Linking farm households' social needs, social policy, and farm persistence to better understand and support family farms in the 21st century

Dissertation

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Abstract

Policy makers, farm family advocates, and researchers have overall focused on resolving issues connected to the farm operation such as access to land or farm transition. The consideration of household level issues, such as difficulties paying for health insurance or saving for retirement, has however been inadequate despite the evidence that these difficulties can negatively impact the development and viability of the farm operation. To work towards a greater understanding of the factors that shape and support family farms, I explore the links between farm household social needs, social policy, and farm persistence in three stand-alone, yet, connected research articles. The farm persistence literature, a body of work with a long tradition of studying how family farms adapt to on-going changes, provides the theoretical foundation of this dissertation. My methodological approach is based on a mix of qualitative and quantitative data and a comparative approach. In the first article, I broadly consider the role of social policy in the farm sector and propose a research framework to integrate social policy into the international family farm research agenda. Then, I focus on health policy, a large component of social policy in Western industrialized countries, and health needs, a major social need, for U.S. farm households as an empirical case. In particular, I assess U.S. farm households' access to health insurance and health care along the life course in the second article and I assess their medical economic vulnerability in the third article.

Taken together, my findings point to difficulties accessing and paying for health insurance and health care and a general sense of vulnerability. Farm households of all ages juggle trade-offs between household consumption, savings, and on-farm investments but it is the younger households that are the most vulnerable despite being in better health. Meanwhile, the eligibility for old-age universal coverage (i.e. Medicare) does not remove all difficulties and bring up questions about the impact of social needs on the timing and cost of farm transition. While having public health insurance eases access to care, the buffer that it provides in case of major illness or injury is limited. More important than the sole availability of social safety net programs, my findings point to the importance of considering both the institutional arrangements of these programs and farm households' lived experiences accessing these programs.

Theoretical contributions to the family farm literature relevant broadly to Western industrialized countries include the expansion and reframing of our understanding of the factors that shape the development of farm operations and farm reproduction by bringing households level difficulties and social policies to the forefront. My dissertation also provides insights on the importance of embracing the complexity of farming system through a relational approach and the consideration of lived-experiences. Practical implications include the need to account for household level issues in programs and policies aimed at supporting the agricultural sector as well as the need to consider the extent to which social policies could support both the farm household and the operation.

I conclude this dissertation by highlighting avenues for future research. Cross-national comparative research would provide important insights towards understanding

the mechanics of social safety net programs, the ways farm households interact with these programs, and the type of programs that support them the most. There is also a need to further explore the interactions between social needs, social policy, and farm persistence including the linkages across multiple social needs along the life course. Longitudinal data are essential to assess compounding effects of the difficulties meeting social needs on the well-being and health of farm households and on the long-term viability of farm operations. Last, because my findings point to the importance of institutional arrangements, it is crucial to continuously update the family farm literature to reflect the on-going changes in the political, economic, and social spheres.

Dedication

To those who have passed on but who have inspired and supported me in ways they might not have expected:

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Fields of Study

Major Field: Environment and Natural Resources

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Chapter 1 – Introduction

Similar to the general population, farm households in the United States (U.S.) have difficulties meeting some of their social needs such as healthcare, childcare, or retirement due to high cost of programs, lack of programs, or difficult access to these programs (Ahearn et al., 2015; Gundersen & Offutt, 2005; Inwood, 2017; Inwood & Stengel, In Press; Mishra et al., 2010; Pryor et al., 2008; Reschke, 2012; Sam Brasch, 2014). For example, a 2008 survey of farmers found that 57% reported the availability of health insurance as a serious problem for their operation while a 2017 survey of young farmers (i.e. farmers under 35) found that, while this age group is likely in its healthiest years, health insurance was the 4th most frequently reported challenge behind access to land, student debt loan, and labor (Ackoff et al., 2017; Inwood, 2015).

Beyond quality of life and health issues, the inability to meet social needs can have severe negative consequences on the farm business such as limiting on-farm investments, delayed and more costly farm transitions, and early farm exits (Ahearn et al., 2015; Barlett, 1993; Bennett & Kohl, 1982; Chang et al., 2011; Contzen et al., 2016; Davis et al., 2009; Inwood, 2013; Inwood et al., 2018; Mishra et al., 2010; Ouellet & Perrier, 2018; Pryor et al., 2008, 2009). Yet policy makers, farm family advocacy and farm commodity groups, and researchers have overall focused on resolving issues connected to farm businesses such as access to land, capital, technical knowledge, labor

allocation, and intergenerational farm transfer (Ahearn, 2011; Calo, 2017; Inwood, 2013). Furthermore, agricultural policies, in the U.S. and beyond, have historically been aimed at supporting farm income. However, rural and farm researchers have pointed out the shortcomings of current farm policy, arguing the majority of agricultural policies tend to favor larger scale operations and distort trade (Anderson & Valenzuela, 2007; Courtenay Botterill, 2007; Daucé, 2015; Gundersen & Offutt, 2005; Mann, 2005) or do not meet their goal such as farm payments' failure in the United States (U.S.) to eradicate the long-term migration out of farming areas (El-Osta, 2014; Gundersen & Offutt, 2005) while early retirement schemes in the European Union (E.U.) have not substantially changed farmer age, farm scale, or ownership structure (Bika, 2007; Davis et al., 2009). Furthermore, Courtenay Botterill (2007) and Chang et al. (2011) contend that these policies are seldom designed with the well-being and social needs of farm households in mind. As a result, we have both limited formal social supports tailored to meeting the social needs of the farm sector and a narrow understanding of how difficulties experienced by farm families are connected to long-term economic and social sustainability of the agricultural sector.

In this dissertation, I explore the intersection between farm households' social needs, social policy, and farm persistence with the ultimate goal of better understanding and supporting family farms. In particular, the three overarching research questions of this dissertation are: (1) how do farm households meet their social needs? (2) how do farm households' social needs interact with farm development? and, (3) What is the role of social policy in supporting farm households? I use a comparative approach across U.S.

states, but also within France and the U.S., use relational theoretical approaches that aim to reconcile structure vs. agency and objective vs. subjective measures of economic vulnerability, and draw on analyses of primary surveys and secondary documents. This dissertation provides empirical insights into how farm households meet their social needs and the role of social policy in the U.S. This dissertation provides theoretical insights by broadening the line of inquiry that examines how difficulties that originate within the farm household flow towards the farm operation and impact farm development, farm transition, and ultimately farm persistence. These theoretical insights should be broadly relevant to the family farm literature focused on Western industrialized countries. This is because while these countries provide a range of social safety nets programs to their citizens, the social needs and issues connected to farm persistence transcend geographical boundaries and social policy contexts.

In the reminder of this introduction chapter, I first provide context on the farm population and broader level issues to which this research is connected. In other words, I respond to the question, why are social needs and social policy in the agricultural sector worth exploring? Second, I provide general background on farm households' social needs and the role of social policy in supporting the agricultural sector. Third, I discuss the theoretical foundations of this research and as well as the theoretical blind spots that this dissertation speaks to. Last, I present my overall research objectives and provide a general overview of the remainder of the dissertation which is based on the 3-article format.

1.1. Why study farm households' social needs, social policy, and farm persistence?

The difficulties farm households experience meeting their social needs have broad implications for the farm sector, rural economic development, and are relevant to the general population. In this section, I provide the greater context that motivates this dissertation research and point to some of the knowledge gaps that this dissertation speaks to. The coverage of these issues is non-exhaustive but rather focused on the more salient issues.

1.1.1. Aging of farm population and recruitment of the next generation

The issue of farm households' social needs is directly connected to the aging and shrinking of the farm population. In particular, it is connected to questions of who will be the next generation of farmers, farm transition, and the health needs of the aging farm population. According to the last agricultural census, main farm operators were on average 59 years old, up from 51 in 1974 (U.S. Department of Agriculture, 1974, 2017a). Furthermore, between 2014 and 2019, 10% of U.S. farmland was expected to change hands. About one quarter of the land would be sold to non-relatives while two thirds of farm operators who planned to transfer their land did not have a succession plan (Harris & Mishra, 2016; U.S. Department of Agriculture, 2015).

Looking at issues farm households may face along the life course and business cycle, there are important questions about young and beginning farmers' economic viability due to high start-up costs and high household expenses such as health insurance

and childcare (Ackoff et al., 2017; Inwood & Stengel, In Press; Lusher Shute, 2011; Sam Brasch, 2014; Stone, 2014). While the local food movement has contributed to a regained interest in farming, there are also questions about the willingness of first-generation farmers to forgo standards of living that they might have grown-up with. For example, this includes their parents' employment-based health insurance benefits, retirement savings, and paid vacations (Inwood et al., 2013). For older farm households, the farm transition literature has tended to focus on the transition of farm assets and farm management. We know less about the extent to which issues connected to aging, health, and household finances play a role in the timing and cost of farm transition (Contzen et al., 2016; Conway et al., 2016, 2017; Lobley et al., 2012).

Recognizing challenges meeting social needs along the life course, rural researchers and farm advocates have called on broader social supports for the farm sector such as social safety net programs. This is because social issues not only underpin the ability to both maintain farming as a livelihood and attract the next generation of farmers, social supports may bolster the ability of farmers to withstand crises (Ackoff et al., 2017; Ahearn et al., 2015; Courtenay Botterill, 2007; Gassman-Pines & Hill, 2013; Gundersen & Offutt, 2005; Mann, 2005; Moffitt, 2015; National Farmers Union, 2016; National Young Farmers Coalition, 2016). Yet, despite these calls for broader social supports and evidence of the social difficulties experienced by farm households, our understanding of both the role of social safety nets in the farm sector is limited. This dissertation directly speaks to these knowledge gaps.

1.1.2. On-going structural changes

Farming has always been a hard endeavor due to the physical demands of the work. Yet on-going structural changes in the agricultural sector and in the broader political, economic, and social spheres have increased the complexity of maintaining family farms' economic viability (Droz et al., 2014; Lasley & Conger, 1986; Meert et al., 2005). Agricultural scholars, including rural sociologists, have discussed at length the structural changes that present specific challenges to the agricultural sector including the liberalization of food markets, concentration and consolidation in the food system, increased private governance, changes in intellectual property, and the industrialization of agriculture (see for example Bonanno (2014); Bonanno and Constance (2006); Busch (2010); Friedland (1991, 2003); Friedmann (1978b); Friedmann and McMichael (1989); Hightower (1972); Howard (2016); James and Hendrickson (2008); James et al. (2013); Lobao and Meyer (2001); Lobao and Stofferahn (2008); Reinhardt and Barlett (1989)). Furthermore, environmental changes due to changes in climate patterns and more extreme weather events are expected to further increase the unpredictability of agricultural production and to add on farmers' stress (Goswami et al., 2016; Morton, 2007).

Less often talked about by food systems' scholars, broader societal changes also likely have an impact on family farms' economic viability and their ability to meet their social need. These include changes brought about by economic restructuring, erosion of labor unions, welfare state retrenchment, and state re-scaling (Clawson & Clawson, 1999; Hall & Lamont, 2013; Huber & Stephens, 2001; Huber & Stephens, 2005; Lobao, 2014,

2016; Peck & Tickell, 2002; Starke, 2006). This is because these changes are re-shaping social safety net programs and labor markets (as I discuss in the next section, off-farm employment is important for household income and social benefits). As Lobao and Meyer (2001) argued, the farm population provides a laboratory to understand how larger social policy and social transformations impact rural households more broadly. This includes a greater understanding of their social and economic well-being as well as livelihood and coping strategies.

1.1.3. Economic development, labor markets, and prosperity of rural areas

The issue of farm households' social needs is directly connected to economic development and labor markets in rural areas because farm operators can be both employers and employees (Inwood, 2017). Rooted in the work of Walter Goldschmidt (1947) and of agricultural economists, farmers have long been seen as important economic engines due to their purchase of inputs and hiring of workers. While the importance of agriculture in the overall economy has greatly declined, local food advocates and some scholars have made the fostering of rural economic activity including the creation of jobs through the agricultural sectors a cornerstone argument (Kirschenmann et al., 2008; Lyson, 2004; Myers, 2004; Thilmany McFadden et al., 2016; Vermont Sustainable Jobs Fund, 2011). But because U.S. social policies emphasize employment-based provision of some benefits such as health insurance and retirement, there are important questions about the quality of jobs, pay, and benefits in the agricultural sector for farm operators and their workers (Becot et al., 2018). Compounded

with issues connected to weak agricultural labor and low minimum wage laws, the ability to provide these benefits to employees are directly connected to farm workers' retention in labor markets where labor might not readily be available or where farm workers might not be documented. Yet despite activists and researchers pointing to the lack of attention to working conditions, access to benefits, job quality, and social sustainability in the agricultural sector for decades, these social questions have overall been pushed to the side from the larger discussions on the structure of the agricultural sector and its future (Allen, 2016; Hightower, 1972, 2002; Jordan & Constance, 2008; Pilgeram, 2011; Tanaka & Bhavsar, 2008).

Off-farm employment provides an important means for farmers to access benefits. Between 50 and 70% of farm households obtain health coverage through off-farm employment (Ahearn et al., 2013; El-Osta, 2015; Inwood et al., 2018; Zheng & Zimmer, 2008). However, securing a job with benefits can be challenging. This is because compared to urban and suburban areas, rural areas tend to have less economic diversity, have higher rates of unemployment and underemployment, and wages tend to be lower. As a result, job lock, whereas individuals feel tied to a job for fear of not being able to secure benefits otherwise, is greater in rural areas (Ketsche, 2005; Larson & Hill, 2005; Mushinski et al., 2015; Slack, 2014). Furthermore, the changing structure of the labor market in rural areas might make it more difficult to obtain benefits through employment. Indeed, while manufacturing, an industry that has historically offered benefits, has seen its share in rural labor markets decrease, the service industry which is less likely to offer benefits, has seen it share in rural labor markets increase (Thiede et al., 2018; U.S.

Department of Agriculture, 2017b). Public sector jobs have traditionally been an important source of employment for women and for farm households (Glasmeier & Lee-Chuvala, 2011; Inwood et al., 2018) but state rescaling and austerity measures have led to cuts in government spending including wage and hiring freezes along with layoffs in the public sector (Glasmeier & Lee-Chuvala, 2011; Kim & Warner, 2018; Lobao, 2014; Lobao & Adua, 2011). Taken together, traditionally less favorable rural labor markets and structural changes bring up questions connected to the challenges that farm households might have in securing employment, the implications for accessing benefits such as health and retirement, and the competition for time and resources between the off-farm job and the farm operation.

1.2. Farm households' social needs, social policy, and farm persistence

1.2.1. Previous research on farm household social needs and connections to farm persistence

Despite calls for broader social supports and evidence that social difficulties experienced by farm households can have broader effects on the farm operation, our understanding of the difficulties experienced by farm households and of the formal social support for the agricultural sector through social policy is limited. Most of the research that has specifically focused on social needs comes from the U.S. and focuses on specific social needs in isolation, namely health care (Ahearn et al., 2013; Chang et al., 2011; Gundersen & Offutt, 2005; Inwood, 2017; Zheng & Zimmer, 2008), retirement and succession

(Mishra et al., 2005; Novak et al., 2005; Winter & Volker, 2002), food assistance (Gundersen & Offutt, 2005), or childcare (Inwood & Stengel, In Press; Reschke, 2012). The majority of these studies are quantitative and often lack the necessary data to make inferences on the effect these issues have on the social and economic well-being of the farm household and farm operation. While less often the focus of studies, farm family scholars in other Western industrialized countries have also found evidence of difficulties among the farm population meeting health care needs, inadequate household income, and inadequate retirement pensions (Bika, 2007; Brangeon & Jégouzo, 1995; Chappuis et al., 2015; Contzen, 2019; Contzen & Crettaz, 2019; Contzen et al., 2016; Conway et al., 2016; Courtenay Botterill, 2007; Davis et al., 2009; Droz et al., 2014; Mann, 2007; Roche, 2016). But, similarly to the U.S., the discussion of how the farm is impacted has been tangential.

1.2.2. Previous research on social policy in the farm sector and connections to farm persistence

The family farm literature across Western industrialized countries provides some insights into the role of social policy in agriculture, the interaction these programs have with the farm operation, and factors that limit access and use of social safety net programs. In this dissertation, I define social policy and associated social safety net programs as the collection of policies and programs to support individuals and families in times of planned and unplanned life events, such as birth, maternity, retirement, unemployment, poverty, illness, accidents, and death. Considering the role of social policy, farm scholars

have shown that social safety net programs ease access to health care (Droz et al., 2014; Dulitz & Schrader, 2013; Inwood, 2017), childcare (Inwood & Stengel, In Press; Reschke, 2012), and enable farm households to satisfy basic needs for both low income (Brangeon & Jégouzo, 1995; Contzen & Crettaz, 2019) and retired farm households (Corsi, 2017; Davis et al., 2009; Mann, 2007; Mishra & El-Osta, 2008). Furthermore, Droz et al. (2014) provide some evidence that the negative effects of macro-level economic and political pressures on the agricultural sector can be moderated by the social safety net supporting farmers.

Research conducted by Chang et al. (2011), Corsi (2017), Davis et al. (2009), Gundersen and Offutt (2005), Inwood (2017), and Inwood and Stengel (In Press) demonstrate that the type, availability, and level of benefits of social safety net programs impact the development of the farm operation and farm transition across a range of policy contexts. However, the ways in which the farm is impacted is at times seemingly contradictory. Examining health insurance in the U.S., Chang et al. (2011) found that health insurance (from the public or private sector) can stem farm exits. Meanwhile Inwood (2017) found that some farm households purposefully limited their off-farm employment in order to qualify for means-based health insurance programs, even though forgoing the added income decreased the available capital to invest in farm development over the long-term. Examining farm transfers, the European-based literature has pointed to the role of adequate retirement pensions in enabling and encouraging farm transition (Corsi, 2017; Davis et al., 2009; Gaté & Latruffe, 2016) while the U.S. and South Korean based literatures have found evidence of the contrary (Chang, 2013; Mishra & El-Osta,

2008). The inconsistencies in the literature likely point to institutional differences in both the organization of the social safety nets as well as differences in the agricultural, social, economic, and political environments.

The literature provides three key insights into the multidimensional factors that hinder farm households' access and use of social safety net programs. First, scholars in France, Canada, Ireland, and Switzerland point to the lower levels of coverage of social safety nets for the farm sector, in particular retirement pensions (Bourgeois, 2007; Brangeon & Jégouzo, 1995; Contzen, 2019; Contzen et al., 2016; Davis et al., 2009; Gaté & Latruffe, 2016; Mann, 2007). Reasons for lower levels of protection include lower contribution levels over the life course due to lower, and at times negative, farm income (Daucé, 2015; Novak et al., 2005), the inclusion of farm assets in the calculation of benefits for means-based benefits (Courtenay Botterill, 2007), and historical push back from the agricultural sector to social safety net programs (Bourgeois, 2007; DeWitt, 2010; Rance, 2002). Second, research has documented the under use of means-based programs by farm households, most of which are poverty relief programs. Across social policy environments, welfare stigma and shame are the most often cited reasons followed by the lack of information, low level of anonymity in rural areas, bureaucratic burden, informal livelihood strategies, and opposition to government intervention (Brangeon & Jégouzo, 1995; Contzen & Crettaz, 2019; Deville, 2015; Gundersen & Offutt, 2005; Inwood, 2017; Mann, 2005, 2007). Third, social policies have in some cases disadvantaged farm women. For example until 2006 in France and still in Switzerland, the administrative status women could/can claim limits their program entitlements and

forces them to rely on spouses resulting in lower social protection such as lower retirement pensions (Contzen, 2019; Contzen & Forney, 2017; Hervieu & Purseigle, 2013; MSA, 2012). To increase the well-being of farm households and ease access to the social safety net, Mann (2005), Courtenay Botterill (2007), and Contzen and Crettaz (2019) have argued for the need to consider the ways in which government programs and policies could ease access to benefits that farm households are eligible for. To meet this call, there first needs to be a better understanding of the social safety net programs available and the institutional arrangements, such as the actors and mechanisms, that govern access and eligibility. This dissertation intends to provide a framework and outlines a research agenda to speak to some of these knowledge gaps.

1.3. The farm persistence literature as the theoretical foundation of the dissertation

Because the farm persistence literature provides the theoretical foundation for this dissertation, I provide a general overview of this literature by first presenting a short genealogy of the farm persistence literature within the sociology of food and agriculture. Second, I discuss the evidence for and against the persistence hypothesis and third, I discuss the factors that explain variation in the rate at which family farms are disappearing (or reproducing). Last, while the theoretical contributions will be discussed in greater details in the three research articles and in the conclusion chapter, I present in general terms the theoretical broadening that this dissertation research contributes to the farm persistence literature.

1.3.1. A short genealogy of the farm persistence literature

Farm persistence scholars, who come from multiple disciplines such as rural sociology, anthropology, psychology, geography, and to some extent agricultural economics, have long been concerned with the question of the extent to which family farms are staying on the land and adapting in the face of major social, economic, and political changes. Focusing on the U.S. literature, the debate around farm persistence was perhaps the most active from the 1970s until the 1990s. Newby (1983) credits the critical turn on agriculture, one that draws on a political economy approach, for re-energizing rural sociology as a discipline, or what he called the 'new rural sociology'. In the 1990s, scholars moved their attention away from family farms towards macro-level analyses such as food regimes, globalization, and commodity systems analysis (Friedland, 1984, 1991; Friedmann & McMichael, 1989; Jackson-Smith & Buttel, 1998; Johnsen, 2004). Scholars have continued to study farm persistence but Lobao and Meyer (2001) noted about 20 years ago, and some may argue that it still the case in the Western industrialized countries literature, there has overall been a lack of theorization. Furthermore in recent years, researchers' focus seems to have shifted to small scale farmers (Besky & Brown, 2015). Implicitly, the concern is still about the well-being of farmers and about making a living, but it overall fails to adequately consider the greater economic context in which these farmers are located. Furthermore, scholars are increasingly turning to discussions of farm resilience. Marking a departure from the political economy groundings of the farm persistence literature, the farm resilience literature tends to focus on the characteristics of the farm operation and attributes of the farmers that enable family farms to bounce back

after the crisis (see for example Cabell and Oelofse (2012); Speranza et al. (2014)). Though not specifically writing about agriculture, scholars such as Hall and Lamont (2013) and Cote and Nightingale (2012) have argued that the increased focus on individual and community resilience fits within the broader neo-liberal agenda of decreased public investments, increased private governance, and increased responsibility of individuals and communities. In other words, these scholars worry that a focus on resilience runs the risk of 'blaming the victim' and that it does not adequately consider the extent to which individuals and communities' actions are limited by broader social, economic, political, and environmental factors.

1.3.2. Evidence for and against the persistence hypothesis

Karl Marx sought to understand how the development of capitalism in different countries would shape the fate of peasantries because for him, understanding how peasants fared was the key for understanding national development. Farm persistence scholars have documented the major structural changes in the agricultural sector throughout the 20th century and the acceleration after World War II. As a point of illustration, between 1950 and 1978, the number of farms in the U.S. was divided in half while the average acreage approximately doubled. Still, in the 2010s over 90% of farms in Western industrialized societies are still operated by family farms. In revisiting the plenary panel on 50 years of debate on peasantries during the 2016 International Rural Sociology Association conference, Bernstein et al. (2018) summarized the debate among farm persistence scholars simply. On one hand, scholars who adhere to a modernization script have argued

that family farms will disappear. On the other hand, those who focus on self-employment and autonomy have argued that family farms will persist. Below I summarize the contemporary debates within the context of industrialized societies but also point to how foundational scholars continue to inform these debates.

Family farms will disappear

Scholars arguing that family farms will disappear have tended to ground their argument in a Marxist class analysis or in economic theory. The class analysis has been the most influential among rural sociologists who draw extensively from the work of Kautsky and Lenin (see discussions by Reinhardt and Barlett (1989) and Lobao and Meyer (2001)). It is important to note however, that Kautsky and Lenin did not make global predictions. Rather, they were writing about particular national contexts at specific times. For Lenin writing about Russia late 1800s-early 1900s, peasants agriculture was doomed to extinction under capitalism because capitalism was more efficient and larger corporate farms would absorb peasants. For Kautsky writing about Germany around the same time than Lenin, family farmers might not fully disappear, but they would eventually become semi-proletarianized because to persist they would have to sell some of their labor to larger and more efficient production units. Buttel (1980) was also of the opinion that family farms are unable to compete under capitalism as a result of major structural changes such as farm specialization, increased mechanization, increased reliance on purchased input, increased integration along the supply chain, and overproduction. For him, small scale farmers were becoming increasingly marginalized and the need to seek

off-farm employment to supplement the household income was seen as a sign of family farms' demise.

While not as adopted by rural sociologists, classical and neo-classical economic theories assume that smaller farms would disappear because due to their smaller scale, they are not as able to attain economies of scale. Assuming a logic of profit maximization, larger scale operations (which can also be family farms) were to have an advantage due to task specialization through commodity specialization (Reinhardt & Barlett, 1989). Scholars have critiqued the class-based and economic theories for lacking to consider farmers' agency and for the assumption of rationality (Lobao & Meyer, 2001; Mooney, 1983; Reinhardt & Barlett, 1989; van der Ploeg, 2018). This is because on one hand, class-based theories often fail to consider how farmers' decisions can shape the future of their farm while economic theories tend to over-emphasize profit maximization. Furthermore, Reinhardt and Barlett (1989) argued against the traditional economic arguments by showing the ways in which family farms (implicitly smaller scale) can effectively compete on an economic basis as they argued that managerial costs on smaller operations are lower and that these smaller operations can still benefit from economies of scale. Furthermore, family farms work under different economic logics that capitalist firms. For some family farms, working longer for smaller returns is not irrational.

The contemporary literature arguing that family farms will disappear does not seem as developed as the family farms will persist (see below). The agricultural of the middle debates have perhaps talked the most about the bifurcation of the agricultural sector and the dangers of losing medium-scale farms (De Master & Environment, 2018;

Kirschenmann et al., 2008; Lyson et al., 2008). And, if we shift our focus away from farm household level to the macro-level analyses such as the food regimes or commodity systems analyses, scholars have carried on the conversation. Largely using a political economy lens, scholars such as Friedmann and McMichael (1989) and Friedland (1984, 2003) but also more recently Hendrickson et al. (2018) and Howard (2016) clearly speak to the power imbalance and to the threats that family farms are under.

Family farms will persist

Scholars who have argued that family farms will persist have centered their argument on the characteristic of the farm household, on the characteristic of agriculture, or have created bridges across previously separate explanations such as micro and macro level or separate theories. Overall these scholars argue that there is something special about farm families and about agriculture that has kept capitalism at bay. Starting with the arguments focused on the characteristics of the farm household, Russian economist Chayanov (1966) laid out the argument in the early 1990s that family farms are efficient and competitive agricultural production units driven by behavioral logic. Based on the idea of demographic differentiation, Chayanov argued that the goals of production are not based on the principle of profit maximization but rather are based on the consumption needs and labor availability of the household. Because family farms were willing to forgo profit and even a wage through self-exploitation, family farms were able to compete with large-scale capitalist unit. Chayanov's work has influenced the work of other scholars such as Friedmann (1978a), Barlett (1993), and Salamon (1992). These scholars have shown that

adaptation strategies have enabled family farms to weather the ebbs and flows of the weather and of economic markets. For instance, they have pointed to farm households cutting back on consumption, working without drawing a wage from the farm, liquidating assets, or taking off-farm jobs. It is specifically their flexibility that have enabled them to compete against capitalist firms whose structures are more rigid. However, for Jackson-Smith and Buttel (1998), neo-Chayanov scholars did not adequately consider the role played by larger socio-economic forces and using the example of the dairy sector, dairy farms where not thriving in the 1990s as evidenced by the high rate of turnover.

To explain why family farmers were persisting, Mann and Dickinson (1978) provided a structural explanation by focusing on the characteristics of agriculture. For them, agriculture has inherent characteristics that are unappealing to capital. These characteristics include unproductive production time (the gap between production time and labor time), idling of equipment, and the risk and invariability in agricultural production due to the natural processes such as the weather or pest pressure. These characteristics create unattractive conditions for the emergence of capitalist relations. However, their strict focus on the characteristics has been questioned as technological innovations would make agriculture more attractive in the long run (Reinhardt & Barlett, 1989).

Last, over time, scholars have moved towards explanations that bridge across previously separate explanations such as micro and macro level or separate theories. Indeed, Bernstein et al. (2018) point to how agrarian scholars have worked towards building "multi-level, multi-actor, and multi-dimensional theories than span over longer

timeframes" (p 695). Bennett and Kohl (1982) and Mooney (1983) provide early examples. Bennett and Kohl (1982) describe the complex agro-family system in which family farms are embedded which includes micro (nuclear family household and enterprise), meso (community), and macro (national structures) levels. Described as an adaptive system, farm families engage in a diversity of management styles that are shaped by the characteristics of the farm operation and its economic performance, the agrifamily life and business cycles, social status and consumption levels of the household. Through a synthesis of Max and Weber's work and critic of Mann and Dickinson (1978), Mooney (1983) showed the varieties of ways in which capitalism has penetrated agriculture and the varying ways that family farms can be organized. In particular, he discussed the contradictory class location of many family farms as new petty bourgeois where they can be both employers of farm workers and off-farm employees. Furthermore, through his use of Weber's subjective vs. formal rationality, he argued that farmers are equally motivated by substantive rationality: a desire to have autonomy over their work, to be stewards of the land, and to provide a certain quality of life that families cannot obtain with money alone. Perhaps one of the most exciting on-going theoretical development is van der Ploeg's (2018) theorizing of the 21st century peasantry. Grounded in Chayanov's work, his theory explains why peasants have remained on the land and are autonomous units within the capitalist system. He bridges what is happening on the farm operation with meso level structures. In particular, he links characteristics of both the farm operation and farm household with material and social supports among farmers and within the region. He describes a set of factors that can be

seen as a root system (rhizome) that support farms and explains their continuity. While the discussion of the linkages across scales are not new (for example see Bennett and Kohl (1982) and Smithers and Johnson (2004)), van der Ploeg (2018) intends to both explain what is happening and provide a transformative model. Furthermore, his theory emphasizes the role of women and networks (mix of material and social supports at the micro and meso level) to explain what is keeping farmers on the land. These factors have mostly been 'hidden' in other theories. For Bernstein et al. (2018) however, van der Ploeg's theory might be overly optimistic and might not adequately account for larger political and economic environments.

1.3.3. Factors that explain variation in the rate at which family farms are disappearing (or reproducing)

The farm persistence literature, as well as the sociology of food and agriculture more broadly, provide evidence of the multitude of factors that explain variations in farm disappearance and reproduction. Factors that explain variations in farm persistence are connected to the farm household, commodity itself, or to the larger environment. All these factors likely overlap.

