Factors Influencing Recruitment and Retention Decisions of Primary Care Physicians in Rural Practice in British Columbia, Canada: Building Grounded Theory Via Instrumental Case Studies

by

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Faculty of Commerce
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I Andrew William McKay

Hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person nor material which to a substantial extent has been accepted for the award of any other degree or diploma at Charles Sturt University or any other educational institution, except where due acknowledgment is made in the thesis. Any contribution made to the research by colleagues with whom I have worked at Charles Sturt University or elsewhere during my candidature is fully acknowledged.

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Abstract

This dissertation emerged in response to the growing shortage of rural physicians in Canada. This report on the research project begins with a comprehensive overview of the relevant literature, summarizing the major themes, and identifying gaps. From this emerged the research questions:

1. What are the key factors that influence primary care physicians in British Columbia, Canada, to choose rural practice?

2. What are the key factors that influence primary care physicians in British Columbia, Canada, to leave rural practice?

This was exploratory research, seeking to more comprehensively define the factors relevant to physician practice location decision making. As there is scant exploratory research but extensive quantitative research of these issues, the research used an iterative, inductive case study technique. The cases used forty-two individual doctors from multiple sites. The instrument used questions framed with data from secondary sources and honed in focus groups. Grounded theory was built progressively towards theoretical saturation and constructed from a realist ontology. This “realism” was reinforced by ensuring that the stakeholders, physicians who chose rural practice (both those who stayed and those who left), helped to build the emergent theory via negotiated outcomes.

The literature review found fifty-four factors as potentially significant in influencing physician practice location decision making. Participants in this research volunteered forty-five of these factors as influencing their practice location decision making. The participants volunteered eighteen new, previously
unreported factors, and the project developed new grounded theory to integrate the larger set of factors.
CHAPTER 1
INTRODUCTION

1.1 **Overview**

This research project has two aims. First it describes what factors influence primary care physicians in rural British Columbia to choose rural practice, and for those who do so, why some stay and others leave. Second, this project builds grounded theory that integrates the extant literature with the research findings.

The relevant literature in this area is predominantly narrow and quantitative, validating the factors that influence doctors' practice location decision making. However, there is scant broad exploratory research underpinning the quantitative work. Second, while the literature expands the list of factors potentially influencing practice location behaviour, there needs to be an encapsulation of the divergent research tracks into more comprehensive theory.

In this research, certain factors emerge as being inextricably entwined in a socio-cultural and temporally-dependent dynamic. That is, practice location decisions are part of a larger social process. A scientific realist ontology is used in this project. Interviews with doctors who have practiced in a rural area are used as a tool to develop grounded theory via an iterative (cyclic) process of analytic induction.

1.2 **What is the Problem?**

The number of doctors choosing rural practice in Canada is declining over time, that is, there is a labour supply management problem. The current rural doctor to patient ratio in Canada is 1:1,235, substantially higher than the urban ratio of 1:446 (*The Rural News*, 17 November 1999, p.1). Health Canada predicts the rural ratio to increase to one doctor to
1,818 patients by the year 2021. Rural physicians are retiring at the rate of about 477 per year, whereas only about 294 Canadian medical school graduates choose rural practice per year (Hutten-Czapski, 2002, p. 96).

Another problem is the increasing average age of rural doctors, currently 49 and climbing (Wilson, 2002). Retirements are accelerating, that is, the number of physicians retiring every year is climbing as the baby-boomer segment reaches retirement age. While many occupations will be in short supply as baby boomers retire, the effect on the health care sector can be anticipated to be particularly pronounced. Older people tend to place greater demands on the health care system, so the demand for physicians will increase at the same time the health care system is experiencing a declining supply of doctors as retirements outpace replacements.

There is a rural versus urban imbalance in terms of raw numbers of doctors. In 1999/2000 British Columbia (B.C.) had 20 Health Regions. In 1999/2000 the areas with the largest population (Greater Vancouver and Victoria) constituted five Health Regions, with a doctor: patient ratio of 13.6 family practitioners per 10,000 residents. Conversely, the remaining 15 Health Regions outside of these main urban areas have a doctor:patient ratio of 9.2 Family Practitioners per 10,000 residents, and this ratio is declining. Between 1998/99 and 1999/2000, B.C. experienced a net increase of 26 FP’s. However, this modest growth was somewhat at the expense of rural B.C.: the regions outside of Greater Vancouver and Victoria (the capital) experienced a headcount decrease of 59 over the same interval. Similarly, B.C. gained a net of 54 specialists over the same interval, but all of the growth came in these same urban areas (gain of 57) while the rest of the province experienced a net loss of 3 (Centre for Health Services and Policy Research, 2002).

In B.C., Soles (2001) found that the total number of practicing physicians in non-urban areas is declining by about 1-2% per year. Likewise, 46% of B.C. rural physicians
are foreign trained, and the average age of rural physicians is in the mid-40s and is rising. Of course, this demographic fact is affecting all occupations, not just doctors. The Pagliccia et al (2002) study of secondary data found similar results.

The study “Toward Integrated Medical Resource Policies for Canada” by Barer and Stoddart (1991) is influential and widely-cited. It quantified the uneven geographic distribution of doctors in Canada. Their 1999 paper “Improving Access to Needed Medical Services in Rural and Remote Canadian Communities” is a ten year follow-up analysis of the authors’ 1991 paper, and discusses policy options for improving access to medical services in rural and remote communities in Canada. This study suggests that rural recruitment is a problem, as does Carlisle and Johnson (1996) that inner city and rural practices have the most difficulty recruiting and retraining physicians.

Canada is not unique in perceiving that the imbalance between rural and urban physician numbers means there is a shortage of rural physicians, but there are important differences between Canada and other countries. For example, it has been estimated that the U.S. has a surplus of 145,000 physicians, but this surplus production of physicians has had little impact on shortages of rural general practitioners (Al-Assaf and Wilson, 1991). These researchers found rural America had proportionally about half the national average of physicians. Almost ten years later little had changed. For example (,) Rosenblatt (2000) found that rural America had 20% of the nation’s population but only 9% of the physicians. At this point, Canada and the U.S. diverge. Whilst Canada has a shortage of rural general practitioners, the U.S. does not; Canada’s total number of practising physicians is declining whereas in the U.S it is rising. In the U.S., Rosenblatt (2000) found that generalists distribute themselves roughly proportionately to population; the rural shortage is largely due to the dearth of specialists in rural practice. This study also confirmed two findings found in many other studies. First, the more specialized a physician is, the less likely s/he
will choose rural practice. This makes sense intuitively—the more specialized a physician, the larger population base is needed to support a practice. The second finding is more significant for the rural physician shortage: women prefer urban practices, and this tendency has remained persistent over time, in spite of the four-fold increase in female enrolment in U.S. medical schools in the 1990s. This is also an experience in Canada (Reid, 2001).

Another part of the problem is that normal market forces do not solve the shortage because medicine in Canada does not operate as a true market. Under the Canada Health Act (1985), doctors essentially have to choose between participation in the provincially-run public system (Medicare) or be salaried by a firm or other employer. Under Medicare most physicians are paid according to a provincially negotiated fee schedule—there is no competitive pressure to lower fees. While there are incentives to rural practice, the near insatiable consumer demand for health services means doctors can generally earn excellent incomes just about anywhere in the province, which somewhat negates any financial incentive to rural practice. Part of the reason demand for medical services is high everywhere is that, from the patients’ perspective, there is no economic incentive to limit consumption or choose lower-cost options. Medicare as currently structured undermines the normal relationship between consumers and service providers.

1.3 Developing an Initial Explanation Based on Prior Understanding

There is a sizeable and growing body of literature investigating factors influencing practice locations decisions of doctors. What is lacking is broad exploratory research that would normally come before detailed study such as the preponderance of narrow quantitative retrospective cohort studies that dominate the literature. The external validity of much of the published literature is often further threatened by one or both of two
common problems. First, little of the existing work attempts to account for the possible impact of extraneous variables. Second, the indicators that are assessed are almost invariably confounded, actually measuring two different constructs: rural recruitment (why some doctors choose rural practice) and rural retention (why some leave rural practice). There is no comprehensive understanding of rural physician practice pattern behaviour and decision making. There is also little discussion of the problem from any recognizable management ontology – a review of articles’ references reveals virtually no citations from peer reviewed management or human resource journals. Little of the research is from Canada.

1.4 Overview of the Other Chapters

The report follows a standard DBA/dissertation chapter sequence, that is, Chapter 1 Introduction, Chapter 2 Literature Review, Chapter 3 Methodology, Chapter 4 Data Analysis and Discussion of Findings, and Chapter 5 Conclusions and Implications. This sequencing works well for this research, and there were no substantive reasons to change it.

1.4.1 Chapter 2 Literature Review

This chapter begins by defining the problem. As the key terms “underserved” and “rural” are pervasive but ill-defined in the literature, there is a section discussing these myriad definitions and the impact of these definitions on this research. This is followed by an extensive review of the relevant literature on factors influencing rural physician recruitment and retention. “Rural Background” is given its own section for discussion, because it is such a common theme in much of the literature. The literature also contemplates solutions to the problem, so these have their own sections in the literature review. Finally there is a summary of the gaps in the literature and a conclusion containing a synopsis of the gaps in the literature and identification of the research question.
What is lacking in the literature is broad exploratory research to develop a comprehensive understanding of the factors influencing physicians' practice location decisions (recruitment and retention), as well as an appreciation for the subtle interplay of these factors. Further, there is no holistic understanding of recruitment or retention as socio-cultural and temporally-dependent processes, rather than a list of attributes.

There are many factors studied in the body of literature on physician recruitment and retention. In preparation for this research project the author reviewed 72 relevant studies and scanned many others. Most investigate background factors, such as where physicians grew up or went to medical school. Small numbers assess the importance of factors actually associated with the work, work and personal relationships, or factors in the wider environment or context of rural medical practice. From this emerged the research questions:

What are the key factors that influence primary care physicians in British Columbia, Canada to choose rural practice?

What are the key factors that influence primary care physicians in British Columbia, Canada to leave rural practice?

1.4.2 Chapter 3 Methodology

This chapter begins with a review of the research questions. Because they are central to the choice of research design chosen for this project, the next sections are an overview discussion of grounded theory, a discussion of case study research and the resultant research design. The next sections describes how the interview data was analyzed. Next is a section that bounds or delimits the research by stating the key assumptions and limitations. As this is a management problem, the appropriateness of case
study research for this problem is discussed, along with a small section on case study research and validity.

It appears that theory development is still embryonic in this area. Thus to develop a comprehensive understanding of a dynamic social reality in a management problem, an iterative, inductive case study technique was used. The cases used single units of analysis (i.e. individual doctors) in a multiple case design. The instrument used questions framed using data from secondary sources and honed in focus groups. Constructed from a realist ontology, grounded theory was built progressively towards theoretical saturation. This “realism” was reinforced by ensuring that the stakeholders, physicians who chose rural practice (both those who stayed and those who left), helped to build the emergent theory via negotiated outcomes.
At its core, the process was essentially as is outlined in Wollin (1996):

"The basic sequential and iterative process of the analytical induction method can be used from a scientific realist perspective. In this case, explanation or theory replace hypotheses. The revised process, which is at the heart of the research design proposed in this paper becomes one of:

- developing an initial explanation for a phenomena based on prior understanding and the formulation of the research question;
- examining the first case for empirical support; revising the explanation or theory in light of analysis of the case;
- selecting and examining another theoretically-dense case, especially a negative case, both for empirical support and for further insights; and
- repeating the process until "theoretical saturation" is reached, in that each additional case adds minimally to the theory." (Wollin, 1996, pp. 5, 6)

To strengthen the external validity, a goal of 40 case studies was proposed, with a minimum of 32 and a maximum of 48. In the end, the research proper involved 42 case studies. In addition the pre-test involved four case studies. Participants were selected from each of two distinct sub-populations: physicians who stayed in rural practice in one group (STAYERS), and physicians who left (LEAVERS) in the other. As this is purposive sampling, the study sought maximum variations in the length of time a physician stayed in rural practice. Once a pool of potential participants was identified, a randomly selected stratified sample of physicians from four classifications of communities were drawn for both STAYERS and LEAVERS ("R<", "R+", "CA<" and "CA+")

Opportunities for convergence were by testing the emergent, validated grounded theory against data from subsequent interviews of doctors from other Canadian jurisdictions.

1.4.3 Chapter 4 Data Analysis and Discussion of Findings

This chapter begins with an introduction followed by a summary of the results. Specifically, the intersection of factors from the literature and factors from the research
(both previously identified and new) are discussed in the same extant framework of four categories. The next major section discusses how the six new categories of the Socio-Temporal-Cultural Model of the Drivers of Rural Physician Practice Location Decision Making were developed, and why the extant categories from the literature are inadequate for theory building. This is followed by a section titled "Validation of Grounded Theory: Field Input, which articulates how the grounded theory was developed iteratively, and the resultant revisions to the theory. There follows a short section on Convergence. The next to last section is a Summary of Responses, provided to give readers an overview of the breadth of responses. This is followed by the Conclusion to this chapter.

1.4.4 Chapter 5 Conclusions and Implications

This section summarizes the products of the research. First, the effectiveness of the sampling frame is discussed. Next the key factors influencing rural physician practice location decision making are reviewed, that is, the fifty-four factors identified in the literature and the eighteen new factors identified in this research. Finally, the emergent theory (the "Socio-Temporal-Cultural Model of the Drivers of Rural Physician Practice Location Decision Making"), its implications and its limitations are summarized.

This concludes the overview of the other chapters. The report now moves on to the literature review, where gaps are identified and the research questions developed.
CHAPTER 2
LITERATURE REVIEW

2.1 Introduction

Chapter 2 reports on an analysis of the literature in the field of rural physician recruitment and retention. The literature review began with queries of relevant databases including ABI/Inform, Business Source Premier, Medline and PubMed. The on-line index of the Journal of the Canadian Medical Association was also reviewed, as were the hardcopy indexes of Canadian Journal of Rural Medicine. Lastly, the indexes of all articles used were also scanned to identify other possible articles for inclusion in the Literature Review.

The chapter analyzes what is known about the topic, identifies gaps in the literature, and develops the research questions that this research project addresses. Table 1 on the next page lists the fifty-three factors (fifty-four including the broad category "Community Factors") cited in the literature as influencing physician practice location decision making. The eight factors in italics were found in the literature but not in this research.
Table 1: Factors Identified in the Literature

<table>
<thead>
<tr>
<th>Background Factors</th>
<th>Practice Factors</th>
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<tbody>
<tr>
<td>• year graduated from medical school</td>
<td>• variety of practice</td>
</tr>
<tr>
<td>• stated first year medicine preferences</td>
<td>• spatial competition models</td>
</tr>
<tr>
<td>• rural experience in training</td>
<td>• quality of doctor-patient relationships</td>
</tr>
<tr>
<td>• public school</td>
<td>• quality of doctor-doctor relationships</td>
</tr>
<tr>
<td>• medical school</td>
<td>• professional isolation (or lack thereof)</td>
</tr>
<tr>
<td>• location of youth</td>
<td>• personal time</td>
</tr>
<tr>
<td>• location of birth</td>
<td>• on-call/year</td>
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<tr>
<td>• internship or residency</td>
<td>• number of peers</td>
</tr>
<tr>
<td>• gender</td>
<td>• non-medical responsibilities</td>
</tr>
<tr>
<td>• ethnicity</td>
<td>• money</td>
</tr>
<tr>
<td>• college or undergraduate school</td>
<td>• medical facilities</td>
</tr>
<tr>
<td>• choice of specialty</td>
<td>• locums</td>
</tr>
<tr>
<td>• age of first interest in medicine</td>
<td>• life stage</td>
</tr>
<tr>
<td>• skills learned in medical school</td>
<td>• interest of work</td>
</tr>
<tr>
<td>Community Factors (group name also cited in the literature)</td>
<td>• CME (continuing medical education)</td>
</tr>
<tr>
<td>• topography</td>
<td>• clinical autonomy</td>
</tr>
<tr>
<td>• size of community</td>
<td>• career path</td>
</tr>
<tr>
<td>• schools</td>
<td>• access to specialists</td>
</tr>
<tr>
<td>• rural lifestyle</td>
<td>• access to medical technology/equipment</td>
</tr>
<tr>
<td>• religion</td>
<td>• Familial Factors</td>
</tr>
<tr>
<td>• recreational opportunities</td>
<td>• spouse/significant other employment opportunities</td>
</tr>
<tr>
<td>• proximity to friends and family</td>
<td>• spouse/significant other and children's preferences</td>
</tr>
<tr>
<td>• geographic location</td>
<td>• proximity to family</td>
</tr>
<tr>
<td>• ease of making desirable friends/social life</td>
<td>• ease of finding a suitable mate</td>
</tr>
<tr>
<td>• cultural opportunities</td>
<td>• children at home</td>
</tr>
<tr>
<td>• cost of living</td>
<td></td>
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<tr>
<td>• community involvement</td>
<td></td>
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<tr>
<td>• climate/weather</td>
<td></td>
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<tr>
<td>• being needed</td>
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2.2 Defining "Rural"

There is great variability in the use of the term "rural". Many authors use the term rural without defining it at all. Bosak and Perlman (1992) reviewed 178 articles in the areas of mental health and sociology, noting that almost half (43%) do not define "rural." Even when the term is defined, the definitions vary considerably.

The essence of the problem in defining rural is that it is vague and ambiguous. For quantification, nominal variables are sometimes defined in terms of higher order data (for example "green" can be adequately defined with a ratio variable – its wavelength of light). In this case, there is a higher order data type to use as a proxy that is readily available and generally agreed upon. Such is not the case for "rural".

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Statistics Canada (1999) attempt to do the same thing, defining “rural” in terms of population: communities of less than 10,000 people. Specifically, Statistics Canada defines three population clusters. A “Census Metropolitan Area” (CMA) is a large urban area, together with adjacent suburban and rural areas with a high degree of economic integration with the urban area. A CMA has an urban area of 100,000 people or more. A “Census Agglomeration” (CA) is a smaller urban area with an urban centre of 10,000 – 99,999 people. A Rural Area is simply any area not included in a CMA or CA. A more detailed explanation of Statistics Canada Standard Classifications can be found in Pitblado and others (1999), or in the Users Guide published by Statistics Canada (1997).

However, this one-dimensional view is often seen as simplistic, ignoring geography, culture, demographics and other variables that some researchers see as components of “rural”. Some researchers attempt to develop broader indices. Leduc (1997) proposed a “Canadian General Practice Rurality Index” composed of six variables: number of general practitioners, number of specialists, remoteness from a basic referral centre, drawing population, remoteness from an advanced referral centre and presence of an acute care hospital. Each value is weighted and their values summed on a 100-point scale. The British Columbia Northern and Isolation Allowance Program used the first three of these variables and a construct of the fourth (doctor:patient ratio), but omitted the last two in favour of three different variables: exceptional circumstances, remoteness from a major population centre and size of community. Unfortunately, there is little consensus worldwide on multi-faceted definitions of rural, for example the New Zealand Rural GP Network Rural Ranking Scale uses seven completely different variables. Some indices use ten or more variables, for example in the U.S., the sociologists Cleleand and Mushlitz (1991) designed a “Connectedness Index” composed of ten weighted variables to define rurality.
There are other complex indices, but in 1995, Weinert and Boik developed the Montana State University Rurality Index which showed that only two variables (population and distance to emergency care) were needed to produce results similar to those of more detailed indices. This pair of variables is sometimes used in Canada. For example, the Ontario Medical Association defines the related term “rural practice” as “practice in communities with a population of <10,000 and >80 km from a regional centre of >50,000 people.” (Rourke, 2005, p.233). The Society of Rural Practitioners of Canada uses a similar definition. This same pair of variables is used in this project.

Others for simplicity use only a specified distance from tertiary care to define rurality, including the Royal Australian College of General Practitioners and the Canadian Association of Emergency Physicians. The Canadian Medical Association and Canada Post codify rural as any area with the number “0” as the second digit of its postal code. Another common simple definition of rural comes from the Organization for Economic Co-operation and Development (OECD), which defines rural as less than 150 persons per square kilometre. The online “Compact Oxford English Dictionary” (www.askoxford.com, 2005) simply defines rural as “relating to or characteristic of the countryside rather than the town.”

Pitblado and Pong (1999) gives a summary of the major definitions of rural in use in health research in Canada, and acknowledges that many authors add to the problem by using the term “rural” without defining it:

“However there are almost as many definitions of ‘rural’ as there are rural researchers. To make a bad situation worse, it is not uncommon for authors to use the term rural without specifying what it refers to.” (Pitblado and Pong, 1999, p. 9)

However, these same authors have more recently developed a more subtle approach to the issue. In Pong and Pitblado (2001), the authors discuss some of the issues involved in
measuring the geographic distribution of physicians in Canada. In a related article, Pong (2002) reaffirms that comparing the spatial distribution of physicians to the spatial distribution of the population is of limited utility. That is, as there is no agreed upon optimal doctor patient ratios, the problem needs to be looked at more comprehensively incorporating physician utilization, population health and other inter-relationships.

Adding other ill-defined variables such as “remote”, “isolated” or “northern” only exacerbates the problem.

2.3 Factors Influencing Rural Practice

Researchers have been studying issues related to physician recruitment and retention for many years. One survey was Becker, Hartz and Cutler (1979), who found that rural background in particular, but also place of birth, place of internship, and place of college were also significantly associated with practice location. Colditz and Elliot (1978) found that “interest of work” and “variety of practice” were the most commonly cited attractions of rural practice. Disincentives to rural practice were difficulty accessing CME, locums, and professional isolation. Practice conditions and location were the most commonly cited reasons for choosing their current location. Though this study is older, the consistency of these findings with more recent findings in Canada and the U.S. suggest that factors affecting practice location decisions may be robust temporally and between these nations.

In 1985, Coombs, Miller and Roberts asked 396 medical students and 103 faculty members at the University of Alabama School of Medicine to identify factors that help determine medical students choice of practice locations and specialties. Students preferred practice locations similar to the size of their hometowns, and often chose specialties accordingly. There was also an overall tendency amongst students to prefer small cities.
(20,000 to 100,000 population). Spousal preferences, proximity to family, and financial incentives were not related to practice location preferences. About one third of faculty said they influenced students’ specialty choices, a belief not shared by the students. The insignificance of spousal preferences in this study is contrary to findings in many newer studies. This may be because the survey asked medical students their practice intentions, rather than graduates where they actually practice. Many medical students are single, so it makes some sense that they would give little weight to spousal influence on their practice intentions. In this way, the study is not so incongruent: spousal factors have been shown to influence retention far more than initial practice location or recruitment decisions.

Elam, Rosenbaum and Johnson (1996) found that significant predictors of practice location included place of origin, gender, undergraduate institution, residence at admission, and in particular location of residency and specialty choice.

Potter (1995) conducted a small study (n=233) examined characteristics of Alaskan family physicians as determinants of practice location. Factors significant for rural practice were size of community, opportunities for subsistence hunting/fishing, and a feeling of being needed. Significant factors for urban practice were access to medical consultation, CME, proximity of extended family and friends, employment/educational opportunities for spouse, cultural advantages, a salaried position, and children’s educational opportunities. The study found that rural background had no significant predictive value for future practice locations. While at first glance this finding appears to conflict with the results of many other studies, on closer examination it may not. The study examined current practice location, to a sample at all stages of their medical career. As such, it is as much a study of retention as recruitment, and therefore confounding the two variables.

