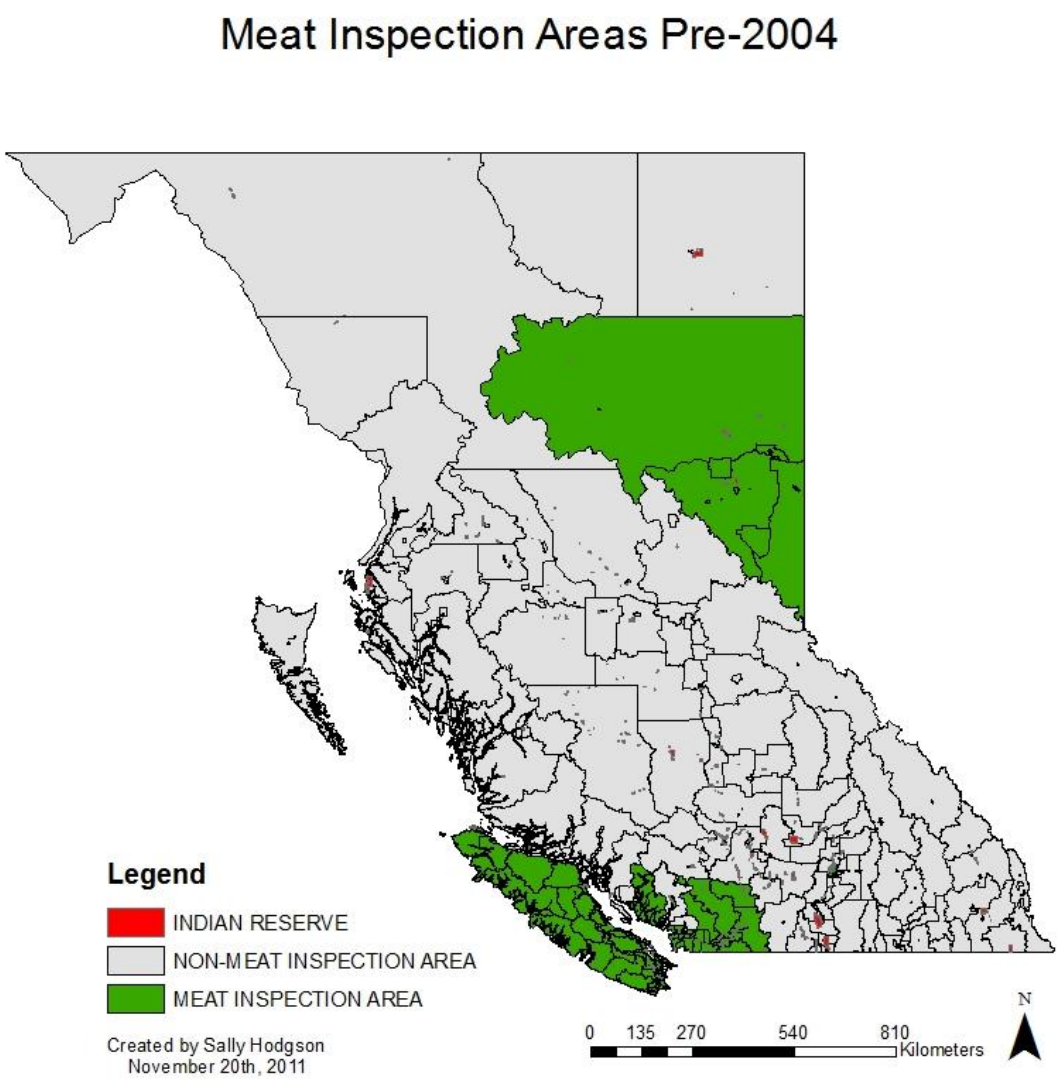

Figure 1. Meat Inspection Areas Prior to 2004

(see: Appendix A Meat Inspection Areas Prior to 2004 for a detailed list of MIA's)

It was, in part, to address this confusing and potentially dangerous regulatory situation that the BC Meat Inspection Regulation (MIR) was passed in 2004.

3.2 BC Meat Regulation Transitional Phase: 2004-2007

In July 2004, the British Columbia provincial government enacted a new Meat Inspection Regulation (MIR) under the BC Food Safety Act, increasing the standards and food safety infrastructure requirements for slaughterhouse (abattoir) operators. This regulation came shortly after the 2003 discovery of Bovine Spongiform Encephalopathy (BSE), a fatal infectious prion disease, in a non-imported Canadian cow (Coulhart, Mogk, Rancourt, Godal, & Czub, 2003), and the 2004 BC Avian Influenza H7N3 outbreak (Tweed, Skowronski, David, Larder, Petric, & Lees, 2004). This new BC regulation was enacted in an attempt to regulate and homogenize meat slaughter and sales across the province of British Columbia, replacing the 1960 BC Meat Inspection Act and 1993 Slaughterhouse Regulations (BC Food Processors Association, 2005). The regulation aimed to *"...provid[e] consumers with the assurance that all meat and meat products are properly inspected for safety"* (Ministry of Agriculture and Lands; Ministry of Health , 2006).

The 2004 MIR mandated that all BC abattoirs be licensed as either provincial class A, provincial class B, or federal, and that every slaughter be inspected, thus eliminating the previous level of un-inspected operations. Existing federally- and provincially-licensed operations remained unchanged. Compliance with the new regulation would require costly and extensive facility upgrades for unlicensed producers. For example, under the 2004 law, rural meat farmers who once relied upon on-site or local abattoirs for slaughter were required to transport their animals long distances to a provincially- or federally-licensed abattoir, or spend the $150,000-300,000 to upgrade their plants, or the $500,000-

1,500,000 required to construct a brand new plant (Johnson, 2008). To address these concerns, the provincial government also introduced a transition period, initially for two years, later extended for a third year until September 2007.

Because of the economic costs of upgrades necessitated following the 2004 MIR, there was some concern that remote and some rural communities in BC might have difficulty accessing meat, and that this could adversely affect food security in these communities. As a result, a number of programs were established during this period, with government support, to assist abattoir operators by guiding them through the licensing process and providing assistance with the financial burdens of upgrading or building licensable slaughter facilities. The Meat Industry Enhancement Strategy (MIES) was developed in 2004 by the Ministry of Agriculture and the BCFPA, shortly after the enactment of the new Meat Inspection Regulation. The MIES was created to aid those who wished to upgrade or build a slaughterhouse in order to qualify for a provincial licence and inspection.

In 2006 the Meat Transition Assistance Program (MTAP), also funded by the government and administered by the BCFPA, was created to help increase licensed slaughter capacity by providing capital cost support for abattoir upgrades and builds. The goal of both MIES and MTAP was to ensure adequate licensed slaughter capacity in BC for all species of livestock in all regions, and to provide a basis for future expansion. MTAP provided three phases of funding. In addition to funding for individual plants MTAP Phase 1 also included Community Solutions funding, to provide resources for communities to establish sustainable, local solutions for livestock processing. Funds for

the community solutions were provided on a 50-50 cost shared basis with the community, up to a maximum of 100,000 dollars (BC Food Processors Association, 2006).

3.3 Temporary Class C License Period 2007-2010

Although comparative data are not available, prior to 2004 farm gate meat sales may have been a considerable part of many rural families' livelihoods and consumers' local food sources. After 2004 it became illegal to sell meat that was not processed in a licensed facility, and on-farm slaughtered animals could only be consumed for personal use, thus affecting the supply of local meat products in these communities. By 2007, officials began to realize that upgrading to provincial or federal facility standards might not be feasible for all small-scale processors and that rural and remote communities often did not have the numbers of animals needed to make an abattoir economically feasible (BC Food Processors Association, 2010). Difficulties in complying with the rigorous new regulation led to complaints from small-scale producers and processors regarding the potentially devastating financial impacts of the mandated changes, and complaints from consumers in remote communities who feared reduced food security and rising food prices. Increased transportation to licensed abattoirs made necessary by the eradication of farm-gate sale of meat from unlicensed facilities threatened many operations in remote communities (Johnson, 2008; Lee, 2011).

By 2007 it had become apparent that, despite the previous measures, many un-licensed facilities had not yet met the licensing requirements. Passage of MIR (along with other changes underway in the economy in general and in the province's agricultural economy specifically) may also have had the unintended consequence of hastening the closure of

some small-scale abattoirs, with an associated decline in livestock production in many remote and rural communities in the province (Johnson, 2008; Hesje, 2009a; Hesje, 2009b; Hesje, 2009c; Reichert & Thomson, 2010). As well, some processors may have continued, after passage of the MIR, to conduct slaughter operations illegally.

As a result, in fall 2007 the province introduced a transitional Class C licence in order to regulate facilities continuing to work towards provincial or federal licensing and allow them to remain in business during their upgrades.

3.4 BC Meat Regulation From 2010-2011

By 2010 there was a growing concern about the ability of small, rural farmers in remote communities to access slaughter services. While the number of provincially licensed Class A and B slaughter plants in BC increased from 11 in 2004 to 37 by early 2010 (BC Food Processors Association, 2010) (see Figure 2), rural and remote locations continued to experience a lack of local meat processing facilities.

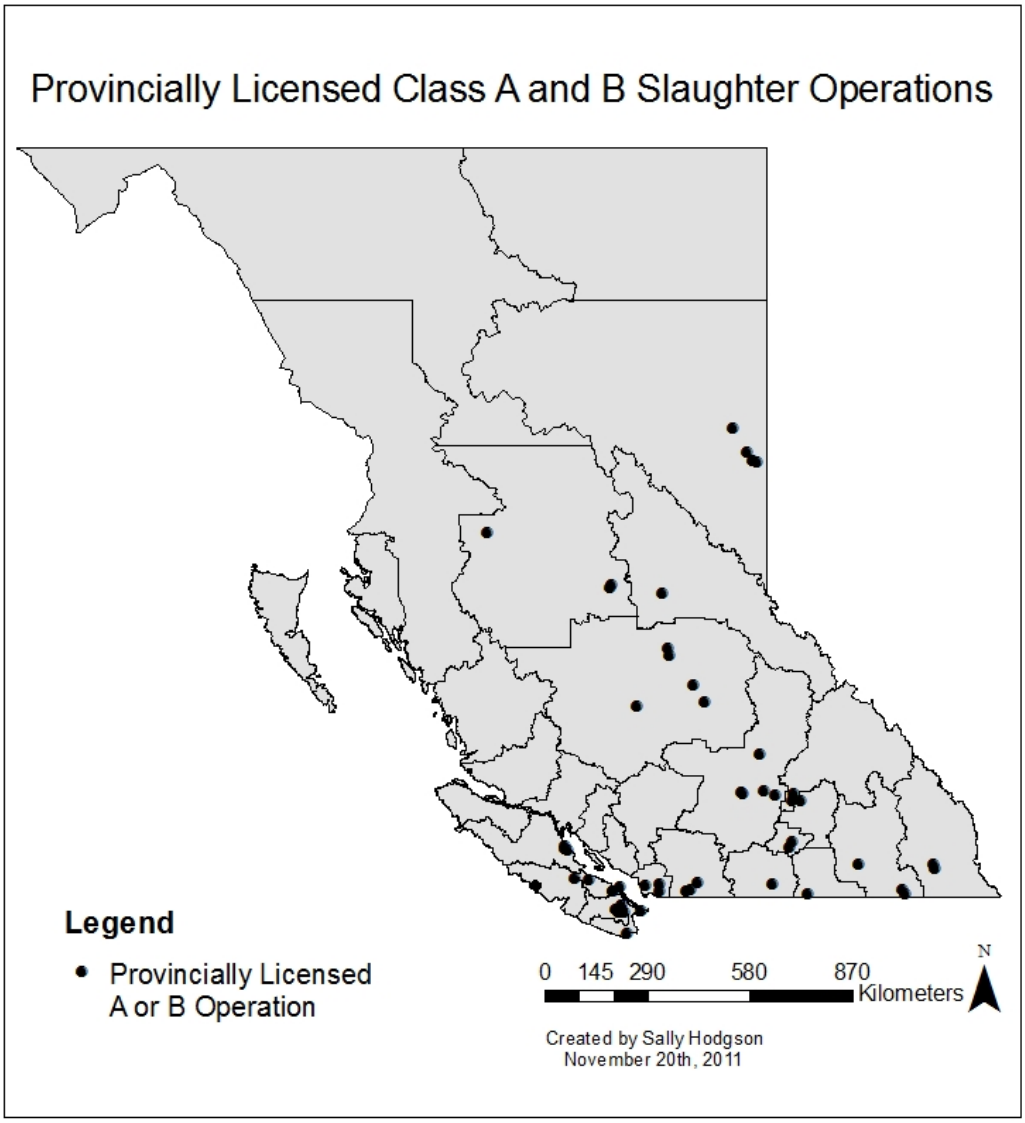

Figure 2. Provincially Licensed Class A and B Slaughter Operations as of October 2011 (Data source: http://www.health.gov.bc.ca/protect/meat-regulation/slaughterhouse-lists.html)

The possibility of meat being processed illegally with no oversight led to concerns over the safety of meat. In response to these and other concerns, the government launched a unique licensing and training program in 2010 to improve meat processing capacity and thus local meat supply in rural and remote regions through an amendment to the 2004 regulation. This amendment created D and E licenses for rural and remote communities without adequate access to licensed meat processing facilities, allowing producers to

continue on-farm slaughter. Class D licences (rural retail) permit sale to local retail and restaurants within designated regional districts where no provincially licensed A and B facilities exist. Class D licence holders are permitted to sell product at the farm gate and in the local retail market, with a 25-animal unit restriction[1]. Class E licenses (rural farm-gate) allow on-farm slaughter of a restricted number of animals and direct farm-gate sales. A Class E licence holder has a 10-animal-unit restriction and may sell product via direct farm-gate sales only. These licences were intended to provide increased access to slaughter services in remote areas, to improve understanding of food safety principles and planning among small livestock producers, and to offer an opportunity for slaughter operators who may have been working illegally to operate within the law.

In order to qualify for a Class D or E licence, producers must be located in one of the following 10 designated rural and remote regional districts: Central Coast, Comox-Strathcona (Mainland and Discovery only), Kitimat-Stikine, Mount Waddington, Northern Rockies, Powell River, Skeena-Queen Charlotte, Squamish-Lillooet, Stikine, and the Sunshine Coast (Figure 3).

[1] An animal unit is defined as the combined weight, when measured alive, of 1,000 lbs (454 kg) of livestock.

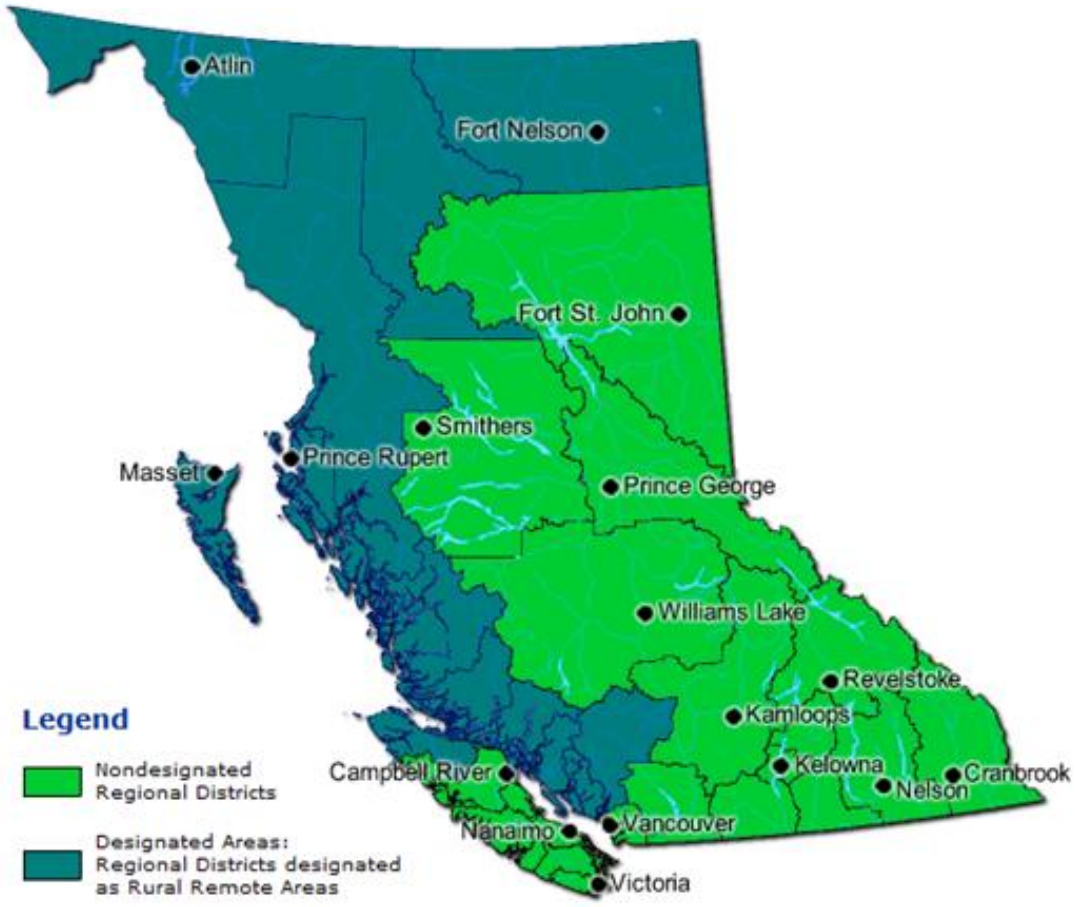

Figure 3. Designated Areas Map for D/E Licenses as per 2010 Amendment
(Data Source: Ministry of Health, 2011)

Operators not located within a designated area, may still be eligible for a Class E licence at the discretion of the licensing agency (Canadian Department of Justice, 2004). In addition, as of June 2010, transitional Class C licences were no longer being issued, and those in possession of C licences were in the process of completing their transition to provincial A or B licences, or could opt to obtain D or E licences. The submission of a Transition Plan and Food Safety Plan became mandatory for Class C licence holders as many operators had made minimal progress in moving towards full licensing for a variety

of reasons, both controllable (e.g., lack of desire to comply) and uncontrollable (e.g., bylaw conflicts) (BC Food Processors Association, 2010).

