Finding a Home:
A Developmental Model of Rural Physician Recruitment and Retention

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Abstract
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Shortages of health care professionals have plagued rural areas for centuries, and programs to alleviate them have met with limited success. These programs generally focus on factors that affect recruitment and retention, with the supposition that recruitment is the major factor driving shortages.

The strongest known influence on rural physician recruitment is a “rural upbringing,” but little is known about how this childhood experience promotes a return to rural areas, or how non-rural physicians choose rural practice without such an upbringing. Through in-depth, semi-structured interviews with both rural- and urban-raised physicians, this study investigates practice location choice over the life course, describing a progression of events and experiences important to rural practice choice and retention in both groups.

Study results indicate that rural exposure via education, recreation, or upbringing facilitates future rural practice through four major pathways. Desires for familiarity, sense of place, community involvement, and self-actualization were the major reasons for
small-town residence choice. Each these motivations was the start of a "pathway" that proceeded through distinct stages. Previous experience with community and sense of place, whether urban or rural, encouraged initial rural practice choice. In addition, prior resilience under adverse circumstances paved the way to continued rural success. Physicians' decisions to stay or leave exhibited a cost-benefit pattern once their basic needs were met.

These results support a focus on recruitment of both rural-raised and community-oriented applicants, and suggest that place-based education and targeted mentorship are essential to support the integration of new rural physicians by supporting resilience, community contacts, and sense of place. Further research should explore the differences between the integration of rural- and urban-raised physicians and how specific support structures might ease their assimilation.
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I. Literature Review: Rural Physician Shortages

Geographic maldistribution of physicians and other health professionals in the United States has been documented for nearly a century. Reports as early as the 1920s lamented growing rural doctor shortages, and these deficits have endured despite considerable academic, policy, and grassroots attention to the problem (Cutchin 1997a; Rabinowitz 1999a; Owen 2005). Today, twenty percent of the United States population lives in rural areas, but only 9% of physicians practice there (Ricketts 1999; Hart 2002). Sixty-seven percent of rural areas are considered Health Professions Shortage Areas (HPSAs), and the most remote areas, presumably those most in need of physicians, continue to be the most underserved, despite overall increases in physician production (COGME 1998; Hart 2002) (Figure 1).

![Figure 1. Active Physicians Per 100,000 Population by Year and Location, United States, 1940-1995.](source: AMA from BHP’s ARF data, 1997)

1 These statistics are based on the Federal Office of Management and Budget definition of "rural," which distinguishes rural and urban counties based on the presence or absence of a metropolitan area of more than 50,000 people within county boundaries. All people residing within a metropolitan county are considered metro, whether or not they actually reside in a community that would conventionally be identified as rural. While widely used, this definition has been extensively criticized, particularly in the western U.S. where counties often cover area the size of several New England states. These statistics nevertheless provide needed information about the general status of rural populations, while more fine grained analyses are better able to distinguish between various gradations of population density.

2 HPSAs are defined as areas with less than one primary care provider per 3,500 residents, and are eligible for federal and state programs that aim to increase physician supply.
Unfortunately, this decreasing availability of physicians is projected to continue, along with its consequences for the health of millions of people (Ricketts 1999; Hart 2002). Rural physicians continue to be highly mobile, specialization in the medical workforce is increasing, fewer specialists are choosing to practice in rural areas, and fewer than 4% of recent U.S. medical school graduates have plans to practice in a small town (Rabinowitz 2005; Ricketts 2006; Zastrow 2006). Therefore, the question of how to recruit, integrate, and retain physicians and other health professionals in rural areas remains a focus of rural health research (Geyman 2000; Hart 2002; Hegney 2002; de Vries 2003; American Association of Medical Colleges 2004; Dauphinee 2006; Ricketts 2006).

Various explanations for the rural physician shortage have been offered, ranging from the insidious effects of health policies to physician preference for careers with controllable schedules. Individual-level explanations focus on problems with either recruitment or retention at local, regional, or national levels (Pathman 1994; Rabinowitz 1999a; Pathman, Konrad et al. 2004). Macro-scale influences include economic and political developments such as globalization, decreasing small-scale agricultural production, and a national health policy that prioritizes urban and suburban concerns, which have all served to restructure rural economies and fuel rural-urban disparities.

Because individual-level factors are often seen as more easily modifiable, they form the focus of most rural workforce research, and will also be the focus of this analysis. Of these, recruitment has been identified as the limiting factor in most shortages and has therefore been the focus of most studies. Nevertheless, retention strategies also warrant
attention because particularly strong retention can offset poor recruitment and the issues affecting retention may be more modifiable. Furthermore, physician turnover at any level disrupts the integrity of fragile rural health organizations (Pathman, Konrad et al. 2004). This section will therefore examine the factors that influence recruitment and retention, how they differ, and the potential contributions of a new focus of rural health research, physician integration.