Rabinowitz et al (1999b, p.212) wrote “Demographic, educational and economic factors related to recruitment and retention of physicians in rural Pennsylvania.”
article's findings are significant in two regards. The article attempts to quantify the relative importance of various factors associated with retention of rural physicians. Second, it distinguishes rural practice and retention as separate issues. Rural background was overwhelmingly the most important predictor of rural practice; with first year medical school student practice intentions being the only other significant independent variable. Medical school curriculum, exposure to rural practice in medical school, and a number of other variables were not significant predictors. Conversely, only practice issues (locums, CME, income, etc.) were significant predictors of rural retention.

One paper that focuses exclusively on retention is Sempowski, Godwin and Seguin (2002). This Canadian study surveyed “stayers” and “leavers” using definitions of community size that are similar to those used in this dissertation research. The authors found that long term rural physicians were statistically more likely to be male, older, paid on fee-for-service, have high spousal contentedness, more children at home, and more and better access to CME. Another study that studies retention as a distinct construct is Feeley (2003). As this article relies on predefined factors from the literature, it makes no attempt to expand the list of possible influences. An implication of this is that the results may be too narrow – by using a predefined list of influences, it precludes identifying other influences. The article is significant though in that applies reasoned action theory in an attempt to explain rural physician retention as a predictable social behaviour.

Rourke (1993) wrote an editorial in the Canadian Medical Association Journal that summarizes the results of a survey by the CMA of 2400 rural, and 400 ex-rural physicians. This survey identified important recruitment and retention factors for rural practice, in order of a) attractiveness of rural practice for both the physician and spouse, b) considerations of children, c) recreation, d) rural experience in training, e) community size and lastly f) financial incentives. Physicians who had left rural practice cited as
professional concerns: work hours, professional backup, specialty services, additional training, hospital services, CME, and earning potential; personal reasons were children's education, spousal employment, recreation, cultural opportunities and retirement. These same physicians were asked what might have encouraged them to stay rural, to which they responded additional colleagues, locums, opportunity for group practice, specialist services, alternative compensation, CME, improved facilities and emergency transportation. Note that both for those who stayed and for those who left, money was relatively unimportant in their decision-making. This may help explain why financial incentives in general have such limited long term effect. The editorial goes on to list and describe, in order of merit, modifiable factors: education, group practice opportunities, improved hospital facilities, reasonable working conditions, financial incentives, isolation, and spousal factors. The author sees education as the single most important modifiable factor, especially engendering an interest in medicine in rural high school students, and selecting medical students with rural backgrounds.

In British Columbia, Kazanjian et al (1991) surveyed physicians to gain a better understanding of practice location decisions, quantifying some of the key factors associated with practice location decision making. Another important British Columbia study was published by the British Columbia Medical Association "Attracting and retaining physicians in rural British Columbia" (1998) which made essentially the same observations.

Samaha, Franklin and Rice (1987) surveyed the practice intentions of final year residents in Louisiana. Growing up in a small town is associated with wanting to practice in a rural setting, while familial and income issues were associated with wanting to practice in a larger centre.

Similarly, Scmittling (1981) found that graduates practising in rural area tended to practice more than 100 miles from where they did their residency, whereas urban graduates
tended to practice within a 100 mile radius of where they completed their residency. The study, like many others discussed in the next section, also found that people tend to practice in a community similar to where they grew up.

The influence of spouse and family considerations was confirmed again in Geyman’s 2000 study of residents, which found that spousal preferences were a key driver in the residency location selection decision.

At least three (one Canadian) studies have also revealed that being male is a statistically significant predictor of rural practice. (Carter, 1987; Doescher et al, 2000; Ellsbury et al, 1999).

While Lavanchy et al (2004) did not study physician and recruitment and retention per se, they did complete a quantitative survey of determinants of rural physicians’ life and job satisfaction. They found that job satisfaction, personal relations, health and finances, and absence of depression are determinants of personal satisfaction, while predictors of job satisfaction are location, on-call shifts, personal accomplishment and lack of emotional exhaustion.

Job and life satisfaction indicators appear to supercede background in the issue of retention, as distinct from recruitment. Rural and urban physicians share many job satisfaction indices: schools, opportunities for spousal employment and other familial issues, access to recreation and culture, opportunities for CME etc. However, there are significant if subtle differences. Many rural physicians report that they chose rural practice because of the opportunity for a varied practice, yet this independence is borne of a frequent lack of specialist support, which some studies cite as a barrier to rural recruitment. It’s also clear that some physicians choose their degree of isolation based partly on their comfort level. For example, some physicians choose a rural practice that is not isolated, so that they can have ready personal and professional access to a major centre when and if
they want it. Rural and urban physicians both report lifestyle as a contributor to their practice location decision: some want all of the amenities of a big city, others value outdoor recreational opportunities, but both groups are making their decision partly based on lifestyle preferences.

2.4 Importance Of Rural Background

One point that is reiterated in various forms by Barer and Stoddard (1991) is the importance of rural background in recruitment of physicians for rural practice:

"There is also mileage to be gained from attempting to recruit more future physicians from the areas to which one hopes they will return..." (Barer and Stoddard, 1999 p.26).

This admonition is firmly grounded in the literature. For example, Becker, Hartz and Cutler (1979) conducted a Wisconsin study that reviewed practice pattern decisions in two different time spans, 1950-55 and 1963-68. This study found that the ratio of rural physicians who attended rural high schools was 2.2 to 3.5 times higher than those who attended urban high schools. Similarly Colditz and Elliot (1978) found that 38% of Queensland’s rural practitioners had spent more than 10 years of their childhood in a rural location.

Easterbrook (1999) found that physicians who were raised in rural communities were 2.3 times more likely to choose a rural practice immediately after graduation (.95 CI 1.43-3.69, p=0.001). They were also 2.5 times more likely to still be in rural practice (.95 CI 1.53-4.01, p=0.001).

Elam, Rosenbaum and Johnson (1996) conducted a longitudinal study (1974-85) that examined the practice choices of 1093 graduates of the University of Kentucky College of Medicine. A statistically significant proportion of students returned to practice in their district of origin.
In Norway, Magnus and Tollan (1993) found that of past University of Tromso medical students who spent their youth in the remote north, 82% practice there, compared with 37.7% of their urban-raised peers. Alexandersen et al (2004) wrote a follow-up study to this and other papers that had similar results, and found that 75.4% of Tromso graduates choose northern practice, whereas only 7.5% of their Oslo-educated peers do, primarily because Tromso educates students from northern Norway.

Rolfe (1995), studying 331 graduates of the University of Newcastle medical school found that doctors with rural backgrounds were 2.5 times more likely to choose rural practice. There are numerous other studies that confirm the finding that physicians raised in rural communities tend to practice in rural communities, although many of these unfortunately fail to distinguish between factors affecting rural recruitment from those affecting rural retention (see Rourke and Rourke, 1995; Kassebaum and Szenas, 1993; Fryer et al, 1993 and 1997; Hamilton et al 1997; Rabinowitz et al, 2000; Rabinowitz and Paynter, 2000; Looney et al, 1998).

While the focus of much of the relevant literature has been the importance of rurality, there is some literature that suggests that the importance of background is more generalizable. That is, physicians tend to practice in communities similar to where they grew up. Doctors from big cities tend to practice in cities; likewise for doctors from inner city areas, suburban areas, small cities, rural areas etc tend to practice in similar locations. Of the studies of this type, Xu and others 1997 study is methodologically one of the better ones: all of the findings follow directly from the empirical evidence, and the authors explicitly acknowledge the possibility of the influence of other variables outside those in the study. Other community characteristics from physicians' formative years also yield similar results: socio-demographics, ethnicity, etc. (Coombs, Miller and Roberts, 1985; Rolfe, 1995; Rabinowitz et al, 2000; Rabinowitz, 1993; Brazeau, Potts and Hickner, 1990).
If the shortage of rural physicians can be more accurately characterized as the shortage of rural primary care physicians, then Schiebel's 1996 study has important findings for medical schools hoping to improve the rural supply of primary care givers. This study found that indicators of future primary care practice included older students, female, from an under-represented minority or from a rural background were more likely to enter primary care. The more of these attributes a student had, the more likely they were to enter a primary care specialty.

Kwong et al (2005) observed that, while medical students with rural backgrounds tend to come from poorer socio-economic backgrounds than their urban-raised peers, rural background students are not more likely to be influenced in their choice of practice location by financial incentives vis-à-vis their urban-raised peers.

2.5 Research on Solutions

Barer and Stoddart (1999) succinctly reviews many of the commonly-offered policy alternatives: no change, increase medical school enrolments, regulatory/administrative coercive approaches, financial incentives to physicians, increased use of foreign medical graduates, return-of-service programs, educational initiatives, rural residency opportunities, professional support programs, family/spousal support initiatives, and changes to the present organization of medical care in Canada. Foreign trained physicians have long been and remain a significant proportion of Canada’s “new” doctors. This solution though is expensive, and fraught with ethical issues. Take the example of a relatively poor country such as South Africa, a country with a large population and a much worse shortage of doctors than Canada. If South Africa spends scarce dollars to train a physician, is it ethical for relatively wealthy and relatively well-served Canada to try to recruit doctors from South Africa? Likewise, what is the impact on Zambia when, of the 600 doctors trained by the
medical school in Lusaka over the past 23 years, only 50 now work in Zambia? The ethics of rich nations recruiting doctors from poorer ones has received scant attention in the literature, but it is an issue. The declaration produced by the 1997 World Rural Health Congress in Durban, South Africa included a call on richer nations recruiting doctors from poorer countries to examine the impact of these practices on disadvantaged nations. Bundred and Levitt (2000), writing in *The Lancet*, give a good overview of the problem. They discuss the ethics of recruiting foreign doctors from many perspectives. In attempting to balance individual mobility rights with national interests, the authors observe that

"We cannot stop (nor should we) the desire of individuals to seek a more satisfying quality of life for themselves and their families. However, the active pillage by governments of physicians from other countries is another matter." (Bundred and Levitt, 2000, p.245)

Dauphinee (2005) summarizes the ethical issues and challenges for Canada in this issue and makes recommendations on how policy should be developed.

On a more pragmatic level, relying on foreign trained doctors to the degree that Canada does is risky – vagaries of world economies and ever-changing inducements make this supply chain unreliable. As well, there may be quality differences in doctors trained in other education systems. In British Columbia, one of the most likely home universities of newly licensed doctors in B.C. is the University of Johannesburg (Reid, 2001b). Note too that Canada is far from the only country recruiting expatriates from other countries. Worse still from Canada's perspectives, is that other countries actively recruit our doctors. The result is that about ¼ of Canadian-trained physicians never practice a day in Canada. Most Canadian ex-patriciate physicians moved to the U.S., but even Australia, a country whose issues in rural care are similar to Canada in many ways, is actively recruiting Canadians (Sullivan, 2000).
In 1993, Gushue provided an overview of measures designed to help address the shortage of rural physicians. The measures include a year-for-year return-of-service bursary scheme whereby 10 medical students at Memorial will get $12,500 per year in return for service in a designated underserved area. Administrators in those districts will have to compete for the students' assigned to their district, the students thus have some limited choice in where they go, and students and their families will have the opportunity to become familiar with the community prior to their arrival. This mitigates the somewhat coercive aspects of other more rigid return of service schemes. Further, the medical school is actively targeting these bursaries at students with rural backgrounds, and has begun a high school awareness and orientation program. When the article was written, the measures were new, too early to assess their efficacy. More recently Sempowski (2004) reviewed ten studies (three from Canada, one from New Zealand, six from the United States) on the effectiveness of financial incentives in exchange for rural and underserved area return of service commitments. His primary conclusion is the return of service schemes achieve short term recruitment but have less success with long term retention. Similarly in British Columbia, Yang (2003) found that physicians practising in urban areas are unlikely to move a rural area in spite of financial incentives to do so. A notable exception is the state of Oklahoma's physician incentive programs, which Lapolla et al (2004) found have achieved about double the retention rate as the National Health Service Corps (NHSC) (82% versus 36%). However this may be as much a reflection of the oft-noted weak retention of NHSC rural physicians, as opposed to a reflection of the strength of the Oklahoma program.

While most studies make no attempt to disaggregate the factors influencing recruitment and retention, Pathman et al (2004) explicitly does so. This study is a comparison of retention in Rural Physician Shortage Areas (RPSA) versus non Rural
Physician Shortage areas in the U.S. While the study finds no significant differences in retention in the two groups, it does identify poor recruitment in RPSA's as a problem distinct from retention.

Governments are taking a leading role in facilitating a less ethnocentric view of the problem. In British Columbia for example, there is a cross-sectional Health Human Resources Advisory Committee (HHRAC). This group has representatives from health professions, employers, unions, relevant provincial ministries, regions, health career educators and other stakeholders. This group and others like it across the country has a number of problem-oriented working groups. In terms of educational initiatives, the HHRAC has struck the “Healthcare as a Career Choice Working Group” to take a larger view of the problem from a planning, recruitment and educational perspective. Groups such as this are a positive sign.

If the HHRAC is a “top-down” cross-sectional strategy, there are also “grassroots” strategies (for example the National Health Summit 2001 conference in the northern B.C. community of Prince George). The conference was entitled “Communities Taking Action: Strategies for Rural, Remote and Northern Health Care”. This community-based organization is endeavouring to provide a mechanism for rural and remote communities to lobby for greater local autonomy and control over health care decision making for their communities. A couple of their key goals are illustrative: “Find ways to empower communities to take charge of their own health care needs and decisions”(p.5), and “Create “Centres of Excellence” for rural/remote health care”(p.6). Significantly, this conference also explicitly explored how First Nations communities can be effective in defining their own community based health care (Beesley, 2001).
2.6 **Efficacy Of Educational Initiatives**

The literature is quite clear on the major types of factors that are determinants of practice location. Essentially there are six: **personal background**, professional educational factors, **professional practice factors**, **personal/family factors**, **community factors** and economic factors. "Education" intersects all of these determinants. As a result, educational initiatives represent a significant and growing policy option, ranging from high school enrichment and orientation programs, pre-medical programs, medical school recruitment and selection policies, exposure to rural practice in undergraduate and post-graduate training, and continuing medical education.

Barer and Stoddard (1999) also identify the **efficacy** of educational initiatives as a significant gap in the literature:

"This is currently an open question since some specific educational practices and policies appear to have increased the number of physicians in rural/remote practice but, overall, educational strategies have received relatively little attention..." (Barer and Stoddard, 1999, p.21)

The authors also explicitly urge more research in this area:

"...The overall impression... from both the existing literature and from speaking with individuals involved in educational strategies is that only a fraction of what could be done is currently being done." (Barer and Stoddard, 1999, p.21)

The implications of this are that educational initiatives may hold unrealized promise in terms of helping to ameliorate the shortage of physicians in rural practice. More appropriate educational programs (such as the new medical school in Prince George) need to be researched, designed, implemented and evaluated.

Educational initiatives come in many forms. First, there are many schools whose admission policies are influenced by the **preponderance of evidence** supporting rural background as a predictor of rural practice. Some of these include: Mercer University School of Medicine (Glasser and others, 2000), the Upper Peninsula program at the
University of Michigan (Brazeau, Potts and Hickner, 1990), University of Arkansas (Geyman, 2000), the WWAMI program at the University of Washington (Geyman, 2000; Ebbesson, 1988), Jefferson Medical College (Philadelphia) (Rabinowitz and Paynter, 2000; Rabinowitz, 1983 and 1993), the University of Tromso (northern Norway) (Lochen, 1991), the University of Oklahoma (Rhodes et al, 1995), the University of Illinois College of Medicine at Rockford (Stearns et al 1997 and 2000), and Baylor College of Medicine (Houston) (Thomson et al, 1999). Here is British Columbia, the new Northern Medical Program at the University of Northern British Columbia develops a “Rural Remote Suitability Score” as an additional parameter in student selection. (UNBC website, 2005)

Beyond admissions policies, a second theme in the literature explores rural-focused curricular models. Commonalities in these models are early and substantial contact with both rural communities and rural doctors (Kaufman, 1990). For example, in Canada Memorial University has long had a rural-focused curriculum. 2005 was the first year of the University of British Columbia’s new satellite medical programme at the University of Northern British Columbia, and this was also the inaugural year for the Northern Ontario School of Medicine (a joint venture of Laurentian University and Lakehead University). Some U.S. examples include the University of Minnesota – Duluth, multiple programs at the University of Washington, Jefferson Medical College, University of Illinois, East Carolina University and the University of Oklahoma. Other international examples include Australia’s University of Queensland and the new James Cook school, as well as Norway’s University of Tromso (Boulger, 1991; University of Washington website; Kaisen et al, 1984; Lilley et al, 1998; Reamy, 1994; Rourke and Strasser, 1996).

Brazeau, Potts and Hickner (1990) reported on the Upper Peninsula (UP) program in Michigan that seeks to address the rural physician shortage by training doctors in a rural, practice-based setting. While the study found that U.P. program graduates were more likely
to choose rural practice, it did not compare the relative likelihood of rural practice of rural background students in both the upper Peninsula and in the parent, conventional undergraduate medical program in Detroit. This could have strengthened, or refuted, their assertion that “the UP program has been successful to date in training medical students who ultimately pursue careers in rural primary medicine” (p. 350), nor did the study attempt to control for self-selection. Without this, it’s unknown to what degree the program itself is responsible for the observed effect. Many studies of programs that include substantial exposure to rural practice are somewhat weakened by the absence of any investigation, analysis, or even contemplation of other possible explanatory variables (rural background, student self-selection etc.). The common error is accepting this prima facie association with causation.

Easterbrook (1999) assessed whether exposure to rural practice during undergraduate medicine or family practice residency is associated with increased likelihood of practice in a rural setting. This is a good small study. The instrument was well pre-tested, the definitions and categorizations used are grounded in the literature, and subsequent mailings to non-respondents produced an excellent response rate for a mail survey (75.9%). The authors were also careful to control for confounding variables in their multivariate logistic regression (“age” and “length of practice”). Neither exposure to rural practice during undergraduate training, nor exposure to rural practice during residency were significantly associated with either rural first practice or with rural current practice (to the authors’ disappointment). However, rural hometown was strongly associated with both rural first practice and rural current practice.

Gray, Steeves and Blackburn (1994) identified the practice locations of 571 specialists who completed specialty residencies with Dalhousie. This medical school requires all first year post-grads to spend time in a rural community, and has a long history
of producing a disproportionately large share of Canada's rural physicians. For both primary care and other specialties, over 50% of respondents were practising in a rural area. The authors are careful to observe that many Dalhousie students choose Dalhousie because of the diversity of its residency experiences. Nonetheless, the study suggests that rural exposure in residency may impact choice of practice location. The weakness of the study is that the authors did not collect background or prior-intention data that would permit them to test the significance of the rural residency experience. Another very similar study from the U.S. is Norris and Acosta (1997), which had similar findings but has the same weakness. Another example is Gessert et al. 1989. This error appears to be most common in studies published before about 1996. Nonetheless, there are many programs with a rural focus whose graduates tend towards rural practice. Another more recent Canadian study is Hutten-Czapski and Thurber (2002), who completed a retrospective cohort analysis of the Canadian Post-MD Educational Registry database, correlated with the Canadian Medical Association databases. The authors found that Memorial University and Université Laval, with rural-focused programs, produced a high proportion of physicians who chose rural practice vis-à-vis other Canadian schools, and that the University of Toronto and training in family practice emergency medicine produced the lowest proportion of rural physicians. The study found gender to be not statistically significant. The authors also discuss confounding variables such as rural background that significantly influence practice location.

In 1993 Magnus and Tollan reported that one of the main goals for the University of Tromso medical school in northern Norway is to educate doctors for rural practice. Their follow-up survey covered 11 graduation years, a total of 417 graduates. The study found that 56.1% of graduates prefer to work in remote areas. What is particularly interesting to note is that of students who spent their youth in the remote north, 82% practice there,
compared with 37.7% of their urban-raised peers. In other words, Magnus and Tollan did control for rural background.

In 1999 Rabinowitz et al reviewed the Physician Shortage Area Plan (PSAP) at Jefferson Medical College (JMC), which recruits and selectively admits students with rural backgrounds who intend to practice family medicine in rural or underserved areas in Pennsylvania. The program also supports them while in medical school. This study found that PSAP graduates were much more likely than their non-PSAP peers at JMC to a) choose rural practice, b) choose to serve in an underserved area, c) choose family practice, and d) to choose family practice in a rural setting. Rural retention after 5-10 years is also very high (87%). The authors posit that "...(E)ducators who are committed to addressing the rural physician shortage can institute programs such as the PSAP to achieve these goals in a highly effective and long-lasting manner" (p.260). The authors' explicitly acknowledge the importance of rural background for rural physician recruitment and retention, but they make three significant omissions. First, they make no attempt to reflect the literature that describes the quite different relative importance of rural background on rural recruitment versus rural retention. Secondly, and more importantly, the study does not acknowledge the self-selection bias of persons applying to the program. Third, the study does not isolate the effect of the intervention, controlling for rural background – there is no way to tell to what degree PSAP's impressive statistics are a result of the intervention. However, the authors are almost certainly correct in their assertion that the program has helped to nurture the right people into becoming rural physicians, we just cannot be certain of how much of the program's success is due to the program itself. What is peculiar about this omission is that Rabinowtiz himself acknowledges this limitation in a very similar study he did alone six years earlier, in 1993: "One limitation of this study is the possibility
that some PSAP students might have entered medical school and chosen to practice family medicine in rural and underserved areas even without the program.” (p. 938)

Rolfe (1995) in New Zealand found that those who chose a rural general practice rotation in their final year were 3 times more likely to choose rural practice, but it is unclear whether the effect is caused by the rotation or self-selection. Conversely, a rural rotation in third year was weakly but significantly associated with dissuading rural practice (RR=.07).

Tesson et al (2005) reviews some medical education programs in Australia, Canada and the United States designed to meet the medical needs of rural and remote areas. The study highlights the role of government funded rural medical education initiatives and the challenges these programs face – the article helps to identify best practices based on these programs’ experiences.

Which schools produce physicians for rural practice? One general theme is that medical schools that are in non-urban settings tend to be more successful in producing physicians for rural practice. Some particular studies of note include Rosenblatt, RA et al. (1992) who asked “Which [American] medical schools produce rural physicians?” This is a very large, oft-quoted and influential study. The authors tested their hypothesis that “medical schools vary systematically and predictably in the proportion of their graduates who enter rural practice,” (p.1559) primarily by analyzing The American Medical Association’s Physician 1991 Masterfile of 578,610 physicians. The study produced some significant insights: primary care specialists (family practice, general surgery, etc.) are much more likely to enter rural practice. Men are more likely to enter rural practice than women. Proportionally, family physicians are slightly over-represented in rural counties, whereas all other specialties are under-represented. Public medical schools in rural states produce the overwhelming majority of physicians in rural practice. In summary, four medical school variables were strongly associated with rural practice: location in a rural
state, public school, high production of family physicians, and smaller funding from the National Institutes of Health. The study tries to take a balanced view on most issues, tempering extreme opinions as to the role of academic medical centres in solving the rural physician shortage. However, the study does focus on the ability of medical schools to produce graduates who choose rural practice. What is lacking in this study has been illustrated by subsequent researchers: that medical school curriculum actually has only a modest impact on physician practice decisions, and virtually no impact on retention.