Class D and E operators are permitted to quarter red-meat animals and remove the wings and heads of chickens (i.e., they can conduct minimal processing), and must label all products as non-government inspected meat. Class E products must also be labelled "not for resale". Farm name and address must also be visible on the labelled product to aid in traceability. Holders of Class D and E licences are able to sell at farmers' markets, but only within their regional district – they cannot transport meat to other regions for sale. Inspections of Class D and E facilities are conducted by Environmental Health Officers (EHOs) from the regional health authorities. In addition to these monitoring and inspection roles, EHOs are also responsible for enforcement under the MIR in relation to all classes of provincial licences. This uses a graduated enforcement approach that starts with education and can escalate to warnings, fines, and in extreme cases prosecution.

Table 1. Federal and Provincial Meat Policy Timeline

Years	Federal Policy	Provincial Policy
1960	-	B.C. Meat Inspection Act Passed
1985	Canadian Meat Inspection Act (M.I.A)	B.C. Meat Inspection Act still in place
1990	Meat Inspection regulation pursuant to 1985 M.I.A	B.C. Meat Inspection Act still in place
1997	Creation of the Canadian Food Inspection Agency (C.F.I.A.)	B.C. Meat Inspection Act still in place
2004	1985 M.I.A and 1990 Federal Meat Regulations still in place	New B.C Meat Inspection Regulation enacted making all of B.C. a "Meat Inspection Area"
2007	1985 M.I.A and 1990 Federal Meat Regulations still in place	End of transition period to new M.I.R
2010	1985 M.I.A and 1990 Federal Meat Regulations still in place	B.C Meat Inspection Regulation Amendments enacted

Table 1 above summarizes the evolution of meat legislation in British Columbia.

3.5 Preliminary Reports from Communities in British Columbia

Although the infancy of this regulation and program limit the availability of comparable literature, some small communities facing the legislation across British Columbia have created feasibility reports highlighting the potentially disastrous effects of regulatory compliance. Some preliminary evidence from these reports and a description of the approach taken by government officials is briefly outlined in this subsection.

The supposedly imminent threat of recurrent food-borne disease was the stated motivation behind the Canadian government actions to eradicate potential sources of

meat contamination with the introduction of the 2004 Meat Inspection Regulations. It has been suggested, however, that the 2004 Canadian Meat Inspection Regulation may have in fact been developed primarily to ensure international consumer confidence for nations importing Canadian products, considering the recent food-borne illness outbreaks (Marr, 2007).

The seemingly rapid adoption of the 2004 Meat Inspection Regulations left many producers wondering what evidence government officials relied upon to justify the initial forced compliance for small-scale meat producers serving a local community base through small market and farm gate sales. In the 2008 study of the impact of meat inspection regulations on slaughter capacity in the North Okanagan Regional District, Johnson (2008) found no evidence to suggest locally-produced meats sold at farm gate posed any threat to public health, and argued that large-scale, multi-sectoral corporations may be at higher risk for contamination, as the pathway for disease increases and potential for traceability may erode during multi-stage and multi-location processing (Johnson, 2008). Larry Copeland, the Director of the Food Protection Services for British Columbia at that time, argued instead that a lack of reported cases does not *prove* local meats are safe, and suggested that highly trained meat inspectors can spot potential issues that small-scale producers may not have the knowledge or wherewithal to discover on their own (Marr, 2007).

Coupled with the push from a quickly eroding food safety rating and reputation on the international stage, officials appear to have applied aspects of the precautionary principle to the creation of the new meat slaughter regulation. The basic idea of a precautionary principle is most commonly defined by the United Nations 1992 Rio Declaration:

"In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation" (United Nations, 1992, p. 3).

This definition has since expanded to include issues which have the potential to cause harm to public health, in this case the risk of food borne illness from existing food safety meat slaughter regulations:

"When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically." (Wingspread Conference, 1998).

Ironically, in pushing forward with a precautious approach, significant damage was done to the economic aspects of the meat industry, and thus, food and farming security in rural BC.

Johnson's (2008) impact study also notes that the 2004 MIR legislation contradicts existing policies in BC such as the Climate Change Initiatives, efforts to reduce fuel consumption and emissions, the promotion of green and sustainable communities and buy local campaigns. With the creation of the graduated licensing system under the 2010 amendment, Class D and E licenses were intended to reduce the severity of this issue; however, the burden still exists for those who do not qualify for these licenses. Johnson's (2008) study also notes the impacts of the 2004 MIR on food security for both producers and consumers in the North Okanagan. In this regional district, five specialty poultry and four custom red meat processors ceased operations following introduction of

MIR[2]. In addition, producers experienced higher slaughter costs and lower profit margins resulting in a loss of revenue. For example, the report states that the costs to slaughter a beef animal on-farm was $90-100 before MIR but increased to $250-300[3] after MIR for animals processed at licensed slaughter facilities, in part because of higher animal waste disposal costs.

Data on the impacts of MIR on the economy of local meat slaughtering and resulting local food security are limited. Reichert & Thomson (2010) noted that on Salt Spring Island there were 36 fewer farms raising sheep, cattle, pigs, goats and/or poultry in 2008 compared with 2005, a decrease of around 35%. They attributed some of this decline to the need for livestock farmers to take their animals off-island for slaughter, a time consuming, expensive and stressful process. These declines in the amount of meat processed locally may create both higher prices and reduced supplies in rural and remote communities (Johnson, 2008)[4], further disrupting the already precarious nature of food security in these regions.

[2] Since this initial negative impact in the North Okanagan, several processing facilities have been established and are operating in the region (BC Centre for Disease Control list of provincially licensed abattoirs, published on its website at http://www.bccdc.ca/foodhealth/meat/Slaughterhouses.htm).

[3] The BCFPA and MOH question the $250-300 number: the cost did go up, but not this much – a number like $150 for slaughtering a beef animal is more typical

[4] A mobile red meat and poultry facility is under construction on Salt Spring and is hoped to be licensed and open for business in 2012.

Chapter 4: Methodology & Research Design

In this chapter, the methodological framework, data collection methods and research design for the thesis are presented. The first section will begin by discussing grounded theory and its contributions to understanding issues of food policy and food security. The next sections outline the locations used in the study and explain why they were selected. Finally, the methods used to collect qualitative and quantitative data are described in detail, followed by a description of methods for data analysis.

4.1 Methodology

Grounded theory is a methodological framework, developed in the field of sociology by Glaser and Strauss in the 1960's while researching dying hospital patients, and has since become a preferred methodology for many qualitative researchers (Cope, 2009; Glaser & Strauss, 1967). This theory suggests a kind of objectivity by allowing themes to emerge from the data, rather than forming research around an existing hypothesis. It allows for the creation of new data throughout the research process by allowing researchers to return to their initial questions in response to the emergence of new themes and concepts (Cope, 2009). It justifies and legitimizes the utilization of qualitative interviews to elicit information and provides a more substantive, rigour to the resulting data.

Grounded theory has been utilised by other similar studies addressing the unique needs of farmers, food security, the food industry and food safety. This existing research helps to legitimize the utilization of grounded theory for this thesis by including similar research topics and interviewing techniques. Sargeant, Ramsingh, Wilkins, Travis, Gavrus, & Snelgrove (2007) utilized the techniques of grounded theory to their study on the

constraints of microbial food safety policy in North America. Utilizing this thematic approach allowed them to develop new ideas and compare them to the limited existing academic research. Triangulating semi-structured interviews with data from focus groups and workshop methodologies further legitimated their findings. By including verbatim text, the authors ensured that participants maintained a voice and highlighted various perspectives.

Grounded theory has been successfully used in other studies regarding food insecurity (Tarasuk & Reynolds, 1999), farmers (Vaarst, 2003) and the food and beverage industry (Vander Wekken, Sorensen, Meldrum, & Naylor, 2012), providing excellent examples of its applicability for this study. Tarasuk & Reynolds (1999) gathered and analyzed data concurrently, allowing new insights to be integrated into the scope of research for future interviews.

The principles of grounded theory are utilized throughout the research process, guiding the interview process and concurrent analysis. Major strategies employed during the analysis include the use of coding, memos and constant comparison (Cope, 2009). Systematic coding involves the creation and recording of categories. Careful coding can help assuage the concern over subjectivity in analysis by ensuring that themes incorporate the diversity in opinions, leaving rhetorical space for disagreement and perspectives (Cope, 2009). Constant comparison then involves a re-organization of codes, theories and ideas as new data emerges. The associations of these codes are then recorded as memos allowing the researcher to reflect upon the conclusions they have drawn through

the coding process. These memos can then provide the basis for the creation of theory (Glaser & Strauss, 1967).

4.2 Study Locations

These communities were chosen for the study as they were the first to participate in the Slaughter Safe Training food safety course. Completion of this course was required to qualify for a D or E rural meat slaughter license under the 2010 amendment. They represent communities that qualify for these licenses as rural or remote, and as such, many 2010 observations made in these communities will be relevant to other rural areas of the province that qualify under the amendments. These ten regional districts[5] have been designated by the Ministry of Health based on: proximity to licensed slaughter facilities, population density, small number of livestock, and transportation barriers such as seasonal road closures and necessity for marine transportation (Ministry of Health, 2011).

Most of the research efforts have focused on the communities of Bella Coola, Haida Gwaii and Powell River as very few meat farmers operate on the islands of Texada and Lasqueti, and only one of these islands contains a grocery store. Figure 4 below shows the locations of the research communities on a map of the province of British Columbia.

[5] Designated regional districts include: Central Coast, Kitimat-Stikine, Mount Waddington, Northern Rockies, Powell River, Skeena-Queen Charlotte, Squamish-Lillooet, Stikine, Strathcona (Mainland and Discovery Islands portion only) and Sunshine Coast.

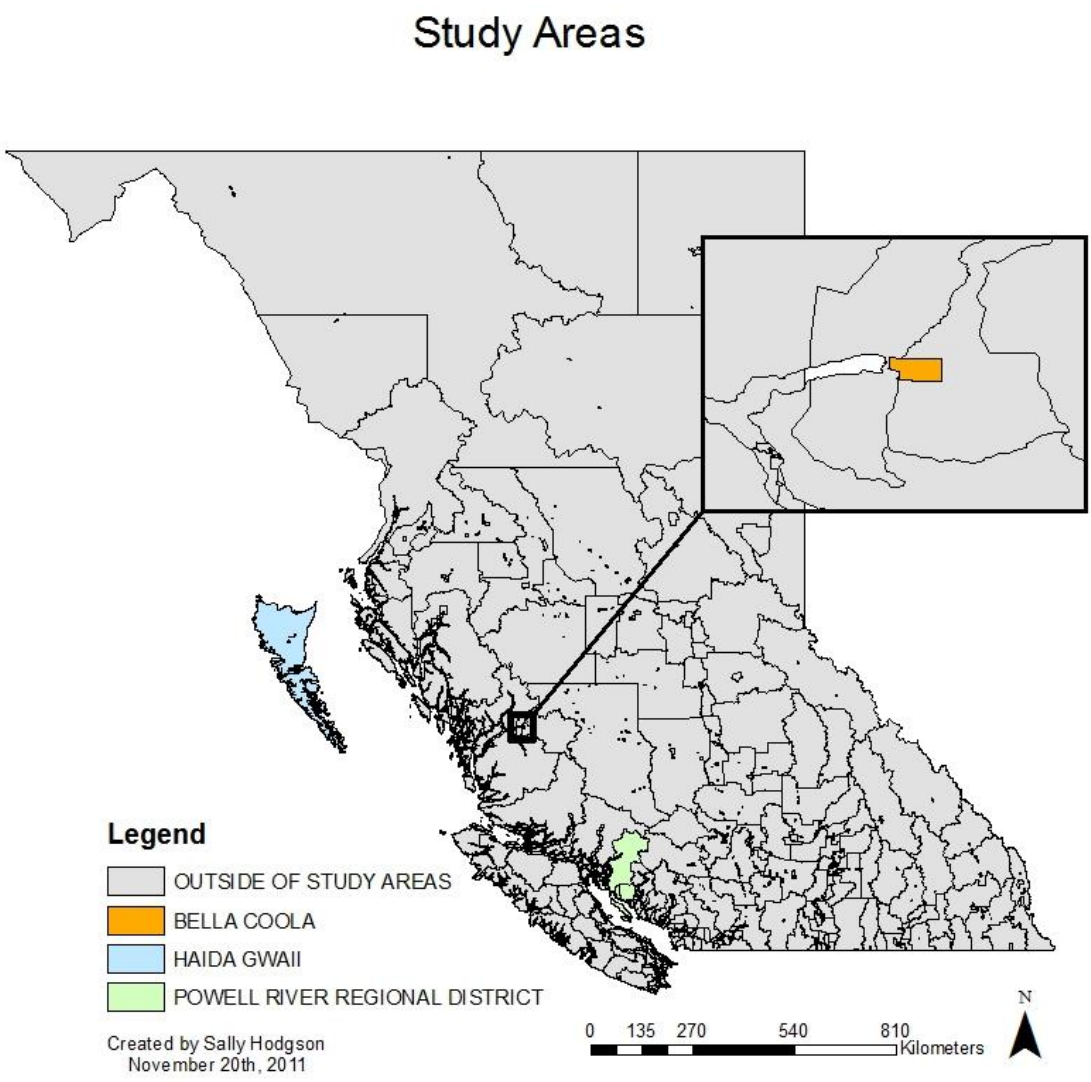

Figure 4. Mapped Locations of Bella Coola, Powell River and Haida Gwaii in the Province of British Columbia

4.3 Methods and Data

This subsection describes the specific methods used for data collection and gathering. It begins by explaining the quantitative data gathering process, followed by an explanation of the qualitative procedures used.

4.3.1 Descriptive Agricultural and Socio-economic Statistics

Agricultural production data was gathered from Statistics Canada's agricultural censuses collected in 2001 and 2006 for each community. Since the regional boundaries changed slightly in 2001 for these communities, historical agricultural census data prior to 2001 was not available for the study. Major agricultural trends were determined from the provincial census data and calculated relative change to analyze the similarities and differences across the study communities. This data was then used to assess changes in key indicators of food security. Analysis focused on changes in number of farms, number of animals, and total hectares of crop land, as well as the total dollar value of farm land and buildings, from 2001 to 2006.

Socio-economic profiles for the communities were developed utilizing the evidence from the literature review regarding factors which make communities particularly vulnerable to food insecurity as justification. Data was collected from BC Statistics by region and then compared to the averages for the province of BC.

4.3.2 Interviews Conducted by the British Columbia Food Processors Association and the Ministry of Health in 2009

The Ministry of Health and the British Columbia Food Processors Association provided us with some community research collected by researchers in 2009, prior to the announcement of the 2010 rural slaughter amendments. This research includes historical records from books and local museums, as well as data from a recent slaughter facility feasibility study document. This was supplemented with data from in-depth interviews with farmers in each region. These data were contextualized with quantitative trends

between 2001 and 2006 to enrich our understanding of food security in the five study communities.

4.3.3 Meat Price Survey & Participant Observation Summer/Fall 2010

Each community was visited in the summer of 2010. During these visits, main grocery outlets at each site were surveyed. Meat product price data was gathered in grocery stores across the three communities to determine average prices of meat products in each location and to assess meat product availability. The statistical census data coupled with product availability and price information helped develop an objective picture of the food security situation in each community.

The following meat products were priced: fresh wild sockeye salmon, farmed Atlantic salmon, lean ground beef, regular ground beef, whole chicken, chicken breast, chicken thighs, pork tenderloin, pork roast, pork chops, turkey products, lamb products and high-end beef products. These items were selected as they form a representative sample of commonly available meat products.

Cost per kilogram was recorded for each product using Microsoft Excel spreadsheet software. In certain cases, prices in stores were based on a cost per product. In these situations, it was not possible to make accurate comparisons to items priced per kg, as there was no scale available to weigh the items. In these situations, the items priced individually were entered into the Excel file and highlighted with a label to differentiate them from the other items being compared. If a product from the list was not available at one of the establishments “no data” was displayed for that store on the file. If a store carried a different variety than the other stores were carrying, those data were recorded

and labelled in the file. Immediately following the trips to each community, two grocery stores in Victoria, BC were sampled using the same schema and guidelines, and serve as an urban comparison.

The site visits were also conducted in order to establish contacts at each location, and begin to form relationships with the farmers participating in the food safety training course prior to interviewing them one year later. Site visits also allowed for an in-depth understanding of how the course material was being offered, and highlighted some of the initial concerns being raised by participants and trainers in a non-formal setting. These observations reflect preliminary field results and informal conversations with farmers and local business managers.

Participant observation methods were utilized during these site visits to gather data. This method of data collection was first documented by researchers in the fields of sociology and anthropology (see: Glaser & Strauss, 1967; Denzin, 1970; Pelto & Pelto, 1970; Sanjek, 1990; Hammersley & Atkinson, 1983; Ellen, 1984) and has since been employed by researchers across disciplines. Participant observation allows the researcher to be immersed in the activities of the study population, allowing for a more a more informed assessment of the individuals (Jorgensen, 1989).

This method of collection is ideally suited here, due to the exploratory nature of the study and the attitude of mistrust towards government and program developers held by many of the program participants. Jorgensen (1989) highlights the aspects of a study that make best use of these techniques when:

"the research problem is concerned with human meanings and interactions viewed from the insiders' perspective; the phenomenon of investigation is observable within an everyday life situation or setting; the researcher is able to gain access to an appropriate setting; the phenomenon is sufficiently limited in size and location to be studied as a case; study questions are appropriate for case study; and the research problem can be addressed by qualitative data gathered by direct observation and other means pertinent to the field setting" (p.13).

Although this collection only accounts for a small piece of the study data, it is an important piece, as it showcases farmers attitudes prior to participating in the course and their interactions with one another.

4.3.3.1 Powell River

Price data were collected at 8 grocery stores in the Powell River District on July 27th and 28th, 2010. Save-On Foods, Safeway, Top of the Hill Grocery, Lund Grocery, Lang Bay Store, and Quality Foods were the grocery stores included in the sample. The Chopping Block and Village Meats were the two butcher shops included.