Starting with characteristics of the farm household, location along the life course, family location, culture, class positions, and access to resources all influence farm persistence. Chayanov's (1966) demographic differentiation perhaps provides the best example of how farm households' location along the life course and family composition help explain whether a farm might reproduce or disappear. A contemporary example is

provided by Inwood and Sharp (2012) and Inwood et al. (2013) as they explore how internal family dynamics, family composition, and family culture shape succession, and farm adjustments. In short, families with heir(s) and multi-generational families are more likely to reproduce. Salamon (1992) and Bennett and Kohl (1982) provide examples of the role of culture and ethnical heritage in shaping farm land transfer and farm trajectories. They point to how different ethnicities emphasize different outcomes. Using the example of Salamon's (1992) study, farmers with German ancestry valued multi-generational transfer of land while farmers with Anglo-Saxons ancestry favored economic gains. These different motivations had direct connections to decisions that farm households made and could in some cases jeopardize the farm operation. Last, through the concept of class differentiation, Lenin speaks to how access to resources interacts with the ability to reproduce. Pilgeram (2011) provides a contemporary example of the role of class position in connection to self-exploitation and the ability of farmers with more resource to choose the type of agriculture they want to engage with.

Moving to the factors connected to the commodity produced, Friedland (1984) through his commodity systems analysis approach emphasizes the importance of understanding the commodity. This is because the characteristics of the commodity will directly shape the characteristics of the farm operation and its ability to persist. Jackson-Smith and Buttel (1998) provide an example when they outline why dairy has not industrialized to the extent that other animal commodities have such as poultry or hogs. While they speak to the factors connected to industrialization, the industrialization and farm persistence questions overlap. Factors that explain variations across commodity but

also across time and space include concentration of production (i.e. are there are few actors controlling market shares or many independent family farms), integration of the supply chain (i.e. a famer retains managerial independence through a marketing contract or he/she has none due to horizontal integration), risks associated with biological systems and market volatility which is directly connected to the work of Mann and Dickinson (1978).

Last, the larger environment and path dependencies created throughout history also shape a farm's ability to reproduce. The food regime literature points to institutional and policy environments (for example environmental regulations, subsidies, tax policies, trade treaties), globalization of markets, and financialization. The insights generated by the food regimes literature are similar to those highlighted by scholars who used farm operations as their starting point (Jackson-Smith & Buttel, 1998; Pfeffer, 1983). Overall, these larger environment factors directly shape and limit the decisions that farm households make.

1.3.4. Use of the farm persistence literature in the dissertation and theoretical broadenings

The central theoretical insights that this dissertation research draws from are the deep inter-connections and inter-reliance between farm individuals, the farm household, and the farm operation (for example: Bennett and Kohl (1982); Friedmann (1978a, 1978b) Reinhardt and Barlett (1989); Smithers and Johnson (2004)) (figure 1-1). This is because the personal and professional spheres share financial resources and labor and the

interactions between the two spheres help explain why difficulties experienced by the farm household may negatively impact the farm operation.

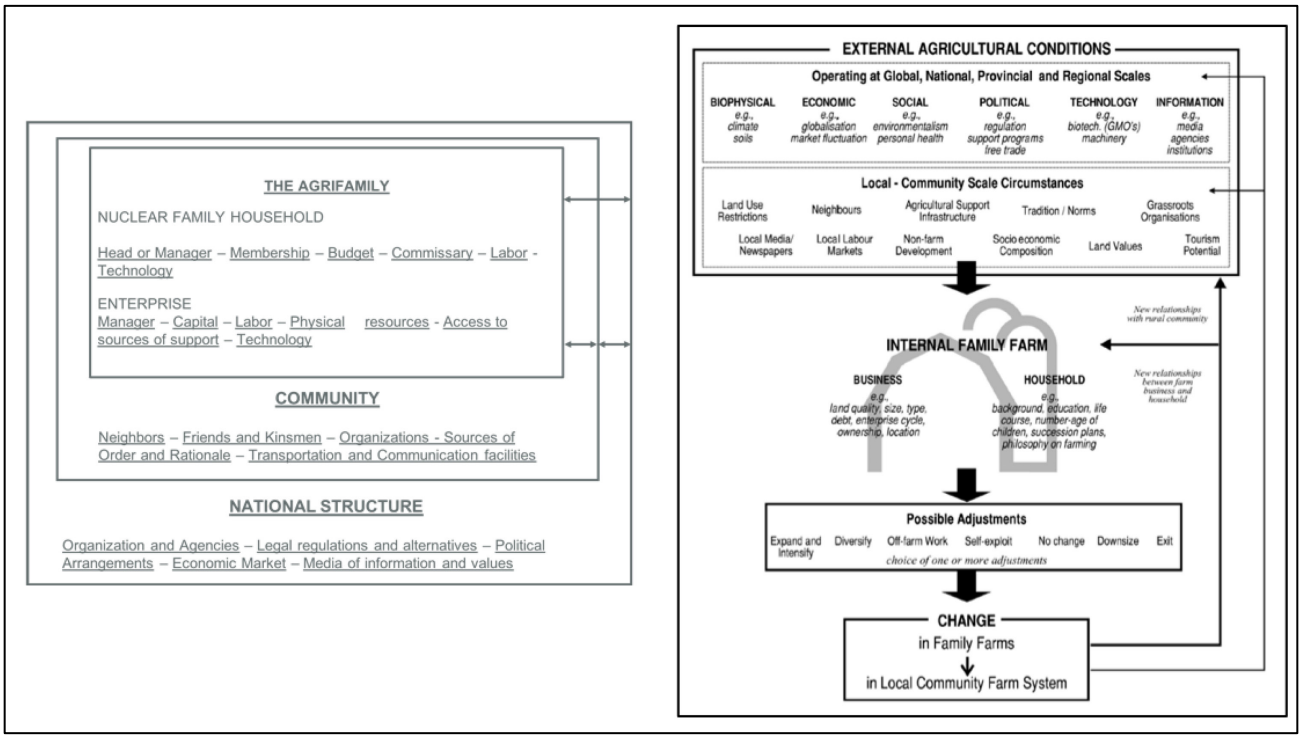

Figure 1-1. Examples of farm household-farm operation systems by Bennett and Kohl (1982) (left) and Smithers and Johnson (2004) (right)

Out of the scholars who have explicitly considered the interconnections between the farm household and farm operation, two lines of inquiry have emerged over time. The first line examines how family characteristics and structure, family goals, and cultural aspects shape the structure of the farm operation and impact farm transition and farm persistence (see for example: Bennett and Kohl (1982); Clark et al. (2012); Friedmann (1978a); Inwood et al. (2013); Jackson-Smith and Buttel (1998); Mooney (1983); Reinhardt and Barlett (1989); Salamon (1992); and Smithers and Johnson (2004)). Of

most interest to this dissertation research, the second line of inquiry examines the effects of difficulties in the farm household-farm operation system. This line of inquiry was particularly active in the 1980s and 1990s in response to the farm crisis as scholars studied the impact of the farm operation's financial difficulties on stress and mental health, adaptation strategies, changes in gender roles, and impacts on family development (see for example: Barlett (1993); Belyea and Lobao (1990); Conger and Elder Jr (1994); Heffernan and Heffernan (1986); Lobao and Meyer (1995); Lorenz et al. (2000); Meyer and Lobao (1997); Meyer and Lobao (2003) and; Schulman and Cotten (1993)). Yet this line of inquiry has overall been uni-directional with the focus flowing from the difficulties originating at the farm operation level to the impacts on the farm household. A line of inquiry focusing on how household level issues including social needs such as health care, retirement or childcare flow towards the farm operation has arguably received insufficient attention. By considering household level issues and social policy, this dissertation research broadens our theoretical understanding of factors that likely shape family farms, farm development, farm transition, and ultimately farm persistence.

1.4. Organization of the dissertation

The overarching research questions of this dissertation are: (1) how do farm households meet their social needs with a focus on health? (2) how do farm households' social needs interact with farm development? and, (3) What is the role of social safety net for the farm households? This dissertation contains five chapters, including this introductory chapter, and uses the 3-article format.

In chapter 2, I broadly consider the role of social policy in the farm sector and propose a framework to integrate social policy in the international family farm research agenda. To do so, I conduct a cross-national comparative document review of government-sponsored social safety net programs available to farm households in two countries: France and the U.S. I chose France and the U.S. because, while they have similar levels of economic development including in the agricultural sector, they sit on the opposite sides of the social policy continuum. Called on by Droz et al. (2014) and Inwood (2013) as a unique country for cross-national comparative study, France has a comprehensive and universal social safety net tailored to the agricultural sector. In contrast, the U.S. has a limited and mostly means-based social safety net. By choosing countries for maximum variations on the basis of their social policy, my goal is to work towards identifying common patterns (Patton, 2002). Specifically, I draw on the comparison of the types of programs available, cost, administration, and access in these two countries to: (1) develop a foundational framework of institutionalized social supports to be used in future empirical work, (2) identify factors that may influence a farm households' use of social safety net programs, and (3) propose a research agenda to move the family farm literature forward.

In chapters 3 and 4, I use health insurance and health care for U.S. farm households as an empirical case through a dataset of about 1,000 farm households in ten case study states to work towards empirical and theoretical insights. While the dissertation is broadly framed around understanding the role of social policy, chapters 3 and 4 focus on health policy which in Western industrialized countries is a key

component of their social policy programs. In particular, in chapter 3, I use a conceptual framework based on the merging of the life course approach in the health and family farm bodies of literature to assess: (1) the differences in health needs, access to health insurance and access to health care across age groups and (2) the extent to which health issues impact the farm operation differently as they age. This article teases the interactions between farm household level issues, social safety nets, and farm persistence.

In chapter 4, I draw on the complementary insights from the medical economic vulnerability and farm economic stress and bankruptcy bodies of literature to develop a relational conceptual framework to assess: (1) the extent to which farm households are experiencing difficulties due to health-related costs and (2) the factors associated with objective and subjective measures of medical economic vulnerability. This article provides insights towards a more holistic understanding of the factors associated with the vulnerability of farm families.

In chapter 5, I conclude this dissertation by first drawing from the three articles presented in chapters 2 to 4 to provide an answer to the overarching research questions I introduced in the beginning of this chapter. Then, I summarize the theoretical and practical contributions of the dissertation. Last, I discuss the limitations of the dissertation research and general avenues for future research.

Chapter 2 - Comparing French and United States Social Safety Nets: A Framework for Integrating Social Policy into the International Family Farm Research Agenda

Abstract

Some farm scholars have contended that agricultural policies are seldom designed with the well-being and social needs of farm households in mind even though the challenges experienced in the farm sector directly impact the farm household. Surprisingly little is known about how farm households meet their personal needs and the role of social policy in the agricultural sector. As a first step towards a holistic understanding of the interactions between social policy, farm viability, and farm persistence, we conduct a cross-national comparative document review of government-sponsored social safety net programs available to farm households in two countries on the opposite side of the social policy continuum: France and the United States. In particular we develop a foundational framework of social safety net programs to be used in future empirical work, identify four factors that may shape farm households' use of social safety net programs, and propose a research agenda to move the literature forward. Besides our contribution to the family farm literature, our article offers an opportunity to reframe and broaden approaches to farm resilience by highlighting the critical need for understanding the ways in which institutional social supports play a role in supporting family farms.

Keywords

farm households - farm persistence and resilience - social needs - social safety net comparative study

2.1. Introduction

Recognizing the importance of agriculture to their national economy and security, Western industrialized countries have historically invested in government agencies and policies dedicated to the farm population and farm economics. However, as the farm population continues to age and shrink in the face of growing economic challenges resulting from global political and economic structural changes and increasing production limits in the face of climate change, it is necessary to re-examine how current approaches to farm policy do or do not support the farm population especially during periods of great flux.

Rural and farm researchers have pointed out the shortcomings of current farm policy, arguing the majority of agricultural policies tend to favor larger scale operations and distort trade (Anderson & Valenzuela, 2007; Courtenay Botterill, 2007; Daucé, 2015; Gundersen & Offutt, 2005; Mann, 2005) or do not meet their goal such as farm payments' failure in the United States (U.S.) to eradicate the long-term migration out of farming areas (El-Osta, 2014; Gundersen & Offutt, 2005) while early retirement schemes in the European Union (E.U.) have not substantially changed farmer age, farm scale, or ownership structure (Bika, 2007; Davis et al., 2009). Though often relegated as background arguments, but equally important, scholars such as Courtenay Botterill

(2007) and Chang et al. (2011) contend that agricultural policies are seldom designed with the well-being and social needs of farm households in mind even though the challenges experienced in the farm sector directly impact the farm household. This group of rural researchers and farm advocates have called on broader social supports for the farm sector, such as social safety nets programs, to address needs related to health, aging, sufficient income, and childcare. This is because social issues not only underpin the ability to both maintain farming as a livelihood and attract the next generation, social supports may also bolster the ability of farmers to withstand crises (Ackoff et al., 2017; Ahearn et al., 2015; Courtenay Botterill, 2007; Gundersen & Offutt, 2005; Inwood et al., 2018; Mann, 2005).

Diving deeper, a rarely asked but critical question is: what are the links between social needs, social policy, and support in the farm sector? In other words, why care about personal household-level issues when considering the challenges faced by the agricultural sector? Farm persistence scholars concerned with how farm households adapt to constantly changing local and macro-level pressures provide theoretical insights to answer these questions through studies that have examined the interplay between farmers, the farm household, and the farm operation. Bennett and Kohl (1982), Chayanov (1966), Friedmann (1978a), Barlett (1993), and van der Ploeg (2018) have found it is the formal and informal interactions between the personal and professional spheres and the ability of the farm operation to draw on the resources of the household that have enabled family farms to persist. Although these scholars have seldom considered how difficulties experienced by farm individuals and households can negatively impact farm persistence,

their theorization on the interplay between the professional and personal spheres suggest that difficulties experienced by farm households in meeting their social needs can affect economic viability, farm transition, and farm persistence issues (Bennett & Kohl, 1982; Inwood, 2013; Mishra et al., 2010). For example, more recent empirical work shows how household issues such as high health insurance and health care costs in the U.S. can limit on-farm investments and lead to farm exits (Chang et al., 2011; Inwood et al., 2018; Pryor et al., 2009) while inadequate retirement pensions in Canada, Ireland, or Switzerland can delay and increase the cost of farm transition (Contzen et al., 2016; Davis et al., 2009; Ouellet & Perrier, 2018).

Despite calls for broader social supports and evidence that social difficulties experienced by farm households can have broader effects on the farm operation, our understanding of both the role of social safety nets in the farm sector and farm households' use of social safety net programs is limited. Most of the research that has specifically focused on social needs and social supports for farm households comes from the U.S. and focuses on specific social needs in isolation, namely health care (Ahearn et al., 2013; Chang et al., 2011; Gundersen & Offutt, 2005; Inwood, 2017; Zheng & Zimmer, 2008), retirement and succession (Mishra et al., 2005; Novak et al., 2005; Winter & Volker, 2002), food assistance (Gundersen & Offutt, 2005), or childcare (Inwood & Stengel, In Press; Reschke, 2012). The majority of these studies are quantitative and often lack the necessary data to make inferences on the effect these issues have on both the social and economic well-being of the farm household and the role of formal social supports. We know of only a handful of studies from other Western

industrialized countries specifically focused on social safety nets for farm households but their discussion of the connections with the farm operation was limited (Courtenay Botterill, 2007; Deville, 2015; Mann, 2005, 2007). Examining the family farm literature focused on farm transition, retirement, beginning farmers, or poverty, we find evidence of difficulties meeting social needs but the discussion of social safety net programs along with their role in supporting the household and operation has been tangential (Bika, 2007; Brangeon & Jégouzo, 1995; Contzen et al., 2016; Conway et al., 2016; Davis et al., 2009). The lack of research specifically focused on social policy and the agricultural sector may reflect U.S. researchers' long-held assumption that a farmer or their spouse will work off-farm for added income and benefits. While in Western industrialized countries with broader social safety nets such as Canada, France, or the United Kingdom, the lack of research and inquiry may be associated with the stronger presence and universality of social safety nets. In both cases, a type of research complacency into the role of social safety net has developed. This manifestation may be driven by entrenched (and sometimes unspoken) long held assumptions about the presence and function of social programs. However, the importance of understanding the links between formal social safety nets and farm persistence is especially critical in the modern era as neo-liberal policies are put in place that reflect welfare state retrenchment and austerity measures that create new policy environments farm families must operate in.

As a first step towards a holistic assessment of the interplay between social policy, farm viability, and farm persistence, we take a descriptive approach and conduct a cross-national comparative document review of government-sponsored social safety net

programs available to farm households in two countries: France and the U.S. We chose France and the U.S. because, while they have similar levels of economic development including in the agricultural sector, they sit on the opposite sides of the social policy continuum. Called on by Droz et al. (2014) and Inwood (2013) as a unique country for cross-national comparative study, France has a comprehensive and universal social safety net tailored to the agricultural sector. In contrast, the U.S. has a limited and mostly targeted, on condition of income, social safety net. By choosing countries for maximum variations on the basis of their social policy, our goal is to work towards identifying common patterns (Patton, 2002). Specifically, we draw on the comparison of the types of programs available, cost, administration, and access in these two countries to: (1) develop a foundational framework of institutionalized social supports to be used in future empirical work, (2) identify factors that may influence a farm households' use of social safety net programs, and (3) propose a research agenda to move the family farm literature forward. In our article, we define social safety nets as the collection of policies and programs to support individuals and families in times of planned and unplanned life course events, such as birth, maternity, retirement, unemployment, poverty, illness, accidents, and death. By exploring issues connected to the ways farm households meet their social needs and the role of social policy, this article extends the family farm and farm persistence literature and proposes to create a bridge with the social policy literature. This article also offers an opportunity to reframe the debate on farm resilience by emphasizing the need to understand the ways in which institutional supports, such as

social policy, may affect both the farm household and farm enterprise when farm households are faced with challenges out of their control.

In this article, we first provide background by summarizing insights on social safety nets for farm households drawn from the family farm literature and by providing a general overview of the French and U.S. social safety nets. Second, we describe our document analysis approach. Third, we present the structure of the social safety nets for farm households in the two countries including: benefits available, programs eligibility, administration of programs and costs. Fourth, drawing on the insights generated by the comparison of the structure of the safety nets and on the family farm literature, we discuss four factors that may shape farm households' use of social safety net programs. Fifth, we propose a research agenda on farm household formal social supports. Lastly, we summarize the key aspects of our analytical framework and discuss the contributions of our work.

2.2. Literature Review

2.2.1. Social safety nets in the family farm literature

While there is currently limited research specifically examining social safety net programs for the farm sector, the family farm literature from Western industrialized countries does provide insights into the role of social safety nets, the interaction these programs have with the farm operation, and factors that limit access and use of programs. Considering the role of social policy, farm scholars have shown that social safety net

programs ease access to health care (Becot & Inwood, 2019; Droz et al., 2014; Dulitz & Schrader, 2013; Inwood, 2017), childcare (Inwood & Stengel, In Press; Reschke, 2012), and enable farm households to satisfy basic needs for both low income (Brangeon & Jégouzo, 1995; Contzen & Crettaz, 2019) and retired farm households (Corsi, 2017; Davis et al., 2009; Mann, 2007; Mishra & El-Osta, 2008). Furthermore, Droz et al. (2014) provide some evidence that the negative effects of macro-level economic and political pressures on the agricultural sector can be moderated by the social safety net supporting farmers.

Research conducted by Chang et al. (2011), Corsi (2017), Davis et al. (2009), Gundersen and Offutt (2005), Inwood (2017), and Inwood and Stengel (In Press) demonstrate that the type, availability, and level of benefits of social safety net programs impact the development of the farm operation and farm transition across a range of policy contexts. However, the ways in which the farm is impacted is at times seemingly contradictory. Examining health insurance in the U.S., Chang et al. (2011) found that health insurance (from the public or private sector) can stem farm exits. Meanwhile Inwood (2017) found that some farm households purposefully limited their off-farm employment in order to qualify for means-based health insurance programs, even though forgoing the added income decreased the available capital to invest in farm development over the long-term. Examining farm transfers, the European-based literature has pointed to the role of adequate retirement pensions in enabling and encouraging farm transition (Corsi, 2017; Davis et al., 2009; Gaté & Latruffe, 2016) while the U.S. and South Korean based literatures have found evidence of the contrary (Chang, 2013; Mishra & El-Osta,

2008). The inconsistencies in the literature likely point to institutional differences in both the organization of the social safety nets as well as differences in the agricultural, social, economic, and political environments. Research using a more purposeful cross-national comparative approach can help unravel some of the differences across contexts and provide a framework for analyzing the ways social safety net programs impact the farm operation.

The family farm literature from Western industrial countries provide three key insights into the multidimensional factors that hinder farm households' access and use of social safety net programs. First, scholars in France, Canada, Ireland, and Switzerland point to the lower levels of coverage of social safety nets for the farm sector, in particular retirement pensions (Bourgeois, 2007; Brangeon & Jégouzo, 1995; Contzen, 2019; Contzen et al., 2016; Davis et al., 2009; Gaté & Latruffe, 2016; Mann, 2007). Reasons for lower levels of protection include lower contribution levels over the life course due to lower, and at times negative, farm income (Daucé, 2015; Novak et al., 2005), the inclusion of farm assets in the calculation of benefits for means-based benefits (Courtenay Botterill, 2007), and historical push back from the agricultural sector to social safety net programs, effectively delaying their access to these programs (Bourgeois, 2007; DeWitt, 2010; Rance, 2002). Second, research has documented the under use of means-based programs by farm households, most of which are targeted poverty relief programs. Across social policy environments, welfare stigma and shame are the most often cited reasons followed by the lack of information, low level of anonymity in rural areas, bureaucratic burden, informal livelihood strategies, and opposition to government

intervention (Brangeon & Jégouzo, 1995; Contzen & Crettaz, 2019; Deville, 2015; Gundersen & Offutt, 2005; Inwood, 2017; Mann, 2005, 2007). Third, social policies have in some cases disadvantaged farm women. For example until 2006 in France and still in Switzerland, the administrative status women could/can claim limits their program entitlements and forces them to rely on spouses resulting in lower social protection such as lower retirement pensions (Contzen, 2019; Contzen & Forney, 2017; Hervieu & Purseigle, 2013; MSA, 2012). To increase the well-being of farm households and ease access to the social safety net, Mann (2005), Courtenay Botterill (2007), and Contzen and Crettaz (2019) have argued for the need to consider the ways in which government programs and policies could ease access to benefits that farm households are eligible for. To meet this call, there first needs to be a better understanding of the social safety net programs available and the institutional arrangements, such as the actors and mechanisms, that govern access and eligibility.

2.2.2. Overview of the French and U.S. social safety nets

The literature on the French and U.S. social safety nets is large but has generally focused on salaried workers (i.e. general population). To situate the reader, we summarize the most salient aspects of the social safety net in each country, including underpinning ideologies and general historical evolution most relevant for the farm population, before discussing the structure of the safety net through our document review (section 2.4). France has a comprehensive and universal social safety net designed to meet varying social needs along the life course whether they can be anticipated, such as motherhood, or

unanticipated such as an illness or injury. The 1945 Social Security[1] ordinance is the landmark law of the French social safety net that combined new and existing programs into a suite of benefits including health insurance, workers' compensation, retirement pensions, family, and disability benefits for salaried workers, the elderly, widows, and people with disabilities. Designed by the resistance movement during World War (WW) II to be implemented when the war ended, the ordinance was seen as a way to re-unify the divided country, to create social cohesion, and to reduce inequalities (Fondation Charles de Gaulle, n.d.). At first, self-employed workers, including farmers, were not covered by the ordinance. Instead, the ordinance designated the Mutualité Sociale Agricole (MSA), the major agricultural insurance co-op created in 1930, as the official professional organization in charge of the social protection of the agricultural sector. Furthermore, the ministry of agriculture was designed as the ministry in charge of social policy for the sector (MSA, 2015b). By the time of the 1945 ordinance, farmers already had access to workers' compensation and family benefits but they did not have access to government sponsored retirement and health benefits. They gained access to retirement benefits in the 1950s and to health benefits in the 1960s under the government's guise of seeking parity of social protection with the rest of the population and of improving the standards of living of the farm population (Juilhard, 2007; La Vigne, 1999; Rance, 2002). Since the 1960s, the focus of welfare reform for the farm and general population has been on continuing to work towards parity of benefits across the population, on cost saving

[1] In France, social security is the term used to describe the set of welfare programs and the name of the governing agency.

measures in particular starting in the 1980s, and on adapting the safety net to reflect societal changes[2].

Compared to France, the U.S. social safety net is limited, few programs are universal and targeted programs[3] are mostly on the basis of income. The 1935 Social Security Act, the landmark law of its social safety net, expanded retirement, disability, and unemployment benefits that were available in some states to all citizens in the country (Social Security Administration, n.d.-b). The act was passed during the turmoil of the Great Depression and intended to protect individuals in precarious economic situations due to mass unemployment and mass poverty. The agricultural sector (among other professional sectors) was exempt from the act until the 1950s[4]. Significant addition and expansion of programs were made to the social safety net in the midst of the 1960s' war on poverty including universal health insurance for individual over 65 and for individuals with disabilities (Medicare), means-based health insurance (Medicaid) and means-based family benefits (housing, income support, and food assistance) (Katz, 2008; Social Security Administration, n.d.-a, n.d.-b). In the late 1970s-early 1980s, the emphasis on using social safety net programs to maximize participation in labor markets while discouraging people from seeking public assistance increased. This has been done

[2] For example, extension of maternal and parental leave to support the widespread participation of women in the labor force.
[3] In the reminder of this article, we refer to this program based on the eligibility criteria of these programs which are most often means-based but sometimes connected to employment or marital status, and number of children.
[4] Scholars have provided multiple reasons to explain the exclusion of the agricultural sector from the Social Security Act including racism as most farm workers from the South were African Americans, administrative hurdles to collect the tax, and lobbying from the agricultural sector against additional financial burden (Cohen et al., 1954; Davies & Derthick, 1997; DeWitt, 2010; Durst & Monke, 2001).

through an emphasis on employment-based benefits for health insurance and increasingly for retirement and means-based programs with strict entitlement rules (Adams & Artz, 2015; Scofea, 1994; Skocpol & Amenta, 1986). As a result, the stigma against welfare programs in the U.S. is strong (Pfau-Effinger, 2005; Skocpol, 1993). The latest major reform of the social safety net known as the Affordable Care Act (ACA) expanded health insurance coverage by providing means-based subsidies to purchase private insurance and lowering income-threshold for public health insurance, however policy implementation has not been uniform and has varied across the fifty states (Patient Protection and Affordable Care Act, 2010; The Henry J. Kaiser Family Foundation, 2019).

2.3. Document review approach

Our description and comparison of the structure of the French and U.S. social safety nets for the farm sector [5] is based on a document review. In a documents review, researchers identify documents using systematic research criteria, which are appraised for relevance and synthesized (Bowen, 2009).

To identify documents, we searched primary sources such as government websites and reports and secondary sources such as peer-reviewed articles and the grey literature (reports, theses, and conference proceedings). We conducted searches for

[5] As a point of clarification on the use of terms, throughout the article, we use farm operators, or farmer, to refer to self-employed individuals. We use farm household to describe a household unit that includes at least one self-employed farm operator. And, we use farm worker to describe individuals who do not have the self-employed status, who receive an income for the work they do on the farm, and who pay taxes on that income. Farm workers can be part of the farm household or not.

primary sources through google.com and google.fr and secondary sources through Google Scholar in French and in English and through four article databases for France (HAL Archives Ouvertes, Persée, CAIRN, and ProdINRA) and six article databases for the U.S. (JSTOR, Academic OneFile, Academic Search Premier, Science Direct, USDA PubAg, and Web of Science). After reviewing the documents from the initial searches, we identified gaps in the preliminary findings and conducted additional searches. Reflecting ongoing changes in social policies, we included media sources (newspapers, magazines, and websites) when changes were too recent to be included in government sources or grey literature but significant to understanding the systems in place. Our goal for this document review is to be equally systemic and transparent in our search of documents, as it is to be comprehensive. The first author, who is bilingual and bicultural, conducted the searches in French and in English. Keyword searches included administering agencies of the social safety net programs and programs of the social safety net systems, such as social security, health insurance, and workers' compensation. We used these keywords in association with keywords related to the agricultural sector, such as 'agriculture,' 'farm,' and 'farmers.' Additionally, because in the U.S., there are limited variations for self-employed individuals across sectors of activity, we also searched the term 'self-employed'.

We focused our review to mandatory programs at the national level in order to compare "baseline" social safety nets available to farm households in the two countries. We limited the scope of our document review using three criteria. First, in both countries the social safety net programs had to be mandatory, that is all farm households are

required to pay for them through their taxes. Second, programs had to be initiated by governments at the national level, this is where there are important differences between the two countries emerge. France organizes itself as a unitary state. The central government promulgates policies, which are then implemented by branches of the administration, for example, individual private insurance programs throughout the country follow national level policies and directives. Therefore, there should be no differences in program eligibility and access from one region to another. In contrast, the U.S. organizes itself as a federal state. The federal government shares power with state, and in some cases county governments, this organization can lead to wide variations in social safety net program availability and eligibility across different geographic territories. Third, we did not include "cotisant de solidarité" or "solidarity contributor" in our definition of self-employed farm households in France. This classification is for farmers whose acreage or hours worked on the farm are below the threshold to qualify as a self-employed farmer for the purpose of social benefits. This classification only provides access to workers' compensation. Hobby farmers, older farmers who have wound down their activity, or individuals who have inherited farmland tend to fall under this classification. We acknowledge these three criteria limit the scope of our analysis, however, they provide a framework and baseline for future research to expand upon.

To ease the organization of the material and ensure reliability we coded the material in the qualitative research software, Hyper Research. We used codes such as 'types of programs', 'eligibility', 'cost of program', and 'administration of benefits' to develop an understanding of the structure and function of the social safety net programs. Last, we

calculated total estimates of the cost of social safety net programs for farmers by using available data or estimates. We use the euro (€) as the common currency across the two countries.

2.4. Structure of social safety net for farm households

In this section, we describe the French and U.S. social safety nets for the farm sector with a focus on the benefits available and program eligibility, administration of programs, and cost.