Further, rural background now appears to have a significantly stronger predictive capacity, but practitioner origin was not part of the data set for this study and so was completely overlooked by the authors.

There are also quite a number of studies that assess the efficacy of post-graduate educational experiences in developing physicians for rural practice (see Reamy, 1994; Buechler, 2000; Gray et al, 1994; Acosta, 2000; Pathman et al, 1999). Most of these studies reveal that strong exposure to rural medicine and education on rural practice during residency training is strongly associated with rural practice. In these studies, 50% - 90% of graduates of these programs chose rural practice after graduation. While some of these studies are multivariate, none of them assess the influence of variables that are extra to the program in question (e.g. gender, rural background, etc).

In contrast, Rabinowitz et al (2001) published “Critical Factors for Designing Programs to Increase the Supply and Retention of Rural Primary Care Physicians.” Rabinowitz has written many earlier studies on this topic, some of which are referenced in this paper. However, this paper is significantly more exhaustive in the variables it explores, and it is methodologically more sound: a large sample, a fifteen year span, rigorous application of appropriate statistics, and conclusions that derive solely from the evidence. This study found that participants in the Physician Shortage Area Program were 4.5 times
more likely to practice in a rural area than were non-program participants. The study goes on to note that students with a rural background were 4 times more likely to practice in a rural area. Most significantly, the study discovered that 75-78% of the success of the PSAP is due to the freshman practice plans and rural background of participants. The study indicated that:

"Non-PSAP graduates who had grown up in a rural area and had a freshman-year plan for family practice were 78% as likely to practice rural primary care (16/80 [20%]) as PSAP graduates (18/70 25.7%)]" (Rabinowitz et al, 2001, p.1044)

In other words, 78% of the success of the PSAP program can be explained by factors extraneous to the program.

Educational initiatives sometimes perform weakly. Pathman, Konrad and Ricketts (1992) studied the National Health Service Corps (NHSC), which provides about 450 scholarships annually to medical students on a year-for-year return of service in a federally-designated “health professional shortage area” (HPSA). This study compared job satisfaction and retention rates for NHSC and non-NHSC rural physicians practising in HPSAs. The study found that NHSC physicians had lower morale and lower retention than their no-NHSC peers. NHSC physicians reported that their low morale and low retention was due to being poorly matched to communities, scant attention to familial satisfaction issues, and scant attention to practice issues. This suggests that issues related to retention differ significantly from issues related to recruitment. It is also clear that return of service schemes need to be cognizant of these differences and reflect them in schema planning and operationalization. Three years later, in 1995, these same authors studied whether rural retention is better for a) graduates of public medical schools, b) those who completed community hospital-based residencies, and c) those who completed rural rotations as medical students and residents. The study also differentiated between physicians who did
and did not serve in the National Health Service Corps (NHSC). This well designed, statistically exhaustive study found no statistically significant variations. Rural retention duration did not differ for public versus private medical school graduates, nor did it differ for those trained in community hospitals versus university hospital-based residencies, nor did it differ for those who completed rural rotations as students or residents. Results were virtually identical for both NHSC and non-NHSC participants. The authors take great pains to illustrate that their results are consistent with the literature. This study clearly demonstrates that rural exposure in the medical course appears to have little impact on rural retention. This is significant because it substantiates the growing understanding that the factors positively influencing rural recruitment are not the same ones positively affecting rural retention.

Indeed, there is evidence that rural exposure during undergraduate or graduate medical education is not a statistically significant predictor of rural practice (Rabinowitz et al, 1999 and 2000; Pathman et al, 1994).

One of the most interesting contra indicators is in Looney's 1998 study of Kentucky medical school graduates. Looney found that it was far easier to predict who would not go into rural practice. In essence he found that while rural-raised students may enter rural practice, urban-raised students almost never do.

2.7 Non Physician-Based Solutions

There are many possible caregivers beyond physicians: expanded capacity nurses, physician assistants, primary care technologists, as well as allied health workers with expanded skill sets.

One of the options that is the subject of growing attention and resources across the country is the use of expanded practice registered nurses. Nurses have long been used as
primary care givers in extremely remote or isolated situations, not as a deliberate response to perceived physician shortages, rather as a practical, expedient solution to the need for some form of medical service. However the concept of expanded roles for nurses is receiving increasingly sophisticated investigations. Pilot projects abound, and some provinces even have specific legislation covering nurse practitioners. Money is also a driver: governments recognize that for low risk and commonplace procedures and elementary triage, nurses are cheaper and quicker to educate, and receive significantly lower remuneration. By far the most comprehensive document reviewing the current status of expanded nursing roles in Canada is the Centre for Nursing Studies and the Institute for the Advancement of Public Policy’s “The Nature of the Extended/Expanded Nursing Role in Canada”, published in March 2001. This status report was meticulously researched and documented. The report provides: a) a detailed comparison and contrast of the widely varying scope of practice for expanded practice nurses in Canada, b) profiles of extended/expanded nursing practice, c) a review of collaborative versus independent practice models, d) discussions of role confusion and of collaborative practice, and e) patient perceptions. The researchers interviewed doctors, nurses, other health care professionals and patients. The report provides a refreshingly frank overview of the issues, attitudes and fears of both doctors and nurses, and makes 8 recommendations, each of which is grounded in the findings of the study. These findings also find support in the literature (Bergeron, Neuman and Kinsey, 1999; Hampton, 1998; Pan et al, 1995; Strickland, Strickland and Garrettson, 1998).

Some of the studies in the nursing literature make the same mistakes as is common in the medical literature, ascribing variations in nurse practice decisions to nursing school differences. For example, Wood’s 1998 study found curricular differences did impact nurse’s practice area. However, this study suffers the same leap of faith that so many of the
physician studies do: the author makes no attempt to control for variables beyond the nursing school curriculum (Wood, 1998).

In Australia, the National Association of Rural Health Education and Research Organizations also produced a discussion paper in 2001 that made similar recommendations to the Centre for Nursing Studies and the Institute for the Advancement of Public Policy paper discussed above. While methodologically not as rigorous, it similarly reflects opinions of a wide range of health professionals. Both papers recommend better post-secondary education and continuing education for expanded practice, both make recommendations regarding scope of practice, remuneration, recruitment and retention, and both recommend governments to take a leadership role in developing integrated practice models for rural and remote practice. In spite of their differences, the papers have a common purpose: where the Australian paper emphasizes operational recommendations and the Canadian paper focuses on legal, regulatory and structural issues, both papers clearly are advocating for a systematic formalization of expanded capacity nursing in their respective health care systems.

In Canada, however, one of the impediments to more use of expanded capacity nurses is that nurses themselves are in short supply. Some observers ask how nurses can be asked to do more when they're already short staffed and overworked (Reid, 2001c). As well, nurses like most professions are facing a growing number of retirements as “baby boomers” exit the workforce, and nursing schools cannot keep up even with current demand. Indeed many provinces have actually cut back on the number of nursing spaces in university. While expanded capacity nurses may be able to provide some amelioration of the rural doctor shortage, there are not enough of them, and thus it appears that at least in the short to medium term that nurses have their own shortage to deal with, never mind solving the doctor shortage.
A smaller body of literature goes even further, for example Nurkin (1998) proposed that the focus on recruiting physicians is misplaced, that rural communities would be better served by focussing their efforts on better use of non-physician personnel such as nurse practitioners, and better use of telemedicine. This Nurkin study and others are taking a more holistic view of the problem of rural access to health care, that is, looking at the problem from a non discipline-specific perspective. For example, Wooten (2001) examines telemedicine, and finds that telemedicine and in particular telenursing are safe, efficient and cost-effective. The same study found that decision support for nurses over video dealing with minor injuries is effective and safe. This small but growing number of problem-based studies is a change from the voluminous health care provider discipline-based literature. A consistent thread in the literature is that while non-physician health care professionals can relieve physicians of many routine or relatively simple duties, and in the process help to meet community health needs, this will only offset part of the unmet rural health care need.

2.8 Gaps In The Literature

The literature review identified eight gaps in the literature. This research project addresses the first two:

1) There is little broad-based exploratory research to support and inform the preponderance of narrow, quantitative research. Specifically, there is a need to broadly encapsulate the widest range of possible factors influencing recruitment and retention, in order to be able to adequately control for extraneous variables. It is this gap, the absence of broad, encapsulating research, that this research project addresses.
2) While there are many possible indicators described in the literature, there is a lack of theory that integrates the work to date. This research project also constructs theory.

3) Lack of clear, robust definitions of "rural", "underserved" and related terms.

4) Some studies have illustrated that students expressing an interest in rural practice upon entering medical school are more likely to enter rural practice. Thus to what degree can eventual practice location be ascribed to a priori intentions, vis-à-vis the effectiveness of a particular educational intervention? (Basco et al 1998; Blue et al, 1996). The gap here is that much of the literature that ascribes positive outcomes to educational initiatives do not control for self-selection bias, that is, students predisposed to rural practice may choose programs that openly espouse development of rural physicians. Likewise the weight of rurality of students and practice intentions on entrance as independent variables are never assessed as covariates in studies of the efficacy of educational initiatives to ameliorate shortages of rural physicians (nor are any other origins).

5) The significance of pre-medical or high school education on the likelihood of rural practice, whether directly or in concert with other variables already positively associated with rural practice.

6) There exists no thorough disaggregation of the factors influencing rural recruitment and those influencing rural retention.

7) There is evidence that doctor:patient ratios and population health are weakly related, but little rigorous study to determine what the impact of more healthcare on population health
8) More research is needed on the efficacy of alternative care providers, such as expanded practice nurses. For example, are people in communities whose primary care giver is a nurse as healthy as people in comparable communities served by a doctor.

2.9 Conclusion

This chapter has illustrated that while there has been considerable quantitative research on physician recruitment and retention, there is little broad exploratory research underpinning the narrower research trajectories. Second there is also no attempt, extant, to develop theory to explain the location decision making process. This research addresses these two gaps.

Once the gaps were identified, a research question needed to be developed. The realities of rural medicine in Canada helped frame the questions. Rural medicine is predominantly carried out by family practitioners, so in order to create a manageable research project, the study was restricted to family practitioners. In Canada, health care is a provincial jurisdiction, so the study was restricted to one province, British Columbia. While this research is not addressing directly the confounding of recruitment and retention, it does need to acknowledge that they are different constructs. As this is broad, exploratory research, a case study approach were called for. Finally, as this is exploratory research in an applied area that seeks to develop theory, grounded theory is an appropriate methodology. Hence we have the questions:

What are the key factors that influence primary care physicians in British Columbia, Canada to choose rural practice?

What are the key factors that influence primary care physicians in British Columbia, Canada to leave rural practice?
The next chapter will describe and defend the methodology used in this study to explore these research questions.
3.1 **Introduction**

This chapter discusses the specific research questions and outlines the methods used. After a synopsis of the methodology, there follows a detailed description of the method used, with particular attention paid to grounded theory and case study research. The chapter concludes with an explanation of the key assumptions underscoring the method, and a discussion of validity in the context of this project.

3.2 **Research Questions**

Two research questions were identified in the review of related literature:

1. What are the key factors that influence primary care physicians in British Columbia, Canada to choose rural practice?
2. What are the key factors that influence primary care physicians in British Columbia, Canada to leave rural practice?

3.3 **Synopsis**

The absence of any comprehensive understanding (theory) of a dynamic social reality in a management problem suggested the use of an iterative, inductive case study technique. Specifically, these cases used single units of analysis (i.e. individual doctors) in a multiple case design. The instrument used both closed and open questions, framed using data from secondary sources and honed in a pre-test of four physicians. Constructed from a realist ontology, grounded theory was progressively build towards theoretical saturation. This realism was reinforced by ensuring that the stakeholders, physicians who chose rural
practice (both those who stayed and those who left), helped to build the emergent theory via negotiated outcomes.

3.4 Method

3.4.1 Discussion of Grounded Theory

Glasser and Strauss (1967) described in their seminal work *The Discovery of Grounded Theory* their method of managing and interpreting qualitative data from their participant observation studies. As a research paradigm, Denzin and Lincoln (1994) place grounded theory as a late modernist approach, which fits well with grounded theory’s realist ontology. However, some authors, such as Locke (2001) and Lowenberg (1993) point to grounded theory’s concern with subjective experience and its American pragmatist and symbolic interactionist heritage to suggest it may fit better in the interpretive school. Grounded theory does not fit neatly anywhere. Indeed, even Glasser and Strauss explicitly make the connection between grounded theory and symbolic interactionism. Further, the stress on referencing every aspect of the enquiry process back to the empirical world is relentless. Grounded theory’s distinguishing features then are its focus on discovery through direct contact with the social world being studied and a rejection of *a priori* theorizing. Thus grounded theory produces substantive theory as distinct from (and prior to) formal theory (to paraphrase Glaser and Strauss, 1967).

In terms of grounded theory’s theoretical products, ‘conceptual categories’ are stand-alone elements, whereas “properties” are a conceptual element of a category. The more properties a conceptual category has, the more theoretically dense it is. Note too that heuristically, grounded theory focuses on process, not discrete units of analysis.
3.4.2 Discussion of Case Study Research

There is no single accepted definition of a case study as a research method (as distinct from the inductive use of case studies as a teaching method). As well, the noun “study” is ambiguous. There is some agreement. For example, most would probably agree that the fundamental epistemological question may be “what can be learned from the case?” Case studies generally follow a phenomenological epistemology, with a hermeneutic pattern. That is, the data is iteratively re-evaluated in terms of the emerging whole, often in an alternating cycle of induction and deduction (Berg 1998). After that, the definitions diverge in content and vary in robustness. Further complicating things is the research paradigm. Yin (1994) notes that case study research can be conceived of as a distinct method, or as is the case in this research, as a technique.

Some definitions of case studies are quite weak, in that they are easily refuted. Many of these are simply too vague. Babbie (1992), for example, defines case studies as a method that is a subset of ethnography (i.e., field research): “I have used the term field research to include methods of research sometimes referred to as participant observation, direct observation, and case studies” (p.239). Other authors would completely reverse this definition, making ethnography a subset of case studies. Feagin et al (1991) for example writes that “There are several types of ... case studies. The first of these is ethnography, or what is sometimes called field research. An ethnography represents a detailed study of the life and activities of a group of people” (p.181). However, many other authors take issue with co-mingled definitions such as these, indeed, many are explicitly of the opinion that case studies and field research are quite distinct, perhaps even mutually exclusive.

Another often-seen error is crafting a definition of case studies that is so broad as to be encompass most types of research. These authors are attempting to capture the wide range of research that could conceivably be classified as case study, but in so doing, the
definition's breadth becomes its fatal flaw. Definitions such as these could conceivably apply to many types of research that few would consider case studies. One example is found in Stake (1995) who defines case studies not as a methodological choice but a choice of object to be studied. By this definition, virtually any type of research on an identifiable, bounded entity would qualify as a case study. The implication here is that a researcher using case studies needs to clearly state how he is defining “case study.”

Others try to maintain a definitive, symbiotic link between case studies and qualitative research: “A case-study is ... an in-depth, multifaceted investigation, using qualitative research methods, of a single social phenomenon” (Feagin et al, 1991, p. 86). Again, many others would argue that case studies can include quantitative data. Yin (1994) goes so far as to say that case studies should ideally include quantitative data as part of their convergence or triangulation strategy. This is what my research did.

What complicates the problem of definition is that there are, extant, different types of case studies. I should preface this by noting that these categorization are not mutually exclusive – many case studies will share characteristics of more than one of these types. The first is what Stake (1994), Denzin and Lincoln (1994) or Berg (1998) would call an “Intrinsic” case study or Yin or Bickman and Rogg (1998) call “Descriptive” case study. These types of studies describe a case for the sake of the case. The purpose is not to develop or test theory, nor is intended to be illustrative of a particular trait, nor is the researcher looking to be able to generalize. Rather, the purpose is somewhat more ethnographic. Many authors observe that even a rich ethnographic case study is selective in its data, and can never claim to completely, categorically describe anything. That said, the vast majority of inductive “case studies” in popular business literature would fall into this category. Most of these are superficial, certainly not ethnographic in intent, and are intended as engaging reading rather than “research.” In this vein, anytime a maverick
manager’s experience is profiled, or a bankruptcy is dissected, it could be called a “descriptive case study”. In the extreme, it could be argued that virtually any news story is a “descriptive case study,” and while superficially true, such an extension strains the bounds of credibility.

The second type are “Instrumental” case studies (Denzin and Lincoln, 1994; Berg, 1998). This dissertation uses instrumental case studies because they are used when the existing knowledge or base of theory is poor. Thus they are intended to provide insight into or refinement, or even creation, of theory. The case may be very detailed, but the case itself is secondary to the primary instrumental aim. Here we often see the alternating cycle of deduction and induction that is a common feature in case studies: gathering data, developing hypotheses, gathering more facts to test the emerging hypotheses. Yin in Bickman and Rogg, (1998) covers roughly the same ground with two categories, what he calls “Exploratory” case study and “Explanatory” case study. The distinction here is that exploratory case studies are used to develop hypothesis in the instances of little or no theory and/or experience, whereas explanatory case studies seek to test hypothesis, develop and refine theory, and develop generalizable conclusions. Stake uses parallels in sociology to further categorize a subset of instrumental case study where numerous cases are examined and compared simultaneously in what he calls “Collective” case study, a concept echoed in Berg (1998). Groups of cases are studied in this way so that a common characteristic, or differences, may in some way be generalizable to a larger set of cases.

3.4.3 Case Studies in Business and Management Research

One of the strengths of case study research is simply their popular appeal. Case studies have long been common in business literature, particularly in mass-market business related publication (such as Business Week, Canadian Business, Forbes, Inc, etc.). The
vast majority of these are largely descriptive case studies, varying widely in methodological rigour. Some are well done, many are little more than a series of anecdotes strung together in no discernable pattern. It would be mistake however to characterize this sort of work as worthless. Indeed, in the tradition of the parable and the fable, there may well be educational value here. It’s left to the reader to discern how much could be generalized from the article to his own business problem. It’s also unlikely that a reader would mistake a case study in Business Week as substantive, valid research. I would argue that this is simply a popular version of the discovery learning pedagogy that is commonly found in the use of case studies in business education. (Denzin and Lincoln 1994) Indeed, case-based education is common in most fields of applied human endeavour (e.g. medicine, social work, criminology, etc.)

This is not surprising. One of the strengths of case study research is its face validity. Being field based, working in a relatively unconstrained way to expose and understand real world issues and problems, improves the credibility of the findings for many business people. Another strength of case research is that researchers generally are endeavouring to understand the overall context as well as the discernable parts. That is, case studies are able to consider a business problem in toto, not as the sum of its parts. Most other lines of enquiry, particularly quantitative methods, are far more restricted in their scope. It’s intuitive that a quantitative method, hoping to disprove a null hypothesis, must limit their line of enquiry to quantifiable data that will help prove (or at least associate) with the hoped-for alternate hypothesis(es). This underscores another strength of case study research. A researcher can begin a study without knowing precisely the boundaries of the inquiry, because insights discovered in the course of the study may later become a key part of the case.
Case studies are useful in describing, understanding and explaining business problems, spanning the range of utility of qualitative research. This span, coupled with a uniquely holistic view of problems, makes case studies a powerful tool. Of these, the "explaining" function, in solving applied problems that may be generalizable to some larger group of circumstances, and thereby add to the process of theory generation and refinement is a particularly important strength. Another of the strengths of case studies is that we can gain both propositional and experiential knowledge. On the experiential side, as discussed, case studies aid knowledge transfer by presenting ideas in a context, with illustrations and examples that a reader can relate to. This is both a strength and a weakness of case studies. The weakness here is that the case study write-up is a mixture of subjectively-included facts and the author's own ideas and experiences. Which aspects of the study will be transferred depends very much on the reader's own experience, pre-existing knowledge and biases. Thus a weakness of the case study is that it is uncertain what a given reader may "learn" from the study. Some learning will be appropriate, other learning will be less valid.

Some authors, particularly in business research, perceive strengths in case study research beyond the relatively 'safe' ground of descriptive and exploratory research. Smith and Dainty (1991) for example suggest that the validity of case study research is dependent on the strength of the logical/causal connections, regardless of the type of study. They also reiterate the importance of a theoretical basis for research. Unfortunately, they do not articulate at all why they single out logical connections as being especially important in business case studies versus case studies in other disciplines. It's stated without being substantiated.

Yin's (1994) "six sources of evidence" is often-quoted (Bickman and Rog, 1998; Denzin and Lincoln, 1994). Of these, I will be able to employ three, namely archival records, open-ended interviews, and focussed interviews.
A weakness of case study research is that it is politically less acceptable and often more difficult to publish. This is a more environmental than procedural/methodological criticism (Smith and Dainty, 1991). Indeed, even some writers (examples below) on business research methods appear to have a bias in favour of quantitative methods. Consider for example “Business Research Methods” (Emory, 1985), a 400+ page volume detailing business research design, data collection, sampling, analysis and reporting in which there are precisely three sentences on case studies. Likewise, Fubara and Mguni’s 1995 book “Research Methods in Management” has a chapter on “Methodology” and another on “The Nature of Research in Social Sciences/Management,” neither of which contemplate case studies. Case studies are not mentioned until section (4) of the chapter titled “Other Research Methods.” In this case, the authors do not malign case study research, but in giving it only seven sentences in the book, they marginalize it. “Damning with faint praise” as the saying goes.

3.4.4 Research Design

At it’s core, the process used is essentially as outlined in Wollin:

“The basic sequential and iterative process of the analytical induction method can be used from a scientific realist perspective. In this case, explanation or theory replace hypotheses. The revised process, which is at the heart of the research design proposed in this paper becomes one of:

- developing an initial explanation for a phenomena based on prior understanding and the formulation of the research question;
- examining the first case for empirical support; revising the explanation or theory in light of analysis of the case;
- selecting and examining another theoretically-dense case, especially a negative case, both for empirical support and for further insights; and
- repeating the process until “theoretical saturation” is reached, in that each additional case adds minimally to the theory.” (Wollin, 1996, pp. 5, 6)
With this design in mind, the theory development process developed by Wollin (1996) is adapted to meet the needs of this project as illustrated in Figure 1.