4.3.3.2 Bella Coola

During the September 2010 research trip to Bella Coola, heavy rainfall caused ditches to overflow, destroying large sections of highway leading in and out of the regional district. The heavy rains and road washouts made it impossible to visit 2 of the 3 grocery retailers in the valley, so price data could only be collected from one retailer. The small size of the other two stores and the specific requirements for collection meant data could only be collected in person. Due to the weather conditions, the available supply at that location was likely not representative, as a number of local residents were buying products in excess, given the uncertainty of road closures and future supply shipments. Given that Bella Coola experienced a once-in-one-hundred-year flood during the site visit, researchers also had to leave the valley earlier than scheduled and were not able to

ascertain accurate local meat price and availability for comparison with other study communities. As a result, price data collected at this location was incomplete.

4.3.3.3 Haida Gwaii

Baseline price data was gathered at the 6 largest grocery operations in Haida Gwaii on September 17th and 18th, 2010. Some of the small grocery businesses did not operate on a set schedule; given limited time available during the site visit it was not possible to visit these stores. In the town of Masset, data was collected at Atwell Family Foods, Delmas Co-Op, and Masset Grocery. In the nearby town of Port Clements data was collected at Bayview Market. On the south end of the island, City Centre Stores and Gwaii Co-Op were visited.

4.4 Interviews Fall 2011

In the fall of 2011 semi-structured interviews were conducted with two distinct groups: the first group was made up of experienced meat farmers from across the communities of interest; the second group included key stakeholders from the Ministry of Health and the BC meat industry who had participated in the development and roll-out of the MIR and its amendments. There were approximately 30-40 individuals directly involved with the initial project, aimed at creating an alternate licensing option for rural and remote communities without reasonable access to a slaughtering facility. All potential interview participants were involved in the development or delivery of the amended regulations, or had participated in the food safety training course as farmers.

A list of potential participants was provided by the local farmer's institutes in each community and a contact at the BCFPA. Selected interview participants were then contacted by trained researchers, and provided with the study materials to determine their interest in participating. All interviews were conducted by telephone from August 2011-January, 2012, and recorded interviews were transcribed using random number identification to ensure relative anonymity. Whenever possible, a snowball sampling technique was utilized to determine other potential participants during interviews, however, given the limited sample of potential participants suggested participants had already been contacted. Given the relatively small size and isolation of these communities, and the small number of potential participants in each sample, it was not possible to ensure complete anonymity. In order to retain a high level of confidentiality and anonymity, responses were summarized to reflect a communal "voice", and wherever possible community names were not directly associated with responses. The University of Victoria Human Research Ethics Board approved our study application.

In order to achieve these research goals, semi-structured interview questions were tailored to address the two groups of interest individually (See Appendix B Farmer Interview Questions; Appendix C Key Informant Interview Questions). Twenty-five key stakeholders were selected, (from a larger list of approximately 30-40 high-level individuals provided by the MoH) involved in the program development, from the Ministry of Health and the B.C Food Processors Association (BCFPA). Given the highly political nature of this study, interviews with key informants were conducted by a qualified interviewer who had not been involved with previous group meetings with the Ministry of Health in order to follow the concepts of grounded theory and allow new data

to emerge. The final list of selected participants was not shared with the Ministry of Health as an additional step to maintain anonymity. Interview questions for key informants aimed to determine some of the challenges, barriers and successes involved in the development and implementation of the meat regulation program and its amendments (See Appendix C Key Informant Interview Questions).

Fifteen experienced farmers were selected from across the communities of interest, however only eleven were available to participate. Farmer interviews focussed more on determining how the meat regulation program had impacted their business, and the local food security in their communities. These interviews were conducted by a trained researcher who had visited the communities and had previously met some of the participants during 2010 site visits.

4.5 Data Analysis

Analysis of the data occurred throughout the interview process. After each interview, verbatim transcripts were compared to previous data to look for emerging themes. When new ideas were highlighted, memos were made and interview questions were reformulated to include additional sub-questions. Themes were extracted into a database and updated or altered to incorporate new concepts following the principles of grounded theory. Analysis was conducted by one researcher to maintain consistency in the development of themes. Once all interviews had been conducted, the database was paired down into a final list of coded concepts for each group of stakeholders. Quotes were selected that help to highlight the identified themes and to ensure that individuals with varying opinions were not lost amongst the concepts.

These themes were analyzed in conjunction with the quantitative agricultural and socio-economic statistics, the literature identified in the review, and the food costing data and participant observation info gathered during the site visits. Methodological triangulation was used to help validate the findings and provide credibility and corroborating evidence to highlight and further develop the themes identified in the interview process (Creswell, 1998).

Chapter 5: Results

The results section will begin by presenting basic agricultural data showing changes in the local agriculture in these study communities between 2001 and 2006. Next, socio-economic profiles will be presented for each community using the provincial average for comparison. These data will highlight the vulnerability of these study populations to issues of food security as outlined in the literature review. This will be followed by a report of the results from interviews with farmers. These results will illustrate the varying views from farmers regarding local food security and explore their thoughts about the situation for farming in their communities prior to the introduction of the MIR. Results will allow for an in-depth exploration of farmers feelings about the impacts of the MIR and amendment on local food security in their communities. Finally, this chapter will outline results from interviews with key informants from the Ministry of Health and the BC Food Processors Association to get their perspectives on the regulation and its effects.

5.1 Descriptive Agricultural and Socio-economic Statistics

The change in total number of farms, total hectares of land in crops and total number of animals in each of the four regions from 2001 to 2006 is summarized in Figure 5 below. Data are then further broken down by study community in the following subsections.

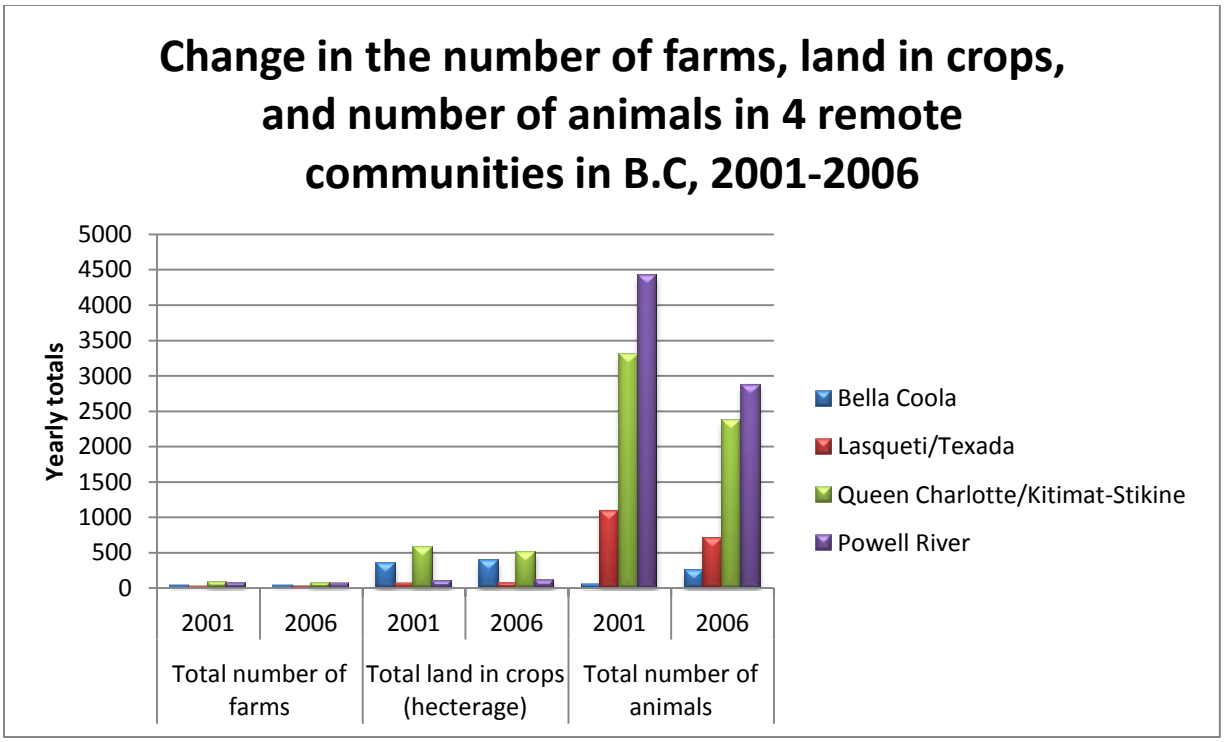

Figure 5. Change in the Number of Farms, Hectarage in Crops, and Number of Animals in Four Remote Communities in BC, 2001-2006.

Socio-economic data from each of the communities of interest for 2005 are listed in Figure 6, Table 2 and Table 3 below. The data have been compared to the provincial average for the province of British Columbia and will be further broken down by study community in the following subsections.

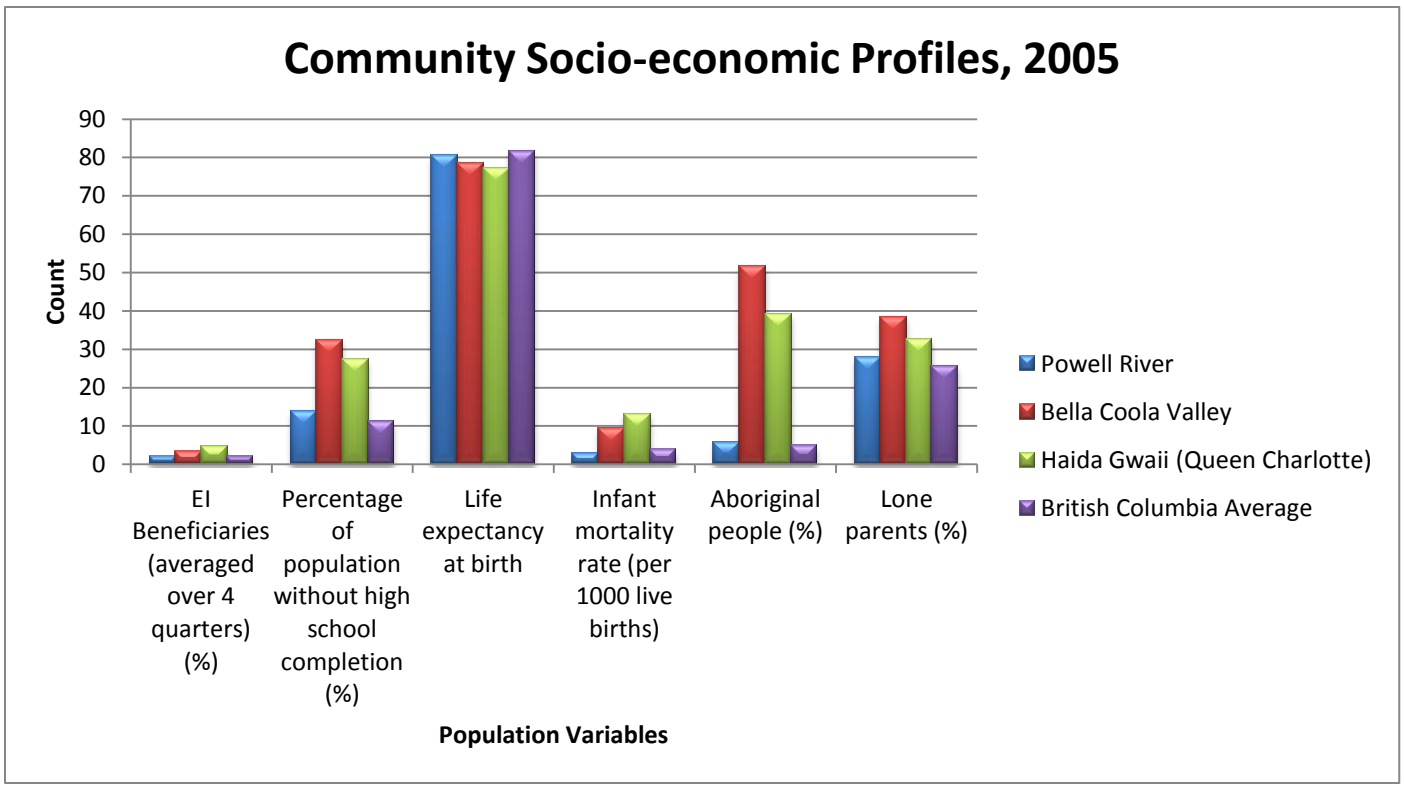

Figure 6. Community Socio-economic Profiles for 2005

Data source: (BC Stats, n.d.)

Table 2. Community Socio-economic Profiles by Local Health Authority for 2005

	Local Health Area			British Columbia Average
	Powell River	Bella Coola Valley	Haida Gwaii (Queen Charlotte)	
EI Beneficiaries (averaged over 4 quarters) (%)	2.1	3.3	4.6	2.1
Percentage of population without high school completion (%)	13.9	32.5	27.3	11.1
Life expectancy at birth	80.5	78.5	77.2	81.7
Infant mortality rate (per 1000 live births)	2.9	9.4	13.2	3.8
Aboriginal people (%)	5.7	51.6	39.2	4.8
Lone parents (%)	27.8	38.4	32.7	25.7
Average Family Income ($)	65,233	48,574	57,598	80,511
Average Female Lone Parent income ($)	32,435	21,422	32,132	43,491
Proportion of population with income under $20,000	9.0	22.5	10.8	8.0

Data source: (BC Stats, n.d.)

Table 3. Rate of Diabetes and Obese/Overweight by Health Service Delivery Area

	Health Service Delivery Area		British Columbia Average
	North Shore/Coast Garibaldi (Including Powell River RD and Bella Coola Valley)	Northwest (Including Haida Gwaii)	
Rate of diabetes (%)	2.3	5.4	5.3
Rate of obesity and overweight (%)	42.2	62.1	44.7

Data source: (Statistics Canada, 2011)

5.1.1 Powell River

As of the 2006 census, 19,599 people lived in the Powell River Regional District. This district includes the main city of Powell River, the Islands of Texada, Lasqueti, Savary and Hernando, the Sliammon First Nation and a number of unincorporated and uninhabited regions. The district encompasses a land area of 5,092.06 km² (BC Stats, 2009a).

5.1.1.1 Agriculture

The value of agricultural land and buildings in the Powell River Regional District increased from 2001 to 2006 by over 55%, the number of animals declined by approximately 34%, and the number of farms declined by 10% (Statistics Canada, 2006). However, the number of hectares in crops increased by over 1000% (Table 4).

Table 4. Change in Basic Agricultural Statistics in the Powell River District, 2001-2006

	Agricultural census year		Percent change
	2001	2006	
Total number of farms	70	63	-10%
Total land in crops (hectares)	10	114	+1040%
Total number of animals	4,422	2,875	-34.98%
Total value of land and buildings ($)	20,947,950	32,634,264	+55.79%

On the Islands of Texada and Lasqueti, there was a 35% decline in the number of animals, a 10% increase in the number of farms, a 34% increase in land in crops, and an increase of 55% in the total value of land and buildings (Table 5).

Table 5. Change in Basic Agricultural Statistics on Lasqueti and Texada Islands, 2001-2006

	Agricultural census year		Percent change
	2001	2006	
Total number of farms	20	22	+10%
Total land in crops (hectares)	55	74	+34.55%
Total number of animals	1,095	703	-35.80%
Total value of land and buildings ($)	7,237,500	15,020,000	+107.53%

5.1.1.2 Socio-economic Profiles

The median family income in the Powell River Local Health Area in 2005 was $65,233 (compared to $80,511 for the province of British Columbia) with a low income rate of 9.6% among working families (compared to 13.3% for the Province) (BC Stats, n.d.).

Life expectancy was 80.3 years (compared to 81.4 for the province) see Table 2. The rate of obesity and overweight published in 2011 for the North Shore/Coast Garibaldi Health Service Delivery Area (NSCG-HSDA) that includes the PRRD was 42.2% (compared to 44.7% for the province) and the rate of diabetes was 2.3% (compared to 5.3% for the province) see (Statistics Canada, 2011). Overall food insecurity in the NSCG-HSDA was measured at 5.9% in 2005 (Provincial Health Services Authority, 2007). For a breakdown of the population estimate see Figure 7.

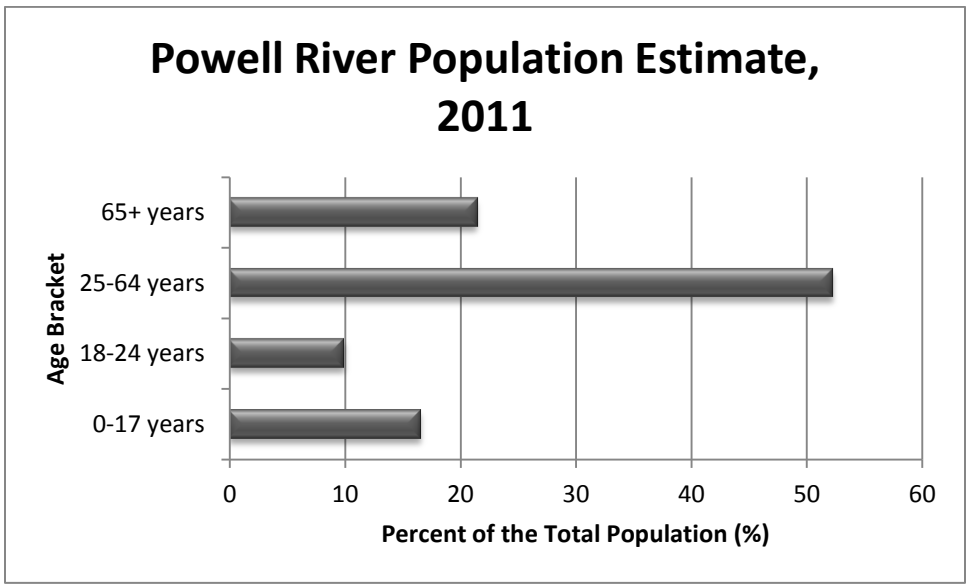

Figure 7. Powell River Population Estimate, 2011

5.1.2 Bella Coola

The Bella Coola Valley is home to 2,897 residents of whom 788 are Nuxalk, a Coast Salish First Nation (BC Stats, 2009b). The Nuxalk have a reserve in the valley, comprised of the Bella Coola townsite and the Four Mile subdivision (BC Stats, 2009b).