2.4.1. Benefits available and program eligibility

The programs currently available fall into four distinct sets of programs: health, workers' compensation, retirement, and family benefits. For each of the programs, we highlight the type of benefit (in-kind through the provision of goods and services, cash through unconditional cash transfer, tax credits or deductions, or mix of in-kind and cash benefit) and the eligibility criteria (universal or means-tested) (see table 2-1 for summary). Despite the constant changes in social safety net policies and programs, this section provides both an important baseline understanding and the basis for the foundational framework of institutionalized social supports that can be leveraged in future studies. French farm households have access to a universal and comprehensive suite of benefits designed to support their social needs along the life course including a few programs specifically tailored to the agricultural sector. Out of the 20 mandatory programs we

identified, nine are in-kind, ten are cash, and one is a mix of in-kind and cash benefit. The majority of in-kind programs are health benefits that provide reimbursements for health expenses, including medical care for non-work illnesses and injuries, preventive care, maternity care and leave, dental, and vision care expenses. In-kind benefits specific to the agricultural sector include parental leave, suicide hotline, vacation/counseling services for struggling families to help them take a break from the farm to work through family issues, and homecare professionals for the elderly (MSA, n.d.). As an illustration, while parental leave for birth and adoption is a cash benefit for salaried workers, it is an in-kind benefit for self-employed farmers that covers some of the cost of hiring a temporary farm worker. For the birth of a child, this benefit ranges from 11 days for the father to at least 16 weeks for the mother. One of the ways that French farm households can access temporary trained workers is through the 'Service de Remplacement' (Service de remplacement France, n.d.). This organization federates a network of temporary farm worker nonprofit organizations found in every region. Services such as suicide hotline or vacation/counseling services are most often provided by mental health and social services professionals trained on issues particular to the agricultural sector and rural areas (MSA, n.d.). Most of the cash benefits[6] are retirement benefits (average monthly benefits 757€ in 2017) and family benefits such as a child care stipend (between 88 and 857€ per month depending child care arrangement and household income), a stipend to help with expenses related to raising children (between 33€ and 132€ per month depending on

[6] Unless specified, benefit amounts are for 2019.

household income, age and number of children), yearly back-to-school benefits to help purchase school supplies (between 369€ and 403€ per child based on their age), and housing benefits to help pay rent or mortgage (between 241€ and 402€ based on income and assets, size of the family, and geographical variations in housing costs). Non-work related sick and illness leave and workers' compensation are also cash benefits, where farmers can receive up to 29€ per day of leave based on farm income and length of medical leave (Berteaux, 2018; MSA, 2019a, 2019c, 2019d). France offers some tax credits and deductions to provide social safety net programs. For example, tax credits and deductions are available for childcare (for some childcare arrangements 50% of remaining expenses; between 161€ and 183€ per dependent child starting in middle school up to university; 25% of child alimony), home help (50% of expenses such as eldercare or disability care givers, house cleaners or gardeners, homework helpers, and computer support up to 15,000€ spent), housing (mortgage interest deductions or energy savings improvements), and elder and disability care (40% of diagnostic and 25% of expenses to adapt the home (Ministère de l'Action et des Comptes Publics, n.d.). Program eligibility reflects the French ideological underpinnings of the social safety net. In France, 15 out of the 20 programs analyzed are universal and are designed to achieve the country's larger social goals of social cohesion and reducing inequality. Farm households who meet the basic criteria of the programs, such as being sick or having children, and being up to date in their MSA payments are eligible for these benefits. However, as previously noted, there can be variations in the benefit dollar amount based on: household income, age, number of children, for family benefits and previous income

for retirement benefits. This is also the case for retirement benefits, where benefits are calculated based on previous income. Some of the family benefits are means-tested, including: housing and back-to-school subsidies, vacation/counselling programs for struggling families with personal and on-farm issues, and solidarity/supplemental income.

Similar to France, the U.S. social safety net includes health, retirement, and family benefits. However, unlike France, it does not include workers' compensation though some individual states mandate it. There are great differences between the U.S. and France in the way benefits are offered and in the eligibility criteria. In contrast to France, none of the U.S. programs are specifically tailored to the agricultural sector. Out of the 15 mandated programs we inventoried, five provide in-kind benefits, seven provide cash transfers, and three are a mix of in-kind and cash transfer benefits. In-kind programs are mostly health benefits. Cash benefits[5] are provided for disability benefits (1,004€ on average per month), supplemental income (either through cash 514€ on average per month or tax credit on average 2,263€ in 2018), and retirement (1,339€ on average per month) (Internal Revenue Service, 2019c; Social Security Administration, 2019). The programs that provide both in-kind and/or cash benefits are family benefits. Largely aimed at reducing poverty and encouraging participation in the workforce, these benefits provide either cash transfers (temporary assistance for needy families with the median monthly benefit of 409€ in 2018) or tax credits (up to 1,819€ in child tax credit per child under 18 and up to 5,458€ in child and dependent care credit based on the number of dependent and income in 2018) (Burnside & Floyd, 2019; Internal Revenue Service,

2017, 2019d). The family benefit for low-income households also includes workforce readiness assistance and parental education with the goal of maximizing participation in the labor market, with differences in benefits across states and even counties. Food assistance can be through cash payments, where individuals use a payment card to purchase food at approved retailers (on average 223€ per month per household in 2017), or in-kind including free or reduced school lunch for children and food packages from the U.S. Department of Agriculture (USDA) that are distributed by state social services and hunger relief organizations (U.S. Department of Agriculture, 2017c, 2019). Housing benefits are in-kind through housing vouchers (with the voucher, families pay no more than a third of their income in rent), public housing, or mortgage interest tax deductions (on average 2,240€ in 2011) (Hanson et al., 2013).

The majority of the mandatory programs in the U.S. are means-tested and place restrictions on eligibility. In our inventory, 12 out of 15 programs have an income eligibility criteria, this is in stark contrast to France where most programs are universal. Additionally, U.S. eligibility criteria can vary across states (and in some cases counties) and across programs. For example, the federal government mandates that states provide means-based health insurance and food assistance programs and while the federal government determines income threshold eligibility for food assistance, state government determines eligibility for means-based health insurance. Using the state of Alabama as an example of how income threshold for different programs vary, gross monthly income eligibility for means-based health insurance for children is 1,822€ for a two-person household, while the income eligibility for food assistance is 1,625€ (Alabama

Department of Human Resources, 2018; Alabama Medicaid, 2018). Health insurance is not universal. Instead, individuals and families may be insured through employers, the private market, or government-based plans. Eligibility for government-sponsored health insurance programs varies across the fifty states and across the life course. For example, the Medicaid program is a means-based program for individuals under age 65, but it is a universal program for individuals with disabilities across all ages. The income threshold for pregnant women and children is usually lower but this income threshold varies across states. Additionally, Medicare is a universal health insurance program for all citizens 65 years of age and older. However, as large swaths of the population have remained uninsured, the federal government has attempted to address this gap through the ACA, a recent policy effort to expand health insurance coverage using a variety of mechanisms. To improve access to public health insurance before age 65, some states expanded Medicaid (income must meet the poverty threshold, which varies across states from 18% to 221% of the federal poverty line). The federal government also introduced means-based subsidies used to purchase private health insurance (income qualifications vary across states from 100% to 400% of the federal poverty line) (The Henry J. Kaiser Family Foundation, 2016). The eligibility for family benefits can also vary across states and these programs are means-tested and tend to have a maximum amount or duration that an individual can receive benefits over their lifetime (Katz, 2008; Skocpol, 1996). For example, family benefits through the earned income tax requires that households have a work income no greater than 49,929€ (Internal Revenue Service, 2019a). Farm households can be at a disadvantage when it comes to tax credit programs because a net

loss reduces earned income, effectively reducing tax income eligibility (Internal Revenue Service, n.d.-b). The only truly universal programs beyond health insurance for individuals over 65 are Social Security retirement benefits and some disability benefits.

Table 2-1. Mandatory social safety net programs for French and U.S. farm households

Programs	France		U.S.	
	Type of benefit [1]	Eligibility [2]	Type of benefit	Eligibility
Health benefits				
Medical care for nonwork illnesses and injuries	IK	U	IK	M for people under 65 U for people over 65
Preventive care	IK	U	IK	M for people under 65 U for people over 65
Maternity care	IK	U	IK	M
Dental care	IK	U	IK	M for people under 65 U for people over 65
Vision care	IK	U	IK	M for people under 65 U for people over 65
Nonwork related disability benefits	C	U	C	M
Death benefits	C	U	C	U
Nonwork related sick and illness leave	C	U	No	No
Maternity, paternity, and adoption leave	IK	U	No	No
Workers' compensation	C	U	No	No[3]
Retirement benefits				
Retirement pension	C	U	C	U
Surviving spouse benefits	C	U	C	U

Continued

Table 2-1. Continued

Family benefits				
Birth, child, and childcare benefit	IK and/or C	U	IK and/or C	M
Child or adult disability benefit	C	U	C	M
Back to school benefit	C	M	No	No
Housing benefit	C	M	IK and/or C	M
Solidary/supplemental income	C	M	C	M
Vacations and counseling for struggling families	IK	M	No	No
Food assistance	No	No	IK and/or C	M
Suicide prevention hotline	IK	U	No	No
Home help support for elders	IK	M	C	M

Sources. France: Mutualite Sociale Agricole (MSA). U.S.: Social Security Administration, U.S. Department of Agriculture, U.S. Department of Health and Human Services. Notes. [1] Types of benefits include C for cash benefits (including cash payment, tax credits or deductions) and IK for in-kind benefits. [2] Eligibility includes M for means-tested and U for universal. [3] In the U.S., workers' compensation is not mandated at the federal level, but it is mandated in some states.

2.4.2. Administration of programs and cost of the social safety nets to farm households

To understand the administration and cost of social safety nets programs to farm households in France and the U.S., we tallied mandatory social programs payments through self-employment tax based on farm income and income tax based on household income (table 2-2). Due to the lack of data and the complexity of the task, our estimates do not include state and county level payroll, income, and/or sales tax and payments to private health insurance companies for mandatory coverage in the U.S. These estimates also do not include payroll taxes rates for off-farm employment in the two countries. Therefore our estimates are likely conservative and represent a rough estimation of what farm households without off-farm employment pay in taxes. These cost estimates provide important baseline data towards understanding the lived experience of accessing and paying for the social safety net.

French farm households access the social safety net programs described above largely through one organization, the MSA[7] which works under a long-established partnership with the French Department of Agriculture and in collaboration with other national social services agencies (MSA, 2017). Beyond its charge to administer the social safety net, the MSA provides education to prevent and respond to work-related accidents and illnesses, supports social well-being, and gives assistance in times of crisis (MSA, n.d.). While the number of programs available to farm households and the diversity of criteria could become overwhelming, the MSA acts as the "guichet unique" or "one stop

[7] As a reminder from section 2.1.1, the MSA is the major agricultural insurance co-op created in 1930 and it is the official professional organization in charge of the social protection of the agricultural sector.

shop" for all programs. To reach farmers, the MSA relies on a network of 94 offices spread throughout the country and in overseas territories (MSA, n.d.). However, this pattern of administration has been changing in recent years. In order to save on administrative costs, the number of offices and staff employed has decreased while the MSA has increased its reliance on the online portal for members to pay dues, check eligibility and apply for programs.

French farm households pay for the social safety net principally through a self-employment tax based on farm income. In 2015, the mandatory social safety net payments for the primary operator totaled 37.3% of net farm income and 633€, the majority of which goes to retirement (17.1% of net farm income) and health insurance (between 7.5 and 12.5% of net farm income) (MSA, 2019b). To assist farm households who might have financial limitations and to account for the fluctuation of farm income, the MSA provides three flexible accommodations. First, farmers may choose if they want their self-employed tax payment to be based on their yearly farm income or on a three-year average (MSA, 2015a; Pleinchamp, 2015; Safer, n.d.). Second, the MSA provides a discount on contributions, ranging from 15% to 65% during the first five years of operating a farm. Third, the MSA can discount, freeze, or forgive the yearly contribution in cases of hardship, such as a natural disaster or a commodity price crisis (MSA, n.d.). While in France farm households primarily interact with one organization the MSA, in contrast U.S. farm households interact with multiple organizations at multiple levels, including state and federal agencies and private insurance companies. The federal government administers retirement benefits via the Social Security Administration and

federal tax deduction and credits through the Internal Revenue Services. Health insurance is administered through private-public partnerships with the public participation taking place at the federal level for the universal health insurance program and at the state level for the means-based insurance program. State or county level agencies generally provide family benefits, while individuals purchase workers' compensation and subsidized health insurance directly from the private sector (Clayton, 2004; McEowen, 2015). The patterns of administration for these different programs vary highly, and it is difficult to provide more details on the application processes as they range from on-line applications for the health insurance marketplaces to paper applications for some programs administered at the state or county level.

When adding up tax payments, including self-employed payroll and federal income taxes, we estimate that U.S. farm households spend about 23.1% of their net farm income to pay for the social safety net at the federal level. Since there is no separate social programs for the farm sector, this estimate is also applicable to other self-employed individuals and households. Parallel to France, most of the contributions pay for retirement (12.4% of the net farm income) and public health insurance (whether or not they are eligible) (between 7.9 and 8.8% of net farm income) (National Priorities Project, 2019; U.S. Government, 2018; Williamson & Bawa, 2018).

Table 2-2. Mandatory social safety net contributions in France and the U.S.

Types of benefits	France [1, 2] In % of net farm income or €	U.S. [1, 2] In % of net farm income [3] or €
Health Insurance		
Health insurance	7.5% - 12.5%[4]	7.9% - 8.8%[4]
Invalidity insurance	0.8%[5]	Included in retirement contribution
Sick leave	180€	N/A
Workers' compensation	434€ - 472€[6]	N/A
Retirement		
Retirement contribution	17.1%	12.4% up to 120,902 € of net farm income
Mandatory complementary retirement contribution	4.0%	N/A
Family benefits	1.0% - 4.1%	2.3%
Other	2.8%	
Total % contributions	37.3%[7]	23.1%
Total € amount	633€[7]	N/A

Sources. France: MSA (2019b). U.S.: National Priorities Project (2019); U.S. Government (2018); Williamson and Bawa (2018). Notes. [1] These estimates do not include payroll tax paid through off-farm employment. [2] In France, payments for mandatory social safety net programs are made through a self-employed payroll tax while in the U.S. they are made through a self-employment and federal income tax. [3] We calculated percent of U.S. farm household federal income spent on social safety net programs by using the average farm household income tax rate (16.8% from Williamson and Bawa, 2018) and ratios spent on different budget lines at the federal level, where 29.6% of federal income tax is spent on medical and health care programs and 13.4% of federal tax income is spent on job and family security programs (National Priorities Project, 2019; U.S. Government, 2018). [4] Percent varies based on income. [5] On net farm

income 5,126 € and over. [6] Cost varies based on riskiness of commodity produced. [7] Calculated mid-point values for range.

2.5. Factors that might enable or hinder farm households' use of social safety net programs

Building on the insights gained from the document review into the structure of the French and U.S. social safety nets for farm households, we now examine and discuss four factors that may enable, or hinder, farm households use of social safety net programs. These factors are: (1) the importance of the user's experience and administration of the programs, (2) program eligibility, benefit levels, and farm income, (3) cost of the social safety net and cost saving strategies, (4) universal vs. means-based programs: social controls and sunk costs. To identify these factors, we synthesize the comparison of the two systems with insights into social safety nets gleaned from the family farm literature summarized in section 2.1.

2.5.1. Importance of the user's experience and administration of the programs

Farm households' experiences and ability to claim social safety net benefits is shaped by the administration of the social safety net programs. France and the U.S. provide insights into two very different ways of administering social benefits. France has streamlined access to its system over the years resulting in French farm households interacting with one organization, the MSA, for all mandatory programs. By contrast, access to the U.S.

system is complex due to the need to interact with several organizations, including federal, state and local county agencies, private insurance companies, and financial establishments. The maze of programs and different organizations and agencies combined with diffuse sources of information likely make it difficult for U.S. farm households to fully understand all the programs and eligibility criteria. The increased reliance on the internet in recent years points to the importance of considering the ways the move to paperless administration is impacting farm households. In France, farm households are encouraged to use the MSA website to pay for contribution and apply for benefits while in the U.S., the purchase of mandatory health insurance coverage is mostly done through on-line insurance marketplaces. In particular, we do not know the ways in which an aging farm population that may have lower internet literacy skills and that may live in remote areas with poor internet connections may create structural barriers to use and access social safety net programs.

2.5.2. Program eligibility, benefit levels, and farm income

The French and U.S. cases point to the fact that the eligibility for and level of benefits based on farm income can place farm households at a disadvantage. This is largely due to the seasonal fluctuating nature of farm income and that farm incomes that can be at times high, low, or negative depending on market conditions. Based on our document review, farm households are affected in two main ways. First, the provision of social support through tax credits means that a net loss reduces earned income, effectively reducing tax credit eligibility (Internal Revenue Service, 2019b). In 2017, a little over half of U.S.

farm households reported a net loss (U.S. Department of Agriculture, 2017a). However, it is important to note that this figure includes all farms with farm sales of at least 910€ meaning that it includes farm households for which the farm operation is not their main source of income. Second, retirement benefits are calculated based on net farm income and the average retirement pensions in the two countries are low. As found in previous studies farmers often require and rely on other income sources later in their life-course to supplement farm based retirement pensions (Contzen et al., 2016; Gaté & Latruffe, 2016; Mishra et al., 2005; Ouellet & Perrier, 2018). For example, in France Daucé (2015) highlighted that farmers' monthly pensions averaged 750€ compared to 1,200€ for the general population[8].

While farmers are generally seen as a group that never wants to retire, the reality is much more complicated and nuanced with retirement decisions linked to social safety nets and physical abilities (Conway et al., 2016; Kirkpatrick, 2012; Mitchell et al., 2008). The topic of retirement generates questions about the degree to which older farm households have access to sufficient resources (including through the social safety net) to meet their social needs and how social needs at this stage of the life course interact with farm transition. Previous research established a link between inadequate retirement income and delayed farm transition, this has direct implications for land access for both young and beginning farmers (Mishra et al., 2010; Whitehead et al., 2012). This is

[8] Besides lower average income, the difference in retirement benefits between farmers and the general population in France is also partially due to the formula used to calculate pensions. The general population calculates retirement benefits based on the 25 highest income years, whereas farmers calculate it based on their entire careers, including the earlier years when they are getting established and their later years when they are winding down their activities (MSA, 2014).

particularly the case if the older generation is holding onto land or pricing the land higher in order to cover living and health expenses (Ouellet & Perrier, 2018).

2.5.3. Cost of the social safety net and cost saving strategies

The value of social safety nets to farm households is a subjective measure, and the financial costs and expense of these programs is a relative measure based on a household's overall income and wealth. The baseline, and albeit rough, estimates of mandatary social safety net payments at the national level range between 23.1% of net farm income in the U.S. to 37.3% in France. Beyond mandatory tax payments, both French and U.S. farm households have additional expenses. In France, these includes retirement savings, either supplemental health insurance plans, and health care co-pays. In the U.S., these include health insurance payments to the private sector and/or through off-farm employment (if they are not eligible for a public plan), health care co-pays, workers' compensation, and retirement savings. The cost of social safety net programs through mandatory tax payments may be challenging for lower income farm households. In the midst of a commodity price crisis in the mid-2010s, French farmers' unions called on the government to reduce the level of social safety net taxes to not only relieve farmers' financial burden but to level the playing field with other European farmers whose social safety net payments are lower (Masson, 2016). In the U.S., research on health insurance has highlighted the difficulties due to high health insurance payments to the private sector though little is known about the perceived weight of the tax payments associated with social safety net programs (Chang et al., 2011; Inwood et al., 2018;

Lottero et al., 2007; Mishra et al., 2012). To lower their tax payments farmers may use cost saving strategies. For example, in France and in the U.S., these strategies have included not paying a spouse (most often a woman) for their work on the farm, choosing a professional category for their spouse that has limited access to social safety nets, or reducing farm income through authorized farm expenses (MSA, 2012; Social Security Administration, 2005; Winter & Volker, 2002). This approach was also discussed by Contzen (2019) whereas some Swiss farm men choose a lower administrative status for their wives as a cost savings tactic. While these strategies are not illegal and can free up income for household consumption and farm investments in the short term, they may unintentionally have long-term negative impacts especially for women by increasing their dependence on their spouses and by creating economic vulnerability in later years due to lower retirement pensions.

2.5.4. Universal vs. targeted programs: social controls and sunk costs

Welfare stigma at the individual and community level has been widely documented as a deterrent limiting farm household use of social safety net programs (Brangeon & Jégouzo, 1995; Contzen & Crettaz, 2019; Deville, 2015; Gundersen & Offutt, 2005; Inwood, 2017). The comparison of France and the U.S. highlights and raises new questions about how program eligibility criteria (universal vs. targeted) may influence the use of social safety net programs. In the U.S., most of the programs are targeted based on income while in France most of the programs are universal. On one hand, universality of programs might reduce stigma and encourage use. However, as Deville (2015) discusses,

there are stigmas around poverty relieving programs in France, as these programs point to personal failure. Even if programs are available and households are eligible, accessing them may not be socially acceptable. At the same time, the fact that most of France's programs are universal bring up questions about whether farm households are more inclined to make full use of the benefits that they are eligible for because they may see their tax payments as sunk costs. Indeed, Swiss scholar Stefan Mann (2007) has argued for the importance of universality to increase farmers' use of programs.

2.6. Setting a farm household social support new research agenda

Our document review and comparison between France and the U.S. raise more questions than we have answers for and calls for a new research agenda at the intersection of the family farm and social policy literatures. One set of questions that emerges is connected to the mechanics of the social safety net programs and the ways farmers interact with these programs. The other set of questions connects to larger sociological farm persistence questions we introduced at the beginning of the article.

Considering the mechanics of and interaction of farm households with the social safety net, the factors we identify as impacting access and use of social safety net programs point to the importance of considering the ways in which the organization and administration of these programs shape their use. Digging deeper into this issue would complement and expand previous work that has identified the underuse of safety net programs due to individual factors such as the ability to take time off work and cultural factors such as welfare stigma (Brangeon & Jégouzo, 1995; Contzen & Crettaz, 2019;

Deville, 2015; Gundersen & Offutt, 2005; Inwood, 2017; Mann, 2005). While understanding the availability and access to social safety net programs is a first step, research should build on existing work to further assess program acceptability and the extent to which ideologies and social norms influence farmers' use of social safety net programs, and how farmers are similar to and different from the general population. For instance, this includes an understanding of the difference in acceptability and use of programs based on the modes of administration such as targeted vs. universal poverty relieving programs. Additionally, analyzing larger and more representative samples with quantitative research methods could be used to triangulate previous studies based on smaller quantitative and/or qualitative datasets (Brangeon & Jégouzo, 1995; Contzen & Crettaz, 2019; Deville, 2015; Gundersen & Offutt, 2005; Inwood, 2017; Mann, 2005, 2007).

As businesses owners, farmers have both gross and net farm income that can be combined with non-farm income to determine overall household income. Mann (2005) has called on the use of the tax code through negative taxes or refundable tax credits as a potential solution to make applying for social safety net programs less stigmatizing and less cumbersome. Meanwhile, our document analysis of the U.S. points to how a net loss reduces benefit levels based on taxable income (Internal Revenue Service, 2019b). Therefore, we need to better understand how farm family diverse income sources along with farm income fluctuations, and negative farm income impact social safety net program eligibility and benefit levels. These aspects are particularly important to understand when devising social and economic policies to strengthen and support the

farm sector. There is also a critical need to understand the short- and long-term implications of cost saving strategies discussed in section 5.3 which include not paying spouse for farm work or decreasing net income through farm investments. (Contzen, 2019; MSA, 2012; Social Security Administration, 2005; Winter & Volker, 2002). Our document analysis focused only on mandatory government social safety net programs and provides a limited review of the full set of programs available to farmers in both France and the U.S. Civil society organizations such as nonprofits, extension services, and farmers' unions in the two countries and employment-based benefits in the U.S. play an important role in formally and informally supporting the farm sector. The role of these programs and their intersection with mandatory social safety net programs needs to be further probed and analyzed in future research.

We opened this article by posing the question: what are the links between social needs, social policy, and support in the farm sector? This question is part of the larger sociological research tradition examining farm persistence. Expanding investigations into the social needs of farmers and farm families in the 21st Century requires us to consider the diversity and heterogeneity of the farm population. This includes considering variations based on household characteristics (i.e. income level, education, age, gender, health status, number and age of children), farm characteristics (i.e. farm scale, farm income, commodities produced, presence of an heir), variations of household livelihood strategies along the life course and business cycle, and household and farm operation goals. Additionally, the use of a cross-national comparative approach in a diversity of social policy environments is essential for building our understanding of the role of social

safety nets in the agricultural sector. We see many opportunities to do this work. First, the framework of institutionalized social support we developed through the cross-national comparative document analysis (and which we summarize in section 2.7) should be broad enough to be adapted for empirical research in other social policy environments lending itself to further comparisons of findings from additional studies. Second, panel sessions during international meetings provide opportunities to develop new networks and to think through research questions and approaches that can be replicated and compared across countries. Researchers in the E.U. are uniquely positioned to develop initial protocols and research programs given the broader acceptance of social safety net programs in Europe, diverse range of social policy arrangements across the continent, and the availability of funding specifically targeted for research collaborations across European countries. Outside of Europe, securing funding for international research travel and collaborations can be a challenge however, on-line research tools and low-cost telecommunications reduces barriers while expanding novel opportunities available to researchers

2.7. Conclusion

Although it is broadly recognized that difficulties experienced by farm households such as lack of income or a health crisis can have broad rippling effects on the farm operation, surprisingly little is known about how farm households meet their personal needs and the extent to which social safety net programs play a role in supporting farm persistence. Using a cross-national comparative approach of two countries on the opposite sides of the social policy continuum, this article: (1) provides a foundational framework of

institutionalized social supports to be used in future empirical work, (2) identifies factors that may influence a farm households' use of social safety net programs, and (3) proposes a research agenda to move the family farm literature forward.

Our cross-national comparison of France and U.S. social policy considers the type of social safety net programs organized in four main groups (health, workers' compensation, retirement, and family), type of benefits (in-kind through the provision of goods and services, cash through unconditional cash transfer, tax credits or deductions, or mix of in-kind and cash benefit), eligibility criteria (universal or targeted), administration of programs (agencies that administer programs and application process such as on-line or in-person), and the cost to farm households. This framework provides a useful baseline for understanding the role of mandated social welfare benefits and is broad enough to be adapted for future empirical research initiatives examining in other social policy environments. The use of a common analytical framework provides an opportunity for scholars to build a body of knowledge that untangles the heterogenous ways in which different types of social policy intersect with farm development and farm persistence.

Coupling our document analysis of French and U.S. social safety nets with the family farm literature led us to identify factors that may affect farm households' use of social safety net programs. We found the pattern of administration may be an especially important variable as it actively shapes the users' experience when looking for information about and applying for programs and ultimately impacts program use. In trying to examine the cost of the social safety net to the farm household and potential strategies to reduce tax payments, the intersection of program eligibility and farm

income, and the connections between social controls and sunk cost as the result of variations in eligibility criteria (targeted vs. universal), we found the limited literature available underscores how little we understand about the ways farm households use and think about social safety net programs or how these programs do or do not affect farm persistence. These questions lay the foundation for a new research agenda that blends the family farm and social policy literature.

By providing a framework for researching social needs and social policy in the farm sector and pushing these issues to the forefront, this article contributes to the literature in at least three ways. First, the majority of research examining factors influencing family farms tends to either focus on agricultural policies or informal support systems such as the family and the community. We broaden this line of inquiry by considering formal social supports provided through social policy. Second, the farm persistence and farm resilience bodies have largely left internal household dynamics unexplored (Inwood, 2013; Lobao & Meyer, 2001). This article contributes to scholarly arguments for considering how household level issues along the life course, including the difficulties experienced meeting social needs, affect both the farm family and farm enterprise (Ahearn, 2011; Becot & Inwood, 2019; Inwood, 2013). Third, this article provides an opportunity to reframe and expand farm resilience and persistence research which tends to primarily focus on individual level farm operation and farmer characteristics. While these literature recognize larger societal factors at play, this current approach results in a paradigm where farm success or failure may be seen only as a reflection of the skill and decisions made by the individual operator (Gillespie &

Johnson, 2010). In contrast our article emphasizes the need to account for the larger systems farmers and farm families are embedded in, and we invite farm resilience and farm persistence scholars to expand their approach by empirically considering the broader role social, economic, and political institutions play in supporting farm households, farm persistence, and farm resilience. We hope this article provides a base from which future researchers can build more holistic understandings and assessments of the complex and multi-dimensional factors that support the social and economic well-being of farm households and their resilience.

Chapter 3 - Interactions between farm household level issues, social safety nets, and farm persistence: The example of health needs and health policy along the farm family life course in the United States

Abstract

Rural studies scholars have a long tradition of studying the interactions between the family life course and the business cycle in agriculture. However, most studies that account for differences across age groups and interdependence across generations tend to focus on the difficulties connected to the farm operation and on the reproduction of the farm operation. In this article, we expand the family farm literature by using the example of health policy and access to health care in the United State (U.S.) to consider how household level issues impact the reproduction of both the farm household and operation as well as to consider the role that health policy, a major component of social policy in Western industrialized countries, may play in supporting the farm sector. In particular, we draw from a nationally representative survey of farm households and a conceptual framework based on the merging of the life course approach in the health and family farm bodies of literature. Our findings provide evidence that household level issues, such as difficulties accessing health insurance and health care, can impact farm households of any age and can negatively impact the farm operation. At the same time, the disaggregation of data by age groups shows the variations in how farm individuals and households meet their social needs and variations in trade-offs between household consumption, savings, and farm investments. Speaking to the role that health policy may play in supporting households and farm operations, some of the biggest differences were

between households under and over 65 (i.e. the age threshold for old-age universal coverage) with older households reporting less difficulties meeting their needs and more satisfaction with coverage. Last, the biggest barriers to health care across age groups were connected to factors that farm households have little control over. This finding points to the importance of more widely adopting a political economy perspective to explicitly consider how the organization and administration of health and more broadly social support systems shape the ability and desire of farm households to meet health needs.

Keywords

Farm persistence – Household level issues - Health care – Health policy – Life course

3.1. Introduction

Rural studies scholars have a long tradition of studying the interactions between the family life course and the business cycle in agriculture. These scholars have shown both the relationships and variations overtime between farm household members' age and household composition on capital accumulation, farm size, and household income (see for example: Bennett and Kohl (1982); Chayanov (1966); Contzen et al. (2016); Inwood et al. (2013)). Most studies that account for differences across age groups and interdependence across generations in agriculture, in addition to fisheries, tend to focus on the reproduction of the farm operation and address issues such as asset accumulation and enterprise growth, retirement, farm transitions, or farmer identity formation (for example Contzen et al. (2016); Gale (1994); Gustavsson and Riley (2018); Inwood et al.