**Figure 1 Theory Development Process**

1. **Getting started:** defining the research question and if possible developing a preliminary model or possible theoretical framework
2. **Selecting a case:** select first or next case on the basis of theoretical richness
3. **Craft or re-craft data collection models**
4. **Enter field for data collection**
5. **Analyze data**
6. **Shaping the model:** Revise the emerging theory, rejecting and re-starting if necessary
7. **Enfold the literature:** Compare the emerging theory with similar, conflicting or heuristically useful literature
8. **Compare with earlier data:** Examine the consistency of the emerging theory with earlier
9. **Theoretical saturation:** Has saturation been reached?
   - **Yes**
   - **No**
10. **Documentation:** write up the theory, supporting it with empirical evidence from the cases

Source: Adapted from Wollin, 1996, p.6

To strengthen the external validity, this dissertation proposed a goal of 40 case studies, with a minimum of 32 and a maximum of 48 as described below. The goal was not less than 20 participants selected from each of two distinct sub-populations: physicians who stayed in rural practice in one group (STAYERS), and physicians who left (LEAVERS)
the other. Prospective participants were identified from a historical review of practice location patterns of physicians in selected communities. Based on Weinert & Boik’s findings, this research project defined communities on a 2 x 2 matrix of population and distance to tertiary care:

Table 2  Community Population and Distance to Tertiary Care Matrix

<table>
<thead>
<tr>
<th></th>
<th>&lt;50 km to tertiary care</th>
<th>50+ km tertiary care</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural Area (&lt;10,000 people)</td>
<td>R&lt;</td>
<td>R+</td>
</tr>
<tr>
<td>Census Agglomeration (10,000 to &lt;100,000 people)</td>
<td>CA&lt;</td>
<td>CA+</td>
</tr>
</tbody>
</table>

Physician location and address data was accessed via eleven editions of the College of Physicians and Surgeons of British Columbia’s “Medical Directory”, editions 1991-1992 through 2001-2002. Seven-hundred thirty-two family practitioners were identified from 32 communities:

a)  R<  (8 communities)

b)  R+  (12 communities)

c)  CA<  (6 communities)

d)  CA+  (6 communities)

Note that more rural communities were required as there are fewer potential participants in Rural communities than in Census Agglomerations. As this is purposive sampling, the study sought maximum variations in the length of time a physician stayed in rural practice. Accordingly, the list of physicians for each classification of community was sorted by time spent in the community, ranging from 2 years to 12 or more. Those who were currently listed as practising in a community were classified as “Stayers”, those who had practiced there for some period of time but left were classified as “Leavers”.

49
Thus “Stayers” and “Leavers” were then subdivided into eight categories:

- \( \text{STAYER}_{R<} \)
- \( \text{STAYER}_{R+} \)
- \( \text{STAYER}_{CA<} \)
- \( \text{STAYER}_{CA+} \)
- \( \text{LEAVER}_{R<} \)
- \( \text{LEAVER}_{R+} \)
- \( \text{LEAVER}_{CA<} \)
- \( \text{LEAVER}_{CA+} \)

Appreciate that the key groups for analysis were “Stayers” and “Leavers”. This research endeavoured to draw from as broad a cross-section of sub-groups as possible, but as the distinctions between the sub-groups is patently arbitrary, this was a secondary, “nice to have”, dimension to the research.

The project then attempted to track down contact information for the 408 identified Leavers. Of these, 267 were found using both Medical Directories and online tools. With 267 addresses for Leavers and 324 addresses for Stayers, 150 were randomly selected (75 from each group) and mailed packages requesting their participation. The packages included a personalized cover letter, a précis of the project, an information sheet, a consent form, and a postage-paid preaddressed return envelope (see Appendix 1). This initial mail out produced the following response:

<table>
<thead>
<tr>
<th>Initial mail out</th>
<th>150</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minus returned for wrong address:</td>
<td>15</td>
</tr>
<tr>
<td>Plus remailed with corrected address:</td>
<td>7</td>
</tr>
<tr>
<td>Total Effective Mailout</td>
<td>142</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Effective mailout size</th>
<th>142</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responses</td>
<td>42</td>
</tr>
<tr>
<td>Yes</td>
<td>18</td>
</tr>
<tr>
<td>No</td>
<td>23</td>
</tr>
<tr>
<td>Deceased</td>
<td>1</td>
</tr>
<tr>
<td>TOTAL</td>
<td>42</td>
</tr>
</tbody>
</table>

No response                           | 100 |

No response                           | 100  | 70.4%
Additional mailings produced similar response rates, until the eight groups each had five participants. Final response rate was:

<table>
<thead>
<tr>
<th>Description</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total mail out</td>
<td>356</td>
</tr>
<tr>
<td>Minus returned for wrong address</td>
<td>37</td>
</tr>
<tr>
<td>Plus remailed with corrected address</td>
<td>18</td>
</tr>
<tr>
<td>Total Effective Mailout</td>
<td>337</td>
</tr>
</tbody>
</table>

Effective mailout size: 337

<table>
<thead>
<tr>
<th>Responses</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>42</td>
<td>12.5%</td>
</tr>
<tr>
<td>No</td>
<td>53</td>
<td>15.7%</td>
</tr>
<tr>
<td>Deceased</td>
<td>1</td>
<td>0.2%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>96</td>
<td>28.5%</td>
</tr>
</tbody>
</table>

No response: 241 (71.5%)

It was anticipated that this sample would produce rich data sets, which it did, with results that are potentially generalizable to theory. A key caveat going into the research was that the number of cases used per group would be situational, based on when “theoretical saturation” was reached within each group. In other words, the research would stop interviewing new participants in a group once theoretical saturation is evident, and this theoretical saturation requirement would take precedence over the proposed group sizes of 4 to 6.

The draft interview questionnaire (Appendix 2) was pre-tested with four physicians, one from each of Stayerm, Stayerc, Leafer, and Leaver. These interviews revealed that some changes needed to be made in the structure and sequence of a number of questions, in order to foster a natural progression in the conversation, and the free flowing of ideas from the participants. In addition, following validation of beta-theory with the 42 participants, a request was sent out on the “RuralMed” email list requesting interviews with other doctors from across the country to assess the strength of the model for rural physicians.
from other jurisdictions in Canada. The final instrument is at Appendix 3. Analysis of the
data is discussed in section 3.5 below.

3.5 Data Analysis

In this study the process of data analysis began with the transcript of an individual
case. The intact narrative was broken down into a fractured narrative. Notations on
provisional categories and properties were added to the fractured narrative. Initially each
fragment often had one or multiple classifications, and these evolved as data was cyclically
re-analyzed. An illustration of this process is given below:

<table>
<thead>
<tr>
<th>Audio transcript 1</th>
<th>3 Oct 04, 1600-1655 hours</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intact Narrative</strong></td>
<td></td>
</tr>
<tr>
<td>Line</td>
<td></td>
</tr>
<tr>
<td>1 (AM) I'd like to start with some easy background and contextual questions. Where did you grow up?</td>
<td></td>
</tr>
<tr>
<td>2 (MM) I was born in Hamilton. Do you know where that is? I lived my early life in Burlington, it was a small town then, about 5,000 people.</td>
<td></td>
</tr>
<tr>
<td>3 (AM) Can you tell me about your birth family?</td>
<td></td>
</tr>
<tr>
<td>4 (MM) My parents were older. My mother was 39 when she had me. She was a nurse and dad was an engineer. I've also got one brother who's two years younger than me.</td>
<td></td>
</tr>
<tr>
<td>5 (AM) How was high school academically?</td>
<td></td>
</tr>
<tr>
<td>6 (MM) It was easy.</td>
<td></td>
</tr>
<tr>
<td>7 (AM) How about socially?</td>
<td></td>
</tr>
<tr>
<td>8 (MM) Dreadful - I was a nerd. Back then a bright girl with ambition was an odd duck.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fractured Narrative</th>
</tr>
</thead>
<tbody>
<tr>
<td>(where born) I was born in Hamilton [CA&lt;]</td>
</tr>
<tr>
<td>I lived my early life in Burlington [R&lt;]</td>
</tr>
<tr>
<td>[birth family] My parents were older [parents' ages???]</td>
</tr>
<tr>
<td>She [mother] was a nurse and dad was an engineer [parents' occupations???]</td>
</tr>
<tr>
<td>one brother who's two years younger than me [birth order???]</td>
</tr>
<tr>
<td>[hs-acad] It was easy</td>
</tr>
<tr>
<td>[hs - social] Dreadful - I was a nerd. Back then a bright girl with ambition was an odd duck</td>
</tr>
</tbody>
</table>

The analysis involved transcribing 84,235 words from participants in 42 case studies, producing 8,335 fragments. The 42 interviews averaged 57 minutes, ranging from 36 minutes to 88 minutes, with a median of 55 minutes. Each fragment in the fractured
narrative was reviewed and an attempt is made to give it a name. Observe that abbreviated notations in square brackets [ ] preceding the responses indicate which question prompted each response. Provisional classifications follow the responses, also in square brackets.

Concurrently, or in tandem, fragments were compared axially to see if the name was evolving into a conceptual category. As the process unfolded, the objective was to articulate conceptual categories that encapsulated both similarities and variations in related fragments. Further, as each category became more robust, less time was spent comparing fragments to each other in favour of comparing fragments to the emergent category. Understand too that the categories began as a bottom up process, starting with provisional categories that evolved into substantive categories.

Another critical contribution came from the literature: fifty-four “factors” influencing recruitment and retention had been previously identified. These were also used as provisional categories when classifying fragments. Using the previously identified “factors” as provisional categories worked very well—many fragments fit well under these rubrics. This, and the fact that their validity is already extant, led to most of these fifty-seven factors becoming substantive categories in the end.

In this research, the process was repeated with multiple cases to produce robust categories. Once all fragments in a case had been categorized, the challenge was then to look for arrangements or relationships between categories that began to develop as a conceptual whole. This included delimiting the theory to the social context to which it pertains. Once additional fragments produced no changes to the emerging theory, we reached theoretical saturation (at 42 cases).

The beta theory was then taken back to the participants for discussion, for their comment and review. Of the original 42 respondents, 40 indicated at their initial interview that they would be willing to review the summarized results and provide feedback on the
accuracy of the emerging theory. Accordingly these 40 respondents were contacted. Of these, 3 did not respond again, and a 3 others declined to participate further, leaving 34 respondents who contributed to the evolution of the grounded theory. Theory was revised to accommodate the breadth of commentary from the field, and iteratively returned to the field for reaction. When there were no more substantive changes, the theory was written up in a more formal way.

3.6 Limitations and Key Assumptions

A key assumption implicit in this research was that the subject physicians are sufficiently representative to generalize to theory. That is, that the psycho-social processes involved are essentially the same for everyone. This assumption was made based on the large body of consumer behaviour literature that shows that while individual consumers exhibit very different preferences and buying behaviour, the decision-making patterns involved are much more universal. Behaviourally, decision making can be somewhat simplistically described as a non sequential process of a) identifying a need, want or desire, b) searching for alternatives to meet that need, want or desire, c) evaluate the alternatives, d) make a decision on which alternative to select, e) evaluate, consciously or unconsciously, how well the choice satisfies the need, want or desire. This template can be as simple as dealing with mid-afternoon hunger, or as complex as choosing a mate. Variations of this same theme are seen in disciplines as diverse as sociology, psychology, marketing and game theory. Choosing a practice location is no different — people make decisions for reasons. Rarely are human decisions a completely rational process, indeed there is considerable evidence that emotional factors influence most human decision-making far more than rational factors. As this model suggests, physician practice location decision making is assumed to be no different.
A second key assumption was a result of definitional quandary: how long does a physician need to stay in a community to be considered a "Stayer"? An exhaustive search for some consensus on this point proved fruitless. In the absence of an objective or generally-accepted definition of satisfactory retention, this research assigned physicians as "Stayers" if they were in the 2 (or more) most recent Physician Directories. Leavers are simply those who stayed for at least two years but are not listed as residing in that community in subsequent Directories. Physicians who appeared in only one directory are not included in either group to eliminate locums and other short-term replacements from the sample.

The key limitation of this research is that generalizability is limited to theory. Another limitation is that the theory is built from a narrow scope of participants, family practice doctors with experience in rural practice in the province of British Columbia. The research would have been strengthened by broadening the sample to include specialists with rural practices (such as general surgeons), other health care professionals in rural practice (such as nurses), and other professionals in rural practice (such as lawyers, veterinarians and accountants). The research could have included participants from other Canadian provinces (although this was done with three participants to address convergence at the conclusion of the research – see section 4.5 Convergence). However the emergent grounded theory can and should be tested in other jurisdictions and with a broader range of participants.

3.7 Case Study Research and Validity

Yin (1994) describes four tests of validity applicable to empirical social research in general, and this research project in particular: construct validity, internal validity, external validity and reliability. Yin in turn cites Kidder & Judd (1986) for
the following definitions:

"- **Construct validity**: establishing correct operational measures for the concepts being studied

- **Internal validity** (for explanatory or causal studies only, and not for descriptive or exploratory studies): establishing a causal relationship, whereby certain conditions are shown to lead to other conditions, as distinguished from spurious relationships

- **External validity**: establishing the domain to which a study's findings can be generalized

- **Reliability**: demonstrating that the operations of a study -- such as the data collection procedures can be repeated, with the same results."

(Kidder & Judd, 1986, p. 203)

Yin is careful to underscore that construct validity is especially problematic in case study research. He describes three tactics that are available to increase construct validity. First is triangulation (or what Bickman and Rogg (1998) refer to as converging lines of evidence), using different techniques that will, hopefully, lead to similar conclusions. Employing multiple data collection techniques, such as company documents, archival records, open-ended interviews, direct and/or participant observation, focused interviews, even artifacts, a researcher can improve the construct validity of findings if the divergent lines of inquiry lead to similar conclusions. This redundancy builds confidence in the findings. (As an aside, triangulation is also one way to address the "fuzzy" aspect of both case study writing and reading by making sure the researcher draws justifiable conclusions, and helping the reader to transfer appropriate learning.) This study does not triangulate the results, however this is a recommendation for future research. The closest this study comes to triangulation comes from comparing the results to data collected in the literature review.

The second tactic suggested by Yin is to establish a chain of evidence (that is, traceable steps from the research question to the conclusion). The grounded theory method employed in this study is quite structured in its approach to data collection, codification and
analysis, so this study does present a strong chain of evidence, and this bolsters its construct validity.

Yin’s third tactic is to have the draft case study report reviewed by key informants. That is, as a way of corroborating the essential facts as presented in the report. Yin makes it clear that while participants may disagree with the analysis, they should not be in disagreement with the facts. As this research required negotiated outcomes with the participants, this corroboration also adds to the construct validity of the research. What is particularly intriguing about theory generation and refinement in case study research in general and this study in particular is the iterative nature of data collection and theory revision. Hypothesis are more clearly sharpened as the constructs are refined. Thus in this study construct validity is being enhanced emergently in the study process, not solely in advance.

Internal validity is an issue only for causal/explanatory case studies, not exploratory case studies, so it needs scant discussion in the context of this research. The whole point is to make sure that inferences about causality are justifiable. This research makes no such inferences.

The third type of test for validity is external validity, the degree to which a study’s findings are generalizable beyond the immediate case study. Testing for external validity is closely linked to the utility of case studies in testing theory, which is discussed in more detail in the next section. For this short note on external validity, suffice it to say that this is a source of some inaccurate criticism of case study research.

Theory generation should be intrinsic to the design of the study’s questions, its propositions, its units of analysis, the analytical logic and the criteria for interpreting findings. As a technique used in this research, case studies can help build grounded theory. Case studies have been criticized as offering a poor basis for generalizing. The point that
Yin (1994) makes well is that case studies are not generalizing to a population, as in statistical generalization in quantitative studies, but rather that case studies rely on what he calls analytical generalization. That is, case studies results are generalizing to theory, not to a population. In this research, three doctors from other jurisdictions in Canada were interviewed using the same instrument and the resultant data analyzed in the same way as the study data. This data did not add any new conceptual categories, nor any new properties within those categories. That is, the new data fit into existing conceptual categories and properties. Thus the emergent theory accommodated the new data. This suggests that the study has good external validity, generalizing well to theory.

Last, I need to consider reliability as a threat to validity in case study research. This is simply the replicability of the study: can another researcher derive essentially the same results by following the same study design on an analogous case? Thus a researcher should design his study such that the steps and procedures are readily repeatable. In this dissertation, the method for identifying and selecting the participants, the instruments used, and the method for processing and analyzing the results are explicitly detailed. Another researcher should be able to replicate this study.

3.8 Conclusion

This chapter provided a thorough overview of the rationale for using case studies to build grounded theory, in exploratory research. The chapter also illustrated how this methodology was used to address the research questions in this dissertation.
CHAPTER 4
DATA ANALYSIS AND DISCUSSION OF FINDINGS

4.1 Introduction

The previous chapter explained the method used for data analysis in this research project. The purpose of the Data Analysis chapter is to present the results of the application of that method, that is, the interviews, the consequent analysis, and the iterative validation and review of the emergent beta-theory from the field.

The projected results of this research were two-fold:

a) a more comprehensive view of the factors that influence primary care physicians in a particular area to choose rural practice, and for those who do so, why some stay and others leave; and

b) the determinant factors will emerge as being inextricably entwined in a socio-cultural and temporally-dependent dynamic. That is, practice location decisions are not states, but rather part of a larger social process.

Recall from section 3.4.3 "Research Design" that this research project aimed to develop grounded theory in a four step process:

"The basic sequential and iterative process of the analytical induction method can be used from a scientific realist perspective. In this case, explanation or theory replace hypotheses. The revised process, which is at the heart of the research design proposed in this paper becomes one of:

- developing an initial explanation for a phenomena based on prior understanding and the formulation of the research question;
- examining the first case for empirical support; revising the explanation or theory in light of analysis of the case;
- selecting and examining another theoretically-dense case, especially a negative case, both for empirical support and for further insights; and
- repeating the process until “theoretical saturation” is reached, in that each additional case adds minimally to the theory."

(Wollin, 1996, pp 5,6)
In this research, this meant taking the revised list of factors influencing practice location decisions and the nascent theory back to the participants for their review, comment and changes.

4.2 Results

Most of the fragments were classified as pertaining to at least one of the fifty-four factors identified in the literature as relating to rural recruitment (see Table 1 in Chapter 2, Literature Review).

As discussed in Methodology, these factors were initially used as Provisional Categories and evolved into Conceptual Categories. The breadth of responses pertaining to each became Elements of these Conceptual Categories.

In many cases, the physicians' answers span a wide range or demonstrated little uniformity. All of these variables yield qualitative (i.e., categorical) data, that is, at the nominal or ordinal level of measurement. There was no pattern in the values reported of these nominal and ordinal variables that appeared to be positively associated with rural practice. This lack of pattern or uniformity is explored more fully in section 4.5 'Summary of Responses'. When considered in isolation, this breadth of response could mistakenly lead to the erroneous conclusion that many of the factors may not be relevant to rural recruitment. These results are summarized below and it will be clear that they reveal very little in isolation.

The frequency of particular responses is irrelevant in broad exploratory research, as the sample size is too small to be statistically valid. As quantifying the results could be misleading (i.e., worse than meaningless), this analysis usually avoids any indication of how many respondents gave any given response.
What emerges is that while neither a given variable, nor the value of a variable may in of itself be associated positively or negatively with affinity for rural practice, the physician’s positive or negative perception of that value is critical to his or her satisfaction with a given rural medicine experience. Perceptions matter more than the variables or their values. When considered in concert with other factors, patterns emerged that are useful for theory building. These patterns are discussed in section “4.4 Categories and Their Relationships”. Key quotes are summarized in Appendix 5, referenced sequentially in curved brackets ( ).

The first outcome that emerged from the collected data was that the arbitrary community classifications used to obtain the sample (R<, R+, CA<, CA+) were irrelevant in differentiating motivators of physician practice location decision making. This is because, regardless of where they were practising at the time of the interview, every respondent had trained and/or worked in communities of varying sizes, and this applied to both “leavers” and “stayers”. Most had practiced in communities that fit 2, 3 or even all 4 of these classifications, as well as urban areas, at some point in their career. Further, many were planning on changing practice location to a larger or smaller community in the future. The community classifications were created in response to the absence of a robust definition of “rural” (see Literature Review section 2.2 ). In the end these somewhat arbitrary classifications were of no utility in theory building. However, while the community classifications were not useful, the fact that all participants had practiced in communities of various sizes may be important. It may be that physicians who elect to spend part their medical career practising in a rural community tend to practice in more locations than do physicians who only practice in urban areas, but this would take additional research to determine. If this is true, this could well have policy implications in terms of what is a realistic expectation for rural physician retention in a given community.
Further, it could impact how rural medicine and rural communities are marketed to prospective rural doctors.

4.2.1 Expansion of Factors Associated With Physicinn Practice Location Decision Making

As discussed in the Literature Review, there are many factors seen as potentially influencing rural physician recruitment and retention. Clusters of these factors are grouped together in the literature as: a) Background Factors, b) Community Factors, c) Practice Factors, and d) Familial Factors. While these classifications are somewhat arbitrary, they suffice for clarity and consistency with the literature, and they are not misleading in any way, so this research continued to use these same four broad groupings.

This section lists each of the literature-cited factors and indicates whether or not they were used in fragment classification in this research. Second, there were also many new factors potentially worthy of further investigation, and these are discussed in more detail. A complete list of all factors is at Appendix 4.

4.2.1.1 Background Factors

Fifteen distinct Background Factors are cited in the literature. In this research, thirteen of them were identified in the assessment of interview fragments (see Table 3 below). Two previously-cited factors, “Stated first year medicine preferences” and “Choice of specialty” were not referred to by any of the participants. “Stated first year medicine preferences” didn’t arise likely because no participant was specifically asked what their stated first year medicine preference was (other than a general discussion of their career intentions while in medical school). “Choice of specialty” did not arise, probably because the selection criteria for the sample had already excluded all but family
practitioners from the study. The absence of these two factors from this study cannot be
interpreted to mean they are not relevant to rural physician recruitment and retention.

Thirteen factors from the literature were used in fragment classification. In
addition, five previously undiscussed background factors were used in the classification of
fragments. Upon analysis some appeared to be merely commonalities between
interviewees with no explanatory value, whereas others appear to warrant further
investigation. All of the Background factors are listed in Table 3, and discussion of the five
new factors follows. Previously-cited factors are discussed in the Literature Review.

<table>
<thead>
<tr>
<th>Background Factors</th>
<th>New or Previously Cited?</th>
<th>Used in Fragment Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>year graduated from medical school</td>
<td>previous cit</td>
<td>yes</td>
</tr>
<tr>
<td>stated first year medicine preferences</td>
<td>previous cit</td>
<td>no</td>
</tr>
<tr>
<td>rural experience in training</td>
<td>previous cit</td>
<td>yes</td>
</tr>
<tr>
<td>public school</td>
<td>previous cit</td>
<td>yes</td>
</tr>
<tr>
<td>primary motivators</td>
<td>NEW</td>
<td>yes</td>
</tr>
<tr>
<td>personality characteristics</td>
<td>NEW</td>
<td>yes</td>
</tr>
<tr>
<td>medical school</td>
<td>previous cit</td>
<td>yes</td>
</tr>
<tr>
<td>location of youth</td>
<td>previous cit</td>
<td>yes</td>
</tr>
<tr>
<td>location of birth</td>
<td>previous cit</td>
<td>yes</td>
</tr>
<tr>
<td>internship or residency</td>
<td>previous cit</td>
<td>yes</td>
</tr>
<tr>
<td>health/facility health</td>
<td>NEW</td>
<td>yes</td>
</tr>
<tr>
<td>gender</td>
<td>previous cit</td>
<td>yes</td>
</tr>
<tr>
<td>ethnicity</td>
<td>previous cit</td>
<td>yes</td>
</tr>
<tr>
<td>college or undergraduate school</td>
<td>previous cit</td>
<td>yes</td>
</tr>
<tr>
<td>college or undergraduate major</td>
<td>NEW</td>
<td>yes</td>
</tr>
<tr>
<td>choice of specialty</td>
<td>previous cit</td>
<td>no</td>
</tr>
<tr>
<td>birth family</td>
<td>NEW</td>
<td>yes</td>
</tr>
<tr>
<td>age of first interest in medicine</td>
<td>previous cit</td>
<td>yes</td>
</tr>
<tr>
<td>age</td>
<td>previous cit</td>
<td>yes</td>
</tr>
<tr>
<td>skills learned in medical school</td>
<td>previous cit</td>
<td>yes</td>
</tr>
</tbody>
</table>

There were five Background Factors used in fragment classification that were not
found in the literature:
a) birth family

Upon analysis, birth family characteristics did not appear to be relevant in distinguishing “leavers” from “stayers”. In both cases, participants’ birth families covered a wide spectrum. Parents were mates for life, multiple married blended families, single parent (male), single parent (female), divorced and one widower. Participants were the youngest child, the oldest child, and in the middle. Most came from wealthy families or middle class families, but some did come from blue-collar families. It appears that this factor does not warrant further investigation.

b) college or undergraduate major

Again, there was a very wide range of undergraduate programs cited by participants, typically in science (particularly biological sciences) majors such as biology, biochemistry, and chemistry. One observation here is that there were a number of participants who, in addition to the required medical school prerequisites, took what could be described “untypical” pre-med majors, such as history, sociology or education. Of the participants who took untypical pre-med majors in this study, all of them are still in rural practice. The implication of this for educational policy makers seeking to increase the number of new doctors who choose rural practice is that “untypical” undergraduate or premedical studies may be a positive indicator of future propensity for rural practice.