The Bella Coola Valley (BCV) is geographically isolated, made up by three main communities: Bella Coola, Four Mile and Hagensborg. The closest large settlement is

Williams Lake, which lies approximately 500 km to the east by way of a treacherous road. Bella Bella, to the west, is eight to nine hours by boat and Vancouver is approximately 400 km to the south by air. The BCV is in the Vancouver Coastal Health Region and falls under the jurisdiction of the Central Coast Regional District (CCRD).

5.1.2.1 Agriculture

Unlike Powell River or Haida Gwaii, Bella Coola has seen an overall increase in agricultural production. Between 2001 and 2006, the Bella Coola Region experienced a 6% increase in the number of farms, an almost 400% increase in the number of animals and a 76% increase in the value of farm land and buildings (Table 6) (Statistics Canada, 2006; Statistics Canada, 2001).

Table 6. Change in Basic Agricultural Statistics in Bella Coola, 2001-2006

	Agricultural census year		Percent change
	2001	2006	
Total number of farms	30	32	+6.67%
Total land in crops (hectares)	350	380	+8.57%
Total number of animals	51	254	+398.04%
Total value of land and buildings ($)	7,698,910	13,555,399	+76.07%

5.1.2.2 Socio-economic Profiles

The median family income in the Bella Coola Valley Local Health Area (LHA) in 2005 was $48,574 (compared to $80,511 for the province) and there was a 7.3% rate of low-income among economic families (compared to 13.3% for the province) (BC Stats, n.d.).

Life expectancy was 78.6 years (compared to 81.4 for the province) see Table 2. The Bella Coola Valley has the lowest ranking in terms of overall regional socio-economic indices in British Columbia (BC Stats, n.d.). For a breakdown of the population estimate see Figure 8.

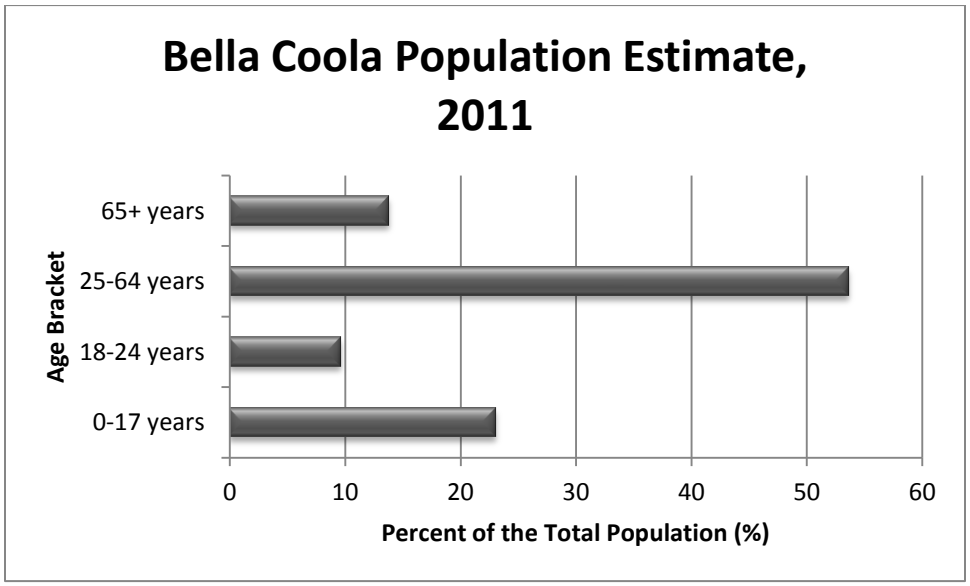

Figure 8. Bella Coola Population Estimate, 2011

The rate of obesity and overweight published in 2011 for the North Shore/Coast Garibaldi Health Service Delivery Area that includes the BCV was 42.2% (compared to 44.7% for the province) and the rate of diabetes was 2.3% (compared to 5.3% for the province) see Table 3 (Statistics Canada, 2011). However, Thommasen *et al.* (2004) notes that:

"people living in the Central Coast Regional District [the Bella Coola Valley and other small coastal and island communities] have the lowest life expectancy in the Province" (p.179)

primarily due to cardiovascular and cancer-related deaths. Over 50% of the population in this LHA is Aboriginal, a population that tends to have higher rates of food insecurity and nutritionally-related disease (Power, 2008; Willows, Veugelers, Raine, & Kuhle, 2009).

For example, the prevalence of diabetes in the local Aboriginal population was 12.5% in 2005 (Patenaude, Tildesley, MacArthur, Voaklander, & Thommasen, 2005). Overall food insecurity in the NSCG-HSDA was measured at 5.9% (Provincial Health Services Authority, 2007)[6]. The cost of the Nutritious Food Basket in 2005 in the Bella Coola Valley was $784 per month to feed a family of four. The provincial average cost to feed a family of four in 2005 was $655 (Howard, 2006).

5.1.3 Haida Gwaii

Haida Gwaii, formerly the Queen Charlotte Islands, consists of two main islands: Graham Island in the north and Moresby Island in the south, along with approximately 150 smaller islands with a total landmass of 10,180 km^2 (3,931 sq mi). Other major islands include Anthony, Langara, Louise, Lyell, Burnaby, and Kunghit Islands. Graham Island has six official communities, and the majority of inhabitants and infrastructure. Moresby Island, just to its south, is home to one community, Sandspit. There are approximately 3,400 residents of Haida Gwaii (BC Stats , 2009c).

5.1.3.1 Agriculture

Agricultural Census data demonstrate that within the Queen Charlotte/Kitimat-Stikine region, which includes Haida Gwaii, there was a 28% decline in the number of animals, an 11% decline in the amount of land used for crops, and a 17% decline in the number of

[6] The data on diabetes quoted above showing a prevalence rate of 2.3% and the data for food insecurity were for the entire North Shore/Coast Garibaldi Health Service Delivery Area which is a vast area with diverse population, so that the rate of diabetes observed in the Aboriginal population in the BCV of 12.5% is submerged in these prevalence rates quoted for the larger health region. This is a general problem in statistical approaches to rural regions with small populations which can lead to under-appreciation of the true incidence of nutrition-related illness and the severity of food insecurity in these types of communities.

farms between 2001 and 2006 (Table 7) (Statistics Canada, 2006). In addition, the value of farm land and buildings remained almost unchanged.

Table 7. Change in Basic Agricultural Statistics for Queen Charlotte/Kitimat-Stikine 2001-2006

	Agricultural census year		Percent change
	2001	2006	
Total number of farms	85	70	-17.65%
Total land in crops (hectares)	581	512	-11.88%
Total number of animals	3,303	2,365	-28.40%
Total value of land and buildings ($)	21,740,200	22,177,083	+2.01%

5.1.3.2 Socio-economic Profiles

The median family income in the Queen Charlotte Local Health Area in 2005 was $57,598 (compared to $80,511 for the province) and there was a 6.1% rate of low-income among working families (compared to 13.3% for the province) (BC Stats, n.d.). Life expectancy was 78.6 years (compared to 81.4 for the province) see Table 2. The rate of obesity and overweight published in 2011 for the Northwest Health Service Delivery Area (NWHSDA) that includes Haida Gwaii was 62.1% (compared to 44.7% for the province) and the rate of diabetes was 5.4% (compared to 5.3% for the province) see Table 3 (Statistics Canada, 2011). Overall food insecurity in the NWHSDA was measured at 6.5% in 2005 (Provincial Health Services Authority, 2007). However, almost 40% of the population is Aboriginal and this population tends to have higher rates of food insecurity (14.5% in one estimate, compared to 5.4% for the province) (Provincial Health Services Authority, 2007) and diabetes (6.7% prevalence for First

Nations compared to 4.8% for other BC residents) (Public Health Agency of Canada, 2009). For a breakdown of the population estimate see Figure 9.

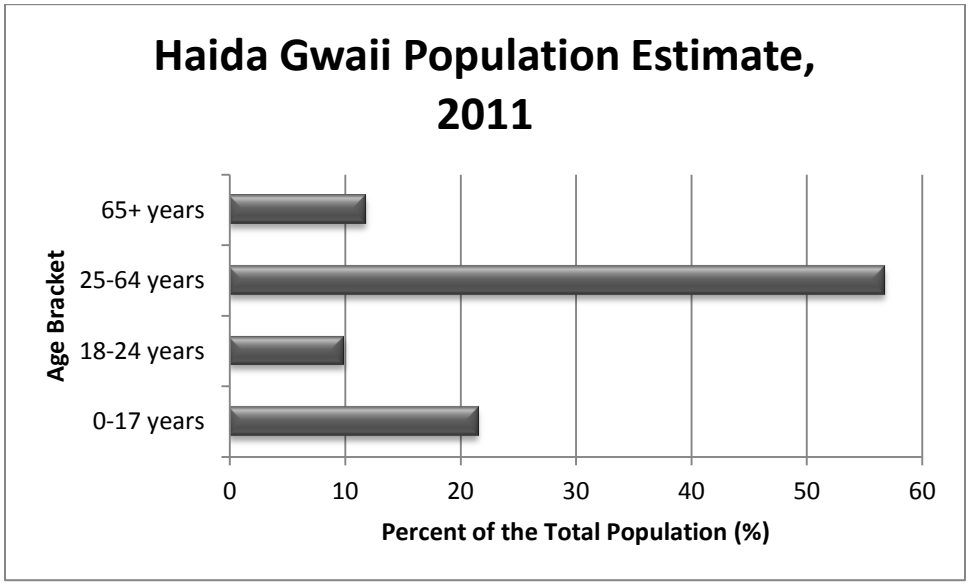

Figure 9. Haida Gwaii Population Estimate, 2011

5.2 Participant Observation in Study Communities Summer/Fall 2010

Each community was visited to observe the food safety slaughter safe training and course orientations. This section outlines the results from this survey and informal discussions with community members during the data collection period.

5.2.1 Meat Price Survey

The affordability and availability of meat is a key indicator of food security in a community. In Powell River, the affordability of meat compared favourably with Victoria. The average price for both lean and regular ground beef (averaged over 8 stores) was lower in Powell River than Victoria (averaged over 2 stores). This difference also held true for whole chicken, chicken breasts, chicken thighs, pork roast, lamb chops and beef roast (see Appendix D Price Data for Chicken and Pork Products; Appendix E

Price Data for Lamb Products and High End Beef; Appendix F Price Data for Turkey Products). However, it should be noted that prices for meat tended to differ significantly between stores. For example, the price of chicken breast ranged from $3.17/kg in one of the smaller grocery stores to $18.90/kg at one of the two butcher shops in Powell River, likely due to a significant difference in the quality of the product.

In general, the majority of stores in Powell River stocked most of the meat items in our survey. The exceptions were regular ground beef, lamb chops and beef steaks and roasts, which were carried by less than 50% of the stores surveyed. However, some of these could be considered specialty items and likely do not constitute a significant proportion of the community's meat consumption. In addition, there were differences in meat availability in relation to store size. Larger chain stores in Powell River had a comparable selection to those in Victoria, while the smaller stores had very little meat selection. For example, one small store stocked only frozen chicken breast and the cost per unit was very high compared to those from the larger chains. At the same time, two of the smaller grocery stores and one of the butcher shops had prices for lean ground beef that were well below the larger chain stores in town.

In Haida Gwaii, a survey of the availability and price for selected meat items between Victoria (averaged over 2 stores) and Haida Gwaii (averaged over 6 stores) suggests that while the selection of some items in Haida Gwaii is limited, the prices were surprisingly somewhat more affordable in Haida Gwaii. The price data shows that average cost for lean and regular ground beef, beef steak and roasts, whole chickens, chicken breast and chicken thighs in Haida Gwaii was lower than in Victoria (see Appendix D Price Data for

Chicken and Pork Products; Appendix E Price Data for Lamb Products and High End Beef). Salmon appeared to be the only retail product that was locally produced and available in Haida Gwaii stores and, somewhat surprisingly, was on average more expensive than salmon sold in Victoria.

Unfortunately there was not a butcher on site during the survey in Masset, so it was not possible to determine if there is an interest in supplying local meat products at their facilities. In a further paradox, chicken products imported from off island were far less expensive than locally harvested salmon. It should be noted however that this does not take into account the role of community food fishing.

It is also apparent that privately hunted wild game, fish and other seafood constitutes a significant portion of the meat consumed by residents. Additionally, food fishing trips for the community are conducted by members of the Haida Nation throughout the year, and provide an additional source of meat protein for residents, which may help to offset the cost of purchasing more expensive products in the retail markets.

In terms of availability, neither pork nor lamb were sold in any of the Haida Gwaii stores sampled, and less than half the stores had lean ground beef, whole chickens, lamb or beef roast. The most commonly available meat products were regular ground beef, chicken breasts, thighs, and beef steak. On average, Haida Gwaii had less availability of some meat products when compared to Victoria or Powell River in summer of 2010, but prices for items that were available appear to be similar if not less expensive than chain stores in Victoria. However, it should also be noted that there were significant variations in the

cost of some meat items from store to store within Haida Gwaii; thus depending upon which store consumers use, meat may be more or less affordable.

5.2.2 Informal Discussions in Study Communities

Informal discussions prior to the course orientations revealed some interesting information about the status of meat farming and sales in these communities. Logistical issues were discussed in terms of supplying the grocery stores with local meat products due to the overhead costs. Many farmers spoke of reluctance to sell to grocery stores if it meant having to decrease the selling price of their products, as they could charge more selling through farm gate. For farmers selling poultry, many encountered the issues of bird size when considering selling to grocery stores, as most consumers want to purchase a "one-meal" sized bird, and those raised by local farmers are often much larger.

Many farmers were excited about the prospects that lay ahead with the changing regulations, but felt it would not be realistic for them to sell to a retail market. Given their limited supply, many were already selling their products to regular customers with a growing wait-list for new customers. In order to open up to the retail market, they would have to drop regular customers from their list, or increase their level of production to meet the supply requirements necessary to provide a sustainable stock to local establishments. As the farming population ages, the idea of increasing workload and expense to meet a growing demand seemed unappealing.

Some restaurants in the communities may serve as potential buyers for local meat sometime in the future, however buying local products would likely require them to raise the retail costs of their items, keeping many reluctant to update their menu to feature local

meat dishes. Some bed and breakfasts have shown interest in purchasing local meat products to serve to their customers; however the regularity of these sales at this time is still unclear.

Interviews with some of the butchers revealed that the level of knowledge regarding meat regulations in the province and the outcome of the new licensing regulations at that time varied quite widely. For some, issues of maintaining a regular, reliable local meat supply were apparent, while others were unsure of the legal ramifications of purchasing and selling uninspected meat products to their customers. The lack of accurate information may have been due in part to the infancy of the program and regulations at that time, and in part the lack of adequate dissemination of information to the communities and the province as a whole.

5.3 Interviews with Farmers in Study Communities and Key Informants Fall 2011

In total, 10 farmers were successfully contacted to participate in the interviews from the initial list of approximately 15 potential participants. Four participants were from Powell River, 1 from Texada, 3 from Bella Coola, and 2 from Haida Gwaii.

Twelve key informants were interviewed from the Ministry of Health and the BCFPA. They were comprised of managers, and other high level staff involved with the meat regulations or the Slaughter Safe training course in some way.

The salient points from the interviews were categorized into thematic areas for participants from the farming community and key informants. Quotes are used to

highlight themes, but whenever possible names of locations and departments have been removed to further anonymize commentary. The following themes are the most common reactions of the two groups to the 2004 MIR and the 2010 amendments, as well as the discourses of the two groups regarding the effects on local food security.

5.3.1 Interviews with Farmers

This section identifies the major themes from interviews with farmers from each of the communities and whenever possible themes are accompanied by direct quotes from participants.

5.3.1.1 What Local Food Security Means to Farmers

Undoubtedly, the changing regulations had some impact on the local meat industry in remote areas of the province. In order to understand the relative severity of this impact it is important to first determine how farmers perceive current food security in their communities.

The concept of food security was at the forefront of discussions regarding the 2004 MIR, with many farmers defining a 'food secure community' beyond the accepted notion of a reasonable supply of food:

"It's got elements of a bigger picture, not just that we can truck em' here, that's not food security, that's convenience"

Though one farmer defined security in terms of a communities' ability to feed the immediate population for a specified time, others chose to define it in a more abstract manner, suggesting instead that:

"Food security for me isn't just the food, its' sort of the ability to live in community and you know, have a vibrant community, not one that is dependent on stuff and decisions that can happen across the world, right? Where we get affected by stuff that we can't change"

Many farmers understood the imminent importance of maintaining a healthy, sustainably food secure community, as a lack of sustainable access to supplies directly threatens their livelihoods: *"If I can't have a regular access to food for my chickens, they'll die"*. One farmer spoke about the uncertain future sustainability of the community, concluding that:

"We haven't really been threatened much with lack of food in here, but I don't believe we're sustainable; if that road goes away everything here is gonna triple in price";

highlighting the precarious nature of the food supply chain and food reserves in many small rural towns.

Others focused on food security's impact on the health and resiliency of their community, suggesting that:

"When you talk about community health I believe that there's 3 aspects...that have to be taken into consideration, those are environmental health, social health and economic health as well...if you want to talk about a healthy community then they're all kind of at play there somehow"

The effect of rurality on community food security came to light, as one farmer distinguished the popular, perhaps overly simplistic notion of food security as availability and access, from the reality of potential food insecurity plaguing many rural and remote regions:

"when we live on an island that is a couple of ferries away from the other people talking about it, ya, it's something less trendy and more sort of a reality"

The concepts of food security and local food are often conflated, so it was important to draw out a conceptual understanding of local food from the perspective of the farmers. For some, true "local" food cannot exist; as one farmer pointed out:

"There's no salt mines that I know around here...no pepper. And there's all sorts of ingredients...where do you get spices from?"