(2013); Inwood and Sharp (2012); Villa (1999)). Less is known about how household level issues and internal household dynamics impact the reproduction of the farm household and operation (Ahearn, 2011; Inwood, 2013; Rissing, 2019). This includes a lack of understanding of the ways in which farm individuals and households meet their social needs such as health, maternity, or adequate income and the ways in which negative compounding effects associated with difficulties experienced earlier on in life may impact farm household and farm operation development overtime and ultimately farm persistence.

Connected to farm individuals' and households' ability to meet their social needs is the access to social safety net programs such as health insurance or retirement pensions. While social safety nets have been in place for decades in Western industrialized countries, our understanding of the role of social policy in the farm sector is relatively limited. This includes little understanding of the extent to which social safety nets might bolster farm households at different points along the life course (Becot & Inwood, Under Review; Gundersen & Offutt, 2005; Michard, 2004; Pagès, 2013). Studies that touch on the role of social safety nets tend to focus on stages later in life with a discussion of retirement pensions (for example: Contzen et al. (2016) and Conway et al. (2017)). Studies on poverty have focused on the lived realties of the farm households whereas considerations of the role played by social safety nets has somewhat been tangential (for example: Contzen and Crettaz (2019) and Roche (2016)). However, studying the impact of agricultural policies and liberalization of markets on farmers' well-being, Droz et al. (2014) provided some evidence of the protective role of more

comprehensive social policies to bolster the health of farm households and the capacity of farm operations to face major structural pressures.

In this article, we draw from a nationally representative survey of United States (U.S.) farm households and a conceptual framework based on the merging of the life course approach in the health and family farm bodies of literature to assess: (1) differences in health needs, access to health insurance and access to health care across age groups and (2) the extent to which health issues impact the farm operation differently as they age. By using the example of one social need (health), a major component of social policy (health policy through health insurance) and the life course approach to consider the interactions between personal and professional spheres on one hand and the role of social safety nets in the agricultural sector on the other hand, we provide theoretical insights into the family farm literature. In particular, the focus on the U.S. provides an extreme (or deviant) case study because compared to most Western industrialized country, the U.S. has a limited social safety net and does not provide universal health insurance coverage to all. The use of an extreme case is useful because it enables us to more clearly identify patterns to ultimately work towards greater theorizing of the interactions between farm households' social needs and farm persistence (Patton, 2002; Yin, 2014). Furthermore, we provide empirical insights in how U.S. farm households access health care and health insurance in the early years of implementation of a major health care reform the 2010 Patient Protection and Affordable Care Act (ACA).

Building our understanding of the interaction between social needs, social safety nets, and farm persistence is timely. On one hand, shifts in international trade agreements, such as the recent re-negotiations of the North American Trade Agreement (NAFTA) or the potential withdrawal of the United Kingdom from the European Union, are expected to reshape the agricultural subsidy structures of impacted countries. On the other hand, demographic shifts due the aging of the population, welfare state retrenchment, and state rescaling are likely impacting the social policy structure of many western industrialized countries. The role of social safety nets, including health policy, to support well-being are particularly relevant for both the farm population and broader rural population as these issues are directly connected to rural development.

Our article is outlined as follow. First, we provide background on our case by highlighting the most salient aspects of the U.S health insurance and health care systems, discussing previous literature on access to health insurance and health care among the U.S. farm population, the challenges they experience, and variations across age groups. We then present our conceptual framework which is based on the merging of the life course approach in the health and family farm literatures before we present our empirical case. We end with theoretical implications of our work and propose avenues for future research.

3.2. Access to health insurance and health care among the U.S. farm population

The U.S. health insurance and health care systems are complex, and, in this section, we provide background for the most salient aspects. Interested readers can refer to Field

(2017) and Rice et al. (2013) for a general overview of the U.S. system and Ahearn et al. (2015) and Inwood (2017) for background on how the 2010 major health insurance reform impacts the farm sector. The U.S. health systems are based on a hybrid model whereas health insurance and health care are provided by private, non-profit, and public sector actors. Federal and state governments provide general oversight on procedures and drugs allowed, health care practitioners and facilities, and insurance providers. Meanwhile insurance providers, including state and federal governments (for public plans) and private insurance companies (for plans through off-farm employment or purchased directly from a private company), determine which health providers their insured can use along with the rate of reimbursement for procedures and drugs. In other words, the source of health insurance and type of coverage likely heavily shape individuals' access to health care. The U.S. does not have universal coverage for all and broadly speaking, source and cost of health insurance vary based on age, income, employment, and marital status. Looking at public plans, universal coverage begins at age 65 (Medicare). Otherwise, public coverage is targeted and available on the condition of income (Medicaid for adults and the Children Health Insurance Program (CHIP) for children), disability (Medicare), or military service (TRICARE). If above the means-test used for Medicaid, a tax credit to offset the purchase of a private health insurance plan may also be available.

Among the farm population, 92% of farm households had health insurance coverage in 2016 and the most common sources of coverage were through off-farm employment (about half of farm households had coverage that way), government

sponsored plans (39%), and direct purchase of private policy (29%) (Inwood et al., 2018)[9]. The source of health insurance within a household changes over the life course since eligibility for coverage is often based on criteria that change (i.e. age, income, employment, or marital status). Additionally, farm households may have coverage from multiple sources at any given time explaining why the sum of health insurance coverage above is greater than 100%. In 2016, one third of farm families had more than one source of coverage which likely leads to complicated arrangements that take time and knowledge to navigate (Inwood et al., 2018). Previous research on farmers' access to health care have pointed to challenges associated with the inability to take time-off from the farm operation, reticence to seeking care, distance to travel to health care provider, lack of health insurance, and cost (Adaire Jones et al., 2009; Earle-Richardson et al., 2015; Inwood, 2017; Lottero et al., 2007).

The way health care and health insurance systems are organized in the U.S. is challenging. Farmers have ranked the rising costs of health insurance and health care as threats to their livelihood (Chang et al., 2011; Inwood, 2015; Lottero et al., 2007). For example, in 2015, 11 per cent of U.S. farm households did not have health insurance while farm households (with and without health insurance) spent on average $5,019 per year in health insurance and health care expenses (U.S. Department of Agriculture, 2016b). In a study pre-ACA, 41 per cent of farm households in Midwestern states experienced financial hardship due to health related expenses while 18 per cent had

[9] As a note to the reader, this article draws from the same dataset than the descriptive statistics reported in Inwood et al. (2018).

medical debts (Pryor et al., 2008, 2009). Farm households' health insurance premiums tended to be higher than the general population pre-ACA due in part to the risky nature of agriculture and the older average age of the farm population (Mishra et al., 2012; Whitaker & Slesinger, 2002). Besides difficulties experienced by the households, previous research has pointed to negative impacts on the farm operation. The reliance on off-farm employment to obtain health insurance reduces labor availability on the farm operation and can be an added source of stress, health insurance and health care costs reduce financial resources for farm development, and lack or inadequate health insurance coverage can lead to early farm exits and bankruptcies (Ahearn et al., 2013; Bharadwaj et al., 2013; Chang et al., 2011; Inwood, 2015; Inwood et al., 2018; Lottero et al., 2007).

Our understanding of the differences in health insurance and health care access along the life course is limited. Indeed, studies using primary data might not have had sufficient observations to compare across age groups while previous studies drawing on larger U.S. Department of Agriculture (USDA) datasets have removed households over 65 as these households are eligible for universal coverage (for example Ahearn et al. (2013), El-Osta (2015), and Mishra et al. (2012)). The exclusion of these older households means that previous studies have missed opportunities to assess how health insurance and health care issues might dovetail with old age care, retirement, and farm transition issues as well as the role that universal health insurance coverage might play. Furthermore, Inwood (2017) provided evidence that attitudes and behaviors regarding health care and health insurance vary across the life course. In particular, younger farmers had higher opinions of the ACA and perceived positive benefits compared to

older age groups which may speak to greater financial vulnerability of the younger households.

3.3. Conceptual framework: The life course approach

To understand farm households' health care needs and the interactions between health insurance, health care access and farm persistence along the life course, we draw on a conceptual framework based on the merging of the complementary use of the life course approach in two bodies of literature. First, the health literature to account for varying health care needs and social inequalities along the life course. Second, the family farm literature to account for the variations in the development of the farm household and farm business cycle, and the interactions between the two. The merging of the health and family farm literature through their common use of the life course approach therefore provides a more holistic picture and provides an opportunity to address some of the limitations within these bodies of literature. Namely, limited consideration of the interactions between the personal and professional spheres in the health literature and limited consideration of issues within the personal sphere in the family farm literature.

While the life course approach could be seen as outdated due to the increased fluidity of individual and family life courses and farm development stages, this approach remains a useful exploratory conceptual framework for several reasons. The age of farmers has overall remained associated with the development of the farm operation (Burton, 2006; El-Osta & Morehart, 2009; Tauer, 2017; Zagata & Sutherland, 2015). The biological needs of individuals and health care needs along the life course have changed

little overtime and, in the U.S., age is associated with the type and cost of health insurance coverage.

In the reminder of this section we first provide a short overview of the use of the life course approach in the health and family farm literatures. Second, we draw from the health literature to understand the health needs of farm families as health needs are directly connected to health care and health insurance use. Last, we draw from the farm literature to understand the overlaps between the business development phases and the family development stages. The understanding of how the two overlap provides insights into variations in wealth accumulation, differences in financial vulnerability, and the trade-offs surrounding access to health insurance and health care that households might have to make.

3.3.1. The use of the life course approach by health and family farm scholars

Health scholars have used a life course approach to understand how present health outcomes are influenced by the past. To do so, they consider how individuals' age, health needs, relationships with individuals in their social networks and the interdependencies with these individuals, life transitions, individuals' agency, and structural contexts shape health outcomes. Researchers have pointed to the link between the lack of financial resources which limit access to care at one point along the life course with the compounding negative effects on health outcomes and asset accumulation in later years. Inversely, health issues can negatively affect the long-term financial trajectory of a household (Burton-Jeangros et al., 2015; Conger & Elder Jr, 1994; Missinne et al., 2014;

Willson et al., 2007). While recognizing variations in health trajectories among individuals and the inherent unpredictability of illnesses and injuries, health scholars tend to breakout individual's life course in three distinctive periods: (1) childhood and adolescence, (2) adulthood often starting at the age of majority, and (3) old age often starting at eligibility for retirement benefits (Burton-Jeangros et al., 2015; Kirby, 2009; Russell & Rice, 2009). The unpredictability of health needs is particularly important to highlight for the farm population. Agriculture is both one of the most dangerous and stressful occupations (Centers for Disease Control and Prevention, 2014; Fraser et al., 2005).

In a parallel approach, family farm scholars have used a life course approach, also sometimes referred to as demographic differentiation, to understand how age, family composition and the juxtapositions of the development cycles of both the farm household and farm operation shape the farm operation and ultimately farm persistence (Barlett, 1993; Bennett & Kohl, 1982; Chayanov, 1966; Contzen et al., 2016; Gale, 1994). These scholars have highlighted the constant changes taking place within the personal and professional spheres including periods of competition between the consumption and development needs of the farm household against the investment and labor needs of the farm operation. For example, within the personal sphere this includes the need for income to pay for health insurance and the need for household labor for childrearing. Within the professional sphere, this includes the need for income to purchase equipment and the need for household labor to work on the farm. These periods of competition often lead to trade-offs whereas farm individuals' and households' decisions are shaped by the goals of

the household and operation as well as by values and external constraints (Bennett & Kohl, 1982; Gale, 1994; Inwood & Sharp, 2012; Reinhardt & Barlett, 1989; Salamon, 1992; Smithers & Johnson, 2004). Family farm scholars have pointed to three to four distinctive periods in the farm business cycle: (1) entry/establishment, (2) growth/ survival, and (3) disinvestment/redevelopment (Bennett & Kohl, 1982; Boehlje, 1973; Gale, 1994; Smithers & Johnson, 2004).

3.3.2. Health needs and health care use along the life course

Using the three life periods of the health literature, we now highlight health needs and health care use, whereas health care use is often used as a proxy of health needs[10]. Health care use is heavy during childhood due to the recommended checkups and vaccinations before it tapers off in adolescence (Drew, 2009; Kirby, 2009). The financial vulnerability of young parents might mean that children do not receive the recommended care. However, Inwood (2017) found that low-income farm households prioritized the health needs of their children over theirs. Last, while praised by some to raise children, the farm environment is a dangerous place. Injuries and illnesses due to machinery, chemicals, or large animals often require professional care (Riedler et al., 2001; Von Mutius & Vercelli, 2010; Wright et al., 2013).

Young adults have the lowest rate of health care use of any age and they tend to be healthiest group. Health care use increases for men and women in their 40s and 50s

[10] For a longer discussion of health care needs along the life course, see: Drew (2009); Kirby (2009); Russell and Rice (2009).

(Kirby, 2009). For women of childbearing years, pregnancies are associated with an increase in health care use and expenses (Kirby, 2009). Using the example of a large Midwest city in 2018, a vaginal birth with minimal intervention is billed on average $7,673 if the provider is in the insurance network and $13,504 if the provider is not (estimate from FairHealthConsumer.org). However, the price that women actually pay varies based on whether they have health insurance, the type of coverage, and the insurance's reimbursement rate.

Health care use is concentrated in old age (Russell & Rice, 2009). For older farmers, their health care needs can be exacerbated by the wear and tear on the body of agricultural work (Chang et al., 2011). Compared to other age groups, adults over 65 have access to universal health insurance which eases access to care and reduce the cost. Indeed, Inwood (2017) found that some farmers specifically waited until they were eligible for Medicare to seek care for known health issues.

3.3.3. Interactions between the farm household and the farm operation

Using the three phases of business development from the family farm literature, we now describe the overlaps between the farm household life cycles and farm operation business stages. Because, the body of literature that specifically speaks to the overlap between the professional and personal sphere is limited and dated, we also draw on the beginning farmers and farm succession literatures to expand and update our understanding.

Traditionally, the entry/establishment phase of the farm operation occurred early on in the adult life of farm operators[11]. This phase tends to be associated with intense competition for time and capital for the establishment and growth of both the household and the operation (Bennett & Kohl, 1982; Gale, 1994; Geller et al., 1988; Heffernan & Heffernan, 1986; Inwood & Stengel, In Press; Katchova & Ahearn, 2017). Young beginning farm households tend to be more financially vulnerable than other households due to their aggressive approach to farm development, higher living expenses, and lower amounts of savings (Gale, 1994; Heffernan & Heffernan, 1986; Lasley & Conger, 1986; Mishra et al., 2002; Moran, 1988; Zagata & Sutherland, 2015). The high cost of childbirth in the U.S. also brings up questions about the reproduction of farm households. At the same time, the financial vulnerability of these younger households might be mediated by three factors including young farmers operating farms that are more economically robust than older farmers (Zagata & Sutherland, 2015), the reliance on off-farm employment for income and health insurance benefits (Ahearn, 2011), and the intergenerational linkages whereas older generations may provide financial support, work on the farm, and/or provide childcare (Contzen et al., 2016; Inwood et al., 2013; Inwood & Stengel, In Press).

[11] Bruce (2019) and Zagata and Sutherland (2015) have shown that it is no longer adequate to assume that beginning farmers are young. For example, 30 per cent of U.S. beginning farmers are 55 years old or more (U.S. Department of Agriculture, 2017a). Because the focus of this article is on health and our conceptual framework is based on the life course, we focus the entry/establishment phase for young new entrants in this article. Future research considering health issue differences based on farm operation characteristics such as new entrants vs. established farmers should account for the differences between young and older entrants. For example, older new entrants tend to come into agriculture with more financial resources than younger entrants. At the same time, they tend to establish smaller operations and are less likely to expand it (Katchova & Ahearn, 2016).

The growth/survival phase tends to occur when farm operators are in their middle age. The size of the farm operation tends to peak in the late 40s-early 50s coinciding with children entering their late teenage-early adult years (Gale, 1994; Tauer, 2017). This phase is likely to be the least vulnerable because, compared to other age groups, middle age farm households tend to have the highest household income and rates of savings as well as the lowest on-farm investment and reduced household consumption needs (Bennett & Kohl, 1982; El-Osta & Morehart, 2009; Gale, 1994; Mishra et al., 2002). While the need for off-farm employment tends to decrease when the farm scale has reach the desired scale, it still often remains an important source of household income and health insurance (Bharadwaj et al., 2013; Chang et al., 2011; Inwood et al., 2018; Zheng & Zimmer, 2008).

The disinvestment or redevelopment phases tend to occur in the older years and might continue past eligibility for retirement benefits (Conway et al., 2016; Potter & Lobley, 1996). The choice to disinvest or redevelop is shaped by multiple factors including the financial viability of the farm operation, retirement pensions and savings, the number of children, and the desire of the young and older generations to continue farming (Contzen et al., 2016; Conway et al., 2017; Inwood & Sharp, 2012; Potter & Lobley, 1996; Villa, 1999). Household consumption is the lowest in the later years, but older farmers may still be financially vulnerable depending on the level of retirement pensions, savings, and needs of younger generations (Contzen et al., 2016; Mishra et al., 2002; Moran, 1988). During the disinvestment phase, the financial demands from the farm operation might be limited to input expenses if loans have been paid off (Gale,

1994; Mishra et al., 2005; Mishra et al., 2010; Moran, 1988). Investments for the redevelopment phase might be made using savings or financed through the new generation. While tangentially discussed in the literature, health issues associated with aging and reduced physical ability influence management decisions and might negatively impact the financial viability of the farm and intergenerational financial arrangements (Burton, 2006; Chang et al., 2011; Contzen et al., 2016).

3.4. Data and methods

3.4.1. Research design and data collection

To answer our research questions (*What are the differences in health needs, access to health insurance and access to health care across age groups? To what extent do health issues impact the farm operation differently as they age?*), we used data from a closed ended survey. Designed using several bodies of literature (access to health insurance and health care with a focus on rural areas, health literacy, and farm business development) and key informant interviews from the early stage of the project, the instrument included questions on basic personal and household demographics, farm operation characteristics, general health condition, use of health care, health insurance coverage, access to information, and farm planning and management. The data for this article come from a larger national study that aims to understand how health insurance affects economic development and quality of life in the agriculture sector. The research protocol was determined to be exempt from review by the University of Vermont ethics committee.

A random sample of farm households in 10 case study states across the U.S. was drawn. The case study states (California, Kentucky, Massachusetts, Michigan, Mississippi, Nebraska, Pennsylvania, Utah, Vermont, and Washington State) were chosen based on regional and production variations and health insurance policy environments (figure 3-1). More specifically, the production variations were based on the four USDA regions (Northeast, North Central, South, West). The health policy variations were based on pairing states in each region that have expanded Medicaid through the ACA with states that have not except in the Northeast region.

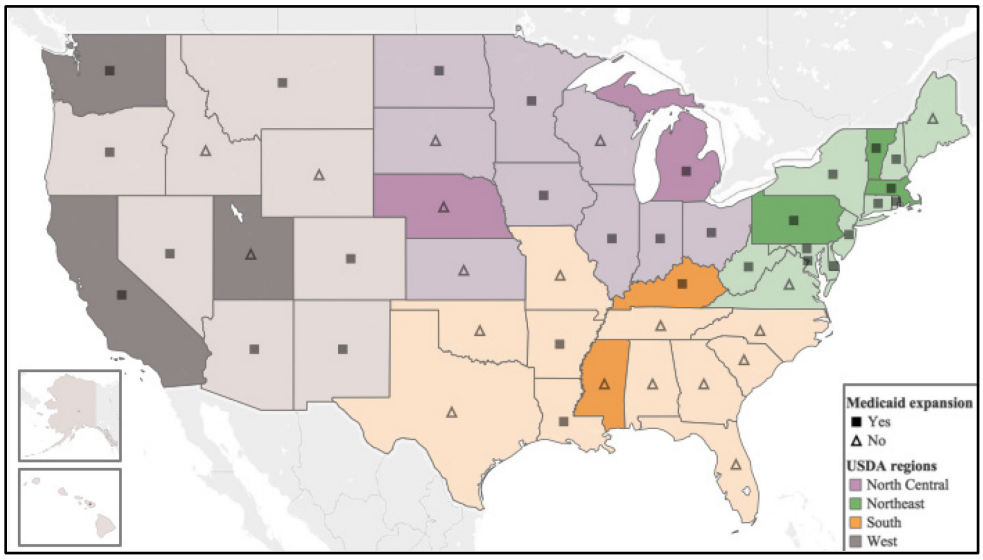

Figure 3-1. Study states based on health policy environment (as of 2016) and production variations

Survey data were collected using a mixed mode (mail and internet) tailored design method (Dillman et al., 2014). Between February and April 2017, advanced letters, multiple mailing and emailing of the survey instruments, and reminder were sent to a purchased list of 10,165 randomly selected farm households in the study states. The

survey letter asked that the household member with the most knowledge about health insurance fill out the survey. To track responses and prevent duplicates, unique token number were assigned to each household. Paper surveys were entered by a team of research assistants and merged with online surveys. Quality control checks were conducted at several points during the data entry and merging processes and included checking for duplicate responses and accurate data entry. A total of 1,292 completed surveys were received.

To ensure that the sample is representative of the national farm population, we used a farm sales probability weight using the survey farm sales variable and the proportion of the U.S. farm population in each of the farm sale categories based on the census of agriculture (U.S. Department of Agriculture, 2012). Because of missing values to the farm sales question, our data analysis is based on a sample of 1,064.

3.4.2. Analytical strategy

Age is widely accepted as an indicator of the influence of life-cycle factors on decision-making and has extensively been used to represent the stages of farm development (Burton, 2006). To assess these variations along the life course, we divided the sample into four age groups (under 35, 35 to 50, 51 to 64, and 65 and over) based on the age of the survey respondent. We chose the age groups based on family and farm business development stages and based on health policy. Thirty-five is the age used by the USDA to define young farmers and early fifties is on average when the farm scale is the largest (Gale, 1994; Tauer, 2017). The first age group should capture households that are in the

early stages of the family and business cycle. Indeed, in this sample 93 per cent of the beginning farmers are under 35. The two middle age groups should capture farm households with children that are likely still in the household and should capture farm households that are transitioning from the entry/establishment phase to the growth/ survival. Eligibility for health insurance coverage starts at 65 and the last group should capture farm operations in the disinvestment/redevelopment phase. As Burton (2006) argued, the use of the age of one household member for the age grouping has limitations. Future research should account for the age of the other household members to gage the family development cycle more precisely.

We conducted bivariate analysis to assess differences across age groups using Chi-square and ANOVA tests. To ensure at least five responses per cells, we collapsed ordinal and categorical variables when necessary. Since we used population weights, we report the design-based F statistics and p-value for categorical variables based on the Rao-Scott correction (Rao & Scott, 1981). Significance levels are reported at the 0.05, 0.01, and 0.001 levels. We also report the Bonferroni corrections for the post-hoc analysis to provide statistical significance across age groups.

The use of cross-sectional data is a limitation of our study because it hinders our ability to track change within the same household overtime and to assess compounding effects of difficulties accessing health care and health insurance over the life course. The lack of longitudinal data on the farm population in the U.S. has long been a limitation (Chang et al., 2011; Jackson-Smith, 1999) and our study is an incomplete, yet important

first step towards a greater understanding of the realities of farm households of different age groups.

3.4.3. Farm households in the sample

Survey respondents were on average 60 years old (two years older than the U.S. farm population) whereas 3 per cent were under 35, 15 per cent were 35 to 50 years old, 46 per cent were 51 to 64 years old, and 37 per cent were 65 and over (U.S. Department of Agriculture, 2017a) (table 3-1). Twenty-one percent of all households had children under 18 and reflecting the family development cycle, the proportion of households with children was greatest among households 35 to 50 followed by households under 35 ($F=24.03$; $p<0.001$). Thirteen percent of the respondents were beginning farmers (10-years or less experience operating a farm) (compared to 24.6 per cent in the U.S. farm population) and the proportion of beginning farmers decreased as respondents age. This points to a somewhat traditional juxtaposition of the farm household-farm operation development cycles whereas beginning farmers were more likely to be young ($F=7.9$; $p<0.001$). Looking at farm scale based on the value of sales and using the USDA categories, 55 per cent of respondents operated hobby farms, 30 per cent operated small farms, 4 per cent operated medium farms, and 11 per cent operated large farms[12]. There were limited variations across age groups with the exception of large operations whereas the three younger age groups were two to three times more likely than households over

[12] The proportion matches the general population since the probability weight was based on that variable.

65 to operate a large farm ($F=2.7$; $p<0.05$). Last, 59 per cent of farm households had an off-farm job which speaks to the importance of off-farm employment for income and health benefits, ($F=17.45$; $p<0.001$). The proportion of households with an off-farm job increased up to 74 per cent for households 51 to 64 before it dropped to 35 per cent for households 65 and over, likely in connection to eligibility for retirement and health benefits.

Table 3-1. Farm households and farm operations characteristics

	All	Under 35 (n=33)	35 to 50 years old (n=197)	51 to 64 years old (n=533)	65 and over (n=301)	F-statistic; p-value
Average Age (in years)	60.4					
Household has children under 18 (%)	21.2	48.8	63.1	18.6	5.7	24.03; $p<0.001$[1]
Beginning Farmers (%)	13.8	59.1	26.1	11.0	8.9	7.9; <0.001[2]
Scale based on sales (%)						2.7; $p<0.05$[3]
Hobby (less than $10,000)	55.0	50.3	44.3	52.3	62.5	
Small ($10,000 to $249,999)	30.0	32.7	32.6	29.8	29.5	
Medium ($250,000 to $499,999)	4.1	2.7	5.6	4.7	2.8	
Large ($500,000+)	11.0	14.3	17.5	13.2	5.6	
At least one household member has an off-farm job (%)	58.8	61.8	68.2	74.3	35.3	17.45; $p<0.001$[4]

Notes. Significant differences based on Bonferroni corrections at least $p<0.05$: [1] under 35 vs. 51 to 64, and 65 and over, 35 to 50 vs. 51 to 64, and 65 and over, 51 to 64 vs. 65 and over. [2] under 35 vs. 35 to 50, 51 to 64, and 65 and over, 35 to 50 vs. 51 to 64, and 65 and over. [3] 65 and over vs. 35 to 50 and 51 to 64. [4] 65 and over vs. under 35, 35 to 50 and 51 to 64.

3.5. Results

3.5.1. Health care needs, health insurance, and the farm operation

Health issues were salient at any age and can negatively impact the ability to work on the farm (table 3-2). Thirty-six per cent of all households had at least one household member with a health issue that makes it difficult to farm with no differences across age groups. As would be expected, the proportion of farm households with pre-existing or chronic conditions increased as they aged. For example, 72 per cent of households 65 and over reported a health condition compared to 39 per cent of households aged 35 to 50.

Health expenses impact both the household and the operation. Differences across age groups for some of the variables are likely connected to differences in the needs of the household, asset accumulation, and development plans. Health expenses limited farm investments for 46 per cent of respondents with differences across age groups. Seventy-seven per cent of the youngest households and over 50 per cent of middle age households reported investment limitations. Despite having reached retirement age, 27 per cent of the oldest households still reported limitations. If health expenses were lower, 57 per cent of all households would make improvements on the farm, 55 per cent would save for retirement, 26 per cent would take care of household needs, 24 per cent would build up their savings, and 6 per cent would save for college (data not shown). While there were no differences across age groups in the desire to build up the farm operation and desire to save, the desire to save more for retirement was higher among older age groups while the desire to save for children's university fees was higher for the younger age groups (data

not shown). The differences across age groups in terms of investment limitations and how households would shift their spending if health expenses were lower are likely tied to the life course effects.

Not only do health expenses limit potential investments, they could lead to the loss of farm assets. Forty-six per cent of households worried that they might have to sell farm assets to cover health related costs but there was no clear pattern in the differences across the age groups. Half of all households reported no confidence at all or slight confidence that they could pay the cost of a major illness or injury without going into debt but there were differences across age groups (data not shown). Between 59 and 70 per cent of households under 65 reported no confidence at all or slight confidence that they could pay for major health expenses compared to 36 per cent of households over 65 (Bonferroni adjustment at least $p<0.01$). Likely speaking to the need to reduce financial liability and recognition that an illness or injury could negatively impact the farm at any point, health insurance was an important risk management strategy for 73 per cent of respondents with no differences across age groups.

Table 3-2. Health care needs, health insurance, and the farm operation (in per cent)

	All	Under 35	35 to 50 years old	51 to 64 years old	65 and over	F-statistic; p-value
Farm household member(s) have:						
Health problems that make it difficult to farm	35.9	47.5	28.9	36.4	37.3	0.5; >0.05
Pre-existing or chronic health condition	64.1	37.5	38.8	67.8	71.7	7.5; <0.001[1]
Health expenses limit investment on farm	45.8	76.5	54.2	56.1	27.2	12.3; <0.001[2]
Concern that might have to sell farm assets to cover health related costs	46.0	59.1	37.5	54.1	37.8	3.8; <0.05[3]
Health insurance is moderately or very important risk management strategy	73.0	70.1	69.8	81.6	63.5	1.9; >0.05

Notes. Significant differences based on Bonferroni corrections at least $p<0.05$: [1] under 35 vs. over 65, 35 to 50 vs. 51 to 64 and vs. over 65. [2] 65 and over vs. 35 to 50 and vs. 51 to 64. [3] 65 and over vs. 51 to 64, 51 to 64 vs. under 35 and vs 35 to 50.

3.5.2. Access to health care along the life course

The ability to access health care in the U.S. is not solely limited to whether farm households have health insurance coverage. The source of coverage and organization of the health care and health insurance systems along with household level factors all play a role in shaping access to health care. Furthermore, the extent to which factors affect access to care vary across age groups in some cases (table 3-3). Overall, 49 per cent of respondents reported no barriers to care with 67 per cent of households over 65 reporting no barriers compared to around 40 per cent of the younger age groups. Cost was the largest barrier reported by 35 per cent of households. Cost is a barrier for around 50 per cent of the younger and middle age groups compared to 17 per cent of the older groups. These differences for households under and over 65 are likely largely connected to universal old-age insurance (Medicare). The next two larger barriers were linked to health insurance restrictions and did not vary across age groups whereas 11 per cent of households reported that a health care provider did not accept their insurance plan and 11 per cent reported that their provider was outside of their network. Individual level factors connected to the inability to take time off from work was reported by 9 per cent of all respondents and was more of a challenge for the two middle age groups and lower challenges for younger and older age groups. This difference could be due to differences in workload and family responsibilities. Last, less than 10 per cent reported challenges due to distance to health facility/transportation (7 per cent), not having health insurance (6 per cent), and inability to find childcare or eldercare (0.5 per cent) with no differences across age groups.