The other observation that perhaps helps eliminate a possible factor for future consideration, is that a small number of participants took their medical studies in Ireland or South Africa, in 7-year programs directly out of high school. Of these, some enjoy(ed) and others dislike(ed) their rural medicine experience, so being a graduate of a direct entry out of high school program may be irrelevant to propensity to practice rural medicine. Indeed, some foreign-trained physicians in this research practice(d) in rural areas only under the
duress of their work visa in Canada, always intending to move to a more urban location as soon they were legally allowed to do so. So while there are many foreign trained doctors in rural practice in B.C., this is likely more a result of their legal status rather than a particular propensity for rural medicine.

c) health/family health

The physician's health, or the health of his/her spouse or offspring, did impact practice patterns. There were participants in this study whose time in rural practice was limited, or in one case precluded, by the need for a family member to have access to the specialists and therapeutic services available in an urban setting. Second, one participant left rural practice to be nearer to the specialists he needed. Thus, physician and physician-family health did influence propensity for rural practice. While this factor may expand the list of factors that influence practice location decision making, it’s impact on public policy is limited to understanding that familial health influences propensity to rural practice.

d) personality characteristics

This is a very complex factor, in reality it’s more of a category comprised of many discrete factors worthy of further investigation (see also section 4.3.2 below). Indeed some personality characteristics are already factors under investigation: desire for clinical autonomy, and personality as it relates to inter-physician relationships. A thorough review of the fragments though suggests that doctors who have had long standing rural practices, or who stated that they intend to stay in rural practice for some time, tend to present themselves in a way that I would describe as very self-directed, self aware, and purposeful. They come across as actualized by their independence from specialists and administrators, and proud of their ability to handle a wide diversity of presentations with little or no back-
up. Conversely, a number of participants who had left or were planning to leave rural practice tended to weight many other factors higher in their priorities (in particular time for family, less emergency medicine, less on-call, more time off, and more support from specialists, other health professionals, and medical technology).

The policy implication of this is that the personality characteristics of physicians who enjoy rural practice warrants much more detailed examination. While it is likely impossible to define a definitive personality profile positively associated with propensity to rural practice, there may well be indicators that suggest a greater or lesser propensity to rural practice. If these can be identified, then conceivably personality testing could help identify potential medical students (for admissions purposes), current medical students (for rotation assignments), and graduates (for residencies) with a greater or lesser likelihood to choose rural practice.

e) primary motivators

This is not really a discrete category, rather it was a secondary classification used whenever a participant spoke of their primary motivators in a practice location decision. However, in all cases these motivators were factors discussed elsewhere in this study. These fragments were of more utility in this study in theory-building, that is, these statements underscored the concept of physician's attitudes and opinions regarding the factors as being more important to decision making than the factors themselves.
4.2.1.2 Community Factors

Fourteen community factors are identified in the literature as related to propensity for rural practice. These are discussed in the Literature Review. Of these, ten were used to classify fragments in this research. Four previously-cited factors were not referred to by any participant in this study ("cost of living," "religion," "size of community," and "topography"). In addition, three new factors were used to describe fragments, although it could be argued that by using wide and comprehensive definitions, all three of these could potentially be subsumed into the previously cited factors. Community Factors are summarized in Table 4 (following page), and discussion of the three new factors follows.

<table>
<thead>
<tr>
<th>Community Factors</th>
<th>New or Used in Fragment Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Topography</td>
<td>previous cit no</td>
</tr>
<tr>
<td>size of Community</td>
<td>previous cit no</td>
</tr>
<tr>
<td>sense of community</td>
<td>NEW yes</td>
</tr>
<tr>
<td>schools</td>
<td>previous cit yes</td>
</tr>
<tr>
<td>rural lifestyle</td>
<td>previous cit yes</td>
</tr>
<tr>
<td>religion</td>
<td>previous cit no</td>
</tr>
<tr>
<td>recreational opportunities</td>
<td>previous cit no</td>
</tr>
<tr>
<td>proximity to friends and family</td>
<td>previous cit yes</td>
</tr>
<tr>
<td>orientation/socialization to community when new</td>
<td>NEW yes</td>
</tr>
<tr>
<td>geographic location</td>
<td>previous cit yes</td>
</tr>
<tr>
<td>ease of making desirable friends/social life</td>
<td>previous cit yes</td>
</tr>
<tr>
<td>distance to larger communities</td>
<td>NEW yes</td>
</tr>
<tr>
<td>cultural opportunities</td>
<td>previous cit yes</td>
</tr>
<tr>
<td>cost of living</td>
<td>previous cit no</td>
</tr>
<tr>
<td>community involvement (both opportunity for and community expectations of)</td>
<td>previous cit yes</td>
</tr>
<tr>
<td>climate/weather</td>
<td>previous cit yes</td>
</tr>
<tr>
<td>being needed</td>
<td>previous cit yes</td>
</tr>
</tbody>
</table>
There were three Community Factors used in fragment classification that were not found in the literature:

a) **distance to larger communities**

This factor was used as distinct from “geographic location” because many participants articulated that a positive aspect of their rural practice locations was that they were only 1 to 3 hours away from a major centre, either for patient care reasons or for their own periodic escape. It appeared that many rural doctors liked the option of being able to access the physicians and other medical resources available in a larger centre, if they needed them.

In this study “geographic location” was used more to describe where the physician practiced physically within the province of B.C., whereas “distance to larger communities” was used more relatively to denote proximity or distance from any urban setting. Regardless of whether this should be a discrete factor, or whether it is merely a subset of “geographic location”, proximity to a larger centre was looked upon as positive by most of the study participants, and may warrant further study.

Conversely, participants whose current practice, or past practice, was quite isolated, frequently articulated the challenges and anxiety of practising and living in a remote setting. Some participants hated it and soon left, others stayed for a longer period until another factor intervened (such as the advent of a family or the lack of a suitable mate), while others have been in an isolated practice for an extended period. Regardless of their time in a remote practice, all participants found either or both of the personal and professional aspects of isolation stressful.

Note too that while the community classifications used in this study, which clustered communities based on size and proximity to tertiary care, did not materially affect
the results, this distance to a larger urban centre did influence practice location decision making.

The policy implication of this is that, in seeking to improve recruitment and retention to isolated settings, policy makers and administrators need to be cognizant of these stresses, making efforts to ameliorate these stresses wherever possible, and ensuring that there is good communication with the individual physicians in these practices to ensure their particular case-specific stressors are being addressed.

b) orientation/socialization to community

This factor was created as it is distinct from “ease of making desirable friends/social life” and from “rural lifestyle.” Neither of those existing factors captured the narrative that needed to be classified (25). It appears that actively welcoming a new physician and attempting to socialize him or her to the new environment can have a positive impact on retention. Some participants spoke warmly of programs such as “take a doctor home to dinner” whereby a doctor new to a community gets invited to meet families in a more social and non-medical environment. Contrast this with the comments from participants as to their poor opinion of communities where the new doctor receives benign neglect, such as little or no help finding a place to live, getting settled, or meeting people in a non-work environment. This created a negative first impression that did not bode well for the doctor having a positive rural experience.

Thus, the degree to which a person is welcomed and socialized to a community, what types of socializations work best, and the influence of this factor on retention decisions, should be further investigated.
c) sense of community

A small number of participants remarked that one of the things they best enjoyed about rural practice was the sense of community. All of them contrasted this with the lack of a community feeling one feels in a large urban setting. This is subjective, but it appears that people who value a sense of community may have a greater likelihood of enjoying the experience of rural medicine.

Of the physicians in this research who disliked rural practice and have no intention of returning, none of them made any reference, positive or negative, to "sense of community" or words to that effect. It appears that sense of community was of less or no importance to them.

Thus physicians who value sense of community may be more predisposed to rural practice, so this should be investigated.

4.2.1.3 Practice Factors

Narrative on issues related to medical practice dwarfed all other commentary in this research. Just over half (~51%) of all of the fragments in this study were classified using practice-related factors. Eighteen of the nineteen factors seen in the literature were also used in classifying fragments in this study. Nine of these nineteen factors elicited considerable commentary from participants (clinical autonomy, Continuing Medical Education (CME), life stage, locums, medical facilities, on-call/rota, personal time (both quantity and quality), quality of doctor-doctor relationships and variety of practice). This reinforces their importance for attention in future research. The only previously-cited factor that was not seen in this research was "spatial competition models". As this factor is a mathematical construct rather than a descriptor of perceived human experience, it's not surprising that it never arose in discussion. In addition, nine new factors were used to
classify fragments. All of the Practice Factors are summarized in Table 5 (following page), and discussion of the new factors follows.

<table>
<thead>
<tr>
<th>Practice Factors</th>
<th>New or Previously Cited?</th>
<th>Used in Fragment Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>variety of practice</td>
<td>previously cited</td>
<td>yes</td>
</tr>
<tr>
<td>spatial competition models</td>
<td>previously cited</td>
<td>no</td>
</tr>
<tr>
<td>quantity of work</td>
<td>NEW</td>
<td>yes</td>
</tr>
<tr>
<td>quality of medical practice</td>
<td>NEW</td>
<td>yes</td>
</tr>
<tr>
<td>quality of doctor-patient relationships</td>
<td>previously cited</td>
<td>yes</td>
</tr>
<tr>
<td>quality of doctor-doctor relationships</td>
<td>previously cited</td>
<td>yes</td>
</tr>
<tr>
<td>professional isolation (or lack thereof)</td>
<td>previously cited</td>
<td>yes</td>
</tr>
<tr>
<td>personal time (both quantity and quality)</td>
<td>previously cited</td>
<td>yes</td>
</tr>
<tr>
<td>on-call/rota</td>
<td>previously cited</td>
<td>yes</td>
</tr>
<tr>
<td>number of peers</td>
<td>previously cited</td>
<td>yes</td>
</tr>
<tr>
<td>non-medical responsibilities (practice management, admin, paperwork, etc.)</td>
<td>previously cited</td>
<td>yes</td>
</tr>
<tr>
<td>money</td>
<td>previously cited</td>
<td>yes</td>
</tr>
<tr>
<td>mentors</td>
<td>NEW</td>
<td>yes</td>
</tr>
<tr>
<td>medical facilities</td>
<td>previously cited</td>
<td>yes</td>
</tr>
<tr>
<td>locums</td>
<td>previously cited</td>
<td>yes</td>
</tr>
<tr>
<td>life stage</td>
<td>previously cited</td>
<td>yes</td>
</tr>
<tr>
<td>interest of work</td>
<td>previously cited</td>
<td>yes</td>
</tr>
<tr>
<td>impact of counseling</td>
<td>NEW</td>
<td>yes</td>
</tr>
<tr>
<td>health administrators</td>
<td>NEW</td>
<td>yes</td>
</tr>
<tr>
<td>government policy</td>
<td>NEW</td>
<td>yes</td>
</tr>
<tr>
<td>gaps between expectations and experience</td>
<td>NEW</td>
<td>yes</td>
</tr>
<tr>
<td>CME (continuing medical education)</td>
<td>previously cited</td>
<td>yes</td>
</tr>
<tr>
<td>clinical autonomy</td>
<td>previously cited</td>
<td>yes</td>
</tr>
<tr>
<td>career path</td>
<td>previously cited</td>
<td>yes</td>
</tr>
<tr>
<td>ambulance service</td>
<td>NEW</td>
<td>yes</td>
</tr>
<tr>
<td>access to specialists (telephone, internet, itinerant and permanent in person)</td>
<td>previously cited</td>
<td>yes</td>
</tr>
<tr>
<td>access to medical technology/equipment (both quantity and up to date)</td>
<td>previously cited</td>
<td>yes</td>
</tr>
<tr>
<td>access to medical health professionals (nurses, therapists, etc.)</td>
<td>NEW</td>
<td>yes</td>
</tr>
</tbody>
</table>
There were nine Practice Factors used in fragment classification that were not found in the literature:

a) access to medical health professionals (e.g. nurses, therapists, etc.)

This factor arose frequently. It is distinct from the frequently cited “access to medical technology” and “access to specialists”. This factor was used to capture dialogue relating to access to non-physician health professionals. Physicians commonly spoke favourably of the importance of having enough good nurses choosing to practice in their community. Also referred to positively were nurse-practitioners, lab technologists/technicians, physiotherapists, occupational therapists, pharmacists and social workers.

One participant referred to a mid-wife setting up practice in the community as a negative experience. Sufficient access to other health professionals in a community helped to keep some physicians in rural practice.

Conversely, the absence or shortage of other health professionals was often cited by doctors who had left rural practice as one of the reasons they left, or was cited as an ongoing source of overwork, stress, and frustration by some participants currently in rural practice. Thus this appears to be a major factor in doctors level of satisfaction with there rural medicine experience, thereby influencing retention decision making. For health policy makers, this is a factor that needs further investigation to better determine how best to manage and fund allocation of other health professionals in rural communities. Unlike many factors that impact physician recruitment and retention, this factor is to a greater degree manageable by health administrators.
b) ambulance service

No study found in preparation for this research discussed patient transport or ambulance service as a factor relevant to rural practice. In this study, several participants specifically singled out the B.C. Ambulance Service. Ambulance service in B.C. is managed and run by this provincial government-controlled agency. Some participants spoke of how much better patient transport is today than it was early in their career. Others spoke of the value of the introduction of “first responders” in their community (in many cases, these are firefighters who are also trained as paramedics).

However participants also spoke of the frustration of having ambulances get stuck at urban hospitals until a patient is admitted, leaving the rural community with no coverage. In B.C., the paramedics can’t leave the emergency department until the patient is admitted, so if the emergency room is experiencing significant wait times, then the paramedics must wait as well.

Another frustration that participants articulated concerned patient transport. A considerable portion of the B.C. Ambulance Service workload is in patient transfers between hospitals. Whenever an ambulance is allocated to patient transfer, it is unavailable for emergencies. In a small community where there may only be one ambulance covering that community, this can be potentially catastrophic in case of emergency.

Another frequent refrain was praise for the ambulance service staff and non-specific criticism of the B.C. Ambulance Service (e.g. “Ambulance service is a struggle. Our paramedics are generally really good, but they have to work in a bad system”). Some participants spoke of weak to non-existent air ambulance services as a significant problem. Obstetrics and trauma were two circumstances they used as examples of where a properly equipped helicopter could be a matter of life or death. As ambulance service was cited as a
factor by both “leavers” and “stayers”, and it was cited as a reason for leaving by some “leavers”, this factor warrants further investigation.

c) gaps between expectations and experience

Practice location decision making can be likened to some aspects of consumer behaviour. People purchase a product or service with expectations of how it should help satisfy their wants, needs, and desires. If the product or service meets these expectations, people will continue to purchase, as this is easier than having to weigh a buying decision. That’s why people buy the same brand over and over. If however the product no longer meets expectations, or if the consumer’s expectations change, then the difference between expectations and experience may be sufficient to prompt a change in buying behaviour.

In this research, physicians were specifically asked about their perception of gaps between what they expected rural practice to be like, and their experience. Many participants reported no gaps. Some others, particularly those who left rural practice, reported that they had gone into rural practice without fully appreciating the breadth of practice or the “cradle to grave” nature of rural medicine, and that this disillusioned them somewhat. Another dimension of this was that some participants reported that they had expectations around the standard of medicine that should be practiced and the minimum acceptable level of support technology and services. They reported that if a community was proactive in addressing these gaps when they became apparent, then that community was a good place to practice medicine. In other words, it was not so much the gaps, but the community’s response to them, that mattered. For example, one physician reported that the Intensive Care Unit (ICU) in her hospital had no back-up power supply and the power went out one night when she was the only doctor on duty. Although this was a bad experience, the community and the hospital turned it into a positive by getting back-up power to the
ICU the next day, then fundraising for a brand new ICU. Thus, gaps between physician expectations and experience should be investigated further.

**d) government policy**

British Columbia, as with the rest of Canada, has publicly-funded medicine for all citizens. Most doctors in the province operate on a fee-for-service system, running their own businesses and billing the provincial government for their services. Most hospitals are provincially owned, administered by regional Health Authorities. The doctors who commented on government policy mostly referred disparagingly to the policies that have limited out of province or foreign doctors to only setting up practice in designated underserved areas, by restricting access to billing numbers or placing location limitations on work visas. There was also some expression from long term rural doctors that the provincial government “panicked” a few years ago and created overly large retention bonuses (“I used to work hard for okay money. I got an extra $120,000, but my work hasn’t changed.” or “I appreciate that the government values our services a lot more than they used to, but the extra money only attracts the wrong sort of person. If they come just for the extra money, they won’t be happy here, and they don’t stay.”).

While government policy was referred to by a number of participants, in of itself this is too broad of a factor to be of much practical use. There is a very broad range of local, provincial and federal government policies, spanning many different ministries and departments with diverse responsibilities. However, many of the factors cited elsewhere in this research can be affected by government policy, so in this regard government policies can play key roles in rural physician recruitment and retention. Second, in aggregate, the impact of government policy on practice location decisions needs further clarification.
e) health administrators

Participants had a lot of negative comments on the Health Authorities and their staffs. Understand that the Health Authorities are large, regionally-based public sector organizations that replaced the local control and autonomy of many smaller, local boards. As a result, many smaller hospitals have been closed or downgraded, and services and specialists pulled from smaller centres to larger ones. It is perhaps not surprising then that doctors working in small communities look on this with some alarm ("We used to have blood here, now they've taken it away. If I get a serious bleeder, they'll die" or "I hate that the economic argument always counts for more than patient care")

Similarly, Health Authority staff are sometimes looked at as being distant and unresponsive to local needs (26). The Health authorities are often the most locally relevant public sector health administrators and policy makers. As such, their understanding of rural health issues, as well as their willingness and ability to support and prioritize rural medicine, are often very important determinants of the quality of rural health care. In this way, the Health Authorities have a very important role in shaping rural physician satisfaction with rural practice. This in turn impacts rural physician retention (and recruitment as well), so this dynamic warrants further attention.

f) impact of counselling

Participants were asked if they had ever been counseled or urged to consider rural practice. In most cases the answer was an unambiguous "no". A large number of participants spoke of the pressure to specialize (by medical school faculty), and a few did refer to being actively counseled against rural practice (by faculty or urban friends). One participant mentioned being actively counseled to consider rural family practice. Thus it is uncertain from this research whether or not counseling medical students to consider rural
practice would impact rural physician recruitment and retention. The data is insufficient to state that counseling does or does not impact practice location decisions and behaviour.

**g) mentors**

Mentors in this research were usually physicians in rural practice who are also clinical faculty in a medical program. They supervised the participant at some point in the participant’s medical education, such as a clinical rotation or residency. In one case the mentor was a rural physician that the participant worked with while doing a locum. Others spoke of finding great mentors, during a rural clerkship as a student or once they’d chosen a rural-focussed residency.

Mentorship was referred to by many participants as a very important factor in their decision to practice rural medicine (see quotes listed under Appendix 5 (8)). Having an experienced rural physician introduce rural medicine in a positive and hands-on setting was, in the opinion of these participants, a key determinant of their subsequent decision to practice in a rural location. It appears that the impact of mentorship on practice location decision making may be quite significant, and should be investigated further.

**h) quality of medical practice**

Like their urban peers rural physicians expressed significant concern over the quality of medical practice in rural settings. Some participants spoke of increased job satisfaction in rural practice when they were able to practice with highly skilled, dedicated peers. Others spoke of the challenges of providing quality care, without easy or timely access to specialists and tertiary care facilities. Conversely, others mentioned that one positive quality of care facet of rural medicine is that the absence of specialists allows rural doctors to provide more comprehensive care, thus improving the quality of care. One
A doctor spoke of leaving a community because her peers were “cowboys” who in her opinion took unnecessary risks with patients: her peers frequently chose to treat complex or serious cases when transport and treatment at a hospital in a nearby community was readily available. She reported that this behavior was repeated on numerous occasions, but she left when it caused the (in her opinion) unnecessary deaths of premature twins.

Regardless of whether the participant spoke positively, negatively, or both about the quality of care in rural medicine, all participants were concerned about quality of care. Doctors care about the quality of medical practice they are able to provide and this impacts practice location decision making. Perceptions of quality of care in rural medicine thus needs further investigation.

i) Quantity of work

As is evident from Statistics Canada data, on average rural doctors live in communities that have lower numbers of doctors per 1,000 population than is true in urban areas, so it is not surprising that they usually report high workloads. In most cases, a high workload was accepted by participants in this research as a reality of rural practice. Some doctors reported being either severely overworked or, in one case, significantly under worked.

Most viewed workload as a stressor, but some also indicated that they enjoy it. High workloads with scant relief did influence some participants to leave rural practice. As high workloads are both a stressor and a factor that can influence some doctors to leave (or assumably discourage some from trying rural practice), it appears that rural physician workloads are a factor that should be investigated.
4.2.1.4 Familial Factors

Five Familial factors are previously cited in the literature, and all five were used in classifying fragments in this research. In addition, a new, sixth Familial factor was identified: "marital status". All of the Familial Factors are summarized in Table 6 below.

<table>
<thead>
<tr>
<th>Familial Factors</th>
<th>New or Previously Cited?</th>
<th>Used in Fragment Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>spousal/significant other employment opportunities</td>
<td>previously cited</td>
<td>yes</td>
</tr>
<tr>
<td>spousal/significant other and children's preferences</td>
<td>previously cited</td>
<td>yes</td>
</tr>
<tr>
<td>proximity to family</td>
<td>previously cited</td>
<td>yes</td>
</tr>
<tr>
<td>marital status</td>
<td>NEW</td>
<td>yes</td>
</tr>
<tr>
<td>ease of finding a suitable mate</td>
<td>previously cited</td>
<td>yes</td>
</tr>
<tr>
<td>children at home</td>
<td>previously cited</td>
<td>yes</td>
</tr>
</tbody>
</table>

There was one Familial Factor used in fragment classification that was not found in the literature:

a) Marital Status

The marital status of physicians had a tremendous impact on practice location decision making for some participants, and it was perceived as all but irrelevant for others. For some, being single gave them the freedom to choose difficult rural practices. For others, having a supportive spouse (sometimes with complementary skills) made rural practice bearable. Conversely, the inability to find (or in one case, keep) a suitable mate was a major stated reason for leaving a rural practice for some participants. Others left rural practice because they got divorced, or conversely, left because they got married.

Marital status is another nominal variable for which there was no obvious relationship between specific values and propensity for rural practice. The significant point here is that
marital status played a significant role in many practice location decisions, but how and why was often very different, even completely opposite, for different participants.