This point was further developed as this farmer argued:

"Buying from the Okanagan, Fraser Valley, Cariboo as opposed to California, or Mexico, unfortunately, that California/Mexico is coming anyways so, I think the idea of a local....it's a fictitious...fictitious isn't the right word you know, it's a false...it's a romantic term, it doesn't exist"

The idea of looking at local food beyond the end product, looking instead at the steps involved along the way was continued as another farmer pointed out: "...*if you grow your own food, where are your supplies coming from?"*

This understanding of the term 'local' highlights the importance of the rest of the food supply chain as integral to the continued functioning of their community's food security.

It was interesting to note the divide amongst farmers, as some viewed local as bounded by a more traditional geographical boundary/definition:

"If it was local, and you can pretty much tell in a small town, cause if it's my stuff, it's gonna have my name on it...right? And then people here go oh ya, that's my neighbourhood..."

Some farmers had a different definition of local depending on the product and its availability in a local market:

"Well I grow my own, and if I can't grow it, I try to buy it locally, like within my regional area, and then if I can't do that...like we'll buy fruit from the fruit vendor who

brings it in from the Okanagan. So you know it's local city, and then it's BC, and then it's Canada, and I try not to buy anything outside of Canada ever"

This idea was expanded to look at local food with a seasonal lens, and tailor purchasing patterns around product availability:

"...[local] also means eating seasonal food, so that means we eat apples when they are harvested, not shipping them or holding them"

Others chose to understand local in its relation to economics and transportation, preferring to focus less on a specified distance or boundary:

"Generally speaking, I don't think local means local as in was in a certain distance. Alright? Because food comes here mostly from like Edmonton or Calgary, and it has to do with freighting. So, local is more along the lines of the economic trails of getting something somewhere...local is more of an economic condition then a physical locality"

The theme of transportation was particularly poignant for many farmers, as the remote nature of their communities re-defined the perhaps more common urbanized notion of "local". One farmer spoke of local food as a compromise between distance and economics, while others saw local as a term bounded by relationships within a community and its members. For others, the use of commercial transportation confined their definition of local food. Given the remote nature of these communities, heavy reliance for many on truck, barge, and ferry supplies, in their eyes, nullifies the local status of most products: *"...as soon as you get the ferries involved it's not local anymore".* Regardless of the variation in definitions, it was clear that concerns over food supplies were at the forefront for farmers:

"*Well where we live [food security] is important here cause all our food comes across 90 miles of water. So it's nice to have local food"*

highlighting the vulnerability of many rural and remote locations to food insecurity and sustainability.

5.3.1.2 The Local Meat Sector and Impacts from the MIR

It became apparent throughout the course of the interviews that the local meat industry in these communities occupies a very small portion of the meat consumed there; as one farmer stated*: "the logistics are just so much against it"*. However, despite its relatively small contribution to meat consumed in their regions, many farmers still felt the hard hitting effects of the MIR on their businesses and abilities to provide local products for their communities:

"...up until the meat inspection regulations happened, we had a fairly high degree of community food security, we had the skills still, we had the land still...there wasn't as many people raising beef at that time, but the potential was still there, and then when the meat inspection regulations were initially implemented it just it just knocked everything down to nothing. And so it's starting to creep back which is really exciting since the amendment was put into place"

"...I would say the number of animals slaughtered here has grown until this regulation came in, and I heard other sheep raisers say: well we're just getting out of it; and we came very close to getting out of it"

"...none of the people or bureaucrats or whoever in government, none of them realized that they were killing the whole way of life and ruining food production as we used to know it"

Although the regulations undoubtedly altered the industry in some way, it is important to note the complexity of the farming system and to acknowledge other factors at play. Some farmers had grown up in the communities where they farm and thus were able to provide interesting insight into the changing agricultural landscapes in their regions. These historical accounts coupled with the community profiles help to better gauge the meat regulations' effect on present day food security in these communities by

highlighting some of the other coincidental issues affecting the sustainability and resiliency of farming in these communities:

"It's like, there used to be more beef raised here, and there were also more people here that wanted beef here, say 30 years ago...the market isn't there anymore, so there isn't the demand now that there used to be"

This concept of a changing community in response to economic conditions speaks to the change in the demand for products and the shift away from industries occurring in a number of rural regions across the province.

"When the population here was 3000 or more and vigorously growing, because the economy existed, then there were more trucks coming in, more frequent things, more warehousing happening. As the infrastructure shrunk to be the decadent community that we really are, people won't like that word but we are not a vigorous growing, there's nothing here, no jobs, no future for kids, they gotta go...The infrastructure isn't big enough to handle that distribution chain and it goes away...So from when I moved here, the population was bigger...there was about 100 more full time jobs"

For every community the topic of an aging population of farmers was a cause for concern; many rural areas lack the necessary infusion of young farmers to pick up the slack, an issue exacerbated by the changing regulations and the uncertainty of the industry's future:

"We did lose a couple of young farmers when the meat regulations were brought in, because it was a small but significant piece of their income, and they couldn't recover from it...So when we were in that boat for a few years, before the amendment details were all ironed out, even in that time those young families just said forget it, I can't do it. If we can't sell our beef then we can't make it, so we're gonna move; so they did. And you know they've gotten on with their lives, and they are doing different things now, so we've lost them. And young families are precious"

"The population is going down not going up, and very few young people stay here. They move or they go elsewhere to find work, there's no work here"

One farmer also acknowledged the pressure being placed on the regulations to shoulder the blame for other issues impacting the industry:

"I understand the challenge you have, because I've used that excuse in the last 10 years like 100 times, ahh it's the regulations, but you know it's not, I'm getting older and it's a lot of work, and frankly it doesn't make a lot of money. But it's easy to say it's the meat regulations, and all of a sudden things topped up about the time I started to get a little older and more tired"

It was interesting to note the other aspects of farming life that are affected by a change in regulation. The criminalization of farmers through the regulation changes not only affected their ability to sell their products, it also forced many to feel isolated and marginalized in their communities:

"It made us be like dope growers selling our illegal chickens....Before I was legal I would only sell to people I knew personally, and I would not sell to anyone I didn't know"

"One woman said her son was driving down the driveway to pick up their chickens, and they are just really regular customers, and he said, do we have to buy the chickens in the dark because it's illegal?"

What happened to the industry's farmers as a result of this illegality and stigmatization however is less clear. Some were driven underground cloaked by an air of secrecy, while others chose to ignore the regulations all together, operating with a business as usual attitude. Regardless of their approach, it was clear that throughout the process these farmers, legal or not, had the full support of their loyal customers:

"[Our customers] are more concerned about the government meddling in the local affairs here and not improving anything...Some of them wrote letters complaining about the fact that we didn't need to have this because everything was fine the way it was"

Despite the precarious nature of farming economics over the past few decades, coupled with the shifting regulatory climate, the addition of the new licensing structure appears to

have assuaged the fears of some meat farmers. Though still in their infancy, the regulation amendments have opened doors for farmers that the 2004 regulations, for all intents and purposes, had slammed shut:

"If you have another generation come in who might want to you know, go to the credit union and get a loan, you have to be legal...so to make a legitimate business model it's absolutely really important as an actual practical thing that makes an impact...We have a business plan and a business model, and if someone could take over our business, they couldn't have done that without the meat regulations new D and E licenses, it just wouldn't work"

"Well nobody wants to operate under the radar. Ok, now if you can operate above the radar with the license you can advertise"

"...[The new licensing structure] gives the opportunity for the skills to be practiced, and the relationships to be formed, you know there are some young farmers that have gotten into raising meat that weren't before"

These positive responses from some farmers may lead to a necessary infusion of new farmers to the business, and may convince other skeptical underground farmers to become licensed.

5.3.2 Interviews with the Ministry of Health and the BCFPA

The interviews with Ministry of Health officials and members of the industry group BCFPA provided greater insight into the inner workings of the regulation, from its inception, through the many hurdles that accompanied its implementation. This section discusses the reasoning behind the regulation, and outlines the arduous process of creating a solution that would work for rural British Columbia farmers, while still maintaining the required safety standards.

5.3.2.1 Reasoning Behind the MIR Legislation

Many angry farmers and community members alike have blamed the hasty imposition of the 2004 regulations on larger-scale food safety scares in Canada in early 2000. However, some key informants working on legislation during that time period explained that the regulation may have been supported by the BSE outbreak, but was already well under development by that point:

"Mad cow might have sped things up a bit, but these regulations were being planned when mad cow was discovered"

The 2004 MIR was seen by officials as part of a larger push to harmonize food safety standards, but interviews confirmed that Canada's international safety rating was hit hard by the disease outbreaks of the early 2000's, calling into question the true push behind the regulations. Other informants felt strongly that the regulations were more about trade related pressures and improving public confidence both internationally and here at home. Some interviewees speculated that heavy international trade pressure to put regulations in place was essential for the removal of bans on exported Canadian meat, and the pressure was thus responsible for the regulatory shift as Canada was number 3 in the world for exporting grain fed beef.

Others felt that things progressed very quickly in 2004 due to the highly politicized nature of this issue, with limited consultation amongst governing bodies. As a result of this haste, some say, the far reaching implications of the 2004 regulation were not thoroughly considered, and thus, its introduction wreaked unexpected havoc on BC's small-scale meat producers. This creation of a one-size-fits-all regulation angered a lot of farmers, as it failed to take into account the needs of rural and remote communities:

"...the international level sort of impacting on local folks so [the 2004 regulations] were a provincial regulation that was maybe not thought out as well as it could have been on how it was going to impact, especially the rural and remote communities. Somehow that was missed and I think that's why they really had to go back and revisit this"

Some informants believed developers of the 2004 regulations lacked understanding of the meat industry in BC. Without a diagram of the existing industry in the province at the time, projecting the potential implications of the regulation for communities as a whole was a nearly impossible task. Some argued that federal manuals were utilized when creating the MIR, leading to the development of legislation geared towards much larger operations:

"Nobody meets these people including the Ministry of Agriculture. They're not terribly well organized and they're just little farmers here and there. When there's industry meetings, it always the big guys that go. So they really did not understand what this industry looks like and how it would be affected. I don't think it was malicious, they really didn't know and it came as quite a shock to them"

5.3.2.2 Impacts of the MIR on Food Security in BC

The 2004 regulations were seen by interviewees as a threat to food security in these rural and remote communities given their isolation, and the immense cost of compliance for farmers. Officials grossly underestimated what was involved in upgrading facilities, believing that such upgrades would be feasible for these communities. It quickly became clear, however, that there were not the sufficient capacity, resources, capital or markets necessary for regional slaughter facilities to operate successfully in these smaller rural communities. Because upgrade costs were out of reach for most small scale farmers some were forced to retire (unwilling to fight the system), leaving a void in local production in their wake. Interviewees spoke of the obvious effect of the MIR introduction on the number of slaughterhouses across BC, explaining that in 2006 there were 300 small slaughterhouses in BC, and in 2011 only 35 remained.

Although the regulation had damaging effect on the small-scale producers in the industry, some interviewees pointed out other confounding factors that they believed were also responsible for the damage. One informant spoke of the political climate at that time, describing issues which more than likely compounded the impacts from the regulation. These included a reduction in expenditures by local populations in response to uncertain economics in conjunction with consumers' uncertainty about the safety of Canadian meat products, brought about by the bovine and avian disease outbreaks of the early 2000's:

"During this time, the world economy started being affected so at the community level in BC they were being affected by a broad range of issues, the general access to capital, declining expenditures by local populations. People didn't have the cash in their pockets. So, in many ways it was kind of a perfect storm that put pressure on the existing operators regardless of the meat inspection regulations"

Another interviewee also spoke of the aging population of farmers, and the effect that a lack of young farmers is having on the industry as a whole.

It was also interesting to note some of the lesser known impacts of the regulation and how they affected the industry. The introduction of the MIR coupled with food safety scares led to a significant decrease in hide prices, one informant suggesting a decline from 50$ to less than 5$ per hide, which many meat farmers relied heavily upon to supplement the cost of disposing offal. This inability to recover increased waste disposal costs was cited as another contributing factor to the number of farmers quitting the business. This reduction in the number of animals then affected sales of hay, leaving farmers with an excess of hay and no one to buy it. In an already limited business, this excess product made it difficult for those farmers to bring in enough capital to maintain their farm status and receive the tax breaks necessary to stay in business.

The introduction of the MIR also resulted in capacity issues for farmers. As timing is critical in the slaughtering process, it is crucial that farmers have access to slaughtering facilities when they need them. The forced closure of slaughterhouses in response to the regulation meant many farmers were unable to bring their animals in to the A or B facilities at the right time, resulting in an increase cost to feed animals while waiting for an opening. In some areas, closures meant there was only one licensed facility left standing, leaving farmers with no choice of service, even if the facility was inadequately operated. This was cited as a potential push for some farmers to operate their facility underground in order to avoid bringing their animals to those facilities:

"And then the argument is of course that all you're doing is driving it underground. And you're creating people who really don't want to be criminals but you're almost forcing them underground"

5.3.2.3 Challenges and Benefits of the 2010 Amendment

Key informant attitudes towards the implementation of the 2010 amendments varied. As might be expected, given that many interviewees played a role in their development, they tended to speak positively about the new structure. It became quite clear that the strong demand for change from farmers and local activists played a role in shaping the 2010 regulations:

"I think it was political pressure from the farmers that made them go back and look at just how onerous these regs were and that they were pretty well unworkable. So I think they were able to make a pretty good case that some revisiting needed to take place"

Interviewees spoke about the positive effect of involving farmers throughout the process of creating the 2010 amendments and the Slaughter Safe training course, as it allowed the legislation to be shaped through their eyes, tailoring something that would work for their unique situations as small scale rural farmers:

"I saw great cooperation from the different people from the ministries. People were really committed to making this work"

"They talked to anybody and everybody that had any kind of stake in this thing...They explained everything and sometimes it took more than one meeting and people had concerns and they addressed them, they didn't just sweep them under the carpet and hope they'd go away"

Having experienced farmers involved with the steering committee, formed to help ensure the 2010 amendments would fit the needs of rural farmers while maintaining necessary safety standards (made up of Ministry officials, rural farmers and BCFPA staff), helped officials to answer some of the more practical questions and begin to better visualize potential hurdles in these communities. Interviewees noted that the consultative nature of this program came as a shock to a number of farmers, surprised to see the government working for them instead of against them:

"A lot of these farmers would have approached this [new licensing] with a lot of suspicion, just based on past experiences they had good reason to be suspicious, but by the end of the day, [they thought] this is good"

It is clear however, that the creation of this program was not without issue. The Canadian Food Inspection Agency was not very supportive of this new legislation, as the Federal system operates as a much more structured organization. The amendments also generated interest from other agencies creating a major regulatory barrier for the program creators, namely issues of water contamination, proper disposal of offal and other waste. Disagreement between members of the BCCDC and the Ministry of Health created a divide between maintaining food safety versus food security. The BCCDC was concerned with the potential breach of safety and contamination stemming from the amendments.

Some of the Health Authorities and Environmental Health Officers (EHO) also saw the amendment in a negative light, as its announcement coincided with heavy budget cuts for programs they were operating. For some Health Authorities involved, this program exemplified shrinking resources and an increasing workload to carry out, implement and enforce a regulation many thought was not a high priority. The unfamiliar hands-off approach made some EHO's very uncomfortable, unwilling to give farmers autonomy to achieve a specified outcome under their own terms. Interviews revealed that some EHO's were even reluctant to receive training in how to deliver the course material, a crucial stage in ensuring provincial consistency. This was an area of concern for some informants as it could threaten the long term continuity of the training and licensing. Consistency in the delivery of the message over time is essential; any fluctuation in standards from one region to another could ruin the program's success.

Some interviewees discussed the difficult integration into the new 2010 structure of farmers and operators who had initially complied with the 2004 regulations. Farms that had invested the time and finances to upgrading to an A or B license were angry that previously underground operations would be given legal status without the financial burden of upgrading, creating community separation and mistrust:

"It's not a secret so of course now the operators that did invest hugely in getting their operations up to speed are furious that the others are getting away without doing it. So now the snitching is starting and ratting people out and the tension in the community because some people are complying and some are not"

Further, the amendment allowed a farmer outside of a designated D or E area to apply for an E license provided an A or B license holder in their area gave approval. Interviews identified this permission as unlikely given that it would eliminate a potential customer

for an A or B holder. Some interviewees disagreed with the severity of this issue however, believing that A and B facilities would not notice a significant reduction in business as there will continue to be farmers that do not want to kill their own animals and rely on that resource. A number of informants spoke of the lack of adequate agricultural data given the potentially high number of farmers slaughtering their animals illegally. The lack of data makes it difficult to accurately assess the true impacts of the D and E facilities on the existing provincially licensed facilities.

The graduated licensing system is facing a number of challenges related to the D and E licensing amendment that informants are still trying to resolve. The major distrust of government felt by many farmers prior to the creation of the amendments is still a potential hurdle for some, making it difficult to highlight the potential benefits and communicate the value add of participating in the new licensing structure to those farmers that remain skeptical. Directors are relying on the positive word of mouth from other farmers who have successfully completed the program to help draw illegal operators out of the woodwork and improve the industry and safety of products in these regions. Some farmers who had completed the program were faced with new challenges as they became licensed, however, jeopardizing the likelihood of attracting other farmers to participate. Issues related to insurance rates were discussed, as companies were unsure how to classify D and E operators given their limited slaughtering capacity and some were even refusing to insure these operators:

"A lot of people have been having a horrible experience with their insurance company. Oh, you slaughter? That's a whole other risk and we can't insure you anymore or if we insure you it'll be 2000 dollars a year more so they keep bumping into new things"

Issues surrounding quantification of rurality and remoteness continue to plague directors, as farmers in many areas of the province feel their access to slaughterhouses is inadequate, but their communities fall outside of the designated areas for D or E licensing. A number of small islands between the mainland and Vancouver Island also appear to have been forgotten in the legislation.

Though it is clear that legislation cannot appease every interested party, the amendments have improved rates of legal local slaughter, allowing communities better access to local products and improving the sense of self for many meat farmers. More farmers are willing to invest in better tools and supplies to create a safer product as the legalization has the potential to improve their sales:

"It gets rid of the need for people to be underground, working deviously and all what that implies both in terms of safety and just everything. People can run a business in a more businesslike manner. They can advertise locally, and that's all good for them"

Despite the success of the amendments thus far, one major concern remains for many informants however. If a food outbreak were to occur in one of these regions, the potential damage to the credibility and reputation of this program could be irreversible.