Table 3-3. Factors that affect access to care (in per cent)

	All	Under 35	35 to 50	51 to 64	65 and over	F-statistic; P value
No barriers	48.5	41.6	42.0	38.5	66.6	6.8; <0.001[1]
Cost (deductible, out-of-pocket)	34.9	52.9	45.1	44.7	16.6	10.4; <0.001[2]
Provider did not accept insurance plan	11.4	20.5	7.6	13.3	9.6	0.8; >0.05
Provider was outside insurance network	11.4	19.9	7.0	13.7	9.2	0.9; >0.05
Unable to take time off	9.0	1.7	6.8	14.7	2.5	35.7; <0.001[3]
Distance to health facility/transportation	7.0	16.8	4.9	5.3	9.2	1.1; >0.05
Not having health insurance	6.4	0	10.6	8.8	1.8	2.6; >0.05
Unable to find childcare or elder care	0.5	0.0	1.3	0.5	0.2	1.1; >0.05

Notes. Significant differences based on Bonferroni corrections at least $p<0.05$: [1] 65 and over vs. 35 to 50 and vs. 51 to 64. [2] 65 and over vs. 35 to 50 and vs. 51 to 64. [3] over 65 vs. 35 to 50 and vs. 51 to 64

3.5.3. Access to health insurance across the life course

Aligning with previous research, farm households were insured at a high rate, but this high rate masks a more complex reality (Ahearn et al., 2015; Lottero et al., 2007) (table 3-4). In 2016, 92 per cent of farm households had health insurance coverage for the whole household, 5 per cent had partial coverage (either some members had coverage and/or coverage was for part of the year), and 3 per cent had no coverage. While there was no statistically significant difference across age groups, households 35 to 50 had the lowest rate of coverage (89 per cent) and households under 35 and over 65 had the highest rate (both 94 per cent).

When asked if health insurance meets their needs, which might be seen as a proxy for satisfaction with coverage, respondents were somewhat evenly split with about a third not at all or somewhat not well, a third neutral, and a third moderately or very well. Respondents over 65 were more satisfied with 43 per cent responding that insurance meets their needs moderately or very well while for the other age groups, satisfaction is below 30 per cent. Besides the cost (which we discuss below), two factors might explain why health insurance only meets the needs of one third of farm households' moderately or very well. First, 74 per cent of households reported that all family members were covered by the same plan in the previous year. About one third of households under 35 were covered under the same plan compared to at least 74 per cent for the other age groups. Having more than one health insurance plans means having to navigate different reimbursement rates and different provider networks. Second, health insurance plans do not automatically cover all health health-related needs and might require the purchase of

additional plans or households might go without. Eighty-four per cent of households had prescription/drugs coverage, 51 per cent had dental insurance, 40 per cent had vision insurance with no differences across age groups.

Table 3-4. Farm households' health insurance coverage and satisfaction with coverage (in per cent)

	All	Under 35	35 to 50 years old	51 to 64 years old	65 and over	F-statistic; P value
Health insurance coverage in 2016						
Household was covered all year	92.2	93.5	89.1	91.5	94.3	0.6; >0.05
All household members were covered under same plan	73.7	30.5	82.4	73.6	74.1	4.8; <0.01[1]
Health insurance meets needs						3.6; <0.01[2]
Not at all or somewhat not well	35.8	57.0	41.4	43.3	22.3	
Neutral	32.2	29.0	34.9	29.5	34.7	
Moderately or very well	32.1	14.0	23.7	27.2	43.1	
Other health related Insurance coverage in 2016						
Prescription/drugs insurance	83.5	69.3	78.5	80.7	90.2	3.7; >0.05
Dental insurance	50.8	52.9	55.0	49.1	46.9	0.3; >0.05
Vision insurance	40.3	38.2	47.6	38.2	40.4	0.4; >0.05

Notes. Significant differences based on Bonferroni corrections at least $p<0.05$: [1] 65 and over vs. 35 to 50 and vs. 51 to 64. [2] 65 and over vs. 35 to 50 and vs. 51 to 64.

Farm households accessed health insurance through multiple sources (table 3-5). Forty-five per cent obtained insurance through off-farm employment, 38 per cent through public insurance, 29 per cent purchased a private policy, 4 per cent had coverage through the Farm Bureau or Farmer's Union plans (plans sold through the two largest farmers' unions), and 4 per cent through a parent's plan. Health insurance through off-farm employment was most important for households under 65 providing coverage for 50 per cent of respondents in this sample. Yet 30 per cent of household over 65 had employment-based insurance (the second most important source of coverage for that group). Public health insurance seems to play an important role both in the beginning and end of professional life. Forty-one percent of households under 35 had public insurance while 73 per cent of households over 65 had public health insurance. Meanwhile less than 20 per cent of the two middle age groups had public coverage. Likely an outcome of the ACA[13] and reflective of the age of the farm household, twenty-three percent of households under 35 reported coverage through their parents' plan compared to less than 10 per cent for the other age groups.

[13] The ACA allows children up to 26 to remain on their parents' employment-based or private plan with no income test.

Table 3-5. Sources of health insurance coverage (in per cent)

	All	Under 35	35 to 50 years old	51 to 64 years old	65 and over	F-statistic; P value
Through off-farm employment	45.3	48.9	51.7	55.1	30.4	6.4; <0.001[1]
Public insurance	37. 8	41.4	18.4	15.6	73.4	36.1; <0.001[2]
Direct purchase of private policy	29.0	37.9	27.9	34.5	21.6	2.3; >0.05
Farm Bureau or Farmers' Union	3.7	2.7	3.6	2.8	5.0	0.8; >0.05
Through parents' plan	3.6	22.9	5.8	4.2	3.6	7.1; <0.001[3]
Health care sharing ministry	1.1	3.8	0.7	1.3	0.6	1.7; >0.05

Notes. Significant differences based on Bonferroni corrections at least $p<0.05$: [1] over 65 vs. 35 to 50 and vs. 51 to 64. [2] over 65 vs. all other age groups. [3] 51 to 64 vs. over 65.

As discussed above, cost was the largest barrier to care and might speak to dissatisfaction and financial vulnerability with health insurance coverage. Farm households reported average monthly premiums of $707 in 2016 (or $8,484 in premiums over the year) (table 3-6). Households under 35 paid less ($380 per month) than all other households (ranging between $1,054 per month for households 35 to 50 and $655 per month for households over 65)[14]. The lower premiums for the youngest households are likely connected to the high rate of public coverage, not having dependents on the plan (spouse or children), and insurance through parents' plans. The higher premiums for households 35 to 50 are likely connected to having dependents on the plan as 79 per cent of the households in this age group had children on their plan compared to 28 per cent of all farm households (data not shown).

Deductibles and out-of-pocket expenses also impact the affordability of health care[15]. Thirty-nine percent of households had a deductible between $2,000 and $5,000 while 17 per cent had deductibles over $5,000. The younger and older households had on average the lowest deductibles, this may be explained by their higher rates of public insurance coverage. The higher deductibles of middle age group are likely connected to having family plans and lower proportion of public coverage. Furthermore, 34 per cent of households had out-of-pocket expenses between $1,000 and $2,999 while 37 per cent had

[14] However, the Bonferroni correction indicates that difference is only statistically significant for groups under 35 vs. 51 to 64.

[15] A deductible, or franchise, is the amount that an individual must pay for health care before the health insurance covers expenses. Out-of-pocket expenses can have two connected meanings. First, it is the amount that individuals paid for health care without getting insurance reimbursement. Second, it is the maximum amount that an individual will have to pay in a given year. After that the insurance will reimburse 100 per cent of allowable expenses.

out-of-pocket expenses $3,000 and over. The two middle age groups had the highest out-of-pocket expenses likely connected to the higher proportion of children in the household.

High healthcare costs and restrictions of health insurance plans are major sources of financial difficulties in the U.S. and 20 per cent of the farm households reported having medical debts over $1,000[16]. While the differences across age groups were not statistically significant, between 27 and 30 per cent of two younger age groups reported medical debts compared to under 20 per cent of the two older age groups. Since these younger households reported lower rates of pre-existing or chronic conditions, the higher rate of debt could be due to the costs of childbirth and health care for young children.

[16] The threshold of $1,000 has been used in the landmark U.S. medical debt studies (Himmelstein et al., 2009; Himmelstein et al., 2005).

Table 3-6. Health expenditures and debts in 2016

	All	Under 35	35 to 50 years old	51 to 64 years old	65 and over	F-statistic; P value
Mean monthly premiums paid by household (in $)	707	380.3	1,054.0	647.1	665.0	4.0; <0.01[1]
Total deductible (in per cent)						8.2; <0.001[2]
Less than $2,000	54.6	52.5	36.3	42.3	78.4	
$2,000 to $5,000	28.8	36.9	34.4	37.9	13.5	
More than $5,000	16.7	10.7	29.3	19.9	8.1	
Total out-of-pocket expenses (in per cent)						3.7; <0.01[3]
Up to $999	29.8	33.9	24.9	20.7	42.9	
$1,000 to $2,999	33.7	31.1	23.4	38.7	31.6	
$3,000 and over	36.5	35.0	51.7	40.7	25.5	
Household has medical debt (in per cent)	20.0	27.3	29.6	19.1	16.7	1.3; >0.05

Notes. Significant differences based on Bonferroni corrections at least p<0.05: [1] under 35 vs. 51 to 64. [2] 65 and over vs. 35 to 50 and vs. 51 to 64. [3] 65 and over vs. 35 to 50 and vs. 51 to 64.

3.6. Discussion

We used the example of U.S. farm households' to empirically assess: (1) differences in health needs, access to health insurance and access to health care across age groups and (2) the extent to which health issues impact the farm operation differently as they age. Furthermore, we leveraged this empirical case study to generate theoretical insights into the interactions between farm household level issues and the farm operation and into the role of social policy in the agricultural sector, through a focus on health policy. We now discuss our key findings and theoretical implications for the farm family literature along three main themes: (1) social needs of farm individuals and households along the life course, (2) health issues, farm development, and farm transition, and (3) the role of health policy in the farm sector.

3.6.1. Social needs of farm individuals and households along the life course

Our findings provide evidence that issues surrounding the ability to meet health needs are salient for U.S. farm households of any age and interact with the farm operation. This is because over a third of all households reported that at least one family member had a health issue that makes it difficult to farm. Of note, the interaction between health issues and difficulty to farm are likely to hold across social policy context and deserve greater attention. This is also because health insurance is seen as an important risk management strategy for all age groups along with the concerns of having to sell farm assets despite the high rate of health insurance coverage. While U.S. health policy is vastly different

from most other Western industrialized countries, our findings suggest that high rates of health insurance coverage, as found in countries with universal coverage, may point to a more complex reality. We discuss this point further when we discuss the role of social policy below.

By disaggregating data by age groups, we find that the ways in which farm individuals and households meet their social needs and their ability to do so vary along the life course. Overall, our findings speak to the health literature with increased health care needs overtime and to the family farm literature with differences in the ability to meet health needs that likely speak to family and business development cycles. Synthetizing findings, we find that, younger households were most likely to report that their health insurance does not meet their needs despite having the lowest rates of pre-existing health conditions, having lower health expenses, and having the highest rate of public insurance coverage after the older age group. The perception that health insurance does not meet their needs in high proportion might be connected to the economic vulnerability and heavy demands for time and financial resources of the entry/establishment phase of the farm operation (Gale, 1994; Mishra et al., 2002; Moran, 1988) and/or of the establishment phase of the household. In the U.S. context, difficulties likely associated with the household development phase include the high cost of childbirth and childcare, uncertainties around what the health insurance will cover, and limited access to paid family leave[17] (Etehad & Lin, 2016; Gault et al., 2014; Inwood &

[17] At the federal level, the 1993 Family and Medical Leave act mandates that employers with 50 employees and more provide 12 weeks of unpaid leave for family and medical reasons. States and individual employers may choose to provide additional benefits such as more time off or paid leave.

Stengel, In Press). Middle age households had the lowest rate of coverage, highest health insurance premiums, while a significant proportion reported barriers to care and health plans that do not adequately cover their needs. These findings somewhat contradict the farm family literature which has pointed to the lower vulnerability among middle-age households in the growth and survival stages (El-Osta & Morehart, 2009; Mishra et al., 2005; Moran, 1988). Last, older households reported the lowest level of barriers to care, were more likely to report satisfaction with their coverage, and were to a lesser extent also negatively impacted by health expenses despite having the highest rate of pre-existing conditions. This might be explained by older households' eligibility for universal coverage (more on that below), lower financial demands from the household and operation, and assets accumulated (Gale, 1994; Mishra et al., 2005; Mishra et al., 2002; Moran, 1988).

The discrepancy between our findings on middle age households and the family farm literature on business cycles illustrates two points. First and in line with Rissing's (2019) findings, the need to consider the difficulties experienced by farm individuals and households when considering the economic viability of the farm operation and its development (more on that below). Second, the need to update the family farm literature to reflect changes in the political, economic, and social spheres. For example, the U.S. literature that speaks to the difficulties experienced by farm households' overall dates back to the 1980s and 1990s and documents the fall out of the 1980s farm crisis. Yet, and likely relevant across social policy environments in Western industrialized countries, our finding on the difficulties experienced by middle age households might reflect important

changes. On the farm operation, this includes increased pressures generated by large structural changes in agriculture such as concentration and consolidation along the supply chain and liberalization of trade policies (Arbuckle Jr & Kast, 2012; Droz et al., 2014; Fraser et al., 2005). In the farm household, this includes increased health care, childcare, and university fees in the U.S. (Dwyer, 2018; Inwood & Stengel, In Press) and increased responsibility to provide care and/or financial support for older generations that are living longer across social policy contexts (Contzen et al., 2016; Conway et al., 2016).

3.6.2. Health issues, farm development, and farm transition

Reflecting the family farm literature, our findings speak to farm households needing to juggle trade-offs along the life course between consumption, savings, and investments when making health care and health insurance decisions (Barlett, 1993; Friedmann, 1978a; Inwood & Sharp, 2012; Reinhardt & Barlett, 1989; Rissing, 2019). Farm households reported that health expenses limit on-farm investments decreasingly as they age while the confidence that they could pay for a major health expense without going into debt increased overtime. It is seemingly at the time when the farm household and operation may require the most financial resources in the early and middle age years, that farm households in our study reported both the greatest difficulties accessing and paying for care and the greatest investment limitations. While previous research on the farm sector, in the U.S. and beyond, has overall focused on farm entry and exit, our findings further speak to the importance of considering how the social needs of varying age groups such as health, childcare, or aging shape decisions and outcomes within the farm

household and operation, the ways in which these social needs vary along the life course and business cycle and, the extent to which trade-offs between meeting social needs and farm investments have compounding effects on income prospects and farm development.

High health care and insurance costs not only bring up questions about farm development early on, they also bring up questions about farm transition and the ability to save for retirement. Indeed, while households over 65 have been excluded from previous key health insurance studies among the U.S. farm population (Ahearn et al., 2013; El-Osta, 2015, 2017; Mishra et al., 2012), our findings echo the farm transition literature whereas older farmers are still investing in the operation passed the age of retirement eligibility (Contzen et al., 2016; Inwood & Sharp, 2012; Lobley et al., 2012). The fact that a third of households over 65 still have health insurance coverage through off-farm employment point to two potential issues. First, the complex health insurance arrangements within households whereas one household member is eligible for Medicare but the other is not; hence the continued importance of off-farm employment. Second, the potential inadequacy of Medicare and/or the inadequacy of retirement pensions and savings. In turn, these two issues bring up questions about whether farm transitions are delayed and whether the cost of the transfer to the younger generation is higher. In other social policy environments, Contzen et al. (2016) and Conway et al. (2016, 2017) have provide important examples of the need to consider the impact of policies on household-level decisions around farm exits and farm transitions.

3.6.3. Role of social safety nets in the farm sector

Speaking to the role of social safety nets through health policy, our findings echo previous studies that have found evidence that social safety nets interact with farm persistence (Chang et al., 2011; Droz et al., 2014; Dulitz & Schrader, 2013). Some of the biggest differences were between households under and over 65 (i.e. the age threshold for old-age universal coverage). Farm households over 65 reported lower barriers to care, had lower deductibles and out-of-pocket expenses, lower levels of concerns about medical debts, and higher levels of satisfaction with coverage. Differences in goals, asset accumulation, and financial demands from the household and operation might explain some of the differences. At the same time, our findings likely point to the role that universal old-age insurance might play in easing access to care and in limiting the financial impacts of health costs on the farm. For younger farm households, targeted public health insurance was the second most important source of coverage. While the small sample size for this group prevents us from getting an understanding of the role of health policy early on in the business cycle, this finding first points to both the greater financial vulnerability of younger households since eligibility for public coverage at that age is based on income. This finding also brings up questions about the extent to which targeted public health insurance keeps young households off the financial edge and/or frees up resources to develop the farm.

Eligibility for old-age universal coverage, however, does not mean that all difficulties disappeared. This implies that even in countries with universal coverage, farm households might not be able to meet their social needs to the extent they desire which

might in turn impact the farm operation. In our study, this was evidenced by the fact that older farm households are still reporting barriers to care or concerns about medical debt. Furthermore, the biggest barriers to care across age groups such as deductibles, out-of-pocket costs, and in-network health care providers rules are connected to the way the health system is organized and mostly out of farm households' control. In a cross-national comparative study of the social safety nets for the farm sector in France, a country with a universal and comprehensive social safety net, and in the U.S., Becot and Inwood (Under Review) discussed the ways in which the administration of social safety net programs, eligibly criteria, benefit levels, and costs likely hinder farm households' ability to meet their social needs. While on one hand health scholars and policy makers tend to focus on individuals' ability to navigate the health systems through knowledge and resources (Abel & Frohlich, 2012; Cockerham, 2014) and on the other hand family farm scholars have emphasized social stigma associated with poverty relief programs (Contzen & Crettaz, 2019; Deville, 2015; Gundersen & Offutt, 2005; Mann, 2005, 2007), our research highlights the importance of more widely adopting a political economy perspective. One that explicitly considers the extent to which the organization and administration of social safety net programs shapes the ability to meet health needs and the desire to access these programs. Indeed, as French sociologist Pierre Bourdieu once reminded us: "we can always say that individuals make choices, as long as we do not forget that they do not choose the principle of these choices" (Bourdieu translated by Wacquant (1989, p. 45)).

3.7. Conclusion

By using the example of health needs along the family farm life course and health policy in the U.S. as an example, the goal of our article was to gain insights into two topics that have received limited attention in the family farm literature so far. Namely the ways in which difficulties meeting social needs may negatively impact the farm operation and the role of social policy in supporting both farm households and farm operations.

Our article should make the following contributions to the family farm literature. First, by focusing on the social needs of farm individuals and households in different age groups and the ways in which these social needs interact with farm development, farm transition, and farm persistence, we provide new insights on the interactions between the personal and professional spheres and show that difficulties meeting social needs at any age limit on-farm investments with potential long-term effects on the farm enterprise. This means that while farm researchers and policy makers have dedicated significant attention to the type of supports for older and young farmers that ease farm transitions and farm entry, we need to seek a better understanding of the difficulties experienced within the personal spheres of the farm system at any age. Our use of cross-sectional data is an important limitation of our study. The use of longitudinal data in future research would enable us to explore potential compounding effects on health and material outcomes as a result of difficulties that farm households may experience accessing or paying for health care and health insurance at various point along the life course. Furthermore, longitudinal data would provide opportunities to explore linkages of social needs along the life course such as health, childcare, and retirement, trade-offs that

households make to meet these various needs, and how these trade-offs impact farm development over time.

Second, by assessing the type of health insurance coverage, costs, and lived experiences with the health care and health insurance systems, we provide some evidence on the role played by public health insurance in easing difficulties and freeing resources for on farm-investment. At the same time, we also provide evidence on the ways in which the administration of health insurance and health care are organized shape access to care. While the realities of U.S. farm households might not be directly relatable to households in other Western countries due to different social policy environments, both social needs and the shaping of the ability to meet these social needs through macro level structures are relevant no matter the policy context. Cross-national comparative research would not only provide empirical insights into how farm households meet their social needs across social policy contexts, it would also enable greater theorization on the role of health policy, and social policy more broadly, in supporting both farm households and the reproduction of family farms.

Chapter 4 - Towards a more holistic understanding of the vulnerability of farm families by considering household level difficulties and lived experiences

Abstract

Farm family scholars have a long tradition of studying how farmers adapt to on-going changes. But, because they tend to focus on macro-level changes, less is known about the extent to which both difficulties experienced within the agri-family system and institutional supports shape farm vulnerability. In this article, we use the example of medical economic vulnerability among the U.S. farm population to begin to fill these research gaps. We develop a relational conceptual framework based on the medical and farm economic vulnerability literature and draw on farm households' survey data to assess: (1) the prevalence of households experiencing difficulties due to health-related costs and (2) the factors associated with objective and subjective measures of medical economic vulnerability. We find that the prevalence of perceived medical vulnerability is three times higher than having actual medical debt, pointing to the importance of considering lived experiences and to the risk of missing early warning signs when over-relying on objective measures. Our findings also point to the vulnerability of the farm population as a whole. What shaped medical economic vulnerability the most were health insurance variables highlighting the importance of considering the institutional arrangements when considering programs and policies to support the agricultural sector. By bringing in personal level issues to the forefront and speaking to the importance of

considering farm households' perception, our work has theoretical implications for the family farm literature. Practically, our work provides empirical insights in the early year of implementation of the 2010 Patient Protection and Affordable Care Act, a major health insurance reform.

Keywords

farm persistence and resilience – household level difficulties – health insurance - medical economic vulnerability - objective vs. subjective measures

4.1. Introduction

Farm family scholars, including farm persistence and farm resilience scholars, study family farms' ability to remain on the land despite on-going changes and crises. Most of the focus of this literature has been on macro-level changes such as liberalization of markets or climate change but there is a need to understand how micro-level difficulties, such as those that directly impact the agri-family system, shape the vulnerability and resilience of the farm sector. Two connected areas that we know little about are, first, the extent to which difficulties experienced by farm households, such as difficulties accessing health care, inadequate household income, or retirement savings, interact with farm vulnerability. And second, the role that institutional supports like social safety net programs may play in both supporting the farm household and the farm operation (Ahearn, 2011; Becot & Inwood, Under Review; Inwood, 2013). These are important knowledge gaps to fill because research on health-shocks (i.e. sudden illness or injury) among farm families in low- and medium-income countries shows that household level

issues may affect farm families at any time no matter the scale of the farm operation, commodities produced, climatic conditions, or policy context. Furthermore, this body of work indicates that health shocks can be more frequent than challenges faced by the farm operation such as a crop failure or a major storm and that institutional supports such as health insurance can limit the blow of a shock (see Bonfrer and Gustafsson-Wright (2017) for their review of the literature).

Because of its focus on difficulties at the micro-level, the farm economic stress and farm bankruptcy bodies of literature provide an important starting point to begin to understand which family farms might be more vulnerable in case of difficulties. Yet, and suffering from a similar shortcoming than the family farm literature more broadly, farm economic stress and farm bankruptcy scholars have limited their assessment to objective measures such as debt-to-asset ratio or having filed for bankruptcy and have at times relied on aggregate level data (Dinterman et al., 2018; Franks, 1998; Katchova & Dinterman, 2018; Zhang & Tidgren, 2018). While this shortcoming is in part due the reliance on secondary data, Jackson-Smith (1999), Gillespie and Johnson (2010), and Rissing (2019) have demonstrated that the focus on objective measures and the use of farm sector aggregate data may provide an inaccurate understanding of the factors associated with farm vulnerability and early farm exits. Their work illustrates the need to consider the heterogeneity of the farm sector and farm households' lived experiences. Indeed, research on economic vulnerability among the general population provides another key argument in favor of considering lived experiences when assessing the difficulties faced by farm families. Besides finding an association between economic vulnerability and negative physical and mental health outcomes, this literature has shown

that subjective measures of economic vulnerability, such as perception of economic vulnerability or comfort level with their debt load, are predictors of poor mental health (Asebedo & Wilmarth, 2017; Holmgren et al., 2018; Richardson et al., 2013; Selenko & Batinic, 2011; Sweet et al., 2013; Turunen & Hiilamo, 2014). With increased pressures on farmers brought on by climate change and on-going structural changes in the agricultural sector, it is crucial to understand which farm households might be more vulnerable and whether current assessments of vulnerability within the farm sector enable us to both understand the extent of the problem and develop adequate responses.

In this article, we use the example of medical economic vulnerability among the U.S. farm population to begin the understand: (1) the prevalence and factors associated with household level difficulties, (2) the role that health policy, a major component of social policy in Western industrialized countries, may play in supporting the agricultural sector, and (3) the ways in which farm vulnerability is assessed. In particular, we draw on the complementary insights from the medical economic vulnerability and farm economic stress and bankruptcy bodies of literature to develop a relational conceptual framework and we draw on a primary dataset of farm households in ten U.S. states to answer the following research questions: (1) to what extent are farm households experiencing difficulties due to health-related costs? and (2) what are the factors associated with objective and subjective measures of medical economic vulnerability? Because compared to other industrialized countries, the U.S. has a limited social safety net and does not provide universal health coverage to all segments of the population, our focus on U.S. farm households provide an extreme (or deviant) case study. The use of an extreme case enables us to more clearly identify patterns to work towards greater theorizing of the

factors associated with farm persistence and resilience (Patton, 2002; Yin, 2014). For the purpose of this article, we define medical economic vulnerability broadly and include difficulties paying medical bills, having a medical debt, and having filled for bankruptcies due to medical bills.

This work has theoretical and practical implications. Theoretical implications to the farm persistence and farm resilience literatures because we bring in the personal level issues to the forefront and speak to the importance of considering the farm households' perception as they might provide early signals of difficulties to come before they are detected through objective measures. While we frame our article within the limitations of the farm economic stress literature due to its focus on objective measures, our work is relevant more broadly. This is because in an era of increased complex modelling and big data on one hand, and indicator dashboards and simplified diagnostic tool on the other hand, we echo Jackson-Smith (1999), Gillespie and Johnson (2010), and Rissing (2019) and point to the importance of embracing the complexity of farming systems by quantitatively and qualitatively considering the ways in which the diversity of needs and lived realities shape farm resilience and farm persistence. Practically, our work provides empirical insights in the early year of implementation of the Patient Protection and Affordable Care Act (ACA) (2010), a major reform which reshaped the U.S. health insurance landscape. Echoing research among the farm population pre-ACA, our findings points to the problem of underinsurance and to a general sentiment of economic vulnerability.

Our article is outlined as follow, we first provide background medical economic vulnerability among the farm population. Second, we present our conceptual framework

which merges the medical economic vulnerability literature and the farm economic stress and farm bankruptcy literature then we present our empirical case. Last, we discuss our findings, theoretical and practical implications, as well as avenues for future research.

4.2. Medical economic vulnerability among the farm population

U.S. health scholars have documented the broad implications of medical economic vulnerability. Among individuals and households who report difficulties paying medical bills, medical debt, or medical bankruptcies, health scholars have first documented the impacts on health including foregoing or delaying care (Baughman et al., 2015; Choi, 2017; Cutshaw et al., 2016; Kalousova & Burgard, 2013, 2014), increased stress and depression (Asebedo & Wilmarth, 2017; Selenko & Batinic, 2011; Sweet et al., 2013), and worse self-reported health status (Anong et al., 2016; Drentea & Lavrakas, 2000; Sweet et al., 2013). Indeed, medical debt and financial vulnerability are considered socio-economic determinants of health (Dwyer, 2018; Sweet et al., 2013). Medical debt and financial vulnerability can set off a vicious cycle of debts, delaying of retirement, drawing on savings, difficulties paying for household expenses, difficulties obtaining loans or jobs, and social exclusion (Cutshaw et al., 2016; Dwyer, 2018; Sweet et al., 2013; Turunen & Hiilamo, 2014).

U.S. farmers have ranked the rising costs of health insurance and health care as a major threat to their livelihood (Dulitz & Schrader, 2013; Inwood, 2015; Lottero et al., 2007). Studies pre-dating the ACA have documented the medical economic vulnerability

among the farm population due to health expenses[18]. About 18% of farm households had a medical debt, 23% reported that health expenses contributed to financial problems, 41% spent more than 10% of income[19] on health insurance premiums and out-of-pocket expenses, and 62% reported making minor or major sacrifices to pay for health expenses (Dulitz & Schrader, 2013; Lottero et al., 2006; Pryor et al., 2008, 2009). Since these farm households were insured at a high rate, these studies pointed to the problem of underinsurance whereas health insurance does not adequately cover health care expenses. Noting that average medical debt was $6,598 and median was $1,110, Pryor et al. (2009) argued that this level of debt goes against the common perception that medical debts are the results of catastrophic medical incidents and Lottero et al. (2006) argued that medical debt is "one of the important source of economic pressure many farm families currently face" (p 1). While we know of no estimates for the farm population, bankruptcy studies among the general population before and after the ACA have found that more than half of personal bankruptcies were due to medical reasons while of majority of those who went bankrupt had health insurance (Cutshaw et al., 2016; Himmelstein et al., 2019; Himmelstein et al., 2009; Himmelstein et al., 2005; Jacoby et al., 2001). Access to data on the farm sector is limited because large national health datasets either do not collect data on professional occupation or farmers are underrepresented (Chang et al., 2011). Furthermore, while the U.S. Department of Agriculture (USDA) collects data on health insurance through the Agricultural Resource Management Survey (ARMS), it is limited to source of coverage and health expenses. This survey does not collect data on type of

[18] For a full review of how the ACA re-shaped the health insurance landscape and how it was expected to impact the farm sector see Ahearn et al. (2015) and Inwood (2017).
[19] As Pryor et al. (2008) discussed, researchers have previously used 10% of income spent on health expenses as a threshold to assess financial hardship.

plan and collects limited information of farm individual and farm household demographics including health status. As a result, the currently available secondary data prevents an assessment of medical economic vulnerability among the farm.

U.S. farm scholars have discussed how medical economic vulnerability negatively impacts the farm operation. For example, medical economic vulnerability due to high health care and health insurance costs or debts can lead to delaying or preventing on-farm investments or the hiring of workers, loss of farm assets, need to work off the farm, difficulties obtaining and paying farm loans, and early farm exists (Chang et al., 2011; Dulitz & Schrader, 2013; Inwood, 2017; Lottero et al., 2007; Pryor et al., 2008, 2009). Most of the research on medical economic vulnerability among the farm population is based on small samples because to our knowledge there are currently no secondary datasets that enables the linkage of variables associated to health status, health insurance coverage, and farm operations. Therefore, we are missing an understanding of which farm households are most likely to be vulnerable due to health difficulties. Furthermore, because most of this research pre-dates the implementation of the ACA, we are missing an understanding of the prevalence of the issue in the new health insurance policy environment.