4.3 Six Categories and Their Relationships

Grounded theory requires the researcher to articulate conceptual categories that capture similarities and variations in related fragments. As was shown in part 4.2.1, all of the fragments were either grouped under existing factors from the literature, or new factors were developed for them. In much of the literature (and in this research project) the factors are in turn grouped as Background Factors, Community Factors, Practice Factors and Familial Factors. These broad classifications are descriptively accurate, but insufficient for theory building. The reason for this is that they don't reflect the dynamic and individualistic socio-cultural and temporal-dependent reality of physician practice location decision making that participants in this research disclosed.

Specifically, participants were clear that changes in their life circumstances, their "age and stage", impacted their decision making. In other words they opined that but for a time difference, they would have made different decisions in essentially similar circumstances. Thus the grounded theory needed to incorporate a temporal dimension.

Secondly it became clear early that any theory attempting to encapsulate physician practice location decision making had to accommodate the social and cultural context of the individuals involved. Physicians often do not make these decisions in a social and cultural vacuum, rather they are but one part of the larger social dynamic as perceived and experienced by the individual. Thus the socio-cultural dimension also needed to be captured. Putting it another way, this decision making is a process, not a state.

The work of developing provisional categories began with looking for relationships between factors. However as each provisional category coalesced, less time was spent
comparing fragments and their factors to each other in favour of comparing factors to emergent provisional categories. In this way provisional categories evolve into substantive categories. Six categories of fragments emerged as substantive categories. These are discussed in series below, in no particular order.

4.3.1 Intrinsic Attributes

Fragments that are intrinsic attributes relate to factors that are intrinsic to the individual. The individual's choice or behaviour is not involved (for example, a person does not choose to be an Indo-Canadian female born in 1958 in Victoria, B.C.), but these factors have been shown in the literature to be relevant to propensity to rural practice. In this way intrinsic attributes became a category. Examples of factors that could be classified as intrinsic attributes are: ethnicity, gender, location of birth (R/CA/CMA), and location of youth (R/CA/CMA).

4.3.2 Life-Stage Dependent Values

Most of the existing literature focuses on the fifty-two previously existing factors. Previous studies for the most part attempt to quantify and correlate the relative importance of various combinations of these factors, as they relate to some aspect(s) of rural physician recruitment or retention. We have an ever-growing list of possible factors worthy of consideration. Indeed, this dissertation research has lengthened the list by eighteen new factors. Thus we are left with a long list of factors, but precious little understanding of how they come together, how real physicians actually make practice location decisions in situ. To re-paraphrase an illustrative metaphor, we have a better understanding of more of the trees, but scant conceptualization of the forest. The second category that emerged from the
cyclic theory-building review process is *Life-Stage Dependent Values*. To explain this category requires an understanding of social reality construction, which itself needs a little background review.

Social reality is relative, as distinct from extant reality. Consider for example, an empiricist and a realist may construct two very different impressions of a social reality, and both be able to adduce sound supporting arguments for their perspective. But it is a somewhat more dubious prospect to attempt to draw up similar battle lines when discussing extant realities. The table that I am typing on is at once a table, an assemblage of cut planks and fasteners, untold billions of molecules that are continuously chemically active, and an even more vast interplay of quantum mechanics. The empiricist may see the chemistry and the realist the table, but it’s nonsensical for them to argue who’s vision is the correct one.

*Life-stage dependent values* speaks to the concept of a constructivist (i.e., relative) perspective on social reality. Weick (1979) discusses how individuals deal with ambiguous information: they construct their own reality. Social reality is relative to the viewer, filtered by his or her psychological “lenses”, interpreted according to his or her unique values and reality-creation process. That’s why the list of factors relevant to practice location decision making keeps getting bigger, but our holistic understanding of the issue has not. What matters to one physician matters less to another. What matters to one physician today may change over time as his or her life circumstances change. These variable priorities are temporally-dependent *(they change over time)*. They are socially-dependent *(they change depending on the quality, structure and number of high priority social interactions)*. Lastly, they are culturally-dependent *(they differ between individuals based on their life experience and group-identification)*. Thus *life-stage dependent values* are temporal-socio-culturally dependent. In other words, they differ for every individual, and change over time. Many
of the factors discussed in this research could potentially be seen as *life-stage dependent values*. What matters more than a list, is an understanding of the concept of relative social reality construction.

One can adduce arguments to support many factors as potentially varying in importance to an individual, depending on their life stage. Putting this another way, part of the emergent theory here is that differing combinations of factors will have changing importance to physician decision making over an individual's working life.

4.3.3 Personality

Physicians making practice location decisions are differentiated adults, or are about to be, and their personality affects these decisions. While this research can acknowledge that personality impacts practice location decisions and warrants its own category, it needs to be emphasized that a greater understanding of practice location decision making behaviour using personality will be a complex undertaking. This is because "personality" is a very complex construct. Personality comes from the Greek word "persona", meaning "mask", and it has many definitions, for example: "Personality is a dynamic organization, inside the person, of psychophysical systems that create a person's characteristic patterns of behaviour, thoughts, and feelings." (Carver & Scheier, 2000). Psychology and other social sciences have evolved several perspectives on personality. Some of the major perspectives are described below to highlight the fact that this dimension will be challenging to explore. These perspectives are summarized from Carver and Scheier, 2000.

- Trait Perspective

This is the classic psychological study of personality. This approach develops systems for classifying psychological characteristics for which people differ consistently between situations and over time. It generally considers people as "types" and describes
people in terms of what motivates their behaviour. Myers-Briggs (MBTI) is perhaps the
most famous personality test using the trait perspective.

- Biological Perspective

The biological model is not a cohesive, theoretical approach. Rather it is a group of
attempts to identify links between personality and biology. Second, it seeks out the origins
of human behaviour in evolutionary theory.

- Psychoanalytic Perspective

Personality theories often have difficulty explaining irrational patterns of human
thinking and behaviour. Psychoanalytic theory addresses this by pursuing the human
psyche, in search of understanding. It was created by Sigmund Freud in the late 19th
century and early 20th century, and it formed the foundation of modern psychology. Much
of the subsequent theory and research, even those that conflict with psychoanalytic theory,
were influenced by it.

- Learning Perspective

The Learning Perspective views personality as an accumulated set of learned
tendencies over a lifetime. It arose from behaviourism and social psychology. This
perspective suggests that personality is “susceptible to molding, grinding, and polishing by
the events that from the person’s unique and individual history” The underlying
assumption here is that all behaviour is learned via experience and by interaction with a
person’s environment.

- Phenomenological Perspective

The phenomenological perspective views people as being intrinsically good and
interested in self-improvement. People are seen as growing and evolving naturally.
4.3.4 Behavioural History

These factors indicate choices made by the physician that are suggestive (positively or negatively) of propensity to rural practice. In a proper quantitative study, these could be assessed statistically to more accurately determine the strength of the relationships between these factors (and groups of these factors) and propensity for rural practice. This category is Behavioural History. Eight of the previously described factors are examples of Behavioural History:

- college or undergraduate major;
- age of first interest in medicine;
- choice of specialty;
- college or undergraduate school (R/CA/CMA, social and educational experience);
- internship or residency (R/CA/CMA, social and educational experience);
- medical school (social and educational experience);
- rural experience in training; and
- stated first year medicine preferences.
From respondents interpretations and discussion of their own behavioural history, it appears that the choices made and the memories of these experiences affect future decision-making.

4.3.5 Persistent Values

These are simpler to understand — they are individual values that are unlikely to change significantly over time. For example, in this theoretical paradigm, "religion" is considered a persistent value. Every person has a different religious view, but in adulthood, most people's religious viewpoints tend to change very little. Another could be "quality of medical practice." Most doctors care about good medicine, but the definition and standards for defining "good medicine" will vary between individuals. For a given individual however, the definition of quality of medical practice is probably fairly static — an individual's perception of quality of medical practice probably remains similar throughout his or her career, thus it is a persistent value.

4.3.6 Experience

Life experience profoundly impacts our decision making. The discussion of "gaps between expectations and experience" and the consumer behaviour response in section 3.6 is but one way of illustrating the impact of experience on decision making. Rather than specific decision points, experience captures the collective impact of life experience on decision making. It also helps to reflect the impact of time.
4.4 Validation of Grounded Theory: Field Input

So we have six conceptual categories in the emergent theory:

- Intrinsic Attributes;
- Persistent Values;
- Personality;
- Life-Stage Dependent Values;
- Behavioural History; and
- Experience.

By this model, the six conceptual categories can all influence each other.

During the data collection, all participants were asked if they would review and comment critically on the emergent beta-theory. Forty of the forty-two participants agreed. Accordingly the beta-model was sent to these forty participants with a request for feedback. Thirty-four participants submitted a response to the beta theory. Some were as simple as “got it – looks good”, or as long as 2 pages, most were 1-2 paragraphs. All spoke favourably of the beta-model. Beyond general statements of approval, there were essentially three substantive observations, two of which necessitated changes.

“Persistent Values” were called “Permanent Values” in the beta-model. Participants correctly observed that while many of these values are robust, and may not change, that is not necessarily the case. They can change, and can even change significantly if the impact of other factors is significant enough. For example, one participant said traumatic experiences can impact permanent values: “Once I had a patient, a seven year old girl, die of cancer. Her mother had been religious her whole life, but after that experience, she stopped going to church. She told me she can’t worship a God that would take her only daughter.”

“Personality” was not a category in the initial beta-model. Rather, the impact of personality was subsumed under “intrinsic attributes”. Some participants felt this did not do justice to the impact of personality. The key observation was that personality is not
beyond capacity for deliberate, conscious change. Taken together, the commentary resulted in personality becoming a category. As is discussed briefly in 4.3.2, “personality” is a very complex construct.

The third set of comments and dialogue on the model centred around its generalizability. Some participants felt that the model would work for a much wider range of decision making than family practitioners in rural practice in British Columbia. Participants need to understand that the methodology only enables generalization to theory. It cannot be generalized to any population without further investigation with the aim of assessing its generalizability to a particular population. The same logic holds for assessing the model’s generalizability to target populations other than the one studies in this dissertation. Thus the comments from the field in this regard cannot validly be built into the model.

The final model thus portrays physician practice location decision making as a dynamic process involving the interaction of six conceptual categories, with the practice location decision at its centre.
4.5 Convergence

In pursuit of some convergence, the final model was tested against cases from other jurisdictions in Canada. A request was published on the RuralMed e-mail list, a list predominantly subscribed to by Canadian rural doctors. Members were asked if they'd be willing to be interviewed using the same questionnaire as the study's principal participants. Doctors from various Canadian provinces, as well as one from the U.S.A. and one from Australia volunteered. In the end, three Canadian doctors from outside of British Columbia
were interviewed. Compared to the model, interview fragments pertaining to practice location decision making for all three of these participants easily all fit within the model. This suggests that the theory may be generalizable to physician populations larger than the target population of this study. Understand that this can only be conjecture without further research.

4.6 Summary of Responses

This section summarizes the breadth of responses to the interview questions. The relevance of this section to the research questions is that it provides an overview of the data set. The intent is to provide an overview of the raw data, whereas the data analysis in section 4.2 expands the list of factors associated with rural practice. To use the forest and trees metaphor, the analysis examined and expanded the 'trees', and this section steps back to give a view of the 'forest'. While this section is outside the data analysis per se, it's value comes from helping to set the overall context.

The overarching observation is that the response sets are quite broad. The respondents reflect a diverse history. Some were born and raised in rural communities (<10,000 people), others in Census Agglomerations (10,000 to < 100,000 people), and other in Urban areas (100,000+ people). There was an almost even split in the gender of respondents (22 male and 20 female), which is interesting given the fact that 73% of the sample were male. Ethnicity was very broad: white, First Nations, oriental and East Indian. Some came from stable two-parent homes, others from divorced or widowed parents. Birth order was widely distributed (oldest, youngest, middle child, only child). Socio-economically, participants' birth families varied widely (1).

Respondents' school experiences were quite varied. Some went to lower income schools, some went to "a typical suburban high school", while others went to private
school. Not surprisingly, most participants reported that high school was academically easy or not overly challenging, but that was not true for everyone. In terms of their social experience in high school, the respondents were more evenly split. Some had positive memories, but many others remember high school as socially difficult, even horrible (2).

Once they got to university, this pattern reversed. Academically some found university easy, others found it very challenging, but virtually all reported good to excellent social lives. Students took their premedical training in large and small universities, in seven different countries.

Participants first became interested in medicine as young as age 5, to as late as after completing post-graduate studies. For some their interest in medicine came from the sickness or death of a close relative or their own sickness.

Some respondents found getting into medical school challenging, others did not. Most chose their medical school for very pragmatic reasons — such as closeness to home, or the first school they were admitted to.

Respondents also frequently discussed who gets selected into medical school and who does not, particularly regarding the relatively low numbers of students with rural backgrounds admitted to medical school. This perception is partially validated in British Columbia — students who attended a rural high school are proportionately under-represented at UBC medical school by about 50% — but this may also simply be largely a reflection of rural-background students under-representation in post-secondary education in general. Many participants also thought that academic performance was over-emphasized in medical school admissions, suggesting that personality, aptitude and background should be more heavily weighted (3).

Similarly, many commented favourably on the new Northern Medical Program at UNBC and also on the importance of exposure to rural medicine in medical school.
Respondents also expressed concern over the escalating cost of medical education and the implications of this for admissions of economically disadvantaged students. Finally, as part of their comments on medical school admissions, some respondents divulged data that suggests they were quite outgoing before starting medical school. One had completed an apprenticeship and was a working tradesperson before deciding to start university in his late 20's to become a doctor. Still others reported an outdoors-oriented lifestyle or extensive rugged travel prior to going into medicine.

Academically, a few found medical school extremely difficult. Others found some parts easy and some parts hard. Others graduated in the middle or the top third of their class, and one reported that he graduated at the top of his class. Many reported that medical school got better as they went along.

Many respondents, particularly older (40+) and foreign-trained ones, indicated that their professors gave a very negative impression of family/general practice in general, and of rural doctors in particular (4).

Another common theme was the opinion that their medical education was inadequate preparation for rural practice (5). They often hastened to add that it was not all bad ("my training in obs/gyn was okay" or "urology, plastics, ortho were well done").

Another common training-related theme was an appreciation of practical, applied skills (6). Still with medical education, many respondents discussed either their exposure (or lack of exposure) to rural medicine in training (7).

One very important theme was the impact of positive mentors. These occurred at many points – during undergraduate medical training, during residency, or once in practice. Over and over again many participants went out of their way to strongly emphasize the significance of positive rural and/or family practice mentors in their practice location.
decision-making (8). Further, many indicated that the absence of these experiences might have had an impact on their peers’ penchant to specialize and/or practice urban medicine.

Some respondents completed a Canadian family practice residency. Others completed a general practice internship under the old system, or are foreign and completed either an internship or a longer residency. Many, but not all, chose to do a residency that had a significant rural component.

Socially, most reported that medical school was as good or better than their social experience in high school, and in some cases significantly better. For example, one respondent who described her high school social experience negatively, enjoyed university because “I lived in residence with intelligent similar women”. Some respondents reported being significantly different in their personality or aspirations than their peers, and a few reported little or no kinship with their fellow students.

Respondents have a variety of marital status, as could be anticipated: they are single, married, divorced and widowed. This is one of the key indicators that in aggregate reveal nothing, but reveal a lot when examined in concert with other indicators within a given case (see 4.4) in terms of influencing practice location decision making. The same holds true for children: respondents were childless, had children at home, and had adult children, so in isolation this appears to reveal little, but nonetheless children (or the absence thereof) had a major impact on practice location decision making.

Some knew they were interested in rural medicine before they started medical school, others came to favour rural while in medical school, and others never had any desire to pursue rural practice, ending up there by a coercive influence (such as billing number restrictions or limitations imposed by work visas). Of this latter group that had practiced in a rural area under duress, most expressed more dissatisfaction with on-call,
emergency medicine and professional isolation than did physicians who enjoy(ed) the experience.

Some things, like isolation and weather, are beyond a policy maker’s ability to control. Not surprisingly, severe winters had an impact on why some physician’s left a community (9).

While some doctors enjoyed the sense of community in a small town, many others reported significant social challenges to rural practice such as making friends or dating (10). In many cases, the strain of few desirable friends, or the unlikelihood of finding a suitable mate, were sufficient to cause the respondent to leave a rural practice. Participants in many cases said that communities can help ameliorate these problems by being welcoming and less deferential, but this is difficult to reconcile with the oft-expressed desire for more privacy and care-free time off.

Recreation opportunities in rural communities also left differing impressions. In some cases, physicians went to a community, or stayed, because of the outdoor recreational opportunities. Conversely, some respondents left rural practice because of the lack of recreational opportunities, such as kids’ sports facilities. A curious aside is that the lack of a pool was mentioned frequently (27 respondents) as a problem. In a similar vein, many rural physicians loved their “rural lifestyle”, but others disliked rural practice for the same reasons.

Schools for children were a source of tremendous disagreement. Some left or had lingering worries about quality schools for their children (11). Others had an opposite view, giving contrary opinions and examples (12).

In the literature, poor access to Continuing Medical Education (CME) is often mentioned as a disincentive to rural practice. In this study, all physicians who commented
on the issue were universally positive, largely due to British Columbia's excellent CME program for rural doctors.

Much as rural doctors love their independence, their opinions on access to specialists was ambivalent. For example, some doctors who left rural practice indicated that one of the reasons they left was "I'm used to having specialists around, and they've become a crutch" or "with lots of specialist support, I no longer trust myself to make decisions". Those who enjoyed their rural practice valued their independence and opportunity for breadth of practice, yet were often thankful for the specialist support they did get. Many participants also discussed, sometimes passionately, the importance of access to other health professionals, such as nurses, therapists, technicians, social workers, etc., and good facilities, supplies and equipment (13). Likewise, access to medical technology is often a source of friction. Rural doctors also discussed frustrations with access to ambulance services, but they also indicated that in some cases things are improving.

British Columbia is divided into a number of regional Health Authorities. These organizations have centralized many services and reduced or eliminated facilities and resources in many smaller centres, which many rural doctors expressed strong negative opinions on (14).

Locums are temporary replacements for other doctors, usually for a relatively short fixed period of time (typically a few weeks or months. Some respondents indicated that ensuring adequate access to locums is important in the recruitment and retention of rural doctors. Many respondents have also been locums, in some cases many times. Locums give doctors the opportunity to look around with no long term commitment.

Money was a very interesting issue. Participants for the most part were quite forthright and open with their opinions. For example, some respondents indicated that
they'd only done a rural locum or a northern placement for the money. Section 4.4 illustrates how the differences of opinion are manifested in different patterns of behaviour. While some respondents indicated that they're not paid well enough, most indicated that money was not their primary driver for practising rural medicine (15). Others indicated that money could be a motivator for new rural doctors, if not themselves. There was also a widely expressed belief that fee-for-service may not be the best payment scheme for rural medicine, as it encourages high volume practices with many low maintenance patients, such as walk-in clinics.

Frequent on-call time is a reality for many rural doctors. While some like it ("I love the work, the 24/7 call"), many have reservations. Too onerous an on-call schedule also drove many doctors to leave rural practice (17). For those who have been rural doctors for a while, many indicated that they're comfortable with the level of call they have to do, if any. The corollary to this is that, after rural medicine, urban on call is dissatisfying to some ("don't like urban medicine because you can't do call in a meaningful way").

When the conversation turned to the quality of doctor-doctor relationships, there was a very large volume of responses. To summarize, the better the doctors in a community got along, the better their fit with each other, the happier doctors were. These relationships were frequently pivotal in a doctor’s decision to stay long term, and equally true, poor working relationships drove many doctors to leave. Good peers, the ability to call in support, doctors with complimentary skills that would act as mentors to young doctors, all of these things evoked strong, even effusively positive responses from many respondents. In a number of cases, different opinions, different philosophies or simple personality clashes brought back sometimes bitter memories (18). From the volume of responses pertaining to doctor-doctor relationships, and the emotion with which these opinions were often expressed, it appears that this may well be a key factor in rural
retention. One pair of interviews was particularly interesting as a researcher. One participant indicated s/he left a community because of not fitting in and difficulty getting along with colleagues. Another participant spoke of a doctor who left because s/he was a bad fit for the medical culture in that community. On careful examination of the locations, the dates and other relevant dialogue, I realized that they were probably talking about each other.

Another very large category of response was "scope of practice". Many rural doctors seem to thrive on the breadth of presentations they face without having to defer to a specialist (unless they want one). They value the independence and in some cases the thrill of being the centre of the action. Likewise, they often opine that they would feel bored or constricted as an urban family practitioner. Conversely, many respondents who had left rural practice or were planning to leave cited this same broad "scope of practice" as a reason for leaving. The stress of this breadth of practice, with its attendant emergency medicine, trauma, obstetrics, surgery, orthopedics, anaesthesia and so on, drives some doctors away. The reverse was also indicated, that is, many satisfied rural doctors indicated how bored or restricted they would feel practicing urban medicine (19).

By far the largest single issue discussed was why and how practice location decisions are made (994 fragments, or 11.9% of the total). Of these, more than half of these practice location decisions could be sub-classified as behaviour driven by pragmatic concerns. This was noticeably common – significant decisions made on the basis of straightforward, practical considerations. For example, a number of respondents made decisions based on external realities, such as government policy ("as a foreign doctor, I had to practice in a rural area because of my work visa") or other factors beyond the doctor's influence ("moved to [community] to get away from my husband"). Another external circumstance was moving for a desired or needed job.
The impact of colleagues was another commonly-cited practical reason for making a practice location decision ("I came to [community] because a friend was already practising there"). Family, or the lack thereof, also drove decision making (20). Money or payment schemes was another common pragmatic approach to decision making (21). Age and stage made a big difference for many — a person's lifestyle, energy level and family situation changes over time, and these changes influence practice location decision making. This theme was explored much more fully in section 4.3. For example, one participant said "once you reach 50, it's not as much fun anymore getting a guy with a broken neck out of a tree or starting an IV in a ditch."

Some of the reasons given make the decision sound almost trivial ("I tripped into rural medicine. I could have ended up elsewhere, it's an accident of fate that I discovered it", or "I never thought about where to practice, I stayed in [community] because it was simple and practical"). There were also many other simple, practical reasons cited for how participants made a given practice location decision. At the same time, many made decisions based on a perception of a personal mission or higher calling ("I chose rural medicine because I thought it was an opportunity to provide care for people who were away from usual access" or "I was idealistic and keen" were typical responses). Many respondents though were quite self-directed to rural medicine. Indeed, to some, the question seemed almost nonsensical ("Where else would I practice?").

The other key question in this research relates to retention, that is, why do some physicians stay in rural practice, and others leave? It's an important question, as some doctors leave rural after a relatively short period of time, while others spend their entire career in rural places. From a policy perspective, if there are ways to improve retention, this could help reduce turnover. Some of the reasons cited for staying in one place are related to the practice of medicine (for example, the type of job, peers, or work permit
requirements were commonly cited). Others said they stayed for more personal reasons, such as easy access to recreation or the office, community, lifestyle for kids, affinity for working with First Nations people, etc.

Many doctors also volunteered reasons why they do not practice in an urban setting (essentially rephrasing the reverse of why they do practice in a rural area), primarily citing the relative restrictiveness and lack of collegiality amongst doctors in urban practice (22).