Chapter 6: Discussion

This chapter will analyze the various data sources presented to paint a picture of food security in the study communities. It will also utilize the data results in conjunction with evidence from the literature to evaluate how strongly these communities have felt the impacts from the meat regulations, and make some future projections as the regulations continue to evolve.

This study was undertaken to determine the impacts of the 2004 Meat Inspection Regulation and the rural slaughtering amendment on community food security in three remote locations in British Columbia. The study also aimed to discover some of the wider implications of the changing legislative landscape.

Utilizing the evidence from population health framework literature in conjunction with the agricultural and socio-economic data presented, it is possible to determine the vulnerability of the study communities to food insecurity. The overall change in agriculture in all three communities points to a substantial decline in the resiliency of the local food systems. Decreasing local production rates are shown with, on average, fewer farms rearing fewer animals across the five year time period. The value of agricultural land and buildings increased by approximately one third in Powell River, on Lasqueti and Texada Islands, and in Bella Coola, while almost no change was recorded in Haida Gwaii. It is also important to note that the costs of livestock production are significantly higher on Haida Gwaii than on the mainland due to high transportation costs for feed (Misty Isles Economic Development Society , 2011).

On the islands of Lasqueti and Texada, it appears that there was a strong focus on crop production between 2001 and 2006. This shift to increasing crop production may help to explain the smaller number of animals seen during that time period, as focus may have shifted more towards land based crops than animal production given the regulatory change and higher initial input cost for meat production. Powell River and Haida Gwaii also experienced rapidly shrinking livestock herds from 2001 to 2006. Bella Coola conversely experienced a seemingly large increase in number of animals; however, overall the absolute number of animals remains extremely low. A comparison of herd size in relation to population size in Haida Gwaii versus Bella Coola further illustrates the differences in food security in the study communities. The population of Haida Gwaii (3,400) is about 20% greater than Bella Coola (2,800), yet there were ten times the number of animals in 2006 on Haida Gwaii and twice the number of farms compared to Bella Coola.

Utilizing some of the well documented risk factors to assess the general health of each population suggests that all three communities are more vulnerable to adverse health than the average for British Columbia. Each community exhibits family incomes well below the provincial average, with Bella Coola showing wages close to half the provincial average. Haida Gwaii and Bella Coola also exhibit disturbingly high rates of infant mortality, and lower overall life expectancy. Diabetes rates, though seemingly low for the North Shore/Coast Garibaldi Health Service Delivery Area (NSCG HSDA), are misleading, as they encompass the relatively affluent and healthy North Shore community, masking a potentially serious health problem for other communities in that HSDA. A study conducted in Bella Coola in 2005 suggests instead that diabetes rates for

the valley are more than double the provincial average and more than six times the rate in the NSCG HSDA. All of the communities have higher percentages of Aboriginal people in the population; Haida Gwaii and Bella Coola in particular are home to almost ten times more Aboriginal people than the provincial average. These agricultural and socio-economic statistics coupled with its extremely remote nature and evidence from interviews suggest that the Bella Coola Valley may be the most vulnerable of the study communities to food insecurity. Haida Gwaii also shares many of the same risk factors and in conjunction with its isolation and the stagnation in the value of agricultural land and buildings relative to the other rural communities studied, appears extremely vulnerable to adverse health impacts and local food insecurity.

Much of the available literature on food security in rural locations points to the difficulty for many communities to acquire quality food at an affordable price due in part to the barriers of transportation in and out of many remote regions. In addition, most of these communities are not able to warehouse food due to inadequate storage facilities and the strain warehousing puts on revenue, and are often one emergency away from depleting their limited food stocks. Significant issues relating to transportation were apparent for all of the communities in the study. Though many of the farmers interviewed had a strong desire for local self-sufficiency within their communities, they had to balance those desires against the harsh realization that transporting goods from markets outside the region is necessary in order to both meet demand and provide necessary feed and farming supplies. This dependence upon transportation creates additional vulnerability for these communities as it affects the cost, quality and availability of products that are

essential to the operation of community food production and the security of the local food system.

Haida Gwaii and Bella Coola are particularly vulnerable to transportation disruption. For Haida Gwaii in particular, imports must travel over 100 km of water and weather delays often impact the ability to bring in shipments to the islands. Although Bella Coola has road access, the highway is treacherous and there are often road closures which restrict access into the Valley. The flood of 2010 in the Bella Coola Valley is direct evidence of the tenuous transportation links and the significant risk of food insecurity facing the community. Powell River also relies heavily upon transportation by road and ferry into the community; however, the presence of larger grocery chains means there is a larger supply of food in the community at any one time. The proximity to other larger towns also reduces the severity of food insecurity for Powell River when compared to the other communities in the study. It is more difficult to assess the situation for Lasqueti and Texada given the limited data; however, they too rely solely upon ferry transportation and are without any commercial warehousing facilities, so it is safe to say they are significantly vulnerable to insecurity and do not appear sustainable without imports. The role of fishing, and wild game hunting was beyond the scope of this project. However, an in-depth study into their role is essential to further clarify the status of food security in each community.

There were also differing issues for farmers depending on the type of animals being raised. For chickens, feed could not be produced locally in great enough supply to meet the demand. This means a heavy reliance on expensive imported products to feed their

chickens and a greater risk of death for their animals if there is a breakdown in the transportation network. For farmers raising cows, grass and in some cases hay can be produced locally with greater success, reducing some of the reliance on costly imports. However many modern consumers are demanding grain fed beef products making feed requirements more difficult.

The complicated issues related to the economics of food are apparent in the study communities, with many farmers struggling economically. The challenge of maintaining a profitable business in the context of cheaper imported foods is a major concern for farmers and many spoke of the added pressure of keeping up with a seemingly ever-changing set of rules and regulations in an uncertain regulatory climate.

Although access to comparable data was limited, the meat price survey sheds some light on the food security situation in these communities. Powell River was the only region in the study with chain grocery stores such as Safeway and Save-on-Foods, so it was possible to compare food prices with these same chains in a large urban centre, Victoria. For similar types of meat, prices within the same retail chain in Victoria and Powell River were similar. Across all stores in the study sample prices on average were highest for meat products in urban chain stores in Victoria, suggesting that smaller store owners in the rural locations may be pricing some of their products based on “ability to pay” in the community. It is more difficult to determine pricing trends for larger chains, as lower operating costs in rural locations may offset increased transportation costs, allowing for standardized pricing across chains. This may mean that although the cost for importing food products to these rural regions are high, the lower incomes of residents drive store

pricing, and some of the stores operate with lower margins than those in Victoria. In particular, some owners may accept smaller profits on perishables such as meat and produce in order to sell them before they spoil. They may offset those lower profits by charging higher prices for pre-packaged foods which can remain on their shelves for a much longer time. These low pricing data are contrary to some of the established information available for rural regions. The Dieticians of Canada 2009 report for example suggested instead that food items can cost up to 117% more in rural regions. However, one could argue that there are a number of factors that determine pricing across stores and communities, as well as a large discrepancy in how one classifies rurality and remoteness. There are also enormous differences in the needs of different rural communities that should be taken into consideration. These estimates from the Dieticians of Canada report may also oversimplify shopping patterns and may instead be more appropriate on a case by case basis. Given the limited data collected for this study, reasoning behind pricing is purely speculative at this stage and could benefit from longitudinal data collection.

The vulnerability of these communities is further heightened by the changing socio-demographic trends. The population in these communities is decreasing, and with it the local market. To make matters worse, the farming community continues to age, and with many nearing retirement, there are fewer young families and farmers to take over. This issue is particularly troubling in light of the drastic change in the regulatory structure for meat slaughter.

The illegality and uncertainty of the local meat industry's future during the regulation transition period was a significant deterrent for many young farmers and their presence is essential if these communities expect to maintain sustainable local food production. The creation of the 2010 regulatory amendment allowed farmers to operate legally and attract new opportunities that may not have been available when they were operating illegally. It is not yet clear, however, if this amendment was too little or too late in assuaging the fears of potential young farmers.

The flight of young would-be farmers from rural communities is not an issue restricted to British Columbia. The aging of rural communities is a major concern for many developed nations such as Canada, Japan and Australia. For example, this migratory pattern has been a longstanding phenomenon for Australia, as the declining availability of employment and educational opportunities in rural regions has many youth headed for urban areas, leaving an aging population in their wake and negatively affecting the sustainability of those communities (Australian Bureau of Statistics, 2006).

Legislative changes have also been witnessed across the international stage as governments attempt to update regulations in response to food safety scares. The United Kingdom tightened meat safety regulations after the devastating effects of the BSE epidemic in the late 1980's; however their dual mandate of protecting both the meat industry's reputation and public health resulted in human deaths and consumer mistrust of government (Cleeland, 2009). Avian influenza outbreaks over the past two decades have also led to an increase in vaccinations, monitoring and the culling of infected animals in countries across Europe and Asia as well as North America, suggesting that

these issues pose an increasing zoonotic threat and are a growing safety concern for many nations (Alexander, 2007).

Although there is still much debate over the exact nature of agents such as Bovine Spongiform Encephalopathy, many scientists believe that the rapid spread of the disease can be partly attributed to the use of infected meat and offal in animal feed and manure (World Health Organization, 2002). Continued research into the transmission of these diseases and the identification of risk factors in all stages of the supply chain (how animals are raised, fed, transported) in conjunction with slaughter safety regulations such as the MIR and amendment will continue to improve public safety and reduce risk.

It remains difficult to determine if the impacts seen in the BC study communities were directly and solely caused by the slaughter regulations. Declining expenditures, the political climate, uncertain economics, and community uncertainty towards the meat industry after disease outbreaks make it difficult to pinpoint one specific cause, and perhaps suggests instead that the regulation may have been the proverbial straw that broke the back of an already fragile local industry.

It is also clear that involving farmers in the creation of the 2010 amendment had a positive effect. The collaborative approach helped farmers take ownership of the safety of their products, rather than regarding the amendment as just another imposition from above. Unfortunately legalization brought with it some unforeseen consequences including difficulty getting insurance, in particular problems in regard to waste disposal with the Ministry of Environment and conflicts over food safety inspections by

environmental health officers. Despite these issues there is hope that the benefits of the amendment can continue to reverse some of the damaging effects of the initial MIR.

Chapter 7: Conclusions

7.1 Conclusions and Recommendations

The graduated licensing regulatory structure created under the 2010 amendment has borrowed some of the principles of adaptive management (see: BC Ministry of Forests and Range, n.d.), analyzing the impacts from the initial regulations and relying upon flexibility in decision making to infuse positive change into the legislation as it developed. Utilizing this way of thinking is what makes this amendment so innovative in its field, and may encourage greater forethought into future decisions for the province and the meat industry as a whole. It appears that the steering committee, officials, and farmers have succeeded in implementing a program that strikes a balance between knowledge, feasibility and safety, and though still in its infancy, has a promising future for BC's farming industry.

Based on data presented in this thesis, some general conclusions are presented below for each informant group as well as specific recommendations to facilitate future improvements to the meat farming industry and general community food security in the province of British Columbia.

Farmers:

Conclusion 1: Although the amendment was essential to keeping farmers legally in business, it is not without issues. The amendment brought up other concerns such as waste disposal and water quality that still need to be addressed and finalized.

Conclusion 2: Including farmers in the decision making process was obviously difficult but appears to have been key in creating a program they were willing to participate in. Their support of the program may have helped convince other farmers who were previously skeptical of government intrusion to take the slaughter safe training course and create an effective food safety plan for their farms.

Recommendation for farmers: Recognize that farmer participation in the development of regulations can produce effective legislation that will better accommodate the unique situations of rural farmers. Take a proactive role in future decisions regarding meat and food security regulations at the local, provincial and national scale to ensure decisions are made that will help farmers maintain a sustainable profitable small business.

Industry:

Conclusion 1: Meat farmers are aging and getting out of the business due in part to the damage from the regulations.

Conclusion 2: The uncertainty brought about by the regulations damaged the supply of young meat farmers. The amendment may have helped to bring them back because it allows them to buy into a legal sustainable business.

Recommendation for industry: Recognize that knowledge will be lost when experienced farmers retire unless it can be transferred to new farmers. Industry can facilitate this transfer by organizing an introductory slaughter course for beginners, and working with experienced farmers to create a mentoring system to help re-invigorate the

meat farming industry with young competent farmers with the necessary slaughter skills to sustain a safe, healthy local meat industry.

Government:

Conclusion 1: These study locations are especially vulnerable to food insecurity due to high transportation costs, their remote nature, socio-economic characteristics, and lack of warehousing for food products.

Conclusion 2: The meat regulations were a measure that was in reaction to a national and international problem. Unfortunately they had unforeseen impacts on a sector that was quite unrelated to the national and international situation.

Conclusion 3: It will be important to use future census data and qualitative records to track the continued effects of the regulations and amendment on number of animals and hectarage of farmland and food security in these and other small remote communities.

Recommendation for government: Recognize that farming in small and remote communities is a marginal business and carefully review any introduction of government regulations that will directly impact the livelihood of farmers, to determine the potential consequences on farm businesses in these vulnerable regions.

7.2 Strengths and Limitations

This study provided an opportunity to observe this innovative new program, while outlining some of its strengths and weaknesses. Continued evaluation of impacts of the regulation and amendment on food security in rural and remote communities will allow

some of the necessary changes to be communicated to key informants, and could help to promote the program provincially, nationally, and internationally. The study design and methodological framework allowed the researchers to maintain an objective view of the program, ensuring as unbiased an evaluation as possible. Although it would have been ideal to collect more data prior to the implementation of the amendment, carefully-constructed interviews coupled with the triangulation of various data sources, has allowed for a solid understanding of how the food system functioned in each of these communities prior to the changing structure.

The collaborative partnership discussed in this study demonstrates the many benefits and challenges of involving those most affected by a regulation, in this case rural farmers, in the process of program development. The unusual nature of the evaluation process, coupling government, industry and academics highlights the complexities of stake-holder consultation, and the challenges of a changing legislative landscape.

Quantitative analysis was limited by the availability of comparable agricultural census data from Statistics Canada. The collection of full baseline quantitative price data was also limited in the Bella Coola Valley District in 2010, as a flood, the biggest seen in this region in over 100 years, hindered data collection. The study was also limited by the sample size, as only three communities had participated in this very new program during the study period. Finally, the inability to contact the underground or illegal farmers was a limitation as it was not possible to get their side of the story with regards to the legistlation.

Due to time constraints, it was not possible to conduct interviews with farmers prior to their participation in the food safety Slaughter Safe training program. As a result, it was necessary to pose some semi-structured interview questions with a historical slant in order to get a better idea of the slaughter process prior to the regulations and amendment.

7.3 Future Research

This study has opened up a number of possibilities for continued research. An evaluation framework needs to be created to ensure future analysis of the food safety training course, and to help monitor its progress. This project opens the door for future models that include consultation with individuals about the rules imposed on them, giving them a front row seat in program development while outlining how to design a regulation that involves the stakeholders.

It is crucial that we continue to study the importance of rural farming in Canada and the role it plays in our food system as a whole. Considering the role of social determinants of health and a population health framework is essential when making alterations to the legislative structure and it is imperative that governing bodies seriously consider potentially disastrous outcomes to the community health of already vulnerable populations. This research raises the following questions and concerns: where does our food come from if no one is rural anymore and why should people try to sustain themselves in a rural setting when it is so much more efficient to do so in an urban environment? Finally, if we don't support rurality and a rural farming lifestyle, then we must support its opposite: factory farms. The efforts to move towards self-sufficient communities and the increased following of movements such as the 50- and 100-mile

diets will be fruitless if rural production shuts down. There are arguable benefits for international trade relations from increased meat regulations, and improvements in safety and quality of meat products, but one must strongly question if they outweigh the potentially devastating social and economic costs for rural farmers and their communities. How much of our food system are we willing to lose?

Bibliography

Alexander, D. J. (2007). An overview of the epidemiology of avian influenza. *Vaccine , 25* (30), 5637-5644.

Anderson, S. A. (1990). Core indicators of nutritional state for difficult-to-sample populations. *Journal of Nutrition , 120*, 1559-1600.

Andrews, M., Nord, M., Bickel, G., & Carlson, S. (2000). *Household food security in the United States, 1999 (FANRR-8).* Alexandria, VA: Food and Rural Economics Division, Economic Research Service, U.S. Department of Agriculture.

Antle, J. M. (2000). No such thing as a free safe lunch: the cost of food safety regulation in the meat industry. *American Journal of Agricultural Economics , 82*, 310-322.

Australian Bureau of Statistics. (2006). *Population distribution: Youth migration within Australia.* Retrieved July 10, 2012, from 4102.0 - Australian Social Trends, 2003 : www.abs.gov.au/ausstats/abs@.nsf/2f762f95845417aeca25706c00834efa/3d196e4d297f42c9ca2570eb0082f628!OpenDocument

Badun, C., Evers, S., & Hooper, M. (1995). Food security and nutritional concerns of parents in an economically disadvantaged community. *Journal of the Canadian Dietetic Association , 56*, 75-80.

Baldwin, J. R., Sabourin, D., & West, D. (1999). *Advanced technology in the Canadian food processing industry.* Ottawa: Statistics Canada.

Barnidge, E. K., Baker, E. A., Motton, F., Fitzgerald, T., & Rose, F. (2011). Exploring community health through the Sustainable Livelihoods framework. *Health Education & Behavior , 38* (1), 80-90.

Basiotis, P. P., & Lino, M. (2003). Food insufficiency and prevalence of overweight among adult women. *Family Economics and Nutrition Review , 15*, 55-57.

BC Centres for Disease Control. (2007). *Abattoirs: Plant construction, equipment and operation guidelines to qualify for licensing under the British Columbia Meat Inspection Regulation.* Retrieved May 11, 2011, from http://www.bccdc.ca/NR/rdonlyres/5F3769BC-CAD6-418B-9666-CAF799194E46/0/AbattoirsPlantConstructEquipOperation.pdf

BC Centres for Disease Control. (2010). *Guidelines for the sale of food at temporary markets.* Retrieved May 6, 2011, from http://www.vch.ca/media/Guidelines_Sale_Foods_Temporary_Markets_April2010.pdf

BC Food Processors Association. (2010). *A new graduated licensing approach for meat production and processing in B.C.* Retrieved May 6, 2011, from http://www.bcfpa.ca/story/2010/04/23/new-graduated-licensing-approach-meat-production-and-processing-bc

BC Food Processors Association. (2005). *Guide to B.C. meat inspection system* .