While the U.S. is an extreme case among Western industrialized countries due to its lack of universal coverage and lower regulations of health insurance, health services, and prescription drugs prices, there is some evidence that farm households outside the U.S. face financial difficulties paying for and accessing health care. For example, in France, difficulties are due to the low reimbursement rates of health services (namely dental, vision, and behavioral care) and the need to pay for some services at the time of

service before being reimbursed later (Chappuis et al., 2015; Droz et al., 2014; Roche, 2016). In Switzerland, this includes challenges similar to those experienced by U.S. farm households including high insurance premiums, high out-of-pocket expenses, and underinsurance (Droz et al., 2014). Furthermore, a recent Organization for Economic Cooperation and Development (2019) report found that among the general population, nearly 17% of European Union (E.U.) residents had difficulties affording care. While the impacts of a major illness or injury in countries with universal coverage might not be as dramatic as in the U.S., the existing evidence highlights the need for the family farm literature to consider the ways in which health needs and health policies shape the financial situations of farm households and in turn impact the outcomes of the farm operation (Becot & Inwood, Under Review).

4.3. Conceptual framework

To understand the prevalence and factors associated with medical economic vulnerability among farm households, we developed a conceptual framework using the complementary insights from the medical and farm economic vulnerability bodies of literature. On one hand, the medical economic vulnerability literature provides insights into the challenges associated with health insurance coverage along with individuals and households' demographics but, other than a few studies focused on family farms pre-ACA (Dulitz & Schrader, 2013; Lottero et al., 2006; Pryor et al., 2008, 2009), it does not speak to the overlaps between the personal and professional spheres of family businesses and seldom considers macro-level factors connected to health insurance and health care environment. On the other hand, the farm economic vulnerability literature including financial stress,

debt, and bankruptcy provides insights into the characteristics of farm households and operations associated with farm economic vulnerability as well as macro-level factors connected to the agricultural and labor market environments. Yet, it does not speak to health insurance characteristics and key individual characteristics such as health status and pre-existing conditions.

To develop the conceptual framework, we first identified the variables associated with medical and farm economic vulnerability. Then we organized and visually represented these variables by drawing on theoretical insights from the family farm and health literature (figure 4-1). By showing the individual ( ), farm household ( ), and farm operation ( ) as overlapping spheres, our conceptual framework speaks to the family farm literature that has discussed the interactions between the three spheres in the agro-family system (Bennett & Kohl, 1982; Bernstein et al., 2018; Chayanov, 1966; Friedmann, 1978b; Inwood & Sharp, 2012; Reinhardt & Barlett, 1989). By showing the agro-family system embedded in larger systems ( ), our conceptual framework speaks to both the family farm literature which has discussed the ways in which family farms are embedded in complex environments (Bennett & Kohl, 1982; Smithers & Johnson, 2004; van der Ploeg, 2018) and the health literature that has long used socio-ecological models to understand the socio-economic determinants of health (Dahlgren & Whitehead, 1991; Link & Phelan, 1995). As with most graphical representations of complex systems, our conceptual framework is simplified in part to ease readability. In reality, many of the factors are deeply interconnected such as those connected to individuals and households which we chose to present together. We now summarize the factors associated with medical and farm economic vulnerability related to the difference components of our

conceptual framework including health insurance, individuals and households, farm operation, and macro-level environments.

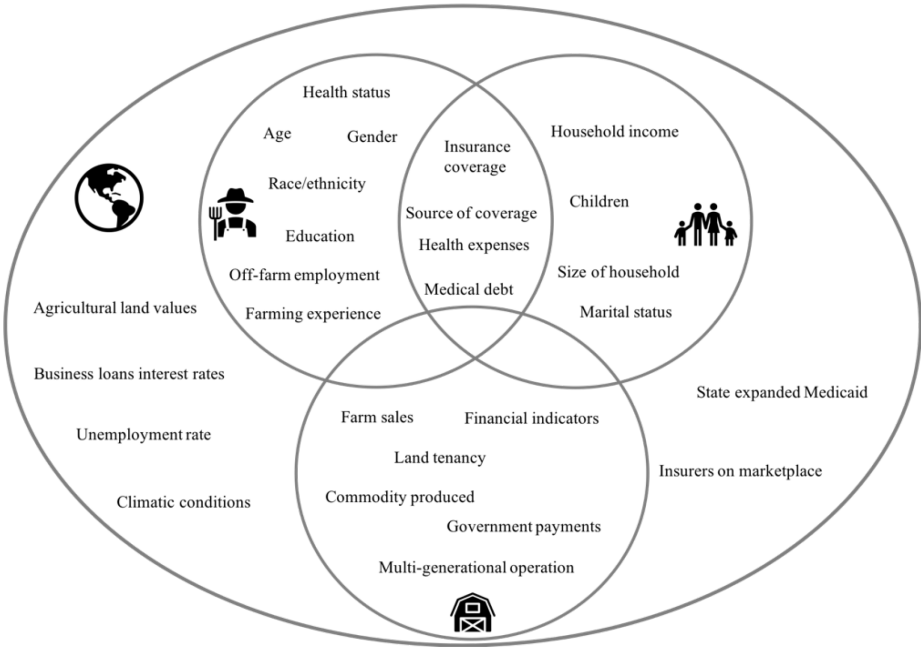

Figure 4-1. Factors associated with medical and farm economic vulnerability

4.3.1. Health insurance

Starting with health insurance coverage, the medical economic vulnerability literature points to not only the importance of having health insurance but also to the type of coverage. Households were more likely to experience medical economic vulnerability when they did not have insurance, had experienced a gap in coverage, and had high out-of-pocket and deductible expenses. The source of coverage, however, was not

consistently associated with vulnerability (Banegas et al., 2016; Baughman et al., 2015; Hamel et al., 2016; Himmelstein et al., 2009; Pryor et al., 2008, 2009).

4.3.2. Individual and household characteristics

The second set of factors is connected to individual and household demographics and speaks to the vulnerability of those with a poorer health status and with a pre-existing or chronic condition, female headed households and/or operated farms, African Americans, unemployed individuals, full-time farmers, beginning farmers (i.e. those with less than 10 years of experience), farm households with off-farm employment, larger households and households with children, lower income households, and households with lower educational attainment (Banegas et al., 2016; Baughman et al., 2015; D'Antoni et al., 2009; Katchova & Dinterman, 2018; Nadolnyak et al., 2019; Wiltshire et al., 2016). Overall the greater vulnerability of these individuals and households is not surprising. It reflects the social stratification literature, a large body of work focused on understanding the distribution of resources, social mobility and social inequalities across social groups; most often on the basis of race/ethnicity, gender, class, and occupational status (for an overview of the social stratification field by lead scholars see the Grusky (2019) edited volume).

The relationship between economic vulnerability and age is not as clear cut as for the other individual and household characteristics. While some studies found that younger households were more likely to be vulnerable, others did not find associations with age (Baughman et al., 2015; D'Antoni et al., 2009; Hamel et al., 2016; Himmelstein et al., 2009; Katchova & Dinterman, 2018; Pryor et al., 2008, 2009). The discrepancy in

the findings around age both point to the importance of considering the issue of medical vulnerability among all age groups but also of considering the intersection with social policy and the larger health insurance environment. For example, in the U.S., old-age public insurance, means-based public insurance for children, and the ability to stay on a parents' employment-based or private plan all have an age criterion.

4.3.3. Farm operation characteristics

The third set of factors is connected to the farm operation. Farm operations that are more likely to be vulnerable include small and large scale operations as their sales are either low or their financial leverage is high, operations with higher debt/asset ratio, fixed expenses over variable expenses, debt levels, and returns to assets (Bryant & Maisashvili, 2017; D'Antoni et al., 2009; Franks, 1998; Katchova & Dinterman, 2018). However, there are no clear patterns in the association with economic vulnerability for farm income, land tenancy, commodities produced, and government payments (D'Antoni et al., 2009; Franks, 1998; Katchova & Dinterman, 2018; Nadolnyak et al., 2019; Shepard & Collins, 1982). The lack of pattern might be due to differences across studies including in geographical areas, dependent variables, or use of aggregate vs. farm operation level data.

4.3.4. Macro-level environments

The last set of variables is connected to macro-level environments. The farm vulnerability literature has pointed to greater vulnerability associated with agricultural land values, increase in unemployment rates, and climatic events (Dinterman et al., 2018;

Nadolnyak et al., 2019). While the medical economic vulnerability literature we reviewed did not assess the role played by the health insurance environment, the literature assessing the effects of the ACA points to increased coverage and access to care in states that have expanded Medicaid as well as indications that the number of health insurance plans offered on the marketplace shapes the type and cost of insurance coverage (Antonisse et al., 2019; Burke et al., 2014; Frank & McGuire, 2017; Mazurenko et al., 2018). We included these factors connected to the larger health insurance environment in our conceptual model as one of the goals of our article is to understand the role played by institutional arrangements, such as those connected to the social policy environment, in supporting the farm sector.

4.4. Methods

4.4.1. Research design and data collection

To answer our research questions (*To what extent are farm households experiencing difficulties due to health-related costs?* And *what are the factors associated with objective and subjective measures of medical economic vulnerability?*), we used a mix of data from a primary closed ended survey and from publicly available secondary data. The primary data on farm individuals, households, and operations are from a larger national study funded by the USDA aimed at understanding how health insurance impacts farms and ranches and economic development through food and agriculture (project title: Health Insurance, Rural Economic Development, and Agriculture (HIREDnAg)). The survey instrument was designed using several bodies of literature (access to health insurance and health care with a focus on rural areas and the farm population, health

literacy, and farm business development) and insights from national key informant interviews with individuals in Extension, tax preparers, farm organizations and non-profits, and state department of health and agriculture staff. The instrument included questions on basic individual and household demographics, farm operation characteristics, general health condition, use of health care, health insurance coverage, access to information, and farm planning and management. The research protocol was determined to be exempt from review by the University of Vermont Institutional Review Board. Secondary data on health insurance and labor market environments were obtained from The Henry J. Kaiser Family Foundation (2019), the Robert Wood Johnson Foundation (n.d.), and the U.S. Bureau of Labor Statistics (2016).

We collected the survey data using the tailored design method for mail and online surveys (Dillman et al., 2014). The survey sample frame was farm households in 10 case study states (California, Kentucky, Massachusetts, Michigan, Mississippi, Nebraska, Pennsylvania, Utah, Vermont, and Washington State) (figure 4-2). First, we selected these case study states to account for regional and production variations using the four USDA regions (Northeast, North Central, South, West). Second, we selected the case study states to account for differences across health policy environments by pairing states that had expanded Medicaid through the ACA within each of the four regions with states that had not (except in the Northeast region). For a greater discussion on the choice of the study states, see Inwood et al. (2018). In collaboration with the University of Vermont Print and Mail Center, we sent advanced letters, multiple mailing and emailing of the survey instruments, and reminders between February and April 2017 to a purchased list of 10,165 randomly selected farm households in the case study states. The letter asked

that the household member with the most knowledge about health insurance fill out the survey. We assigned unique token number to each household to track responses and prevent duplicates. A team of trained research assistants entered the paper surveys which were then merged with the online surveys. We conducted quality control at several points during the data entry and merging processes including checking for accurate data entry and duplicate responses. A total of 1,292 completed surveys were received and we removed 113 hobby farms (farm with sales under $10,000) from our analysis to focus on farmers that are most likely to be commercially oriented.

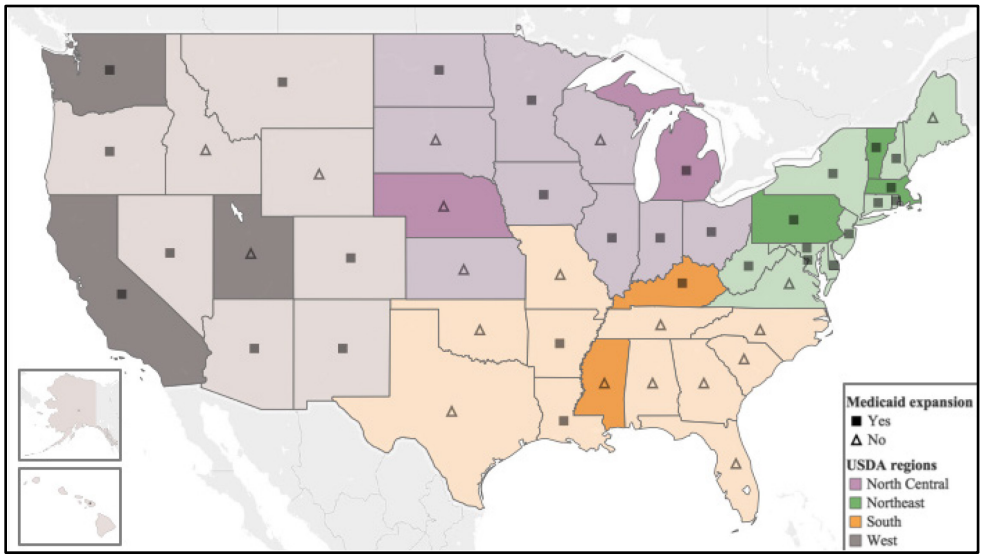

Figure 4-2. Study states based on health policy environment (as of 2016) and production variations

4.4.2. Measures and recoding

The variables used in the analysis, along with the descriptive statistics, are presented in table 4-1 and are categorized to match the conceptual framework (figure 4-1). Due to data limitation but also to reflect our research questions focused on medical economic

vulnerability, we do not include all of the factors from the conceptual framework in our analytical model. For example, we do not have data on the size of the household or household income (more on this variable below). Furthermore, we do not include variables connected to the macro-level environment connected to farm economic vulnerability such as climatic conditions or land values.

Unless specified otherwise, the variables were recorded as dummy variables (i.e. 'yes'/'no'). The decision to recode categorical variables was mostly driven by the need to have at least five observations in the dependent/independent variables cross-tabulations to ensure the validity of the regression analysis.

Starting with the dependent variables, we used the variable 'having a debt over $1,000' as the objective measure of economic vulnerability[20]. While the $1,000 threshold might seem low for households who operate a farm business, this threshold has been used in previous medical bankruptcy studies (Himmelstein et al., 2009; Himmelstein et al., 2005). Our subjective measure is based on the question "given your current financial and health insurance situation, how confident are you that you could pay the medical costs, without going into debt, if you had a major illness or injury such as heart attack, cancer, or loss of limb?" The answer to this question was recorded using a 5-point Likert scale and later collapsed in three categories to meet the 5 observations per cell requirement. The ordinal logistic model with the subjective measure based on a scale failed the proportionality odds assumption test and we ultimately chose to recode this variable as a dummy variable for two main reasons. First, while a multinomial logistic model is

[20] Because having a medical debt is likely associated with the confidence in the ability to pay for major medical expenses without going into debt, the medical debt dependent variable in model 1 becomes an independent variable in the subjective measure of medical economic vulnerability model (model 2).

generally recommended when the ordinal logistic model fails the proportionality odds assumption test, the multinomial logistic model is the least parsimonious and the interpretation of the results is cumbersome. Second, by having dummy objective and subjective measures of medical economic vulnerability, we can more easily interpret and compare the results of our two models.

We recognize that objective and subjective medical economic vulnerability are multi-dimensional constructs and that using one variable for each of these measures is a limitation of both our study and of the medical economic vulnerability literature in general. In an attempt to address this limitation, we conducted exploratory factor analysis (EFA) to create a composite measure of subjective medical economic vulnerability using three survey questions. The results of the EFA were satisfactory but missing observations lead to an important drop in the sample size when using the new construct in the analysis[21]. Because of the loss of observations, we choose to conduct our analysis using one variable for the subjective measure, however as we point out in the discussion section, the construct of a valid measure of medical economic vulnerability warrants future research. In our sample, 20.3% of farm households had a medical debt over $1,000, and 55.5% of the sample were not confident that they could pay for major health expenses without going into debt.

Moving to the independent variables, the measures connected to health insurance speak to coverage, source of coverage, costs including premiums, deductible, out-of-pocket expenses, and health savings tools (i.e. health savings account (HSA) and flexible

[21] Results of the exploratory factor analysis are available upon request.

spending accounts (FSA)[22]). Health insurance premium was recorded as a continuous variable. Health insurance deductible and out-of-pocket expenses were recorded as categorical variables and we collapsed the categories from 7 to 4. Reflecting national level data on the farm population, the rate of health insurance coverage in our sample is high with 92.5% of farm households reporting that all of the household members were covered by health insurance all year (U.S. Department of Agriculture, 2016b) and 73.1% of farm households reported that all members were covered under the same plan. The most frequent source of health insurance coverage was off-farm employment (32.3%) followed by direct purchase of a private plan (28.6%), and public health insurance (28.6%). Farm households spent on average $750.1 in monthly health insurance premiums in 2016 (standard deviation $833.4) and over half of the respondents respectively had deductibles $2,000 and more and out-of-pocket expenses $3,000 and over. Last 23% of respondents had a HSA and 8.3% had a FSA.

In our conceptual model, we presented variables connected to individuals and households in separate spheres to reflect the previous literature. In reality variables connected to these two spheres can be hard to distinguish. Furthermore, because of the way we collected the data, we do not make the distinction between the two in our analysis. However, it should be noted that variables connected to race and ethnicity, educational attainment, and beginning farmers status were those of the individual who responded to the survey. The fact that we did not collect demographic information for all

[22] HSA and FSA accounts are savings accounts with tax advantages to be used for eligible health expenses. HSAs are attached to individuals, are associated with high deductible health plans, and the contributions to the account can be rolled over every year. FSA accounts are tied to an insurance group or employer and unused savings expire at the end of the year and cannot be transferred to another insurance group or employer.

of the household members is a limitation of our study. We recoded the race and ethnicity variables from seven categories to a dummy variable White non-Hispanic/Minority and educational attainment from five to three categories. Variables collected at the household level include having a pre-existing or chronic condition, presence of household members under 18 and over 65, and off-farm work. The age variables for households were obtained using a question in which we asked for source of health insurance coverage for household members in different age groups. Some of the previous literature on medical economic vulnerability and farm economic stress have used a farm household income variable. We did not collect this information but to assess potential specification errors due to missing an important variable, we ran our preliminary analysis with and without a household income estimate that we obtained from the USDA[23]. There were no noticeable differences when we compared the model fit tests, coefficient, and standard errors. Furthermore, the linktest, a STATA function to test for additional predictors that are not statistically significant other than by chance, indicated no misspecification error (UCLA Institute for Digital Research and Education, n.d.-a). In our sample, 59.5% of farm households had at least one member with a pre-existing or chronic health condition. Almost half of farm households had an off-farm job. Under one quarter of farm households had members under 18 and over one quarter had members over 65. Survey respondents were mostly white (95.7%), 38.7% were female, 42.9% had a bachelor's and

[23] To create a household income estimate, Daniel Prager, previously at the USDA, extracted the responses of farmers located in the 10 case study states (except for two states where regional data were used) from the 2016 Agricultural Resource Management Survey (ARMS) dataset. He then estimated a range of household income estimates for this sub-sample using a combination of five variables (1) farm household reported off-farm employment, 2) total farm sales superior or equal to $250K, 3) educational attainment at least some college, 4) primary operator is 65 and over and, 5) beginning farmer status). We matched this newly estimated household income to the same five variables in our dataset.

higher while 37.3% had a high school degree or less. Last, 7.7% of survey respondents were beginning farmers (i.e. had farmed for less than 10 years).

The independent variables connected to the farm operation include multi-generational farm status, commodity produced, and farm sales. We collapsed farm sales from eight to four categories using the USDA farm size categories based on farm sales (hobby, small, medium, and large)[24]. As discussed above, we removed hobby farmers from the analytical dataset and 39.7% of the farms in the sample were small, 21.7% were medium, and 38.6% were large. Over three quarter of the farms in our sample were multi-generational farms. These farms produced grain (53.4% of the sample), livestock (37.9%), dairy (20.0%), and fruits and vegetables (13.8%).

Last, the independent variables connected to health insurance and labor market environments were obtained from publicly available data and merged to our dataset using state and ZIP code variables. In particular, we used the list of state of Medicaid expansion from The Henry J. Kaiser Family Foundation (2019), the number of health insurance plans on the state and county market places from the Robert Wood Johnson Foundation (n.d.) HIX dataset, and the unemployment rate at the county level from the U.S. Bureau of Labor Statistics (2016). Over half of the survey respondents lived in states that have expanded Medicaid and on average there were 6.8 insurers on the market place (standard error 3.3). Last, unemployment rate in the counties of residence was on average 4.6% (2.0 standard error).

[24] USDA categories based on farm sales: hobby: less than $10,000 – small: between $10,000 and $249,999 - medium: between $250,000 and $499,999 - large: $500,000 and over.

Table 4-1. Model variables and descriptive statistics

	Percent	Mean (std. err.)
Dependent variables: Measures of medical economic vulnerability		
Medical debt over $1,000[1]	20.25	
Not confident that could pay for major health expenses	55.45	
Independent variables: Health insurance		
Had health insurance for all HH members all year	92.50	
All household has same plan	73.10	
Source of health insurance		
Off-farm employment	34.27	
Farm Bureau or Farmers' Union	5.17	
Direct purchase of private plan	33.84	
Public health insurance	28.58	
Monthly insurance premium in 2016		750.78 (833.37)
Health insurance deductible		
None	9.16	
$1 to $1,999	30.95	
$2,000 to $5,000	32.85	
More than $5,000	27.04	
Out-of-pocket expenses		
up to $999	22.09	
$1,000 to $2,999	26.14	
$3,000 to $4,999	21.38	
$5,000 and over	30.40	
Health savings account	22.80	
Flexible spending account	8.27	
Independent variables: Farm individual and household levels		
Pre-existing or chronic condition	59.48	
At least one HH member under 18	23.32	
At least one HH member over 65	26.21	
White	95.70	
Education		
HS or less	37.33	
Some college	20.76	
Bachelor's degree and higher	42.92	
Female	38.73	
Off-farm job	47.18	
Beginning farmer	7.73	

Continued

Table 4-1. Continued

Independent variables: Farm operation level		
Multi-generational farm	77.03	
Commodity produced		
Dairy	19.98	
Livestock	37.91	
Grain	53.35	
Fruits and vegetables	13.83	
Farm sales		
Small	39.67	
Medium	21.71	
Large	38.62	
Independent variables: Health insurance and labor market environments		
State expanded Medicaid	56.78	
Number insurers on marketplace		6.84 (3.33)
Unemployment rate		4.61 (1.96)

Notes. [1]Having a medical debt over $1,000 is used as the dependent variable in the objective measure of medical economic vulnerability model (model 1) and it is used as an independent variable in the subjective measure of medical economic vulnerability model (model 2).

4.4.3. Analytical strategy

To gain an understanding of the prevalence of medical economic vulnerability among the surveyed farm households, we first conducted bivariate analysis between the objective and subjective measures of vulnerability and all the independent variables. Then, to assess the factors associated with medical economic vulnerability, we conducted logistic regression analysis. To account for the sampling design, whereas farm households were randomly selected from a population of clusters (i.e. states), we clustered the standard

error at the state level [25] (Abadie et al., 2017). Model diagnostics indicated that the two models were acceptable fit for the data (based on Hosmer-Lemshow test), there were no specification errors (based on the linktest), multicollinearity was not a problem (mean variance inflation factor (VIF) was ~ 1.50 across the two models and maximum VIF value was 2.80), and there were no major influential observations (based on Pearsons residuals and deviance residuals).

To limit potentially biased estimators due to missing observations and to maximize the use of survey data, we conducted the bivariate and multivariate analysis on imputed datasets (one dataset for each of the dependent variables and we conducted the bivariate analysis on the objective measure imputed dataset). Between 47 and 52% of the observations did not have any missing values in the two logistic models. Values that were missing most frequently was for the 'health insurance premiums' variable with between 9 and 11% of the observations missing. In the subjective measure model, 6% of the observations were missing the dependent variable (i.e. confidence in ability to pay for major illness or injury without going into debt). We used the multiple imputation by chained equation (MICE) approach with 25 iterations. We chose to use this imputation approach because it accounts for variables that take on specific values such as categorical and dummy variables (UCLA Institute for Digital Research and Education, n.d.-b). We included all of the model variables in the imputation model but since we did not use an auxiliary variable, we did not impute the values for the dependent variables to limit unnecessary random variations (Allison, 2012; UCLA Institute for Digital Research and

[25] While a multilevel analysis is indicated to parse out the effects of variables at various levels of analysis, we did not have the generally recommended number of clusters (at least 20) to conduct this type of analysis (Hox, 2010).

Education, n.d.-b). We polled the imputed datasets for analysis using the Rubin's combination rule. Our imputed analytical datasets respectively included 1,009 and 993 observations for the objective and subjective measures models (compared to respectively 617 and 616 for the unimputed analytical datasets)[26]. We conducted the imputation and data analysis in STATA IC (version 15).

The model F-tests indicate that in the two models, at least one of the independent variables is different from 0 (objective measure model: F=38,58; p=0.000; subjective measure model: F=106.43; p=0.000) meaning that the models are better fit than models with no predictors (table 4-2). The adjusted R^2 is not available for the models based on the imputed datasets but the adjusted R^2 based on the unimputed datasets were respectively 13.29% and 10.83% for the objective and subjective models.

4.5. Results

4.5.1. Prevalence of medical economic vulnerability among farm households

To begin to understand economic vulnerability among the farm population, we first assess the extent to which farm households experience medical economic vulnerability using an objective and subjective measure. Furthermore, we use bivariate analysis to assess differences in the prevalence of economic vulnerability across groups on the basis of health status, health insurance coverage, farm individuals, households, and operations characteristics along with health insurance and labor market environments.

[26] Interested readers can see the results of the logistic regression models on non-imputed data in Appendix A. Except for a few variables, overall the size and signs of the coefficients are similar. Most of the differences are connected to statistical significance of coefficients potentially indicating biased estimators when conducting analysis on non-imputed data.

Starting with the objective measure of economic vulnerability, 20.3% of farm households in our sample had a medical debt of at least $1,000 in 2016. Out of the factors included in our conceptual model, the bivariate analysis reveals that few of the variables have statistically significant differences across groups except for variables connected to health insurance coverage, health status, and gender (p value at most 0.05) (see table 4-2 for variables with statistically significant differences; results for all variables are available upon request). Farm households who reported having a medical debt in greater proportion included those who did not have health insurance for all members all year (29.2% compared to 19.5% of households with full coverage), those who were covered by more than one plan (27.0% compared to 17.9% for households with same plan for all members), those who had higher deductibles (ranging from 12.9% of households with no deductibles having a debt to 21.7% of households with deductibles over $5,000 having a medical debt), those who had higher out-of-pocket expenses (ranging from 12.2% of households with out-of-pocket expenses up to $999 having a debt to 28.7% of households with out-of-pocket expenses over $5,000 having a debt), and those who had pre-existing or chronic condition (24.2% compared to 14.6% of households without a health condition). Last, women reported having a medical debt in greater proportion than men (24.1% of female who responded to the survey reported a medical debt compared to 17.8% of men). While the higher proportion of female reporting a debt for the household may reflect the greater vulnerability of single female headed household, we did not collect information on marital status. Another explanation for the difference between male and female could be that female have a greater knowledge of household finances and/or that they are more willing to disclose household debts.

Table 4-2. Farm households with medical debt over $1,000 in 2016 (in %)

		Has medical debt (in %)	p
All farm households (HH)		20.3	
Health insurance			
HH had health insurance for all members all year			0.047
	Yes	19.5	
	No	29.2	
All HH members had same plan			0.002
	Yes	17.9	
	No	27.0	
Health insurance deductible			0.015
	No deductible	12.9	
	$1 to $1,999	16.2	
	$2,000 to $5,000	25.4	
	More than $5,000	21.7	
Out-of-pocket expenses			0.000
	Up to $999	12.2	
	$1,000 to $2,999	14.2	
	$3,000 to $4,999	24.3	
	$5,000 and over	28.7	
Farm individual and household			
HH member(s) with pre-existing or chronic condition			0.000
	Yes	24.2	
	No	14.6	
Gender			0.018
	Female	24.1	
	Male	17.8	

The subjective measure of medical economic vulnerability indicates that 55.5% of farm households in our sample were concerned that they could not pay for the cost of a major illness or injury without going into debt. Compared to the objective measure of medical economic vulnerability, the bivariate analysis reveals that more of the variables from the conceptual framework have statistically significant differences across groups (p value at most 0.05) (see table 4-3 for variables with statistically significant differences; results for all variables are available upon request). This includes variables connected to health insurance coverage. Farm households who reported in greater proportion that they

were not confident in their ability to pay for major medical expenses did not have health insurance coverage for all members all year (74.1% compared to 54.0% of those with full coverage), did not have insurance coverage through off-farm employment (58.0% compared to 51.4% of households with off-farm employment coverage), had coverage through a private plan (59% compared to 53.0% for those without a private plan), did not have public health insurance (59.4% compared to 46.9% of those with a public plan), had higher deductibles (ranging from 36.3% of households with no deductibles not being confident to 65.8% of households with deductibles over $5,000 not being confident), and had higher out-of-pocket expenses (ranging from 47.5% of households with out-of-pocket expenses up to $999 not being confident to 59.3% of households with out-of-pocket expenses over $5,000 not being confident). Several variables connected to the individual, household, and farm operation spheres have statistically significant differences across groups. Farm households who reported in greater proportion that they were not confident did not have household members over 65 (61.8% compared to 39.7% for households with at least one member over 65), had members under 18 (63.8% compared to 36.2% for households without a member under 18), had lower levels of educational attainment (respectively 59.5% for those with a high school degree or less compared to 47.8% for those with a bachelor's degree or more), were female (61.6% compared to 51.9% for male), were multi-generational farmers (58.2% compared to 46.5% for first generation farmers), were dairy producers (63.8% compared to 53.3% for farm operations that do not produce dairy), and did not grow fruits and vegetables (57.0% compared to 45.6% of farm households grow fruits and vegetables) (p at most 0.05). We

note that there is no longer a statistically significant difference for households with pre-existing and chronic conditions compared to households without.