Equally important to why people stay in a place is why they leave. Again, sometimes the reasons were personal, other times professional, and often a mixture of the two. Some of the more common personal reasons for leaving were a better environment for kids, change in marital status, isolation and lack of anonymity. Professional reasons cited for leaving include retirement, onerous on-call schedule, burn out (and conversely, too many physicians coming into community), and discomfort with the quality of medicine practiced by peers (23).

When asked if they were ever counseled to consider rural medicine, only 1 of 42 participants indicated that anyone ever asked them to consider it. Many however remember being actively counseled against it, by peers and by medical faculty in particular.

There were two questions that asked the respondent to reflect upon the opinions of others. Question 5e asked “How did your spouse/partner/family feel about you practising in <community name>?” and Question 9 asked “Do you have any reflections on why you chose rural practice, while many of your peers did not?” Conjecture cannot be assumed to be accurate, but for the purposes physician decision-making, the respondents’ understanding or perception of familial opinions or peer opinions are what is relevant to this research. Children often play a big part of how doctors make, or change, their priorities for practice locations decisions. Sometimes doctors came to a community childless, and the advent of children changes their priorities. Doctors facing a growing
family, and likewise doctors whose children have chronic illness or whose children have grown up and left home, can also impact practice locations decisions. The bad news for policy makers is that doctors in these situations make different decisions under similar circumstances. For example, some respondents moved to a rural practice because they perceived a rural lifestyle as better for raising children, while others left rural practice because they perceived an urban lifestyle as presenting more opportunities for their children. In many cases, children were an important part of the practice location decision, but from infants to empty nests, children impacted participants in very different ways.

Keeping with this theme, questions regarding spousal satisfaction elicited considerable response ("to attract or keep docs, pay attention to the spouse", or "communities need to look at whole family unit, not just spouses"). There were many examples of happy spouses and kids of doctors in rural practice. There were however lots of unhappy spouses and families. While familial reactions to living and working in a rural community were quite different, most respondents indicated that their partner's opinion was very important in practice location decision making. Some participants indicated that spousal satisfaction did not significantly impact their decision making. Perhaps not surprisingly, more than half of this group are divorced. Previous studies have identified spousal employment as a barrier to rural practice. In these case studies, no-one mentioned this directly as a problem.

Participants were also asked their opinion as to why they tried rural medicine, while many of their peers did not. Some of the typical answers are their peers lack of exposure to rural medicine, and their fears regarding the lack of back-up.

Another theme that emerged was not asked about directly in the interviews — gender. A number of male participants commented on the impact of gender. When asked if he had any closing remarks, one male physician said: "There's more women students
now, and women don’t do rural as much. We really need more female rural docs, but they won’t do it. I’ve talked to women who’ve come through as students or as locums about this problem, and they’re just not interested in rural.” Every male doctor who commented on this issue spoke positively of the impact on the community of having female doctors, but each of them also expressed frustration at the difficulty of attracting and keeping female doctors in rural practice. Some of the female participants volunteered comments that seem to support this view – they felt that being a female doctor in a rural practice is more difficult than it is for males (24). A couple of female participants left rural practice because their partners (also physicians) wanted to leave. Other female participants indicated that they left rural practice partly because of the difficulty finding a suitable mate or suitable friends. One left an economically poor practice location because she was sexually assaulted (this happened outside of Canada). Finally, participants were asked why many of their peers in medical school did not choose rural practice, to which one female doctor responded “women who would have gone rural married urban guys.” Clearly nothing in this research demonstrates any gender impact, but it does suggest that gender may be an important factor worthy of further investigation to determine if there are gender-specific issues, and how they could best be ameliorated.

4.7 Conclusion

This research has broadened the list of factors potentially impacting practice location decision making by an additional 18 factors, from 54 previously identified in the literature, to 72 (see Appendix 4). Second, the research has built a theoretical model illustrating the dynamic of practice-location decision making, that may be generalizable to physician populations.
CHAPTER 5

CONCLUSIONS AND IMPLICATIONS

5.1 Introduction

This chapter begins with an overview of the conclusions reached vis-à-vis the research questions. This includes a discussion of the utility of the sampling frame, that is, the original selection of prospective participants who had stayed rural practice and those who had left ("stayers" and "leavers"), and organized on a 2 x 2 matrix of community size and distance to tertiary care. Second, this overview of the conclusions gives a summary of the key factors in practice location decision making.

The chapter then moves on to a discussion of the implications of this research for theory, and the implications for public policy. The chapter finishes with suggestions for further research.

5.2 Conclusions About Research Questions

This report focussed on the research questions:

1. What are the key factors that influence primary care physicians in British Columbia, Canada to choose rural practice?
2. What are the key factors that influence primary care physicians in British Columbia, Canada to leave rural practice?

This dissertation had two primary objectives. The first objective was to use case studies as a method of exploratory research, in order to develop a broader, more comprehensive answer these two questions. The second objective was to create grounded theory that would help explain practice location decision making as a process, rather than a state.
In regard to the first objective, answering the research questions, the analysis produced the following results.

5.2.1 Utility of the Sampling Frame

The 42 case studies were drawn from a cross section of physicians who had stayed in rural practice for a protracted period ("stayers") and those who had left rural practice for urban practice ("leavers"). The research found that there were similar and dissimilar motives for the two groups to choose rural practice. However, no Venn diagram could capture the differences and overlaps between the two sets. This is because the differences are predominantly in the frequency of particular responses and the intensity of feelings expressed, not simply a variation in the lists of factors relevant to practice location decision making, nor a clear differentiation of the values of these mostly nominal variables.

For example, many "leavers" left rural practice because they did not want to be there in the first place. Many had practiced in a rural area under duress: they were foreign doctors whose work visas required serving in an underserved area, or they needed a job and that was all there was available at the time. Others had gone simply for the money, but found the money was not worth the physical and mental demands, nor the social stresses, of rural practice. Still others chose rural practice, but left because some other aspect of their life increased in importance, or they got burned out, or a myriad of other reasons. Compare this to the "stayers", many of whom chose rural for altruistic reasons, or because they valued the challenge of being required to perform a wide breadth of practice.

Some of the "stayers" had actually chosen rural practice under duress, while some of the "leavers" had initially loved rural, but left for one of the many reasons discussed in Chapter 4. Thus doctors in the "leavers" group and doctors in the "stayers" group all chose rural for a wide variety of reasons, but those reasons do not at all cluster differently for the
two groups. Putting this another way, one could easily suppose that those who chose rural under duress would form the majority of the leavers, and this was true, but it was far from universal in the sample. Many doctors who had originally chosen rural practice under duress found they loved it and became “stayers”, and many doctors who had chosen rural deliberately, subsequently found reasons to rethink their choice and move on to an urban practice. So, the initial assignment to the group “stayer” or “leaver” was only useful answering the second research question (why did they leave). “Leavers” had a long list of common reasons for leaving, and “stayers” had an equally long list of reasons for staying. What is of particular interest here is that many of the reasons that “leavers” cited as their reasons for leaving were the same reasons that “stayers” indicted as their reasons for staying. To reiterate, the key insight here is that an individual physician’s qualitative positive or negative valuation of those reasons is of much greater importance than the reasons themselves.

The secondary sampling frame was based on an adaptation of Weinert and Boik’s rurality index:

<table>
<thead>
<tr>
<th>Rural Area (&lt;10,000 people)</th>
<th>&lt;50 km to tertiary care</th>
<th>50+ km tertiary care</th>
</tr>
</thead>
<tbody>
<tr>
<td>R&lt;</td>
<td>CA&lt;</td>
<td>R+</td>
</tr>
<tr>
<td>Census Agglomeration (10,000 to &lt;100,000 people)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

With a given “stayer” or “leaver” subset, the categorization of the fragments from each of the four secondary groups (R<, R+, CA<, CA+) were indistinguishable. Use of this secondary sampling frame did not add materially to the diversity of the results, nor to distinguishing any substantive difference between any of the four. In essence, the secondary sampling frame proved to be irrelevant.
5.2.2 Key Factors in Practice Location Decision Making

Section 4.2 discussed the 72 factors identified as influencing practice location decision making. These are generally classified in one of four groups: Background Factors (20 factors), Community Factors (18 factors), Practice Factors (28 factors), and Familial Factors (6 factors). Of these 72 factors, 54 were previously identified in the literature as being significant. All but seven of these previously-identified factors were also identified in this project in the analysis of fragments. In addition, 18 new factors were identified that have not been investigated in the literature are listed in Table 7 (on following page).

Reiterating what is discussed in section 4.2, 16 of these 18 new factors appear from this research to be significant in practice location decision making and warrant further investigation. Conversely “birth family” was used only in fragment classification; it did not appear to have any behaviourally explanatory value. The importance of the last remaining new factor, “impact of counseling”, is uncertain. It is not clear from this research whether or not counseling impacts physician practice location decision making.
Table 7  New Factors

New Factors used in Fragment Classification
Access to medical health professionals (e.g., nurses, therapists, etc.)
Ambulance service
Distance to larger communities
Gaps between expectations and experience
Government policy
Health administrators
Impact of counselling
Marital status
Mentors
Orientation/socialization to community when new
Physician’s birth family
Physician’s college or undergraduate major
Physician’s health/physician’s family health
Physician’s personality characteristics
Physician’s primary motivators
Quality of medical practice
Quantity of work
Sense of community

A complete list of all 72 factors is at Appendix 4.

As has already been discussed, there was considerable breadth of responses in most of these 72 factors. As a result, more subtle investigation of the possible variations in response, and the significance (if any) of these variations, is required.

5.3  Implications for Theory

In the iterative process of developing grounded theory, additional cases, preferably significantly different cases, are compared to the emerging theory and the theory is revised to capture the new data. In the analysis of the data (section 4.3), six categories of fragments emerged as substantive categories.
The first is *Intrinsic Attributes*. Fragments that are *intrinsic attributes* relate to factors that are intrinsic to the individual. The second category is *Personality*. Physicians making practice location decisions are differentiated adults, or are about to be, and their *personality* affects these decisions. The third category that emerged is completely a function of physician behaviour. These factors indicate choices made by the physician that are suggestive (positively or negatively) of propensity to rural practice. This category is *Behavioural History*.

The fourth category that emerged from the cyclic theory-building review process is *Life-Stage Dependent Values*. Social reality is relative, as distinct from extant reality. *Life-stage dependent values* speaks to the concept of a constructivist (i.e., relative) perspective on social reality. Thus *life-stage dependent values* are temporal-socio-culturally dependent.

The fifth category is *Persistent Values*. These are individual values that are unlikely to change significantly over time. The sixth and last conceptual category is *Experience*, because life experience profoundly impacts our decision making.

In validating the emerging theory by negotiating the outcomes with the participants, it became clear that the model would have to recognize that all six categories can combine in differing combinations, and that they can in turn influence each other. It is an interplay, not a mutually-exclusive or sequential process. Input from respondents also made two substantive changes: one to a category name and description ("Permanent Values" became "Persistent Values"), the other to create a new category to raise the significance of "personality", which had previously been subsumed under "intrinsic attributes".

The final model thus portrays physician practice location decision making as a dynamic process involving the interaction of six conceptual categories, with the practice location decision at its centre.
5.4 Implications for Public Policy

As this dissertation developed a model generalizable to theory, discussion of clear public policy recommendations may be premature. However, if subsequent research validates and revises the theory to the point that it can be generalized to a population, this may well have implications for public policy. Some of these possible public policy implications are contemplated below.
The implications for policy are numerous. First, policies designed to ameliorate the shortage of rural primary care practitioners must understand and accommodate the socio-cultural and temporal dimensions of the problem, from the perspective of individual doctors. The bad news for policy makers is that doctors in these situations make different decisions under similar circumstances. In the end, individual doctors make decisions based on their perceptions, circumstances and values at the moment in time, place and social context that they're making the decision. Thus policies must be flexible enough to respond appropriately to individuals. For example, the personality characteristics of physicians who enjoy rural practice warrants much more detailed examination. Another example of the idiosyncratic nature of problem is that policy needs to better understand and respond to the gaps between physician expectations and experience.

To reiterate, there is a very broad range of Health Authority, as well as local, provincial and federal government policies, spanning many different ministries and departments with diverse responsibilities that play varying roles in impacting practice location decision making. Government policies can play key roles in rural physician recruitment and retention.

Many of the new factors used in classifying fragments could also have policy implications, such as what is a realistic expectation for rural physician retention in a given community. Further, these factors could impact how rural medicine and rural communities are marketed to prospective rural doctors. The policy implication "distance to a larger community" is that, in seeking to improve recruitment and retention to isolated settings, policy makers and administrators need to be aware of the stresses caused by distance by reducing those stresses wherever possible, and ensuring that there is good communication with the individual physicians in these practices to ensure their particular case-specific stressors are being addressed.
Another factor with policy implications is “access to other health professionals” since, unlike many factors that impact physician recruitment and retention, this factor is to a greater degree manageable by health administrators. Doctors also care about the quality of medical practice they are able to provide and this impacts practice location decision making. Similarly high workloads are both a stressor and a factor that can influence some doctors to leave (or assum(e)ably discourage some from trying rural practice).

From a policy perspective, if there are ways to improve retention, this could help reduce turnover. Some of the reasons cited for staying in one place are related to the practice of medicine (for example, the type of job, peers, or work permit requirements were commonly cited). Others said they stayed for more personal reasons, such as easy access to recreation or the office, community, lifestyle for kids, affinity for working with First Nations people, etc.

Specifically for educational policy makers seeking to increase the number of new doctors who choose rural practice, it may be true that students who take “untypical” undergraduate or premedical studies may have a greater future propensity for rural practice.

5.5 Further Research

There are a number of direction for future research:

a) quantitative research, with a statistically valid sample, on the eighteen new factors to assess whether or not they are substantive enough to be statistically significant drivers of practice location decision making behaviour,

b) studies assessing the relative importance of the 72 factors in practice location decision making
c) Additional research is required to validate and refine the emergent theory (the socio-tempero-cultural model of the drivers of rural physician practice location decision making). Secondly, the theory needs to be expanded into a practical, operationalizable tool for policy makers, educators and health administrators. This work needs to incorporate decision theory.

d) Finally, once the model is operationalized, it could be assessed for its applicability in other areas, outside of rural physician practice location decision making.
BIBLIOGRAPHY


www.oxford.com (available – accessed 21 June 2007)


Becker P, Hartz A, Cutler J. (1979) Time trends in the association of a rural or urban background with physician location. *Journal of Medical Education*. 54(7) 544-550


Blue AV; Donnelly MB; Harrell-Parr P; Murphy-Spencer A; Rubec RF; Jarecky RK (1996) Developing generalists for Kentucky. *Journal Of The Kentucky Medical Association*. 94(10) 439-45.


Fryer GE et al (1993) Colorado’s decentralized medical education to increase the number of graduates practising primary care in rural areas. *Academic Medicine* 68(4) 301-11

Fryer GE Jr; Miyoshi TJ; Stine C; Krugman RD (1997) Predictors and profiles of rural versus urban family practice. *Family Medicine* 29(2) 115-118


Gessert C; Blossom J; Sommers P; Canfield MD; Jones C (1989) Family physicians for underserved areas. The role of residency training. *Western Journal of Medicine*. 150 226-30.


Gray JD; Steeves LC; Blackburn JW. (1994) The Dalhousie university experience of training residents in many small communities. *Academic Medicine*. 69(10) 847-51


Kaisen A; Kjetså GA; Lie RK; Hjetland R; Haaland PT; Møller P; Oulie HB; Tveit T; Maeland JG. (1984) Interns' evaluation of their preparation for general practice: a comparison between the university of Tromso and the university of Bergen. *Medical Education*. 18(5) 349-54.


Magnus, JH, Tollan, A (1993) Rural doctor recruitment: does medical education in rural districts recruit doctors to rural areas? Medical Education 27(3) 250-253

National Association of Rural Health Education and Research Organizations (2001)


Nurkin, HA (1998) Attracting physicians to underserved communities is not the solution to providing better access to underserved communities. Frontiers of Health Service Management


Pitblado, R; Pong, RW; Irvine, A; Nagarajan, KV; Sahai, V; Zelmer, J; Dunikowski, L. (1999) Assessing rural health: toward developing health indicators for rural canada. Study prepared by the Centre for Rural and Northern Health Research, Laurentian University, for Health Canada.

Pitblado, JR and Pong, RW (1999) Geographic distribution of physicians in Canada. Study prepared by Centre for Rural and Northern Health Research, Laurentian University, for Health Canada. 8-12.


Rabinowitz HK; Diamond JJ; Markham FW; Paynter NP (2001) Critical factors for designing program to increase the supply and retention of rural primary care physicians. *Journal of the American Medical Association.* 286(9) 1041-1048

Rabinowitz HK; Diamond JJ; Markham FW; Hazelwood CE. (1999). A program to increase the number of family physicians in rural and underserved areas, impact after 22 years. *Journal of the American Medical Association.* 281(3). 255-260.


Reid, Mark (2001) Foreign-trained doctors called 'wonderful resource'. 


Samaha, PA, Franklin, RR, Rice JC (1987) Importance of community size in practice location decisions of final year residents. Journal of Community Health 12(2-3) 139-146.


Statistics Canada (1999) Comparative statistics outlining various demographic characteristics of rural and urban populations


Tesson G; Curran V; Strasser R; Pong R; Chivot D. (2005) [Adapting medical education to meet the physician recruitment needs of rural and remote regions in Canada, the U.S. and Australia][en français] *Cahiers de Sociologie et de Demographie Medicales* 45(2-3):329-53


University of Washington website eduserv.hscer.washington.edu/uwsom/fs3_third_WRITE.asp (no longer available)


www.who.int/health-services-delivery/human/workforce/summary.htm (no longer available)
Xu G; Veloski JJ; Hojat M; Politzer RM; Rabinowitz HK; Rattner S. (1997) Factors influencing physicians' choices to practice in inner-city or rural areas. *Academic Medicine.* 72(12) 1026-36


Appendix 1  Mailout Package (ON FOLLOWING PAGES)

- Cover Letter
- Précis of Research Proposal
- Consent Form
- Information Sheet
Appendix

Andrew McKay, 295 Morrisey Place, Kamloops, B.C. V2C 1M5
Telephone 250.828.5120 (o), 250.374.1605 (h), email mckay@cariboo.bc.ca

Dr. xxxxxx
xxxxxx
xxxxxx
xxxxxx

January 8, 2008

REQUEST FOR YOUR PARTICIPATION IN DISSERTATION RESEARCH

Dear Dr. xxxxxx,

My name is Andrew McKay. I am a doctoral candidate in the School of Management at Charles Sturt University (www.csu.edu.au). I am writing to request 1 to 2 hours of your time for a telephone or in-person interview.

My dissertation research is exploring a) how physicians choose to practice in small cities and rural areas, and b) why some in turn choose to leave. Because you have practiced in more than one community, your experience is particularly important. The project will include case studies of up to 48 B.C. primary care physicians. As the study needs to avoid selection bias as a threat to its construct validity, you have been selected at random from the College of Physicians and Surgeons of British Columbia’s Medical Directory.

The extensive quantitative literature on “rural” physician practice patterns does not get us any closer to understanding how physicians make practice location decisions. Previous researchers have been unable to develop a reliable set of key factors influencing practice location decisions because what influences your decision making may be quite different from what influences your peers. I believe no-one’s defined a reliable list precisely because we need a dynamic model, not a static list. Currently we are left with a long and somewhat flawed list of factors that may influence decision making, but no behavioural model.

The anticipated result of my research is a model that describes the socio-cultural and temporally dependent nature of practice-pattern decision making.

Regardless of whether you are able to participate or not, please read, complete and return the Consent Form attached to this letter (Information Sheet on reverse).

Thank you for taking the time to read my request. For your information, I have also included in this package a précis of my dissertation proposal. This describes my research in more detail.

Sincerely

Andrew McKay

attachments: 1) Consent Form/Information Sheet
2) Précis of Research Proposal
Appendix 1

**PREMIS OF RESEARCH PROPOSAL**

Factors Influencing Recruitment and Retention Decisions of Primary Care Physicians in Rural Practice in British Columbia, Canada: Building Grounded Theory Via Instrumental Case Studies

Andrew McKay, Student #11183045, 295 Morrisey Place, Kamloops, B.C. Canada V2C 1M5

**ABSTRACT**

This project will seek to describe what factors influence primary care physicians in a particular area to choose rural practice, and for those who do so, why some stay and others leave. The anticipated result is that the determinants will emerge as being inextricably entwined in a socio-cultural and temporally-dependent dynamic. That is, practice location decisions are not states, but rather part of a larger social process. This broad based exploratory work will be built from a scientific realist ontology. Case studies will be used as a tool to develop grounded theory via an iterative (cyclic) process of analytic induction.

**IMPORTANCE OF TOPIC**

In Canada there is a growing sense of unease over health care, particularly in rural areas. The “rural problem” is usually described primarily as a labour supply issue, in terms of rural physician and nurse shortages (“underserved”), or alternately, as an operational systems problem. While the causal link between more health care and better health is patently weak, the perception is robust, indeed strengthening. The current rural doctor to patient ratio in Canada is 1:1,235, substantially higher than the urban ratio of 1:446, and the disparity is widening. Market forces do not help solve the shortage because medicine in Canada does not operate as a true market. Medicare as currently structured undermines the normal relationship between consumers and service providers, so there is no economic incentive to limit consumption.

**SYNOPSIS OF LITERATURE**

“Physician shortage” is largely subjective perception. There is in the literature no absolute or even generally accepted definition of what the appropriate level of physician service is, or even what the metrics should be. “Shortage” is a relative term, tied closely to geocentric perceptions of comparative advantage.

“Rural” is a vague noun, a nominal-level variable. There are many definitions and indices, but in 1995 Weinert and Boik developed the Montana State University Rurality Index which showed that only two variables (population and distance to emergency care) were needed to produce results similar to those of more detailed indices. This is the definition that will be used in this research project. Based on Weinert & Boik’s findings, this research project will define communities on a 2 x 2 matrix of population and distance to tertiary care:

<table>
<thead>
<tr>
<th>Rural Area (&lt;10,000 people)</th>
<th>&lt;50 km to tertiary care</th>
<th>50+ km to tertiary care</th>
</tr>
</thead>
<tbody>
<tr>
<td>R&lt;</td>
<td>R+</td>
<td></td>
</tr>
</tbody>
</table>
There are many factors studied in the significant literature. In preparation for this research project the author reviewed 72 studies. Most investigate background factors, such as where physicians grew up or went to medical school. Small numbers assess the importance of factors actually associated with the work, or factors in the wider environment. What is lacking in the literature is a thorough disaggregation of factors influencing physicians' practice location decisions (recruitment and retention), as well as an appreciation for the subtle interplay of these factors. Further, there is no holistic understanding of recruitment or retention as socio-cultural and temporally-dependent processes, rather than a mere list of attributes.