BC Food Processors Association. (n.d.). *Meat Transition Assistance Program*. Retrieved May 6, 2011, from BC Food Processors Association Great Nutrition Great Living: http://www.bcfpa.ca/mtap2.html

BC Food Processors Association. (2006). *Meat Transition Assistance Program strategic plan.* Retrieved May 6, 2011, from http://www.bcfpa.ca/files/MTAP1_Strategic_Plan-June_27_2006_incl_PP_Operating_Procedures.pdf

BC Food Systems Network. (2004). *Meat Processing in BC.* Retrieved May 12, 2011, from http://www.fooddemocracy.org/docs/BCFSN_meatReg.pdf

BC Ministry of Forests and Range. (n.d.). *Defining Adaptive Management.* Retrieved 5 20, 2012, from http://www.for.gov.bc.ca/hfp/amhome/Admin/index.htm

BC Ministry of Healthy Living and Sport . (n.d.). *B.C issues first class D meat plant licenses. Press Release* . Retrieved from http://www2.news.gov.bc.ca/news_releases_2009-2013/2010HLS0041-000963.htm

BC Stats . (2009c). *Local Health Area 50 - Queen Charlotte, 2009 Statistical Profile.* Retrieved May 3, 2011, from http://www.bcstats.gov.bc.ca/data/sep/lha/Lha_50.pdf

BC Stats. (2009a). *Local Health Area 47 - Powell River, 2009 Statistical Profile.* Retrieved May 3, 2011, from http://www.bcstats.gov.bc.ca/data/sep/lha/Lha_47.pdf

BC Stats. (2009b). *Local Health Area 49 - Bella Coola Valley, 2009 Statistical Profile.* Retrieved May 3, 2011, from http://www.bcstats.gov.bc.ca/data/sep/lha/Lha_49.pdf

BC Stats. (n.d.). *Socio-economic indices.* Retrieved April 5, 2012, from http://www.bcstats.gov.bc.ca/StatisticsBySubject/SocialStatistics/SocioEconomicProfilesIndices/SocioEconomicIndices/LHAReports.aspx

BC Stats. (n.d.). *Socio-economic profiles.* Retrieved April 15, 2012, from http://www.bcstats.gov.bc.ca/StatisticsBySubject/SocialStatistics/SocioEconomicProfilesIndices/Profiles.aspx

Beaulac, J., Kristjansson, E., & Cummins, S. (2009). A systematic review of food deserts, 1996-2007. *Preventing Chronic Disease , 6* (3), 1-10.

Benedict, C., Garitone, S., Embleton, M., & Collins, D. (2009). Mobile meat slaughter units: Rebuilding the small-scale meat industry. *5th National Small Farm Conference.* Springfield, Illinois.

Berry, A., Katras, M. J., Sanyo, Y., Lee, J., & Bauer, J. W. (2008). Job volatility of mothers: A mixed methods approach. *Journal of Family and Economic Issues , 9*, 5-22.

Bickel, G., Carlson, S., & Nord, M. (1999). *Household food security in the United States, 1999: Advance report. U.S.* Alexandria, VA: Department of Agriculture, Food and Nutrition Service.

Blay-Palmer, A. (2008). *Food fears: from industrial to sustainable food systems.* Aldershot: Ashgate Publishing.

Boucher, C. (2008). *Healthy communities the impact of provincial health policy on rural living: an inquiry into Bella Coola and the Meat Inspection Regulations.* Unpublished document.

Bradley, J. A., & Taylor, C. M. (1993). Disposition of feedlot heifer and beef carcasses under a Canadian streamlined inspection system. *Canadian Veterinary Journal , 34*, 38-40.

Braun, V., & Clarke, V. (2006). Using Thematic Analysis in Psychology. *Qualitative Research in Psychology , 3* (2), 77-101.

Brown, C. (2003). Consumers' preferences for locally produced food: A study in southeast Missouri. *American Journal of Alternative Agriculture , 18*, 213-224.

Canadian Department of Justice. (1990). *Meat Inspection Regulations, 1990 (SOR/90-288).* Retrieved May 12, 2011, from http://laws-lois.justice.gc.ca/eng/regulations/SOR-90-288/index.html

Canadian Department of Justice. (2004). *Meat Inspection Regulations, BC, Reg 349/2004.* Retrieved May 12, 2011, from http://www.canlii.org/en/bc/laws/regu/bc-reg-349-2004/latest/bc-reg-349-2004.html

Canadian Institute for Health Information. (2006). *How healthy are rural Canadians? An assessment of their health status and health determinants.* Ottawa: Canadian Institute for Health Information.

Caraher, M., & Coveney, J. (2004). Publich health nutrition and food policy. *Public Health Nutrition , 7* (5), 591-598.

Carter-Whitey, M. (2008). *Bringing local food home: Legal, regulatory and institutional barriers to local food* . Retrieved April 28, 2011, from Friends of the greenbelt foundation occasional paper series: http://www.cielap.org/pdf/CIELAP_FoodLegalBarriers.pdf

Che, J., & Chen, J. (2001). Food insecurity in Canadian households 1998/1999 data. *Health Reports , 12* (41), 11-22.

Cleeland, B. (2009). *The Bovine Spongiform Encephalopathy (BSE) Epidemic in the United Kingdom.* Retrieved 7 20, 2012, from http://www.irgc.org/IMG/pdf/BSE_full_case_study_web.pdf

Collins, L. (2009). The impact of food insecurity on women's mental health: how it negatively affects children's health and development. *Journal of the Association for Research on Mothering , 11* (1), 251-262.

Conly, J. M., & Johnston, B. L. (2008). Listeria: A persistent food-borne pathogen. *Canadian Journal of Infectious Diseases , 19* (5), 327-328.

Cope, M. (2009). Grounded theory. In R. Kitchin, & N. Thrift (Eds.), *International encyclopedia of human geography* (pp. 647-650). Oxford, England: Elsevier.

Coulhart, B., Mogk, R., Rancourt, J. M., Godal, D. L., & Czub, S. (2003). Prion protein gene sequence of Canadian non-imported case of Bovine Spongiform Encephalopathy (BSE). *Genome , 46*, 1005-1009.

Creswell, J. W. (1998). *Qualitative inquiry and research design: Choosing among five traditions.* Thousand Oaks, California: Sage.

Denzin, N. (1970). *The research act in sociology: A theoretical introduction to sociological methods* . London: Butterworths.

Dieticians of Canada. (2009). *Cost of eating in BC.* Retrieved May 1, 2011, from www.dietitians.ca/Downloadable-Content/.../BC_CostofEating_2009-(1).aspx

Dieticians of Canada. (2010). *Healthy eating and food security: Promising strategies for BC.* Retrieved May 1, 2011, from http://www.dietitians.ca/Downloadable-Content/Public/Healthy-Eating-and-Food-Security-Strategies-BC.aspx

Division of Aging and Seniors, Population Health Directorate, Health Promotion and Programs Branch, Health Canada. (1996). *Broader determinants of healthy aging: A discussion paper.*

Dixon, J., & Welch, N. (2000). Researching the Rural-Metropolitan Health Differential Using the 'Social Determinants of Health'. *Australian Journal of Rural Health , 8*, 254-260.

Dolan, E. M., Seiling, S. B., & Glesner, T. (2006). Making it work: Rural low-income women in service jobs. *Paper presented at the Eastern Family Economics and Resource Management Association Conference.* Knoxville, TN.

Ellen, R. (1984). *Etnographic research: A guide to general conduct.* London and San Diego: Academic Press.

Evans, R. G., Barer, M. L., & Marmor, T. R. (Eds.). (1994). *Why are some people healthy and others not? The Determinants of Health of Populations.* New Yok: Aldine De Gruyter.

Ferrier, P., & Lamb, R. (2007). Government regulation and quality in the U.S beef market. *Food Policy , 32*, 84-97.

Food & Water Watch. (2009). *Where's the local beef?: Rebuilding small-scale meat processing infrastructure.*

Glaser, B. G., & Strauss, A. L. (1967). *The discovery of grounded theory: Strategies for qualitative research.* New York: Aldine Publishing Company.

Goodman, D. (2004). Rural Europe redux? Reflections on alternative agro-food networks and paradigm change. *Sociologia Ruralis , 44*, 3-16.

Goodman, D., & Goodman, M. (2009). Alternative Food Networks. In R. Kitchin, & N. Thrift, *International Encyclopedia of Human Geography* (pp. 208-220). United Kingdom: Elsevier.

Greger, M. (2007). The long haul: Risk associated with livestock transport. *Biosecurity and Bioterrorism: Biodefense Strategy, Practice and Science , 5* (4), 301-312.

Griffin, M. R., & Frongillo, E. A. (2003). Experiences and perspectives of farmers from upstate New York farmers' markets. *Agriculture and Human Values , 20* (2), 189-203.

Guthman, J. A., Morris, W., & Allen, P. (2006). Squaring farm security and food security in two types of alternative food institutions. *Rural Sociology , 71* (4), 662-684.

Hamm, M., & Bellows, A. (2003). International effects on and inspiration for community food security policies and practices in the USA. *Critical Public Health , 13* (2), 107-123.

Hammersley, M., & Atkinson, P. (1983). *Ethnography: Principle in practice.* London: Routledge.

Hancock, T. (2001). People, partnerships and human progress: Building community capital. *Health Promotion International , 16*, 275-280.

Health Canada. (2008). *Food Safety.* Retrieved May 4, 2011, from http://www.hc-sc.gc.ca/fn-an/securit/index-eng.php

Health Canada. (2011). *Household food insecurity in Canada in 2007-2008: Key statistics and graphics.* Retrieved May 2, 2012, from http://www.hc-sc.gc.ca/fn-an/surveill/nutrition/commun/insecurit/key-stats-cles-2007-2008-eng.php

Hennessy, D. A. (2005). Slaughterhouse rules: Animal uniformity and regulating for food safety in meat packing. *American Journal of Agricultural Economics , 87* (3), 600-609.

Hesje, P. (2009a). *Bella Coola Valley Food Ecosystem Cameo for the Remote Sites Consultation Project.* BC Food Processors Association. Unpublished report.

Hesje, P. (2009b). *Haida Gwaii Food Ecosystem Cameo for the Remote Sites Consultation Project.* BC Food Processors Association. Unpublished Report.

Hesje, P. (2009c). *Powell River Regional District Food Ecosystem Cameo for the Remote Sites.* BC Food Processors Association. Unpublished Report.

Howard, E. (2006). *Bella Coola Food Action Plan.* Retrieved May 9, 2001, from Vancouver Coastal Health: http://www.vch.ca/media/CFAI_Full_Bella_Coola.pdf

Humphries, K. H., & Doorslaer, E. V. (2000). Income-related health inequality in Canada. *Social Science & Medicine , 50* (5), 663-671.

Interior Health. (2009). *Meat inspection program guide for facility operators* . Retrieved May 11, 2011, from http://www.interiorhealth.ca/uploadedFiles/Health_and_Safety/Food_Safety/HPE9050MeatInspectionPublicGuideApr1408.pdf

Jayasinghe-Mudalige, U., & Henson, S. (2007). Identifying economic incentives for Canadian red meat and poultry processing enterprises to adopt enhanced food safety controls. *Food Control , 18*, 1363-1371.

Johnson, B. (2008). *Impact of the Meat Inspection Regulation on slaughter capacity in the North Okanagan Regional District (RNDO).* Retrieved May 2, 2011, from http://www.socialplanning.ca/Projects/food%20security/meat_inspection_final_report.pdf

Jorgensen, D. L. (1989). *Participant observation: A methodology for human studies.* Newbury Park, CA: Sage.

Kimmett, C. (2011, January 26). *In BC's heartland, healthy food can be scarce.* Retrieved April 28, 2011, from The Tyee: http://thetyee.ca/News/2011/01/26/HeartlandHealthyFood/

Kirkpatrick, S. I., & Tarasuk, V. (2008). Food insecurity in Canada: Considerations for monitoring. *Canadian Journal of Public Health , 99* (4), 324-327.

Kirkpatrick, S. I., & Tarasuk, V. (2008). Food insecurity is associated with nutrient inadequacies among Canadian adults and adolescents. *The Journal of Nutrition , 138*, 604-612.

Kleinsteuber, C., Kleinsteuber, E., de la Torre, D., Meikle, D., Northrup, K., & Leitner, M. (2006). *Powell River Community Food Action Report* . Retrieved May 2, 2011, from www.vch.ca/media/CFAI_Full_Powell_River.pdf

Lee, J. (2011, April 20). *Mobile abattoir required slicing through a lot of red tape.* Retrieved May 11, 2011, from Vancouver Sun: http://www.vancouversun.com/news/Mobile+abattoir+required+slicing+through+tape/4645508/story.html

Lent, M. D., Petrovic, L. E., Swanson, J. A., & Olson, C. M. (2009). Maternal mental health and the persistence of food insecurity in poor rural families. *Journal of Health Care for the Poor and Underserved , 20*, 645-661.

LeRoy, D., & Klein, K. (2005). Mad cow chaos in Canada: Was it just bad luck or did government policies play a role? *Canadian Public Policy , 31*, 381-400.

Lichter, D. T., & Jensen, L. (2002). Rural America in transition: Poverty and welfare in the turn of the twenty-first centruy. In B. A. Weber, D. G. J, & L. A. Whitener (Eds.), *Rural dimensions of welfare reform* (pp. 77-110). Kalamazoo, Michigan: Upjohn Institute for Employment Research.

Licquirish, S., & Seibold, C. (2011). Applying a contemporary grounded theory methodology. *Nurse Researcher , 18* (4), 11-16.

Ling, C., & Newman, L. (2011). Untangling the food web: farm-to-market distances in British Columbia, Canada. *Local Environment: The International Journal of Justice and Sustainability , 16* (8), 807-822.

Mammen, S., Bauer, J. W., & Richards, L. (2009). Understanding persistent food insecurity: A paradox of place and circumstance. *Social Indicators Research , 92* (1), 151-168.

Manson, J. C., Cancellotti, E., Hart, P., Bishop, M. T., & Barron, R. M. (2006). The transmissible spongiform encephalopathies: Emerging and declining epidemics. *Biochemical Society Transactions , 34*, 1155-1158.

Marmot, M. G. (2005). Social determinants of health inequalities. *The Lancet , 365* (9464), 1099-1104.

Marmot, M. G. (1994). Social differentials in health within and between populations. *Daedalus, Health and Wealth , 123* (4), 197-215.

Marmot, M. G., G, R., Shipley, M., & Hamilton, P. J. (1978). Employment grade and coronary heart disease in British civil servants. *Journal of Epidemiology and Community Health , 32* (4), 244-249.

Marmot, M. G., Smith, G. F., Stansfeld, S., Patel, C., North, F., Head, J., et al. (1991). Health inequalities among British civil servants: The Whitehall II study. *Lancet , 337* (8754), 1387-1393.

Marr, J. (2007). *BC's New Meat Regulation - A Survey of Stakeholders.* Unpublished Document.

McCally, M., Haines, A., Fein, O., Addington, W., Lawrence, R. S., & Cassel, C. K. (1998). Poverty and ill health: Physicians can, and should, make a difference. *Annals of Internal Medicine , 129* (9), 726-733.

McIntyre, L., & Rondeau, K. (2011). Individual consumer food localism: A review anchored in Canadian farmwomen's reflections. *Journal of Rural Studies , 27* (2), 116-124.

McIntyre, L., Connor, S. K., & Warren, J. (2000). Child hunger in Canada: results of the 1994 national longitudinal survey of children and youth. *Canadian Medical Association Journal , 163* (8), 961-965.

McIntyre, L., Glanville, N. T., Officer, S., Anderson, B., Raine, K. D., & Dayle, J. B. (2002). Food insecurity of low-income lone mothers and their children in atlantic Canada. *Canadian Journal of Public Health , 93* (6), 411.

McIntyre, L., Glanville, N. T., Raine, K. D., Dayle, J. B., Anderson, B., & Battaglia, N. (2003). Do low-income lone mothers compromise their nutrition to feed their children? *Canadian Medical Association Journal , 168* (6), 686-691.

McMahon, M. (2009). Standard fare or fairer standards: Feminist reflections on agri-food governance. *Agriculture and Human Values* , 1-12.

Mensah, L. D., & Julien, D. (2011). Implementation of food safety management systems in the UK. *Food Control , 22*, 1216-1225.

Miewald, C., Klein, M. C., Ulrich, C., Butcher, D., Eftekhary, S., Rosinski, J., et al. (2011). You don't know what you've got till it's gone: the role of maternity care in community sustainability. *Canadian Journal of Rural Medicine , 16* (1), 7-12.

Ministry of Agriculture and Lands; Ministry of Health . (2006). *Meat inspection regulation.* Retrieved May 2, 2011, from Meat inspection licensing: http://www2.news.gov.bc.ca/news_releases_2005-2009/2006AL0008-000360-Attachment2.htm

Ministry of Health. (2011). *Meat inspection licensing designated areas.* Retrieved November 2, 2011, from http://www.health.gov.bc.ca/protect/meat-regulation/designated_areas.html

Ministry of Healthy Living and Sport; BC Food Processors Association. *Remote sites consultation project.* Unpublished Report.

Misty Isles Economic Development Society . (2011). *Haida Gwaii agriculture strategy background document.* Retrieved May 10, 2011, from www.mieds.ca/images/.../Background%20Document%20No%20Maps.pdf

Mitura, V., & Di Pietro, L. (2004). *Canada's beef cattle sector and the impact of BSE on farm family income.* Working Paper No.69, Agriculture and Rural Working Paper Series. Ottawa, ON: Agriculture Division, Statistics Canada.

Morris, C., & Buller, H. (2003). The local food sector: A preliminary assessment of its impact in Gloucestershire. *British Food Journal , 105*, 559-566.