Table 4-3. Farm households that are not confident that they could pay for cost of major illness or injury without going into debt (in %)

	Not confident could pay for major health expenses without debt (in %)	p
All farm households (HH)	55.4	
Health insurance		
HH had health insurance for all members all year		0.001
Yes	54.0	
No	74.1	
Had medical debt over $1,000		0.000
Yes	66.6	
No	33.4	
Source of health insurance (vs. not)		
Off-farm employment	51.4	0.044
Direct purchase of private plan	59.4	0.042
Public health insurance	46.9	0.000
Health insurance deductible		0.000
No deductible	36.3	
$1 to $1,999	47.4	
$2,000 to $5,000	60.2	
More than $5,000	65.8	
Out-of-pocket expenses		0.001
Up to $999	47.5	
$1,000 to $2,999	49.6	
$3,000 to $4,999	65.4	
$5,000 and over	59.3	
Farm individual and household		
At least one HH member under 18		0.002
Yes	63.8	
No	36.2	
At least one HH member over 65		0.000
Yes	39.7	
No	61.8	
Education		0.001
HS or less	59.5	
Some college	63.6	
Bachelor's degree and higher	47.8	

Continued

Table 4-3. Continued

Female			0.005
	Yes	61.1	
	No	51.9	
Farm operation			
Multi-generational farmer			0.002
	Yes	58.2	
	No	46.5	
Commodity produced			
	Dairy	63.8	0.007
	Fruits and vegetables	45.6	0.013

4.5.2. Factors associated with objective and subjective measures of medical economic vulnerability

Besides assessing the prevalence of medical economic vulnerability, we also assess the associated factors using multivariate regression analysis. Overall, the patterns found through the bivariate analysis are similar when controlling for health insurance arrangements, farm household demographics and farm operation characteristics, and health insurance and labor market environments in the logistic regression models (table 4-4).

Starting with the factors associated with having a medical debt over $1,000 and apart from educational attainment, only variables connected to health insurance coverage and health status were statistically significant. Looking at health insurance coverage and controlling for the other predicators in the model, the odds of having a medical debt are 50% lower for households covered by the same insurance plan compared to households with more than one plan (p=0.006), respectively 66% higher for those with out-of-pocket expenses between $3,000 and $4,999 (p=0.002) and 2.52 times higher for those with out-of-pocket expenses $5,000 and over (p=0.000) compared to households with expenses up

to $999, 49% lower for households with HSA accounts (p=0.000), and 88% higher for those with an FSA account (p=0.003). The odds of having a medical debt are 48% higher for those with some college compared to those with a high school degree or less (p=0.004) while the probability of having a debt is lower for those who hold at least a bachelor's degree compared to those with some college (p=0.002). Last, the odds of having a medical debt over $1,000 are 69% higher for households with pre-existing or chronic conditions compared to those without (p=0.000). The other variables in the model were not statistically significant pointing to no, or limited, association between these variables and the probability of having a medical debt. Of note, this includes having health insurance coverage, sources of coverage and cost of premium. This also includes variables connected to health policy environment and labor markets.

Moving on to the factors associated with farm households not being confident that they could pay for the cost of a major illness or injury without going into debt, the significance of the health insurance variables shifted some and more variables connected to the farm household and the farm operation are statistically significant. Controlling for the other predicators in the model, the odds of not being confident that farm household could pay for the cost of a major illness or injury without going into debt are 62% lower for households who had health insurance coverage for all members all year (p =0.012), 44% higher for households with a medical debt over $1,000 (p=0.030), 46% higher for households with public health insurance (p=0.011), 35% higher for households covered under the same plan (p=0.010), respectively 2.43 times higher for those with deductibles between $2,000 and $5,000 (p=0.002), and 3.23 times higher for those with deductibles $5,000 and over (p=0.001) compared to households with no deductibles. Turning to farm

household demographics, the odds of not being confident in ability to pay for major health expenses are 55% lower for households with at least one member over 65 ($p=0.007$) and are 43% lower for white households ($p=0.035$). Looking at farm operation variables, the odds of not being confident are 49% higher for multi-generational farm operations ($p=0.012$) and 75% higher for dairy operations ($p=0.005$). Compared to the logistic regression for the objective measure of medical economic vulnerability, variables connected to health status, out-of-pocket expenses, and having HSA and FSA accounts are no longer statistically significant. Last, while the variables having public insurance and having a household member over 65 are statistically significant, the interaction term of these two variables is not statistically significant. The insignificance of the interaction term indicates that when looking at the effect of having a public plan not being confident, having a household member over 65 does not matter and vice versa pointing to a more nuanced finding connected to the role of public insurance which we discuss below.

Table 4-4. Logistic regression predicting the probability of farm households experiencing medical economic vulnerability

	Model 1: objective measure Have debt over $1,000			Model 2: subjective measure Not confident that can pay for major health expenses without going into debt		
	Coef. (Std. Err.)	OR	p	Coef. (Std. Err.)	OR	p
Health insurance						
Health insurance for all HH members all year	-0.38 (0.39)	0.68	0.324	-0.96 (0.38)	0.38	0.012
Medical debt over $1,000	-	-	-	0.37 (0.17)	1.44	0.030
Source of health insurance (vs. not)						
Off-farm employment	-0.38 (0.34)	0.68	0.261	-0.09 (0.18)	0.92	0.637
Farm Bureau or Farmers' Union	0.14 (0.37)	1.15	0.702	0.35 (0.42)	1.42	0.395
Direct purchase of private plan	-0.05 (0.21)	0.95	0.803	0.15 (0.24)	1.16	0.518
Public health insurance	0.17 (0.24)	1.18	0.474	0.38 (0.15)	1.46	0.011
All household has same plan	-0.70 (0.25)	0.50	0.006	0.30 (0.12)	1.35	0.010
Monthly insurance premium in 2016	0.00 (0.00)	1.00	0.211	-0.00 (0.00)	1.00	0.374
Health insurance deductible (vs. none)						
$1 to $1,999	0.12 (0.53)	1.13	0.815	0.41 (0.28)	1.51	0.142
$2,000 to $5,000	0.72 (0.46)	2.06	0.118	0.89 (0.29)	2.43	0.002
More than $5,000	0.45 (0.45)	1.57	0.318	1.17 (0.36)	3.23	0.001
Out-of-pocket expenses (vs. up to $999)						
$1,000 to $2,999	-0.15 (0.23)	0.86	0.504	-0.26 (0.15)	0.77	0.084
$3,000 to $4,999	0.51 (0.17)	1.66	0.002	0.30 (0.16)	1.34	0.062
$5,000 and over	0.92 (0.18)	2.52	0.000	-0.14 (0.17)	0.87	0.435
Health savings account	-0.66 (0.19)	0.51	0.001	-0.39 (0.43)	0.68	0.367
Flexible spending account	0.63 (0.21)	1.88	0.003	-0.18 (0.40)	0.83	0.651

Continued

Table 4-4. Continued

Individual and farm household						
Pre-existing or chronic condition	0.53 (0.13)	1.69	0.000	0.19 (0.12)	1.20	0.125
At least one HH member under 18	0.31 (0.21)	1.37	0.131	0.31 (0.21)	1.37	0.135
At least one HH member over 65	0.06 (0.61)	1.06	0.918	-0.81 (0.30)	0.45	0.007
White	0.39 (0.56)	1.48	0.483	-0.56 (0.27)	0.57	0.035
Education (vs. HS or less)						
Some college	0.39 (0.13)	1.48	0.004	0.19 (0.13)	1.21	0.151
Bachelor's degree and higher	-0.00 (0.14)	1.00	0.995	-0.29 (0.19)	0.75	0.134
Female	0.18 (0.16)	1.20	0.264	0.17 (0.15)	1.18	0.264
Off-farm job	0.06 (0.27)	1.06	0.832	0.08 (0.14)	1.08	0.568
Beginning farmer	0.15 (0.34)	1.16	0.665	-0.02 (0.18)	0.98	0.896
Farm operation						
Multi-generational farmer	-0.19 (0.21)	0.83	0.364	0.40 (0.16)	1.49	0.012
Commodity produced (vs. not)						
Dairy	0.37 (0.49)	1.45	0.443	0.56 (0.20)	1.75	0.005
Livestock	-0.16 (0.24)	0.85	0.501	0.18 (0.23)	1.19	0.446
Grain	-0.24 (0.25)	0.79	0.351	0.17 (0.20)	1.18	0.399
Fruits and vegetables	0.42 (0.35)	1.54	0.214	-0.11 (0.17)	0.90	0.517
Farm sales (vs. small)						
Medium	-0.36 (0.28)	0.70	0.199	-0.20 (0.22)	0.82	0.363
Large	-0.49 (0.25)	0.62	0.055	-0.28 (0.13)	0.76	0.034
State expanded Medicaid	-0.50 (0.33)	0.61	0.130	-0.27 (0.24)	0.77	0.263
Number insurers on marketplace	0.01 (0.04)	1.01	0.715	0.03 (0.03)	1.04	0.197
Unemployment rate	0.05 (0.05)	1.05	0.308	-0.01 (0.03)	0.99	0.730

Continued

Table 4-4. Continued

Interaction						
Public insurance * HH member over 65	-0.47 (0.63)	0.62	0.452	-0.04 (0.42)	0.96	0.932
Constant	-1.72 (0.91)	0.18	0.057	0.31 (0.67)	1.37	0.640
Model F-test	F (35, 3496.3) = 38.58			F (36, 3604.0) = 106.43		
Model p-value	0.000			0.000		

4.6. Discussion

Our study aimed to empirically assess: (1) the extent to which U.S. farm households are experiencing difficulties due to health-related expenses and (2) the factors associated with objective and subjective measures of medical economic vulnerability. In what follows, we discuss our findings along three main themes: (1) vulnerability of the farm population, (2) role of health insurance coverage and health policy and, (3) objective vs. subjective medical economic vulnerability. Based on data from the early years of implementation of the ACA, these findings provides an important update to the work of Lottero et al. (2007), Pryor et al. (2008) and, Pryor et al. (2009).

4.6.1. Vulnerability of the farm population

Taken together, our findings point to the vulnerability of the farm population as a whole in case of a major illness or injury. This is because while 1 in 5 surveyed farm households had a medical debt over $1,000, more than 1 in 2 were not confident that they could pay for health expenses in case of a major illness or injury without going into debt. Furthermore, beyond health insurance variables, few of the variables connected to farm individuals and households, farm operation, and health and labor market environments were statistically significant. Last, while having a pre-existing or chronic condition was statistically significant in the medical debt model, it was not statistically significant in the confidence in the ability to pay for major health expenses model. The general sentiment of economic insecurity among the farm population has previously been highlighted in the

health literature as well as in pre-ACA studies among the farm population (Cutshaw et al., 2016; Dulitz & Schrader, 2013; Himmelstein et al., 2019; Himmelstein et al., 2009; Himmelstein et al., 2005; Jacoby & Holman, 2010; Jacoby et al., 2001; Lottero et al., 2006; Pryor et al., 2008, 2009).

Looking more closely at the few variables connected to farm individuals and households and the farm operation that are statistically significant, the findings overall align with the literature that forms the basis of our conceptual framework and the family farm literature more broadly. In particular, the signs of the associations between medical economic vulnerability with education and household over 65 aligns with the work of Banegas et al. (2016), Baughman et al. (2015), and Hamel et al. (2016). The lower odds of confidence of dairy farmers in paying for medical bills are likely due to the fact that dairy producers are less likely to have an off-farm job, less likely to have insurance, more likely to be privately insured, and more likely to have higher health insurance premiums (Ahearn et al., 2013; D'Antoni et al., 2014; U.S. Department of Agriculture, 2016a). The finding that multi-generational farm households had a lower probability of being confident in their ability to pay major medical bills could be surprising at first because multi-generational operations tend to be larger, have more assets, and more social supports to draw from (Inwood et al., 2013; Zulauf, 2004). However, operations with more financial leverage tend to be more at risk (Bryant & Maisashvili, 2017; D'Antoni et al., 2009; Franks, 1998). Our finding could also reflect the worry of having to sell farm assets to pay for household expenses and challenges passing on the farm to the next generation (Bennett & Kohl, 1982; Inwood et al., 2018; Salamon, 1992).

The finding of the general sentiment of economic insecurity due to health care costs and health insurance expenses among the surveyed farm households is important for several reasons. First, family farms are a heterogenous groups, may it be on the basis of age, gender, race/ethnicity, physical abilities, type of farm operation, or family goals. But, as the literature from low- and medium-income countries demonstrates, health shocks can strike any farm family at any time, and, health shocks tend to be more frequent than shocks to the farm operation (Bonfrer & Gustafsson-Wright, 2017). In line with this body of work and with the findings of our study, Becot and Inwood (2019) found no statistically significant differences across age groups in reporting health issues that make it difficult to work[27]. Taken together, this means that no matter the health policy context, health is a unifying issue across the heterogenous farm population and it reinforces the importance of considering household level issues when considering issues connected to farm development, and the ability of family farms to continue farming. Second, though issues connected to health care expenses and medical debt might not be as seen as salient for farm households in countries with comprehensive and affordable health insurance, financial vulnerability and negative impacts to the farm operation in case of a major illness or injury are likely relevant across social policy contexts. This is because a major illness or injury may incur costs besides health expenses such as loss of work time, decrease in farm sales, and wages for temporary farm workers. In a review of social safety net programs for farmers in Europe, Schoukens (2007) found that most countries did not provide financial support in case of an injury or illness.

[27] This article is based on the same dataset than the one used in this study.

4.6.2. Role of health insurance coverage and health policy

In line with the medical economic vulnerability literature, our findings not only speak to the importance of health insurance coverage but more importantly to potential issues connected to underinsurance (Hamel et al., 2016; Himmelstein et al., 2005; Lottero et al., 2006; Pryor et al., 2009). This is because while the rate of health insurance coverage is high (92% of surveyed farm households had health insurance for all members all year), having health insurance is not a guarantee of financial protection as evidenced by both the presence of medical debt and level of concern in the ability to pay for major health expenses. Based on our findings and in line with our conceptual model what seems to matter more is the level of coverage. This is evidenced by several findings. First, health insurance coverage is only a predictor in the subjective measure model, and except for having a public plan in the subjective measure model (which we discuss more below), the source of health insurance coverage does not seem to matter. Second, having the same plan for all household members is associated with a lower probability of having a medical debt. A potential explanation is that having more than one plan is likely connected to both the complexity of navigating multiple plans and health care provider networks as well as potentially exponentiated insurance deductibles and out-of-pocket expenses limits. Third, health care expenses and health saving tools (i.e. HSA and FSA) seem to matter more than health insurance premiums. Indeed, health insurance premiums were not a predictor in neither of the two models. Meanwhile, out-of-pocket expenses, HSA and FSA accounts were predictors in the objective measure model while health insurance

deductibles were predictors in the subjective measure model. Besides speaking to the complexity of the U.S. health insurance system and inadequacy of some of the health insurance plans offered, our findings connect back to our argument around how we measure vulnerability and the ways in which a limited set of objective measures may not speak to the complexity of the reality. For example, our findings illustrate that focusing on a simple indicator such as 'health insurance coverage' would give us an incomplete picture of the challenges that farm households may experience in meeting their health needs. We further discuss the issues connected to measurement and indicators below.

Our findings indicate that the role of public health coverage is nuanced. Having public insurance was not a significant predictor of having a medical debt but it was positively associated with not being confident in the ability to pay for major medical expenses. Furthermore, previous research has pointed to lower health expenses, debts, and concerns in ability to access and pay for care, as well as higher levels of satisfaction with coverage for household over 65 (Becot & Inwood, 2019; Dulitz & Schrader, 2013; Lottero et al., 2006). However, the non-statistically significance of the interaction term between public insurance coverage and having a member eligible for Medicare on being concerned in ability to pay for major medical bills indicates that age might not matter in case of a health shock. These findings bring up more questions than answers. This includes whether the lower level of confidence for households with a public plan is connected to being on a limited income for households under 65 who are eligible for targeted means-based insurance (Medicaid) or fixed (and potentially limited) income for households over 65 eligible for universal old-age coverage (Medicare). This finding also

brings up questions about the willingness of low-income farm households under 65 to apply for public insurance and welfare stigmas that have previously been highlighted in the family farm literature across Western industrialized countries (Brangeon & Jégouzo, 1995; Contzen & Crettaz, 2019; Deville, 2015; Gundersen & Offutt, 2005; Inwood, 2017). In other words, and tying back to the larger question around measurement that this article speaks to, would accounting for the sole presence of social safety net programs, such as Medicaid and Medicare, without accounting for program uptake provide an inaccurate understanding of the role that social safety net may play in supporting the farm population? Becot and Inwood (Under Review) have argued for the importance of considering farm households' lived experiences with social safety nets programs in order to understand the factors that shape program uptake.

Last, one of the gaps we identified in the literature is the limited consideration of the interaction between the health policy landscape and medical economic vulnerability. To tease out the potential effects of health insurance environment, we controlled for Medicaid expansion under the ACA and number of insurers on the marketplace. The sign of the Medicaid expansion variable suggests a protective role while the effect of the number of health insurance plans is small at best. However, these variables were not statistically significant predictors in neither of the two models. While recent studies have found that Medicaid expansion under the ACA has lowered the rate of uninsured and increased access to care (Antonisse et al., 2019; Mazurenko et al., 2018) and the number of insurers is associated with type and cost of insurance coverage (Burke et al., 2014; Frank & McGuire, 2017), the seemingly limited effects of the health insurance

environment on households' medical vulnerability points to potential limitations of our data. This includes a small sample size and inadequate number of clusters to conduct multilevel modelling. At the same time, the differences in health insurance environments across states are arguably limited. This is because there are limited variations in the structure of the health insurance landscape across states and the major variations across states are the income eligibility threshold for Medicaid or number of insurers and plans on the insurance marketplace. Cross-national comparative research that includes countries with a range of health insurance programs and modes of administration would provide key insights into health insurance arrangements that protect farm households the most.

4.6.3. Objective vs. subjective medical economic vulnerability

As we discussed in the introduction, a current limitation of the farm economic stress and farm bankruptcy literature is the extensive use of objective economic measures such as debt-to-asset ratio or bankruptcy rates which is likely explained by the lack of secondary data on measures that would speak to the lived experiences of farm households. Yet as Jackson-Smith (1999), Gillespie and Johnson (2010), and Rissing (2019) have shown, the focus on financial indicators means that we might have an inaccurate understanding of the factors associated with farm families' vulnerability and early farm exits. As a step towards a more holistic understanding of vulnerability among family farms, we compared and contrasted an objective and subjective measure of medical economic vulnerability. We found that the perceived financial difficulties in anticipation of a health shock was

three times higher than having an actual medical debt among surveyed farm households. This finding first brings up questions connected to mental and physical health outcomes as a result of potentially delaying or foregoing health care as well as the mental stress of financial vulnerability and worries about the future. Recently, Dwyer (2018) has argued for the importance of greater consideration of the intersection between debts and social stratification.

Because the farm economic stress and bankruptcy literature, and more broadly the family farm literature, tend to rely on objective measures, the discrepancy between the objective and subjective measure brings up several additional questions. First, to what extent are early signs of difficulties missed? An example of the potential disconnects between what can be measured and the realities on the ground, the U.S. agricultural sector has experienced several challenges within the last few years due to changes in market structures in the dairy sector, drops in farm income, sudden changes in trade policy, and more recently heavy rains and major flooding in the Midwest. While some have spoken about the difficulties experienced by farmers and increase in the manifestation of stress and suicide, others have hesitated to ring the alarm bell because financial indicators were not pointing to a crisis situation. This in turn brings up questions about the extent to which crisis responses are delayed and costlier when relying on objective measures as well as the extent to which resentment builds up among farm families when their lived difficulties are discredited by the numbers. Another question is the extent to which subjective measures provide an opportunity to gain insights into the lived realities of farm households. This question comes up in part because the increased

call for frameworks, indicator dashboards, and systems' modelling are generally built around measures that are easy to collect and measurable (see for example Cabell and Oelofse (2012); Speranza et al. (2014); United Nations (2019)). Measures connected to individuals worries, satisfaction, and outlook might not meet these criteria, yet they have the potential to bring in individual perspectives on potential challenges before these challenges are actually measurable. Additionally, the differences in factors associated with objective and subjective measures of economic vulnerability illustrate that a mix of objective and subjective measures can provide different, yet, complementary insights.

4.7. Conclusion

Besides providing empirical insights into medical economic vulnerability of the farm population, the goal of this article was to contribute to larger theoretical debates on the ability of family farms to remain on the land despite on-going structural changes and crises such as those experienced by farm households or on the farm.

Our empirical case reinforces the importance of considering household level issues when considering farm development and the ability of farm families to continue farming. As we discussed above, our assessment of the prevalence and of the factors associated with medical economic vulnerability point to the potential vulnerability of many U.S. farm families in case of a health shock. Because of the long-established overlap between the personal and professional spheres in the complex agri-family system (see for example Bennett and Kohl (1982), Reinhardt and Barlett (1989), Salamon (1992)), this could mean that worries surrounding the ability to pay for major medical

bills could parallel a sense of economic insecurity on the farm. Short of confirming our hypothesis, the response to the current U.S. farm crisis and actions around mental health issues by state and federal governments, land grant universities, and farm advocacy groups (Inwood et al., In Press) are indicative of a high level of economic insecurity.

While the evidence on the role of social policy through public health coverage and through state Medicaid expansion was limited and nuanced, our study does point to the role that health policy plays in shaping farm household's economic vulnerability. Directly connected to our empirical case, health policies shape the type, cost, and availability of both health insurance and health care. Aligning with previous research on medical debts and bankruptcy, our study suggests that health insurance and health care arrangements are as important, if not more in some cases, than having health insurance. Because our study is based on one country, we call on future research to assess the prevalence of medical economic vulnerability in a variety of social policy contexts. This research would provide a baseline understanding of an issue that has been seldom studied in the family farm literature but that is likely relevant across policy contexts. Our conceptual model grounded in both the health and family farm literature could be used as a guide for this work. This research would enable us to work towards theorizing the intersection between social policy, farm households' health and well-being, and their ability to stay on the land.

By comparing objective and subjective measures of medical economic vulnerability, our work points to the importance of considering farm households' lived experiences as they might point to early signs of troubles and provide opportunities for

early and/or different types of intervention that those predicated on financial measures alone. A consideration of farm households' lived experiences might also indicate signs of difficulties that might not reach crisis level but that, if frequent enough, might still erode farm families' mental health and the long-term viability of their operation. Discussions on measures to use are usually coupled with discussions around the validity and reliability of these measures. However, as we highlighted in our methods section, the use of one variable to assess objective and subjective measures of economic vulnerability is a limitation of our study, the medical economic vulnerability literature, and the farm economic stress and bankruptcy literature. Yet, economic vulnerability is a multi-layered issue and the use of a limited number of indicators to assess complex society problems likely leads to an inaccurate and limited understanding. Cognizant that as a society, we are not going to do away with measures to summarize social and natural phenomenon, research is needed to design better measures to assess the vulnerability of the farm population. At the same time, our findings highlight the importance of qualitative research to not only triangulate findings but to gain a more nuanced understanding of why despite similar challenges some family farms remain on the land while others do not.

Chapter 5 - Conclusion

I opened this dissertation by highlighting the difficulties that some U.S. farm households have meeting their social needs such as healthcare, childcare, or retirement due in part to the limited social safety net. While farm household level difficulties can have negative consequences on the farm operation, I pointed to our limited understanding of the links between farm households' social needs, social policy, and farm persistence. Rooted in the farm persistence tradition, the goal of this dissertation research was to expand the family farm literature by broadening the line of inquiry that examines the effects of difficulties in the farm household-farm operation system. I argued that thus far this line of inquiry has overall been uni-directional with the focus flowing from the difficulties originating at the farm operation level to the impacts on the farm household. Receiving insufficient attention is a line of inquiry flowing from the other direction. That is a line of research that examines how difficulties that originate within the farm household flow towards the farm operation and impact farm development, farm transition, and ultimately farm persistence.

To begin to explore the line of inquiry that examines how difficulties that originate within the farm household impact the farm operation, I framed my dissertation research around three overarching questions: (1) how do farm households meet their social needs? (2) how do farm households' social needs interact with farm development?

and, (3) what is the role of social policy in supporting farm households? To answer these questions, I used a mix of secondary document and primary survey data analysis coupled with a comparative approach across U.S. states, but also within France and the U.S. in three stand-alone, yet, connected research articles. The article presented in chapter 2 is about calling for a new research agenda at the intersection of the family farm and social policy literatures. To do that, I laid the ground work by summarizing the literature that has considered social safety programs in the farm sector in Western industrialized countries. Then comparing the French and U.S. government sponsored social safety nets for the farm sector, I developed a framework of institutionalized social supports to be used in future empirical work, identified factors that may influence farm households' use of social safety net programs, and highlighted avenues for future research. In the articles presented in chapters 3 and 4, I used health needs, a major social need, and health policy, a key component of social policy programs in Western industrialized countries, for U.S. farm households as an empirical case to work towards empirical and theoretical insights. In particular, I assessed farm households' access to health insurance and health care along the life course in chapter 3 and medical economic vulnerability among farm households in chapter 4.

In this conclusion chapter, I first draw on the insights from the three articles to answer my overarching research questions. Then I summarize the theoretical and practical contributions of this dissertation, discuss the limitation of the research and close with avenues for future research.

5.1. New insights into the interactions between farm household social needs, social policy, and farm persistence

5.1.1. How do farm households meet their social needs?

In line with the literature on U.S. farm households, I find evidence of difficulties meeting social needs (Ahearn et al., 2015; Gundersen & Offutt, 2005; Inwood, 2017; Inwood & Stengel, In Press; Lottero et al., 2007). Over half of the surveyed farm households reported at least one barrier to health care and over half were not confident that they could pay for major health expenses without going into debt. While the farm population is heterogenous due to demographic, farm operation, and geographical differences, the empirical case shows that social needs such as health can impact anyone. This finding echoes the literature from low- and medium-income countries on health shocks (Bonfrer & Gustafsson-Wright, 2017). For example, over one third of all farm households reported at least one member with a health issue that makes it difficult to farm with no differences across age groups. Furthermore, there were limited differences in who felt vulnerable to a health shock on the basis of farm household, farm operation, and health insurance landscape characteristics.

While the data reveal a general sense of dissatisfaction and vulnerability among farm households, the ways in which farm households access health insurance and health care varied along the life course. Younger households were most likely to report that their health insurance does not meet their needs despite having the lowest rates of pre-existing health conditions, having lower health expenses, and having the highest rate of public

insurance coverage after the older age group. Middle age households had the lowest rate of coverage, highest health insurance premiums, while a significant proportion reported barriers to care and health plans that do not adequately cover their needs. Last, older households reported the lowest level of barriers to care, were more likely to report satisfaction with their coverage, and were to a lesser extent also negatively impacted by health expenses despite having the highest rate of pre-existing conditions. As I discuss in chapter 3, these differences across age groups can likely be explained by life course effects associated with wealth accumulation and health needs as well by health insurance arrangements, which in the U.S., are often shaped by age.

This dissertation also touches on the factors that shape farm households' ability and willingness to meet their social needs through the use of social safety net programs. The document review of the French and U.S. social safety nets along with my review of the family farm literature revealed four sets of factors that likely shape how farm households meet their social needs. These factors are: (1) the importance of the user's experience and administration of the programs, (2) program eligibility, benefit levels, and farm income, (3) cost of the social safety net and cost saving strategies, (4) social controls, welfare stigma, and sunk costs. While the dataset I used in my empirical case did not include adequate variables to tease out individual's views on social safety nets, the empirical cases in chapters 3 and 4 points to the importance of health insurance arrangements, a major component of social policy, in shaping the ability to meet health needs. For example, the barriers to care most often cited by farm households were connected to health insurance costs and rules with limited differences across age groups.

Furthermore, it was mostly health insurance variables that were statistically associated with the two measures of medical economic vulnerability. This is an important finding because in the U.S., health insurance and health care issues are often discussed as a matter of individual choice. However, my findings point to factors over which households have little control other than opting in or out of a plan. In other words, farm household's choices are limited by what their health insurance covers, pays for, and the health care providers they can consult.

5.1.2. How do farm households' social needs interact with farm development?

The article in chapter 3 on access to health insurance and health care along the life course provides the most insights into how social needs interact with farm persistence. Reflecting the family farm literature, the findings speak to farm households needing to juggle trade-offs between consumption, savings, and investments when making health related decisions (Barlett, 1993; Friedmann, 1978a; Inwood & Sharp, 2012; Reinhardt & Barlett, 1989; Rissing, 2019). The older the age group, the less health expenses limited on-farm investment and the higher the level of confidence in the ability to pay for major health expenses without going into debts. In other words, it is seemingly in the younger years, at the time when the farm household and the farm operation may require the most financial resources, that farm households reported the greatest difficulties accessing and paying for care and the greatest investment limitations.

Besides impacting farm development in the early years, my findings point to how health insurance and health care costs may impact farm transition. This is because farm

households reported that these costs impacted their ability to save for retirement. The fact that over one third of households with a member over 65 still had off-farm health insurance brings up questions about the complexity of health insurance arrangements within households (due to potentially having a spouse over 65 and one under) but also about the potential inadequacy of Medicare to adequately cover health expenses and/or potential inadequacy of retirement pensions and savings to cover life expenses in older years. In turn, this could impact the timing of farm transition and higher costs of transfer to the next generation. Inadequate household income and retirement pensions also comes up as a challenge for households in other Western industrialized countries (Bika, 2007; Contzen et al., 2016; Conway et al., 2016; Davis et al., 2009). The study of the connection between aging, retirement savings and farm transition could lead to an important expansion of the farm transition literature.

5.1.3. What is the role of social policy in supporting farm households?

Based on my empirical evidence focused on health policy in the U.S., my findings point to the buffer provided by public health insurance. Echoing previous studies, some of the biggest differences in accessing health insurance and health care were between households under and over 65, the eligibility threshold for universal old-age insurance coverage (Chang et al., 2011; Dulitz & Schrader, 2013). Farm households with members over 65 reported lower barriers to care, had lower deductibles and out-of-pocket expenses, lower levels of concerns about medical debts, and higher satisfaction with coverage. While this might be due in part to the accumulation of wealth along the life

course and lower financial demands in older years, these findings point to easier and cheaper access for those eligible for Medicare. This also aligns with Inwood's (2017) qualitative findings that some farmers wait until they are 65 to take care of health issues. For younger households, my findings show that public health insurance is the second most common source of coverage. Since public insurance for those under 65 is means-based (excepted for individuals with a disability), this finding brings up questions about the extent to which public insurance keeps young households off the financial edge and/or frees up resources to develop the farm. Inwood (2017) finds both in her study.

While public health insurance seems to ease access to care, it can do so only to a point. This is because eligibility for public insurance does not mean that all difficulties disappear. Households over 65 were still reporting difficulties accessing health care and health insurance. Furthermore, having public insurance was positively associated with not being confident in the ability to pay for major health issues. This finding may be connected to the low and/or fixed income of those eligible for public coverage. It is also likely connected to the fact that individuals' lives are multi-dimensional with a diversity of demands on financial resources.