**RESEARCH QUESTIONS/OBJECTIVES**

1. **What are the key factors that influence primary care physicians in British Columbia, Canada to choose rural practice?**
2. **Of those, what influences some to subsequently choose to leave?**

There is a sizeable and growing body of literature investigating factors influencing practice locations decisions of doctors. What is lacking is broad exploratory research that would normally presage the preponderance of narrow quantitative retrospective cohort studies that dominate the literature. The external validity of much of the published literature is often further threatened by one or both of two common problems. First, little of the existing work attempts to account for the possible impact of extraneous variables. Second, the indicators that are assessed are confounded, actually measuring two different constructs: rural recruitment (why some doctors choose rural practice) and rural retention (why some leave rural practice). There is no comprehensive understanding of rural physician practice pattern behaviour and decision making. Existing theory is based on ever-narrowing research trajectories that has ever increasing internal validity, marred by ever decreasing external validity. Virtually none of the literature is written by researchers who appear to have a sound theoretical or applied understanding of human resource management. There is an all but universal absence of any discussion of the problem from any recognizable management ontology – a review of articles’ references reveals virtually no citations from peer reviewed management or human resource journals. Little of the research is from Canada.

**METHODOLOGY, DATA COLLECTION & ANALYSIS**

The absence of any comprehensive understanding (theory) of a dynamic social reality in a management problem suggests use of an iterative, inductive case study technique. The cases will use single units of analysis (i.e. individual doctors) in a multiple case design. In the interest of generalizability, samples will be selected randomly. The instrument will use both closed and open questions, framed using data from secondary sources and honed in focus groups. Opportunities for convergence using other techniques will also be sought. Constructed from a realist ontology, grounded theory will progressively build towards theoretical saturation. This realism will be reinforced by ensuring that the stakeholders, physicians who chose rural practice (both those who
stayed and those who left), will help build the emergent theory via negotiated outcomes. At its core, the process will be essentially as outlined in Dr. Drew Wallin’s 1996 paper:

The basic sequential and iterative process of the analytical induction method can be used from a scientific realist perspective. In this case, explanation or theory replace hypotheses. The revised process, which is at the heart of the research design proposed in this paper becomes one of:

- developing an initial explanation for a phenomena based on prior understanding and the formulation of the research question;
- examining the first case for empirical support; revising the explanation or theory in light of analysis of the case;
- selecting and examining another theoretically-dense case, especially a negative case, both for empirical support and for further insights; and
- repeating the process until “theoretical saturation” is reached, in that each additional case adds minimally to the theory.

To strengthen the external validity, a goal of 40 case studies in proposed, with a minimum of 32 and a maximum of 48. Approximately 20 participants will be selected from each of two distinct sub-populations: physicians who stayed in rural practice in one group (STAYERS), and physicians who left (LEAVERS) in the other. As this is purposive sampling, the study will seek maximum variations in the length of time a physician stayed in rural practice. Once a pool of potential participants has been identified, a randomly selected stratified sample of physicians from the four classifications of communities discussed in the Prior Research section above will be drawn for both STAYERS and LEAVERS ("R<", "R+", "CA<" and "CA+")

Appreciate that the key groups for analysis are “stayers” and “leavers”. This research will endeavour to draw from the sub-groups, but as the distinctions between the sub-groups are patently arbitrary, this is a secondary, “nice to have”, dimension to the research. Potential participants will then be contacted for their willingness to participate, and additional random names will be drawn as needed, until we have our eight groups of participants. A key caveat to the number of cases used per group will be situational, based on when “theoretical saturation” is reached in each group. The researcher will stop interviewing new participants in a group once theoretical saturation is demonstrable, and this theoretical saturation requirement will take precedence over the proposed group sizes of 4 to 6.

LIMITATIONS AND KEY ASSUMPTIONS

A key assumption implicit in this research is that the subject physicians are sufficiently representative to generalize to theory. That is, that the psycho-social processes involved are essentially the same for everyone. A second key assumption is a result of definitional quandary: how long does a physician need to stay in a community to be considered a “stayer”? In the absence of an objective or generally-accepted definition of satisfactory retention, this research will assign physicians as “stayers” or “leavers” by
identifying approximately 100 potential participants. For "stayers," identify those who remain in rural practice and rank order them by longest rural practice duration, then contact them for their willingness to participate, filling in sub-groups as we go. For "leavers" identify physicians who were in rural practice but left. Confirm they left for an urban practice, then contact them for their willingness to participate.

There are two main limitations to this research. First, the results will be generalizable to theory, not to a particular population. The second limitation of this research is that while the results may be generalizable to the body of theory of physician recruitment and retention, the results will not be generalizable to other health care professionals in rural practice, or indeed to any group other than the physicians studied.

CONTRIBUTION TO KNOWLEDGE

This study will provide a) a broad general understanding of what factors influence some physicians choose rural practice, and b) of those who do choose rural practice, what factors influence some to stay and others to leave. As this is exploratory research, the study will be primarily focussed on the "what", that is, trying to encapsulate the suite of factors involved. There is a "why" component - in terms of developing a more holistic understanding of the problem as dynamic rather than static. The study will develop a better understanding of the motivators of practice location decision making. The inclusion of physicians who have left rural practice provides insight into the crucial decision point of needs met or unmet; of trivial versus significant variance between expectations and experience. Second, the study will provide a broad conceptual underpinning for subsequent work with more narrowly defined scopes. Parenthetically, the results may also provide "background" support for some of the extant narrow quantitative research. Third, the study will begin to explore variations regarding the relative importance, or lack thereof, of rural community size and proximity to tertiary care in rural physician recruitment and retention.

DESCRIPTION OF PROPOSED CHAPTERS IN THESIS

Section 1: Introduction

This section will begin with an overview of the problem. The introduction will also provide an overview of the research method used, the limitations and assumptions used, and finally the anticipated contribution to theory the research will provide.

Section 2: Prior Research

This will be an exhaustive literature review of prior research on this topic. A chapter will illustrate that narrow aspects of this problem have been studied extensively but in isolation of a) socio-situational nature of the problem, b) its time-dependency and c) place-dependency. The second section will show how similar questions of have been explored in other disciplines. From this, the research questions emerge.

Section 3: Research Methodology

This section will describe the rationale for the structure of the research. The section will begin with a justification of the research paradigm and methodology. The methodology section will describe the case study protocols, such as the specifics field
procedures employed, the interview questions, and how both evolved in the pilot phase. The methodology section will also summarize the analytical procedures used, as well as a discussion of the limitations of case study research, and ethical considerations.

Section 4: Results and Analysis
The cyclical nature of the data collection and analysis in this research model suggest that the results and analysis should be described in concert, as part of theory development process. In this way, the results are not a step preceding analysis, rather the two inform each other as theory emerges. This section will conclude with a discussion of the possible ramifications of the emergent theory.

Section 5: Summary and Conclusion
This section summarizes the thesis, in particular the final results. The importance (or lack thereof) of the results will also be developed here. It is also anticipated that this section will make substantial suggestions on future research.

Endnotes


3 Wallin, Drew (1991) DBA 714 Course Readings, Charles Sturt University
Appendix 1

Consent Form

Factors Influencing Recruitment and Retention Decisions of Primary Care Physicians in Rural Practice in British Columbia, Canada: Building Grounded Theory Via Instrumental Case Studies

1. I, ___________________________ consent / do not consent to my participation in the research project titled "Factors Influencing Recruitment and Retention Decisions of Primary Care Physicians in Rural Practice in British Columbia, Canada: Building Grounded Theory Via Instrumental Case Studies"

2. I UNDERSTAND THAT I AM FREE TO WITHDRAW MY PARTICIPATION IN THE RESEARCH AT ANY TIME

3. The purpose of the research has been explained to me and I have read and understood the information sheet given to me (on reverse of this page).

4. I understand that any information or personal details gathered in the course of this research about me are confidential and that neither my name nor any other identifying information will be used or published without my written permission.

5. Charles Sturt University's Ethics in Human Research Committee has approved this study. I understand that if I have any complaints or concerns about this research I can contact:

   Executive Officer
   Ethics in Human Research Committee
   The Grange
   Charles Sturt University
   Bathurst NSW 2795
   Australia

   Phone: (02) 6338 4628
   Fax: (02) 6338 4194

Signed by: ____________________ Date: _______________

If you have agreed to participate, please indicate below date(s) and time(s) when you would like to be interviewed, and the best way to contact you (telephone, email, fax, daytime, etc.). Thank you in advance for your support:

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

PLEASE RETURN THIS PAGE:

1) By Fax to Andrew McKay, 250.371.5583, OR
2) By Canada Post, in the enclosed, stamped, pre-addressed envelope to Andrew McKay, 295 Morrisey Place, Kamloops, B.C. V2C 1M5
Information Sheet

Introduction
Andrew McKay is a student in the Doctor of Business Administration program at Charles Sturt University, Australia. His dissertation research project is entitled:

Factors Influencing Recruitment and Retention Decisions of Primary Care Physicians in Rural Practice in British Columbia, Canada: Building Grounded Theory Via Instrumental Case Studies

Purpose
The main research questions this project seeks to answer are:

3. What are the key factors that influence primary care physicians in British Columbia, Canada choose rural practice?

4. Of those, what influences some to subsequently choose to leave?

Procedures
Between 36 and 48 physicians will participate in the research
Appendix 2 Draft Interview Question Sheet Prior to Pre-Testing

Interview Guide—DBA
Subject: Dr. ___________________________ Date: ___________ Start Time: ___________
End Time: _______________________

Briefing
Good morning/afternoon/evening Dr. ___________. This is Andrew McKay (the DBA student from Charles Sturt University). Thank you for sending me your consent form.

Is this time still good for our (telephone) interview? As you know, I am a doctoral student at Charles Sturt University. The purpose of this interview to gather data that will help develop a better understanding of the process of practice location decision making. This interview will take about an hour, and will be taped for later transcription and analysis. Do you have any questions or concerns before we begin?

Interview
I'd like to start with some easy background and contextual questions.

Where did you grow up?
And where did you go to university?

I'd like to learn where you've practiced medicine. To start with, can you tell me where you trained and did your residency? Did you have any choice? How did you make that decision?

After graduation, I'd like you to tell me where you've practiced, and for how long in each place.

For each location, ask:
   a) Why did you decide to go there?
   b) You stayed there for XX months/years. What kept you there?
   c) What did you like and dislike about that experience?
   d) Why did you leave?

Why don't you practice in a more urban centre?

Some physicians are attracted to rural practice, others end up there because they dislike some aspect or other of urban practice. Where do you see yourself on this continuum?

Were you persuaded or counselled to consider rural practice in general?

How do your spouse/partner/family feel about you practising in ________________?
Do you have any reflections on why you chose rural practice, while many of your peers did not?

Do you have any advice or suggestions for local health officials and local governments hoping to attract a physician?

What steps do you think are needed to improve the placement and retention of physicians in remote or difficult settings?

You graduated from high school, took undergraduate studies, completed medical school and (an internship/residency OR specialist training). Do you have any thoughts on what, if anything, educators did along the way, or could do better, to increase the number of physicians choosing rural practice?

Do you have any final comments or observations you'd like to add?

Debriefing – Reiterate main points

Would you like to comment, correct or expand on this feedback?

I sincerely appreciate you volunteering to assist me in my research. As I build grounded theory, I'd appreciate the opportunity for your comments on the emerging results. Can I contact you again?

Thank you very much for your time today Dr. _________________. Good-bye.
Appendix 3  Final Interview Question Sheet

Interview Guide — DBA dissertation

Subject: Dr.  
Date:  
Start Time:  
End:  
Time:  
Location:  
Telephone:  

Briefing
Good morning/afternoon/evening Dr. ________________________. This is Andrew McKay (the DBA student from Charles Sturt University). Thank you for sending me your consent form. *discuss if missing*

Is this time still good for our interview? As you know, I am a doctoral student at Charles Sturt University. The purpose of this interview to gather data that will help develop a better understanding of the process of practice location decision making. This interview will take about an hour, and will be taped for later transcription and analysis. Do you have any questions or concerns about the process or the research before we begin?

Interview

1) I'd like to start with some easy background and contextual questions. Where did you grow up? *<probe as required for community size, socio-economics and demographics, as well as description of birth family and nuclear family>*

2) And where did you go to university? Can you describe that experience? *<probe as required for detailed descriptions of premedical and medical studies, as well as there personal impressions of the experience, when/why chose medicine.*

3) You graduated from high school, took undergraduate studies, completed medical school and (an internship/residency and/or specialist training). What, if anything, did educators do along the way, or could do better, to increase the number of physicians choosing rural practice?

4) I'd like to learn where you've practiced medicine.
   a) To start with, can you tell me where you trained and did your residency/internship?
   b) Did you have any choice?
   c) How did you make that decision?
   d) Do you believe that experience had any impact on your decision to try rural medicine?

5) After graduation, I'd like to talk about each location you've practiced. Where did you work first?
   a) Why did you decide to go there?
   b) How long did you stay there?
c) What kept you there?
d) What did you like and dislike about that experience? <probe for gaps between experience and expectations>
e) How did your spouse/partner/family feel about you practising in 

f) Why did you leave?

6) Why don't you practice in a more urban centre? <ask as required as a "push" question>

7) Some physicians are attracted to rural practice, others end up there because they dislike some aspect or other of urban practice. Where do you see yourself on this continuum?

8) Were you ever persuaded or counselled to consider rural practice?

9) Do you have any reflections on why you chose rural practice, while many of your peers did not?

10) Do you have any advice or suggestions for local health officials and local governments hoping to attract a physician?

11) What steps do you think are needed to improve the placement and retention of physicians in remote or difficult settings?

12) Do you have any final comments or observations you'd like to add?

Debriefing <Reiterate main points from notes>

Would you like to comment, correct or expand on this feedback?

I sincerely appreciate you volunteering to assist me in my research. As I build grounded theory, I'd appreciate the opportunity for your comments on the emerging results. Can I contact you again?

Thank you very much for your time today Dr. _________________. Good-bye
Appendix 4  List of Factors Potentially Influencing Family Practitioner Practice Location Decision Making

<table>
<thead>
<tr>
<th>Background Factors</th>
<th>Used in fragment classification?</th>
</tr>
</thead>
<tbody>
<tr>
<td>physicians' year graduated from medical school</td>
<td>previously cited yes</td>
</tr>
<tr>
<td>physicians' stated (first year medical preferences</td>
<td>previously cited yes</td>
</tr>
<tr>
<td>physicians' rural experience in training</td>
<td>previously cited yes</td>
</tr>
<tr>
<td>physician's public school (social and educational experience)</td>
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</tr>
<tr>
<td>physicians' primary motivator</td>
<td>NEW yes</td>
</tr>
<tr>
<td>physician's personality characteristics</td>
<td>previously cited yes</td>
</tr>
<tr>
<td>physician's medical school (social and educational experience)</td>
<td>previously cited yes</td>
</tr>
<tr>
<td>physician's location of youth (RICA/CMA)</td>
<td>previously cited yes</td>
</tr>
<tr>
<td>physician's location of birth (RICA/CMA)</td>
<td>previously cited yes</td>
</tr>
<tr>
<td>physician's internship or residency (RICA/CMA, social and educational experience)</td>
<td>previously cited yes</td>
</tr>
<tr>
<td>physician's health/physician's family health</td>
<td>NEW yes</td>
</tr>
<tr>
<td>physician's gender</td>
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</tr>
<tr>
<td>physician's ethnicity</td>
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</tr>
<tr>
<td>physician's college or undergraduate school (RICA/CMA, social and educational</td>
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</tr>
<tr>
<td>experience</td>
<td>previously cited yes</td>
</tr>
<tr>
<td>physician's choice of specialty</td>
<td>NEW yes</td>
</tr>
<tr>
<td>physician's birth family</td>
<td>previously cited yes</td>
</tr>
<tr>
<td>physician's age of first interest in medicine</td>
<td>previously cited yes</td>
</tr>
<tr>
<td>physician's age</td>
<td>previously cited yes</td>
</tr>
<tr>
<td>physician's skills learned in medical school</td>
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<table>
<thead>
<tr>
<th>Community Factors</th>
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<td>topography</td>
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</tr>
<tr>
<td>size of community</td>
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</tr>
<tr>
<td>sense of community</td>
<td>previously cited no</td>
</tr>
<tr>
<td>schools</td>
<td>previously cited yes</td>
</tr>
<tr>
<td>rural lifestyle</td>
<td>previously cited yes</td>
</tr>
<tr>
<td>religion</td>
<td>previously cited no</td>
</tr>
<tr>
<td>recreational opportunities</td>
<td>previously cited yes</td>
</tr>
<tr>
<td>proximity to friends and family</td>
<td>previously cited yes</td>
</tr>
<tr>
<td>orientation to community when new</td>
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</tr>
<tr>
<td>geographic location</td>
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</tr>
<tr>
<td>ease of making desirable friends/social life</td>
<td>previously cited yes</td>
</tr>
<tr>
<td>distance to larger communities</td>
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<tr>
<td>cultural opportunities</td>
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<tr>
<td>cost of living</td>
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<tr>
<td>community involvement (both opportunity for and community expectations of)</td>
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</tr>
<tr>
<td>climate/weather</td>
<td>previously cited yes</td>
</tr>
<tr>
<td>being needed (can be good, can be a burden)</td>
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<table>
<thead>
<tr>
<th>Practice Factors</th>
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<tr>
<td>variety of practice</td>
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<tr>
<td>spatial competition models</td>
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<td>quantity of work</td>
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<tr>
<td>quality of medical practice</td>
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<tr>
<td>quality of doctor-patient relationships</td>
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</tr>
<tr>
<td>quality of doctor-doctor relationships</td>
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</tr>
<tr>
<td>professional isolation (or lack thereof)</td>
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<tr>
<td>personal time (both quantity and quality)</td>
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<tr>
<td>on-call time</td>
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<tr>
<td>number of years</td>
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<tr>
<td>non-medical responsibilities (practice management, admin, paperwork, etc.)</td>
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<tr>
<td>money</td>
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<td>mentors</td>
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<td>medical facilities</td>
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<td>locums</td>
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<td>life stage</td>
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<td>impact of counselling</td>
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<td>health administrators</td>
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<tr>
<td>government policy</td>
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<td>gaps between expectations and experience</td>
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<td>CME (continuing medical education)</td>
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<td>clinical autonomy</td>
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<td>career path</td>
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<tr>
<td>ambulance service</td>
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<tr>
<td>access to specialists (telephone, Internet, library and permanent in person)</td>
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</tr>
<tr>
<td>access to medical technology/equipment (both quantity and up to date)</td>
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<tr>
<td>access to medical health professionals (eg. nurses, therapists, etc.)</td>
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<table>
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<tr>
<th>Familial Factors</th>
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<td>spousal/significant other employment opportunities</td>
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</tr>
<tr>
<td>spousal/significant other and children's preferences</td>
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</tr>
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<td>proximity to family</td>
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<td>marital status</td>
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<tr>
<td>ease of finding a suitable mate</td>
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</tr>
<tr>
<td>children at home</td>
<td>previously cited yes</td>
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</tbody>
</table>
Appendix 5  Key and Illustrative Quotations

(1) “dad was very wealthy, living in a gated community with high walls”
   “my mom had to work two jobs to make ends meet”,

(2) “did lots of sports in high school, I was president of student Red Cross and
   vice president of the student union”
   “High school was socially dreadful, I was a nerd”
   “Socially high school was not so good - a mixed memory”

(3) “Emphasis on academics gets the wrong type of person for rural”
   “Big city kids can't face prospect of being in a community where there isn't
   access to stimulation.”

(4) “In medical school you were considered a failure if you went into family
   practice”
   “Med school put me off. I was taught by specialists who were constantly
   critical of small town doctors”

(5) “I realized that my training was inadequate for the job. It was very
   unnerving”

(6) “[named medical school] was a clinically-oriented school. It meant
   long hours but it was excellent preparation”

(7) “In third year I was sent out to general practice for two weeks - a very
   positive experience”
   “Get medical students out to rural areas early in their education”
   “It's not as scary as people think it is”

(8) “I did a rural rotation in fourth year. I had an excellent mentor in an
   exciting practice “
   “I had an eye opening experience and admired physicians in [rural
   location]”
"I was single with a baby, heating with a wood stove and had to [snow] shovel a long driveway all by myself. It was too much."
"Winters were too tough so my wife and I decided we had to go somewhere else."

"I left [location] because of no social life, there was no one I really could relate to."
"Social life is difficult in a small town, because as the doctor you're so conspicuous."
"There was only a small group of potential social interactions, church, sports, but no dating partner."

"Left because of no good schools"
"My two youngest went to university together and found they were at a disadvantage [vis-a-vis their urban raised peers]."

"Everyone worries about good schools, but I've come 180 degrees on that. I realize now that making great kids has not a lot to do with great schools. My kids went to a down and out elementary school. Now they know what it's like to grow up in a slum and take care of people."
"My son got a $36,000 scholarship, and over $100,000 in scholarships have come here in the last few years. This whole 'lousy schools' issue is way over-blown."

"I have an excellent nurse, but we need more"
"Important to have good staff, good facilities and good colleagues."
"It was great—we had everything we needed in a small hospital—physio [therapist], OT [occupational therapist], social worker, and so on."
"Without blood, some patients that would have lived in the past will now die."

"The Health Authority could help by being proactive rather than waiting for crises."
"Withdrawal of support services has driven two colleagues out of town."
“I used to work just as hard for less money. Then a few years ago the government panicked and threw more money at us rural docs. Now I make a lot more money, but I don't work any harder.”

“Those that go for financial incentives won't stay [author’s note – for respondents within this study, that opinion is true]”

“The disequilibrium encourages you to see a large volume of easy walk-in patients with no responsibility”

“You're punished for dealing with elderly patients that need monitoring”

“You can get trapped in a rural practice. If you leave, even for a weekend, you feel like you're leaving your colleagues in the lurch. Who'll take call?”

“Can’t overemphasize the impact of on-call on family life”

“We stayed on [rural community] 25 years because level of practice was excellent. We had great peers”

“Colleagues one reason I’m choosing to leave. It’s strained because in fee for service, you get paid for quantity not quality”

“I'm attracted to rural because of it's comprehensiveness”

“The stress of such a diverse practice was exciting, but it burned me out”

“I went to [community] next. It was ruralish and my sister was there”

“I did emerg in [community] for two years because my girlfriend got a job there”

“I would still be in [community] if I could have found a mate. I loved the work”

“I did northern locums to make money to travel”

“I liked that it was a salary, not fee for service”

“For example, in [location} you go on a call rotation with 17 other docs - can't know all the docs and patients”
“Medicine wise, large towns are too restrictive and not collegial”

(23) “Went to [location] for 1 year - a disaster - a toxic place. Terrible medicine”
“What drove me out of [location] was 1 in 3 call”
“Left [community] because I was burned out of small town medicine with no back-up”

(24) “I was the only female in [community], and I was doing all the obs, so rota was just too difficult.”
“I left because there was no swimming pool in [community], and I was the only female doctor in town. Men don’t care what gender their doctor is, but just about every woman in town wanted to be my patient.”

(25) “A community that welcomes a doctor and his family is a tremendous thing”
“People in some places put you on a pedestal and you feel like you’re living in a goldfish bowl. I hated that, frankly. Other places I’ve been, like [community name] I can play hockey, let my hair down, and no one really cares.”
“Sure it’s nice to be respected as a doctor, but for me, part of that is treating me with the same common sense as you would anyone else. Call me 24-7 if you’re hurt or really need a doctor, but I really hate it if someone asks me about a sore back and wants me to take a look when I’m out to dinner in a restaurant with friends, or calls me at 2 am with a toothache. I guess it’s not so much the respect that differs from place to place, it’s the common sense. After a while, that stuff starts to matter”

(26) “the [name] Health Authority could help by being proactive rather than waiting for crises”
“Bureaucrats having more and more say is not a good thing.”