Murdoch, J., & Miele, M. (1999). Back to nature: Changing 'worlds of production' in the food sector. *Sociologia Ruralis , 39* (3), 465-484.

Olson, C. M. (2005). Food insecurity in women: a recipe for unhealthy trade-offs. *Topics in Clinical Nutrition , 20* (4), 321-328.

Orr, J. B. (1936). *Food health and income: Report on a survey of adequacy of diet in relation to income.* Macmillan.

Ostry, A. S. (2006). *Nutrition policy in Canada, 1870-1939.* Vancouver, BC: UBC Press.

Palermo, C. E., Walker, K. Z., Hill, P., & McDonald, J. (2008). The cost of healhty food in rural Victoria. *Rural and Remote Health , 8* (4), 1074.

Patenaude, J., Tildesley, H. D., MacArthur, A. C., Voaklander, D. C., & Thommasen, H. (2005). Prevalence of diabetes mellitus in aboriginal and non-aboriginal people living in the Bella Coola Valley. *BC Medical Journal , 47* (8), 429-437.

Pelto, P. J., & Pelto, G. H. (1970). *Anthropological research: The structure of inquiry.* New York: Harper & Row.

Pheley, A. M., Holben, D. H., Graham, A. S., & Simpson, C. (2002). Food Security and Perceptions of Health Status: A Preliminary Study in Rural Appalachia. *The Journal of Rural Health , 18* (3), 447-454.

Powell River Regional District. (2008). *Powell River Regional District growth and development analysis - Final report.* Retrieved May 18, 2011, from www.powellriverrd.bc.ca/areas/.../Final_Report,_October_2008.pdf

Power, E. M. (2008). Conceptualizing food security for Aboriginal people in Canada. *Canadian Journal of Public Health , 99* (2), 95-97.

Provincial Health Officer. (2005). *Food health and wellbeing, provincial health officer's annual report.* Victoria: Office of the Provincial Health Officer.

Provincial Health Services Authority. (2007). *A review of policy options for increasing food security and income security in British Columbia - A discussion paper.* Retrieved May 4, 2011, from http://www.firstcallbc.org/pdfs/economicequality/3-food%20security.pdf

Public Health Agency of Canada. (2009, September 1). *What is a population health framework and why was it used?* Retrieved January 14, 2012, from http://www.phac-aspc.gc.ca/seniors-aines/publications/pro/healthy-sante/chcs-sscs/healthy-sante/chap3-eng.php#ft1

Ramsay, H. (2006). *Can't slaughter like you used to. New meat regs may end small farmers' way of life* . Retrieved May 9, 2011, from The Tyee: http://thetyee.ca/News/2006/02/08/SlaughterUsedTo/

Ranching Task Force. (2009). *Ranching Task Force report.* Victoria.

Reichert, P., & Thomson, M. (2010). *Salt Spring Island livestock production study.* Retrieved May 18, 2011, from http://www.agridigest.com/LivestockProductionStudy.PDF

Renting, H., Marsden, T. K., & Banks, J. (2003). Understanding alternative food networks: Exploring the role of short food supply chains in rural development. *Environment and Planning , 35* (3), 393-411.

Roininen, K., Arvola, A., & Lahteenmaki, L. (2006). Exploring consumers' perceptions of local food with two different qualitative techniques: laddering and word association. *Food Quality and Preference , 17* (1-2), 20-30.

Rondeau, K., & McIntyre, L. (2010). I know what's gone into it: Canadian farmwomen's conceptualisation of food safety. *Health, Risk & Society , 12* (3), 211-229.

Sanjek, R. (1990). *Fieldnotes: The makings of anthropology.* Ithica, NY: Cornell University Press.

Sargeant, J. M., Ramsingh, B., Wilkins, A., Travis, R. G., Gavrus, D., & Snelgrove, J. W. (2007). Constraints to microbial food safety policy: opinions from stakeholder groups along the farm to fork continuum. *Zoonoses and Public Health , 54* (5), 177-184.

Sarlio-Lahteenkorva, S., & Lahelma, E. (2001). Food insecurity is associated with past and present economic disadvantage and body mass index. *The Journal of Nutrition , 131*, 2880-2884.

Scott, R. I., & Wehler, C. A. (1998). *Food insecurity/food insufficiency: an empirical examination of alternative measures of food problems in impoverished U.S. households.* Madison: University of Wisconsin, Institute for Research on Poverty .

Siefert, K., Heflin, C. M., Corcoran, M. E., & Williams, D. R. (2001). Food insufficiency and the physical and mental health of low-income women. *Women & Health , 32* (1/2), 159-177.

Simpson, G. (2007). *CFIA report card - A small business assessment of the Canadian Food Inspection Agency.* Retrieved April 30, 2011, from Canadian Federation of Independent Business research report: http://www.cfibfcei.ca/cfib-documents/rr3032.pdf

Sofos, J. N. (2008). Challenges to meat safety in the 21st century. *Meat Science , 78*, 3-13.

Spriggs, J., & Isaac, G. (2001). *Food safety and international competitiveness: The case of beef.* Wallingford: CABI Publishing.

Spriggs, J., Hobbs, J., & Fearne, A. (2000). Beef producer attitudes to coordination and quality assurance in Canada and the UK. *International Food and Agribusiness Management Review , 3*, 95-109.

Starr, A., Card, A., Benepe, C., Auld, G., Lamm, D., Smith, K., et al. (2003). Sustaining local agriculture Barriers and opportunities to direct marketing between farmers and restaurants in Colorado. *Agriculture and Human Values , 20*, 301-321.

Statistics Canada . (2011b). *Health profile, February 2011. Northwest Health Service Delivery Area.* Retrieved May 9, 2011, from http://www12.statcan.ca/health-sante/82-228/searchrecherche/

Statistics Canada. (2001). *2001 agriculture community profiles.* Retrieved May 9, 2011, from http://www25.statcan.ca:8081/AgrProfile/acphome.jsp

Statistics Canada. (2006). *2006 agriculture community profiles.* Retrieved May 9, 2011, from http://www26.statcan.ca:8080/AgrProfiles/cp06/PlaceSearch.action?request_locale=en

Statistics Canada. (2011a). *Health profile, February 2011. North Shore/Coast Garibaldi Health Service Delivery Area.* Retrieved May 9, 2011, from http://www12.statcan.ca/health-sante/82-228/searchrecherche/1st/page.cfm?Lang=E&GeoLevel=PR&GeoCode=59

Statistics Canada. (2011). *Health Profile. Statistics Canada Catalogue No. 82-228-XWE.* Retrieved 3 14, 2012, from http://www12.statcan.gc.ca/health-sante/82-228/details/page.cfm?Lang=E&Tab=1&Geo1=HR&Code1=5951&Geo2=PR&Code2=59&Data=Rate&SearchText=Northwest%20Health%20Service%20Delivery%20Area&SearchType=Contains&SearchPR=01&B1=All&Custom=

Tarasuk, V., & Beaton, G. (1999). Household food insecurity and hunger among families using food banks. *Canadian Journal of Public Health , 90*, 109-113.

Tarasuk, V., & Reynolds, R. (1999). A qualitative study of community kitchens as a response to income-related food insecurity. *Canadian Journal of Dietetic Practice and Research , 60* (1), 11-17.

Tarasuk, V., & Vogt, J. (2009). Household food insecurity in Ontario. *Canadian Journal of Public Health , 100* (3), 184-188.

Thommasen, H., & Zhang, W. (2006). Health-related quality of life and type 2 diabetes: A study of people living in the Bella Coola Valley. *BC Medical Journal , 48* (6), 272-278.

Thommasen, H., Thommasen, C., Martiquet, P., & Jin, A. (2004). Causes of death among Status Indians and other people living in the Bella Coola Valley local health area, 1987-2001. *BC Medical Journal , 46* (4), 179-187.

Townsend, M. S., Peerson, J., Love, A. C., & Murphy, S. P. (2001). Food insecurity is positively related to overweight in women. *The Journal of Nutrition , 131*, 1738-1745.

Tweed, S. A., Skowronski, D. M., David, S. T., Larder, A., Petric, M., & Lees, M. (2004). *Human illness from avian influenza H7N3.* Retrieved April 30, 2011, from Emerging Infectious Diseases, British Columbia: http://www.cdc.gov/ncidod/EID/vol10no12/04-0961.htm

United Nations. (1992). The United Nations Conference on Environment and Development., (pp. 1-19). Rio de Janeiro.

Vaarst, M. (2003). Evaluating a concept for an animal welfare assessment system providing decision support using qualitative interviews. *Animal Welfare , 12* (4), 541-546.

Vander Wekken, S., Sorensen, S., Meldrum, J., & Naylor, P. J. (2012). Exploring industry perspectives on implementation of a provincial policy for food and beverage sales in publicly funded recreation facilities. *Health Policy , 104* (3), 279-287.

VanEenwyck, J. (2003). Self-reported concern about food securiyt associated with obesity - Washington 1995-1999. *Morbidity and Mortality Weekly Report , 52* (35), 840-842.

Vozoris, N. T., & Tarasuk, V. S. (2003). Household food insufficiency is associated with poorer health. *Journal of Nutrition , 133* (1), 12-126.

Vozoris, N. T., & Tarasuk, V. S. (2004). The health of Canadians on Welfare. *Canadian Journal of Public Health , 95* (2), 115.

Weatherell, C., Tregear, A., & Allinson, J. (2003). In search of the concerned consumer: UK public perceptions of food, farming and buying local. *Journal of Rural Studies , 19* (2), 233-244.

Willows, N. D., Veugelers, P., Raine, K., & Kuhle, S. (2009). Prevalence and sociodemographic risk factors related to household food security in Aborignal peoples in Canada. *Public Health Nutrition , 12* (8), 1150-1156.

Wingspread Conference. (1998). 1998 Wingspread Statement on the Precautionary Principle. Racine, Wisconsin.

Winter, M. (2003). Embeddedness, the new food economy and defensive localism. *Journal of Rural Studies , 19*, 23-32.

Woods, L. (2003). Grounded Theory Explained. *Nurse Researcher , 11* (2), 4-6.

World Health Organization. (2002, November). *Bovine spongiform encephalopathy.* Retrieved July 20, 2012, from Media centre: http://www.who.int/mediacentre/factsheets/fs113/en/

Worosz, M. R., Knight, A. J., & Harris, C. K. (2008). Resilience in the US red meat industry: The roles of food safety policy. *Agriculture and Human Values , 25*, 187-191.

Worosz, M. R., Knight, A. J., Harris, C. K., & Conner, D. S. (2008). Barriers to sustainability in the specialty red meat sector. *Southern Rural Sociology , 23* (1), 170-207.

Yousefian, A., Leighton, A., Fox, K., & Hartley, D. (2011). Understanding the rural food environment: Perspectives of low-income parents. *Rural and Remote Health* , 1631.

Appendix A Meat Inspection Areas Prior to 2004

Meat Inspection Areas prior to 2004 from the 2004 B.C Meat Inspection Regulations Schedule 1 [en. B.C. Reg. 299/2007, Sch. B, s. 23; am. B.C. Regs. 120/2008, s. 4; 209/2009; 102/2010, s. 10.] Specified Areas

The area comprising all the land of Vancouver Island.

The area comprising all the land within the boundaries of the City of Abbotsford.

The area comprising all the land within the boundaries of the City of Burnaby.

The area comprising all the land within the boundaries of the City of Chilliwack.

The area comprising all the land within the boundaries of the City of Langley.

The area comprising all the land within the boundaries of the City of Maple Ridge.

The area comprising all the land within the boundaries of the City of New Westminster.

The area comprising all the land within the boundaries of the City of North Vancouver.

The area comprising all the land within the boundaries of the City of Pitt Meadows.

The area comprising all the land within the boundaries of the City of Richmond.

The area comprising all the land within the boundaries of the City of Vancouver.

The area comprising all the land within the boundaries of the City of Vernon.

The area comprising all the land within the boundaries of the District of Kent.

The area comprising all the land within the boundaries of the District of Mission.

The area comprising all the land within the boundaries of the District of North Vancouver.

The area comprising all the land within the boundaries of the District of Squamish.

The area comprising all the land within the boundaries of the District of West Vancouver.

The area comprising all the land within the boundaries of the Resort Municipality of Whistler.

The area comprising all the land within the boundaries of School District No. 59 (Peace River South).

The area comprising all the land within the boundaries of the Sunshine Coast Regional District.

The area comprising all the land within the boundaries of the Township of Langley.

The area comprising all the land within the boundaries of the Village of Pemberton.

The area comprising all the land within the boundaries of the former Dewdney-Alouette Regional District incorporated by Letters Patent issued on October 27, 1967 and amalgamated into the Fraser Valley Regional District by Letters Patent issued on December 12, 1995.

The areas comprising all the land within the boundaries of Barnston Island, the Corporation of Delta, the City of Surrey, and the City of White Rock.

The areas comprising all the land within the boundaries of the City of Coquitlam, the City of Port Coquitlam and the City of Port Moody.

(FROM 2004 Meat Inspection Regulation Schedule 1)

Appendix B Farmer Interview Questions

1. What does the term “food security” mean to you? Why is it important?
2. What does the term “local food” mean to you?
3. Could you please describe the current food security situation in your community with a particular focus on the local meat industry?
4. Could you describe ways in which your community faces similar problems, in terms of food security, to other remote communities?
5. Could you describe the ways in which your community faces unique problems, in terms of food security?
6. Could you describe how the food security situation, again with a particular focus on the local meat industry, has changed over the past two decades?
7. Could you please describe the impact of the changing meat inspection regulatory environment on food security in your community? In particular, can you comment on the impacts of the recent introduction of Class D and E licensing in your area?
8. Can you comment on any other regulations or regulatory changes that have had an impact on community food security? (e.g., waste management, local bylaws, etc.)?
9. Could you please describe the impacts of the meat inspection regulation, including the recent amendments, on the farming and the economics of meat production and processing in your community?

Appendix C Key Informant Interview Questions

1. What does the term “food security” mean to you? Why is it important?
2. Could you please describe your role in the development and evolution of meat inspection regulations here in BC?
3. Can you speak to the broad social, political and economic conditions that gave rise to the MIR in BC starting in 2004?
4. What other stakeholders were involved in developing the 2010 regulations?
5. Did you see any changes over time in terms of involvement by various sectors?
6. In your view, what has facilitated the implementation MIR from 2004 to 2010?
7. Would you say that in 2004, you were looking more at food safety and 2010, food security?
8. What were some of the political, social and economic drivers behind the 2010 amendments?
9. Was there a concern that 2004 MIR would affect the viability of the farming communities?
10. Can you tell me about barriers to implementing MIR between 2004 and 2010?
11. Can you speak about some of the barriers for rural and remote communities in applying for and using D and E licenses?
12. What kinds of things are the advocates pushing for?
13. Can you summarize positive and negative effects of the MIR, with a focus on the 2010 amendments?

Appendix D Price Data for Chicken and Pork Products

Region	Whole chicken (includes fresh and frozen and airchill)			Chicken breast (includes fresh and frozen)			Chicken thighs (includes legs and thighs fresh and frozen)			Pork roast (includes loin, bone-in, butt)		
	Average price per kg ($)	Price range ($)	Total number of options per region (n)	Average price per kg ($)	Price range ($)	Total number of options per region (n)	Average price per kg ($)	Price range ($)	Total number of options per region (n)	Average price per kg ($)	Price range ($)	Total number of options per region (n)
Bella Coola Valley stores (n=1)	n/a	n/a	0	15.38	15.38	1	n/a	n/a	0	n/a	n/a	0
Haida Gwaii stores (n=6)	6.99 (13.59 not included due to pricing per bird)	(3.99 - 9.99) and 13.59 per bird	3	4.88	(3.49-6.57)	3	3.16	(2.72-3.73)	4	n/a	n/a	0
Powell River stores (n=8)	6.50 (7.50 not included due to pricing per bird)	(2.04 - 8.49) and 7.50 per bird	6	13.22	(3.17-18.90)	7	6.31	(1.49-8.58)	6	8.24	(2.04-12.99)	5
Victoria stores (n=2)	7.08	(5.49 - 7.99)	3	18.05	(17.61-18.49)	2	8.54	(8.49-8.58)	2	10.45	(9.9-11)	2

Appendix E Price Data for Lamb Products and High End Beef

Region	Lamb rack/roast (includes Frenched rack, NZ rack, leg roast, shoulder roast)			Lamb chops (includes loin, sirloin, shoulder)			Beef steak (includes wing grill, striploin, in/out round, porterhouse, tbone, newyork, sirloin)			Beef roast (includes prime rib, sirloin, top round)		
	Average price per kg ($)	Price range	Total number of options per region (n)	Average price per kg ($)	Price range	Total number of options per region (n)	Average price per kg ($)	Price range	Total number of options per region (n)	Average price per kg ($)	Price range	Total number of options per region (n)
Bella Coola Valley stores (n=1)	n/a	n/a	0	n/a	n/a	0	11.46	(7.99-15.39)	3	10.99	10.99	1
Haida Gwaii stores (n=6)	n/a	n/a	0	n/a	n/a	0	11.27	(2.50-18.99)	9	11.84	(7.69-15.99)	2
Powell River stores (n=8)	21.15	(8.61-30.84)	4	10.17	(1.81-26.43)	4	16.07	16.07	1	11.33	(7.25-15.41)	2
Victoria stores (n=2)	27.17	(17.99-36.35)	2	n/a	n/a	0	16.07	16.07	1	21.20	(13.49-25.11)	3

Appendix F Price Data for Turkey Products

Region	Turkey thighs			Turkey whole (frozen)			Turkey ground		
	Average price per kg ($)	Price range ($)	Total number of options per region (n)	Average price per kg ($)	Price range ($)	Total number of options per region (n)	Average price per kg ($)	Price range	Total number of options per region (n)
Bella Coola Valley stores (n=1)	6.75	6.75	1	n/a	n/a	0	n/a	n/a	0
Haida Gwaii stores (n=6)	n/a	n/a	0	5.99	5.99	1	5.87	5.87	1
Powell River stores (n=8)	9.99	9.99	1	n/a	n/a	0	16.90	16.9	1
Victoria stores (n=2)	n/a	n/a	0	n/a	n/a	0	n/a	n/a	0