Perhaps more than the provision of social safety net programs through social policy, my findings overall point to the importance of institutional arrangements in shaping farm households' ability to meet their social needs. Put differently, what seems to matter is less who provides social supports but rather the cost to individuals, ease of use of the social support programs, individuals' ability to meet their needs, and ways in which eligibility criteria lead to exclusion and stigmatization. The importance of

institutional arrangements echoes across this dissertation. For example, it is one of the factors that I identified as shaping the ability to meet social needs in article 1. In articles 2 and 3, the factors that shaped the ability to meet health needs and medical economic vulnerability were connected to health policy, the organization of the health system and the type of health insurance farm households used. This means that the presence of social safety net alone does not guarantee the ability to meet social needs. This also means that questions around farm households' ability to meet their social needs and interactions with farm persistence are relevant across policy contexts and need to be studied across policy contexts.

5.2. Contributions of the dissertation

5.2.1. Theoretical contributions

This dissertation research makes several theoretical contributions to the farm persistence literature and to the family farm literature more broadly. First, my dissertation research expands our understanding of the factors that shape the development of farm operations and farm reproduction in two directions. At the farm household-farm operation level, the literature has discussed at length the ways in which family goals, culture, and household composition shape the development patterns of the farm operation and farm reproduction (see for example Salamon (1992), Barlett (1993), Bennett and Kohl (1982) and more recently Inwood et al. (2013); Inwood and Sharp (2012), Smithers and Johnson (2004), and Rissing (2019)). At the macro level, the literature has discussed the ways macro-level

forces including agricultural policy shape the agricultural sector (see for example Droz et al. (2014), Friedmann and McMichael (1989), and Howard (2016)). My dissertation research brings personal level issues and social policy to the forefront. I provide empirical evidence that difficulties meeting social needs at any age can limit on-farm investments and labor availability with the potential to shape the short- and long-term trajectory of the farm operation. I also provide evidence that institutional arrangements of health policy, a major component of social policy, can heavily shape the ways in which farm households access health care and pay for it. Besides expanding our understanding of the factors at play, this dissertation provides an opportunity to reframe and broaden approaches to farm persistence and resilience by highlighting the critical need for understanding the ways in which institutional supports play a role in supporting family farms. This is in contrast to some of the literature that overly relies on farmer and farm operation characteristics to explain the ability of family farms to stay on the land.

Second, my dissertation research creates a bridge between the family farm literature and the social policy literature. Indeed, while many of my findings may be of no surprise to a social policy scholar, farm family scholars have seldom considered social policy. As hypothesized in chapter 2, the lack of research specifically focused on social policy and the agricultural sector may reflect U.S. researchers' long-held assumption that a farmer or their spouse will work off-farm for added income and benefits. While in Western industrialized countries with broader social safety nets such as Canada, France, or the United Kingdom, the lack of research and inquiry may be associated with the stronger presence and universality of social safety nets. In both cases, a type of research

complacency into the role of social safety net has developed. This manifestation may be driven by entrenched (and sometimes unspoken) long held assumptions about the presence and function of social programs. However, the importance of understanding the links between formal social safety nets and farm persistence is especially critical in the modern era as neo-liberal policies are put in place that reflect welfare state retrenchment and austerity measures that create new policy environments farm families must operate in.

And last, building on the farm persistence literature, whereas family farms are embedded in complex agri-family systems, my dissertation research speaks to the complexity of these systems in several ways. In considering social safety net for the farm sector in chapter 2, I used a holistic approach by considering the full set of social safety net programs which is a departure from the literature which has tended to focus on one social need at a time (see for example Ahearn et al. (2013), Mishra et al. (2005), or Inwood and Stengel (In Press)). To consider access to health insurance and health care in chapter 3, I disaggregated the data by age groups and showed variations in how farm individuals and households meet their needs and the variations in trade-offs between household consumption, savings, and farm investments. Last to consider medical economic vulnerability in chapter 4, I developed a conceptual framework of the factors associated with vulnerability pulling from two distinct bodies of literature (medical vulnerability for the general population and farm stress and farm bankruptcy). Comparing and contrasting objective and subjective measures of vulnerability as my dependent variables, I find that the over-reliance on objective measures, such as those often used to

assess the financial situation of farm households, might lead to an incomplete understanding of farm vulnerability and might lead to missing early signs of distress. In an era of increased focus on indicator dashboards and simplified diagnostic tools, my dissertation research provides another example of the importance of embracing the complexity of farming systems. This includes the use of a relational approach to consider the ways in which the diversity of needs, lived realities, and the larger systems in which they are embedded shape the reproduction of family farms. Theoretically, this call aligns with neo-Chaynovian scholars such as van der Ploeg (2018) or farm resilience scholars such as Darnhofer et al. (2016). I would argue, however, that this call is seldom implemented in empirical studies.

5.2.2. Practical implications

The findings of my dissertation research point to several practical implications. First, for those interested in supporting the farm sector may they be policy makers, commodity groups, or food systems advocates, my findings highlight the need to consider personal level issues and the role that social safety nets can play in supporting both farm households and farm operations. As Courtenay Botterill (2007) and Chang et al. (2011) argue, agricultural policies are seldom designed with the well-being of individuals and households in mind, but social policies are.

Second, for those working on business planning or farm transition, my findings reinforce the importance of accounting and planning for individual and household level needs in outreach programming. These personal needs shape farm decisions and the

economic vulnerability of farm operations. As an example, Inwood (2015) has discussed the ways in which Extension agents can integrate discussions around health insurance into their programming.

Third, for those concerned with issues connected to health insurance, my findings illustrate the importance of considering a range of factors when considering health insurance coverage. While lower premiums might be desirable in the short term, higher out-of-pocket expenses and deductibles likely limit access to health care and are associated with medical economic vulnerability in the long-term.

Last, for those working with farmers to make changes may these changes to food safety practices, labor practices, or agroecological growing practices, my findings point to the importance of considering how social issues intersect with the ability and/or willingness to adopt different practices. In other words, it is not that a farmer might not want to or might not know how to adopt these practices. It might just be that their child was just diagnosed with cancer, that they are having to deal with several health insurance plans, and that besides worrying about the health of their child, they might be worried about how they are going to pay for the medical bills.

5.3. Avenues for future research

In this closing section I highlight avenues for future research including work to address some of the major limitations of this dissertation research. First, integrating explicit considerations of social policy into the family farm literature opens many opportunities to understand the role that formal support systems can play in shaping farm persistence. As

discussed in chapter 2, one line of inquiry is connected to the mechanics of social safety net programs and the ways farmers interact with these programs. Another line of inquiry is connected to the larger sociological farm persistence questions at the heart of this dissertation. To do this work, important theoretical and empirical insights can be drawn from the large body of research on social policy including the comparative welfare state body of work.

Second, because one of the limitations of this dissertation is the focus on government sponsored social safety nets at the national level, future research should expand the line of inquiry by assessing the full set of social support programs. This is particularly important in the U.S. context because means-based programs and welfare stigmas heavily shape the ability to meet social needs. Furthermore, government programs at the state and county level, non-profit social services organizations, faith-based communities, extension services, farm advocacy groups, and employment-based benefits likely play an important role in formally and informally supporting the farm sector. The role of these programs and how they intersect with national level social safety net programs need to be probed if we are to gain a holistic understanding of the factors that shape farm persistence.

Third, this dissertation focused extensively on health issues. In line with the holistic assessment of social safety nets in chapter 2 and variations in health needs and ability to meet these needs along the life course, there is a need to more broadly assess household level difficulties at any age and the ways in which they interact and ultimately impact farm development. For example, chapter 3 provides some insights into how the

cost of health insurance and care interact with the ability to save for retirement. This in turns brings up questions about long-term compounding effects. Furthermore, chapter 4 provides an important example of the importance to considering a diversity of measures, including measures that speak to individuals' lived experiences.

Fourth and connected to the long-term compounding effects I just mentioned, a limitation of my dissertation research is the use of a cross-sectional dataset. While the comparison across age groups in chapter 3 suggests variations, longitudinal data is needed to assess compounding effects on health outcomes, farm household and operation development. In particular, longitudinal data would allow scholars to parse out whether some of the patterns identified may be due to a cohort or a life course effect. For example, my findings bring up questions about the adequacy of retirement savings for older age groups and ways in which it may impact how the farm is transferred and ability to pay for elder care. Using USDA data, Mishra et al. (2005) found that on average, farm households had more assets to draw from for retirement and that their assets were more diversified compared to the general population. While their findings do not speak to the adequacy of retirement assets and while I drew from a different dataset at a different time point, my findings may hint at a cohort effect as a result of the 2008 financial crisis.

Last, an on-going avenue for future research is the need to continuously update the family farm literature to reflect changes in the political, economic, and social spheres. For example, the U.S. literature that speaks to the difficulties experienced by farm households overall dates back to the 1980s and 1990s and documents the fall out of the 1980s Farm crisis. Yet, and likely relevant across social policy environments, macro-

level structures are constantly changing. Scholars have talked at length about increased pressures on the fam operation as a result of large structural changes such as concentration and consolidation along the supply chain and liberalization of trade policies (Arbuckle Jr & Kast, 2012; Droz et al., 2014; Fraser et al., 2005). Relevant to farm households and discussed by sociologists more broadly, this includes increased health care, childcare, and university fees in the U.S. (Dwyer, 2018; Inwood & Stengel, In Press) and increased responsibility to provide care and/or financial support for older generations that are living longer across social policy contexts (Contzen et al., 2016; Conway et al., 2016). Further illustrating the need to consider on-going societal changes, since I started this work in 2015, the United Kingdom has voted to leave the European Union. France has once more reformed its retirement system. The U.S. has engaged in major changes in trade relationships with key partners, has voted a new Farm Bill, and has made major changes to the ACA. Yet, I hope that the research presented in this dissertation provides a foothold towards a more holistic understanding of the ways in which micro and macro-level changes impact family farms. I also hope that it provides a foothold to think differently about how society can support family farms.

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Appendix A - Additional regression results from chapter 4

Table A-1. Logistic regression on non-imputed dataset predicting the probability of farm households experiencing medical economic vulnerability

	Model 1: objective measure Have debt over $1,000			Model 2: subjective measure Not confident that can pay for major health expenses without going into debt		
	Coef. (Std. Err.)	OR	p	Coef. (Std. Err.)	OR	p
Health insurance						
Health insurance for all HH members all year	-0.29 (0.63)	0.74	0.640	-0.74 (0.56)	0.47	0.182
Medical debt over $1,000	-	-	-	0.51 (0.23)	1.66	0.030
Source of health insurance (vs. not)						
Off-farm employment	-0.33 (0.30)	0.72	0.248	-0.20 (0.27)	0.98	0.947
Farm Bureau or Farmers' Union	-0.62 (0.43)	0.54	0.151	0.53 (0.50)	1.70	0.269
Direct purchase of private plan	-0.17 (0.19)	0.85	0.385	0.15 (0.31)	1.17	0.622
Public health insurance	0.05 (0.49)	1.05	0.916	0.15 (0.31)	1.91	0.047
All household has same plan	-0.85 (0.37)	0.43	0.021	0.22 (0.17)	1.23	0.181
Monthly insurance premium in 2016	0.00 (0.00)	1.00	0.001	-0.00 (0.00)	1.00	0.048

Continued

Table A-1. Continued

Health insurance deductible (vs. none)						
$1 to $1,999	0.14 (0.55)	1.16	0.792	0.40 (0.43)	1.50	0.340
$2,000 to $5,000	0.65 (0.52)	1.92	0.216	0.88 (0.38)	2.40	0.022
More than $5,000	0.38 (0.48)	1.47	0.422	1.30 (0.49)	3.66	0.008
Out-of-pocket expenses (vs. up to $999)						
$1,000 to $2,999	-1.18 (0.30)	0.31	0.000	-0.06 (0.22)	0.94	0.794
$3,000 to $4,999	0.05 (0.16)	1.05	0.757	0.21 (0.16)	1.23	0.184
$5,000 and over	0.51 (0.20)	1.67	0.009	-0.05 (0.15)	0.95	0.716
Health savings account	-0.63 (0.31)	0.53	0.041	-0.36 (0.46)	0.70	0.435
Flexible spending account	0.58 (0.29)	1.79	0.047	-0.14 (0.48)	0.87	0.774
Individual and farm household						
Pre-existing or chronic condition	0.50 (0.20)	1.65	0.011	0.11 (0.19)	1.12	0.559
At least one HH member under 18	0.54 (0.24)	1.72	0.131	0.39 (0.26)	1.47	0.131
At least one HH member over 65	-0.56 (0.79)	0.57	0.480	-0.05 (0.46)	0.95	0.910
White	0.32 (0.61)	1.38	0.597	-0.67 (0.39)	0.51	0.084
Education (vs. HS or less)						
Some college	0.39 (0.29)	1.48	0.181	0.10 (0.11)	1.10	0.355
Bachelor's degree and higher	0.07 (0.23)	1.07	0.763	-0.29 (0.17)	0.75	0.097
Female	0.08 (0.22)	1.08	0.729	0.34 (0.20)	1.42	0.077
Off-farm job	0.17 (0.51)	1.12	0.740	0.17 (0.22)	1.18	0.439
Beginning farmer	0.04 (0.56)	1.04	0.949	0.01 (0.26)	1.01	0.961
Farm operation						
Multi-generational farmer	-0.74 (0.29)	0.47	0.011	0.37 (0.24)	1.44	0.124

Continued

Table A-1. Continued

Commodity produced (vs. not)						
Dairy	0.67 (0.65)	1.96	0.301	0.79 (0.27)	2.20	0.003
Livestock	-0.04 (0.33)	0.97	0.894	0.13 (0.21)	1.14	0.527
Grain	0.03 (0.37)	1.03	0.927	0.32 (0.25)	1.37	0.202
Fruits and vegetables	0.67 (0.55)	1.96	0.222	-0.20 (0.24)	0.82	0.403
Farm sales (vs. small)						
Medium	-0.56 (0.38)	0.57	0.138	-0.01 (0.25)	0.99	0.976
Large	-1.01 (0.37)	0.36	0.006	-0.02 (0.20)	0.98	0.937
State expanded Medicaid	-0.41 (0.42)	0.67	0.338	-0.58 (0.37)	0.56	0.113
Number insurers on marketplace	-0.00 (0.04)	1.00	0.974	0.06 (0.04)	1.06	0.136
Unemployment rate	0.08 (0.04)	1.09	0.051	0.04 (0.04)	1.04	0.283
Interaction						
Public insurance * HH member over 65	0.00 (0.75)	1.00	0.999	-0.99 (0.73)	0.37	0.174
Constant	-1.34 (1.51)	0.26	0.375	-0.28 (0.90)	0.76	0.759
Model Wald Chi-square[1]		-			-	
Model p-value[1]		-			-	
Pseudo R^2		0.1329			0.1083	

Notes. [1] The statistical software reported that there were not enough parameters due to the clustering at the state level to calculate model statistics but that it is not an indication that the model is wrong. When running the analysis without clustering, model statistics are: Model 1 – LR $Chi^2 = 78.89$, $p = 0.000$; Model 2 – LR $Chi^2 = 91.03$, $p=0.000$

Appendix B - Farm household survey from the HIREDnAg project

Please return your completed survey in the postage-paid enclosed envelope to:
Katlyn Morris, Project Coordinator
Dept. of Community Development and Applied Economics
University of Vermont
208H Morrill Hall
Burlington, VT 05408

This project is supported by the Agriculture and Food Research Initiative of the National Institute of Food and Agriculture, USDA, Grant # 2014-05623.

TELL US ABOUT YOUR FARM
This set of questions is to help us learn about the general characteristics of your farm.

1. **Which category best describes your farm in 2016?** (*Check All that apply)*

- ☐ Milk and dairy from cows
- ☐ Livestock (ex. beef, hogs, sheep, goats, poultry)
- ☐ Horses
- ☐ Bees and honey
- ☐ Grain crops (corn, soybeans, small grains)
- ☐ Vegetable fruit, nut or orchard crops
- ☐ Nursery and greenhouse
- ☐ Maple sugar
- ☐ Other_____

2. **How much land do you currently operate as part of a farm or ranch?**
   Total acres (owned and rented) _____

FAMILY NEEDS – HEALTH CARE AND HEALTH INSURANCE
Please tell us how you and your family access health care and health insurance.

3. **How important is health insurance as a risk management strategy for your farm or ranch operation?** *Circle your answer.*

1	2	3	4	5
Not Important	*Somewhat Important*	*Neutral*	*Moderately Important*	*Very Important*

4. **Where do you and your family currently go for routine health care?** (Check all that apply)

- ☐ Doctor's office
- ☐ Clinic
- ☐ Health Center
- ☐ Hospital (including Emergency Department)
- ☐ Chiropractor
- ☐ Naturopath
- ☐ Other_____

5. **About how long does it take you to travel one-way to:**

   a. **Routine primary health care?**
      _____Minutes

   b. **Specialty health care (e.g., cardiologist or oncologist)?**

_____**Minutes**

6. **In 2016 did you have insurance for any of the following:** *(Circle your answer)*

a.	Vision	YES	NO
b.	Dental	YES	NO
c.	Prescription/Drugs	YES	NO
d.	Helicopter Evacuation	YES	NO
e.	Long term care	YES	NO
f.	Disability Insurance	YES	NO
g.	Life Insurance	YES	NO

7. **Did any of the following factors affect you or a family member's ability to visit health care providers or get treatment in 2016?** *(Circle your answer)*

a.	Out of pocket cost	YES	NO
b.	Deductible cost	YES	NO
c.	Distance to health facility/ transportation	YES	NO
d.	Provider did not accept my insurance plan	YES	NO
e.	Provider was outside of my network	YES	NO
f.	Unable to find childcare or eldercare	YES	NO
g.	Not having health insurance	YES	NO
h.	Unable to take time off from work	YES	NO
i.	Other:_____	YES	NO

8. **Do you or a member of your family have a pre-existing or chronic health condition, such as asthma, high blood pressure, diabetes, depression, or other condition?**

☐ Yes ☐ No

9. **Which of the following best describes your household health insurance coverage in 2016? Include commercial coverage (such as Blue Cross and Blue Shield, Aetna, etc.); managed care plans; and public insurance coverage (such as Medicare, Medicaid, VA, etc)** *(Check one)*

☐ Household members had no insurance coverage in 2016 → Go to Q 10

☐ Some household members had coverage, for all or part of the year → Skip to Q 12 (pg. 3)

☐ All household members had insurance all the time → Skip to Q 12 (pg. 3)

10. **In 2016, how much did you spend on health care including doctors' visits, hospital stay, dental and/or vision?** *(Check one)*

☐ Less than $1,000
☐ $1,000 to $2,999
☐ $3,000 to $4,999
☐ $5,000 to $9,999
☐ $10,000-$14,999
☐ $15,000-$19,999
☐ $20,000-$29,999
☐ $30,000-$49,999
☐ $50,000 Or More
☐ Don't Know/Not Sure

11. **What is the primary reason you or your family did not have health insurance?** *(Check one)*

☐ Premiums are too expensive
☐ Deductibles are too expensive
☐ Do not see the value of purchasing health insurance
☐ No good plan available
☐ Opposed to being required to have insurance
☐ Other: _____

Skip to Question 18 on page 4

12. Were all household members covered under the same insurance plan in 2016?

(Include your spouse, dependent children 26 and under, foster and dependent disabled children.)

☐ Yes ☐ No

13. In 2016 did you have any children <u>under the</u> age of 26 receiving health insurance benefits through your plan?

☐ Yes → How many? _____
☐ No

14. Looking at the age categories on the top row, how many household members in 2016, including yourself, received health insurance through the options listed? (*Write the number of individuals in each age category, e.x. if 2 adults 68 years old are on Medicare, write 2 on row d)*

	Household Members Birth to 18 Years Old	**Household Members 19-64 Years Old**	**Household Members 65 Years and Older**
a. Insurance through the farm *operator's* off-farm employer?			
b. Insurance through a s*pouse's/ partner's* off-farm employer?			
c. Insurance through my parents' plan			
d. Farm Bureau or Farmer's Union			
e. Christian Health Insurance Plan			
f. Medicare, Medicaid, Tricare, children's health insurance program, or other public insurance?			
g. Other direct purchase private policy			

i. Did you purchase a private policy from HealthCare.gov or your state's marketplace/exchange?

☐ Yes → Continue to **ii**
☐ No → Skip to Q 15 (pg. 4)

ii. What plan level did you purchase *(check one)*

☐ Bronze ☐ Silver ☐ Gold ☐ Platinum

iii. Did you receive a tax credit or subsidy to help pay for the health insurance premium?

☐ Yes → How much was the credit or subsidy for 2016?

$_____ ☐ Don't Know

☐ No

15. In 2016, what was your family's <u>monthly</u> health insurance premium? (Include the total amount paid by you or family members and/or an employer)

$_____ ☐ Don't Know

16. In 2016 what was your family's <u>monthly</u> contribution towards health insurance premiums?

(Include only the amount paid by you or family members toward the cost of the health insurance premium, not the total premium paid by an employer.)

$_____ ☐ Don't Know

17. In 2016 what was your family's total annual deductible for health insurance? (This is the amount that an insured patient is first required to pay for health care expenses covered by the insurance plan before the insurance plan pays claims for services.) *(Check One)*

Annual/Yearly Deductible	
☐ $0 – No Deductible	☐ $1,000 - $1,999
☐ $1 - $249	☐ $2,000 - $5,000
☐ $250 - $499	☐ More than $5,000
☐ $500 - $999	☐ Don't Know/Not Sure

18. Please estimate your 2016 out of pocket costs for health care including co-payments, deductible for provider visits, hospital stay, prescriptions, dental and/or vision? *(Check one)*

2016 Yearly Health Care Expenses	
☐ $0 – No out of pocket costs	☐ $3,000 to $4,999
☐ $1 - $499	☐ $5,000 to $9,999
☐ $500 - $999	☐ $10,000 or more
☐ $1,000 to $2,999	☐ Don't Know/Not Sure

19. How well do current health insurance plans meet farmers' needs?
Circle your answer.

1	2	3	4	5
Not at all Well	*Somewhat Well*	*Neutral*	*Moderately Well*	*Very Well*

20. Health insurance plans vary by the type of providers and health services they cover. Please indicate if you think your plan covers the following providers and health services, and if you would like additional coverage for these options. *Check all that apply.*

	Already covered	Not Covered, but I would like this	Not Covered, and don't want this	Don't know if my plan covers this	Don't have insurance, but would like this
Occupational Therapy	☐	☐	☐	☐	☐
Physical Therapy	☐	☐	☐	☐	☐
Pesticide Exposure Testing	☐	☐	☐	☐	☐
Lyme Disease Testing	☐	☐	☐	☐	☐
Skin Cancer Screening	☐	☐	☐	☐	☐
Mental Health Services	☐	☐	☐	☐	☐
Hearing Testing and Services	☐	☐	☐	☐	☐
Chiropractic	☐	☐	☐	☐	☐
Acupuncture	☐	☐	☐	☐	☐
Other (please specify)					

HEALTH INSURANCE AND HEALTH SAVINGS ACCOUNTS

There are different types of insurance policies and savings accounts. These questions ask you about insurance coverage options, flexible spending and health

21. <u>Flexible Spending Accounts</u> (FSA) allows you to put money away to pay for certain out-of-pocket health care costs. You don't pay taxes on this money.

Do you or member of your immediate family have a FSA? ☐ Yes ☐ No

22. <u>Health Savings Accounts</u> (HSA) combines high deductible health insurance with a pre-tax savings account. Money in the savings account can help pay the deductible.

Do you or member of your immediate family have a HSA? ☐ Yes ☐ No

23. Do you, or any family member in your household, currently owe money for medical or dental bills over $1,000?

☐ Yes → Did you charge this debt to a credit card? ☐ Yes ☐ No
☐ No

24. There are a variety of ways individuals and families get information about health insurance. Who would you prefer to receive information on health insurance from?

	Least Preferred		Neutral		Most Preferred
a. Extension, farm consultant, farmer organization……	1	2	3	4	5
b. Health insurance provider or insurance navigator….	1	2	3	4	5
c. My financial planner, tax accountant or book keeper	1	2	3	4	5
d. My doctor or health care providers…..……	1	2	3	4	5
e. My employer or my partner's employer……..	1	2	3	4	5
f. Other	1	2	3	4	5

HEALTH INSURANCE AND OFF-FARM WORK
These questions ask about how health insurance affects the need for off-farm

25. Do you or your spouse/partner have a full-time or part-time off-farm job?

☐ **YES** → **continue to Q 26**

☐ **NO** → **skip to question Q 28**

26. Which sector do you or your spouse/partner work in? Please check if you receive health insurance through your employer.

	Employed in Sector	Provides My Health Insurance
a. Private Sector	☐	☐
b. Public Sector	☐	☐
c. Non-Profit	☐	☐

27. What are the top 2 reasons you or your spouse/partner maintain an off-farm job? (*Check 2 options)*

	Check 2
a. For health insurance……	☐
b. Need the income……..	☐
c. Enjoy the off-farm work…….	☐
d. Want a chance to get off the farm …….	☐
e. Other:_____	☐

28. Did you have health insurance 5 years ago?

☐ Yes ☐ No

29. In the last 5 years have you shifted from employer based insurance to marketplace or public option?

☐ Yes ☐ No ☐ Not Applicable

30. Have new insurance options through HealthCare.gov, your state marketplace/exchange or expanded Medicaid *decreased* the need for off-farm work?

☐ Yes ☐ No

HEALTH INSURANCE AND FARM FINANCING
Please tell us how health insurance affects farm and ranch financial decision

31. Do you work with a bookkeeper, tax accountant or other financial advisor?

☐ Yes ⟶ Have you discussed health insurance with them? ☐ Yes ☐ No

☐ No

32. Do health care or health insurance costs limit the investments you make on the farm?

☐ Yes ☐ No

33. **Taking into account farm and household needs, if you did <u>not</u> have health care or health insurance related expenses, what are the top 2 areas you would invest that money?**

	Check 2
a. Capital and infrastructure improvements on the farm	☐
b. Hiring more labor for the farm	☐
c. Retirement	☐
d. College savings	☐
e. Other savings	☐
f. Child care	☐
g. Household Needs	☐
h. Other_____	☐

HEALTH INSURANCE AND FARM ECONOMICS

We would like to understand how long-term financial and health planning factor into your farm business decisions. These questions relate to both your immediate

32. Are you responsible for coordinating a parent, in-law or other older relative's health care?

☐ Yes ☐ No

33. In your family are you concerned that someone may have to sell some, or all of the farm assets (land, livestock, equipment, etc.) to address health related costs, such as long-term care, nursing home or in-home health assistance?

☐ Yes ☐ No

34. Have you or a family member had health problems that have made it difficult for you to farm?

☐ Yes ☐ No

35. If you get sick or injured is there someone who can run the farm for you?

☐ Yes ☐ No ☐ Not Sure

36. If you were sick or injured how much would it cost to hire someone to run the farm for you?

☐ No cost

☐ Less than $100 a day

☐ More than $100 a day

☐ Not Sure

37. Given your current financial and health insurance situation, how confident are you that you can afford the <u>usual</u> medical costs that you currently have (assuming no emergency)? *Circle your answer.*

1	2	3	4	5
Not at all Confident	*Slightly Confident*	*Neutral*	*Moderately Confident*	*Very Confident*

38. Given your current financial and health insurance situation, how confident are you that <u>you could pay the costs</u>, <u>without going into debt, if you had a major illness</u>, such as heart attack, cancer, or loss of limb? *Circle your answer.*

1	2	3	4	5
Not at all Confident	*Slightly Confident*	*Neutral*	*Moderately Confident*	*Very Confident*

39. Do you believe the USDA should be representing farmers' needs in national health insurance policy discussions?

☐ Yes ☐ No

FARM & RANCH LABOR

Farms and ranches often hire a combination of full and part time labor for production and retail work. These questions ask how health insurance

40. Do you currently hire any farm workers or interns (include family and non-family hired workers).

☐ **YES** → **Continue to Q 41**
☐ **NO** → **Skip to Q 44**

41. Including family, non-family and interns, how many paid hired workers do you employee?

_____ Full Time _____Part Time/Seasonal

42. Do you offer any of the following benefits to your employees? *(Circle your answer)*

Health Insurance	Yes	No
Dental	Yes	No
Vision	Yes	No
Health Savings Account	Yes	No
Flexible Savings Account	Yes	No

43. Do your employees have health insurance?

☐ Yes all do ☐ Yes some do ☐ No ☐ Not Sure

44. Do health insurance regulations for employees influence your staffing and hiring decisions?

Circle your answer.

1	2	3	4	5
Not at all Influential	*Slightly Influential*	*Neutral*	*Moderately Influential*	*Very Influential*

DEMOGRAPHICS

To help us understand more about your perspectives, please tell us a little bit about yourself.

45. Is this a multi-generation farm (ie: parents or other relatives ran the farm before you)?

☐ Yes ☐ No

46. USDA defines a Beginning Farmer or Rancher as an individual or entity that has operated a farm or ranch for less than 10 years.

Are you a beginning farmer or rancher? ☐ Yes ☐ No

47. The primary person responsible for the survey responses is:

☐ Male ☐ Female ☐ Other

48. Age: _____Years Old

49. The Census of Agriculture uses the following race and ethnicities category. How do you classify yourself in these categories? *(Check all that apply)*

☐ American Indian or Alaska Native

☐ Asian

☐ Black or African American

☐ Native Hawaiian or Other Pacific Islander

☐ White, non-Hispanic/Latino

☐ White, Hispanic/Latino

☐ Other_____

50. What is your highest level of formal education attained? *(Check one)*

☐ Some School, less than a High School Diploma
☐ High School graduate (includes equivalency)
☐ Associate's or Technical School Degree
☐ Bachelor's degree
☐ Graduate or professional degree

51. Which category represents the <u>total farm sales</u> for your farm business in 2016?
(Check one)

- ☐ Less than $1,000
- ☐ $1,000 to $9,999
- ☐ $10,000 to $49,999
- ☐ $50,000 to $249,000
- ☐ $250,000 to $499,999
- ☐ $500,000 to $999,999
- ☐ $1,000,000 to $4,999,9999
- ☐ $5,000,000 and above

52. Which state do you live <u>in</u>? (*Check One)*

☐ CA ☐ *KY* ☐ *MA* ☐ *MI* ☐ *MS*

☐ *NE* ☐ *PA* ☐ *UT* ☐ *VT* ☐ *WA*

PLEASE SHARE YOUR THOUGHTS
The intent of this study is to inform future policy and programs. Please share any additional information, thoughts or opinions on the back of the survey. Thank you for taking the time to fill out this survey!