Recruitment

With respect to recruitment, retrospective statistical analyses consistently show the importance of five individual-level factors: (1) a rural upbringing, (2) rural residency experience, (3) a rural focused medical school track, (4) an inclination toward community service and (5) plans to practice family medicine upon entry into medical school. Qualitative and frequency analyses show a wider variety of factors, including partner preference, compatibility with area “lifestyle parameters,” and scheduling flexibility. These studies are summarized in Table 1, which orders factors based on the number of studies in which they were found to play a role in recruitment and the methodological strength of these studies (i.e., study design, number of participants, statistical power). Note that some studies included both multi/univariate analyses as well as qualitative or other survey methods, and were thus able to show the importance of

3 Multivariate analyses were defined as studies that used multiple logistic regression to identify independent predictive factors, univariate analyses showed a significant statistical correlation between a single factor and a predicted outcome but did not control for confounding, and qualitative/frequency analyses tabulated factors or themes that respondents believed were associated with recruitment, but did not use statistical testing to verify their effects on this outcome. While not all qualitative studies focus on self-reported themes, those summarized here generally identified concepts and beliefs that were directly expressed on multiple occasions during interviews.
a particular factor through two or more approaches. In addition, some factors show contradictory effects in different studies; these factors are noted by an asterisk and citation for the dissenting study.

Of all of the factors reported, "rural upbringing," defined variously as spending all of one’s childhood in a rural location, more than ten years in a rural location, or calling a rural place one’s childhood home, had by far the most influence on recruitment and has been identified as such in several other methodologically strong literature reviews (Geyman 2000; Brooks 2002; Laven 2003). In addition, "rural upbringing" may be a contributing factor in some studies that show the importance of rural-focused medical education programs: students with rural connections tend to enroll in these programs at higher rates than their non-rural peers, whether or not rural preference is given in program admissions (Rabinowitz 1999b; Brown 2005).

Despite the consistent identification of "rural upbringing" as a key factor in recruitment, the events and factors that comprise this life experience and promote later affinity for rural practice have not been identified. The process by which this "affinity-building" occurs is also unknown. Finally, 74% of rural physicians in the United States do not hail from rural backgrounds; current explanations that draw a direct link between rural upbringing and practice do not apply to these doctors, and a better understanding of intermediate factors stands to suggest interventions that have not been previously considered (Pathman 1994; Bowman 2005).
Table 1: Factors Affecting Recruitment in Previous Studies: “I ended up in rural practice because…”

<table>
<thead>
<tr>
<th>Factor</th>
<th>Independent Predictor (Multivariate Analysis)</th>
<th>Reference</th>
<th>Statistically Significant Correlate (Univariate Analysis)</th>
<th>Reference</th>
<th>Self-Reported Factor (Qualitative or Frequency Analysis)</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Rural upbringing/desire to return to town of similar size</td>
<td>X</td>
<td>(Fryer 1997; Rabinowitz 1999a; Rabinowitz 2001; Hughes 2005; Daniels 2007)</td>
<td>X</td>
<td>(de Vries 2003; Bowman 2007)</td>
<td>X</td>
<td>(Leonardson 1985; Holmes 1986; Costa 1996; Rabinowitz 1999a; Hegney 2002; Tolhurst 2006; Daniels 2007)</td>
</tr>
<tr>
<td>4. Desire to serve community health needs/service orientation</td>
<td>X</td>
<td>(Madison 1994; Daniels 2007)</td>
<td></td>
<td>X</td>
<td>(Tolhurst 2006)</td>
<td></td>
</tr>
<tr>
<td>5. Entering medical school with plans to become a family physician</td>
<td>X</td>
<td>(Rabinowitz 1999a; Rabinowitz 2001)</td>
<td></td>
<td>X</td>
<td>(Tolhurst 2006)</td>
<td></td>
</tr>
<tr>
<td>6. National Health Service Corps Scholarship or other financial assistance</td>
<td>X</td>
<td>(Rabinowitz 2001)</td>
<td></td>
<td>X</td>
<td>(Rabinowitz 2001; Tolhurst 2006)</td>
<td></td>
</tr>
<tr>
<td>7. Osteopathic (rather than allopathic) training</td>
<td>X</td>
<td></td>
<td>X</td>
<td>(COGME 1998)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Spouse’s wishes and opportunities</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td>(Scammon 1994; Costa 1996; Mitka 2001; Carlier 2005; Rosenblatt 2006; Tolhurst 2006)</td>
<td></td>
</tr>
<tr>
<td>9. Spouse grew up in rural area</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td>(Holmes 1986; Costa 1996; Felix 2003; Rosenblatt 2006)</td>
<td></td>
</tr>
<tr>
<td>10. Family physician</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td>(Holmes 1986; Costa 1996; Felix 2003; Rosenblatt 2006)</td>
<td></td>
</tr>
<tr>
<td>11. Family physician</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td>(Holmes 1986; Costa 1996; Felix 2003; Rosenblatt 2006)</td>
<td></td>
</tr>
<tr>
<td>12. Family physician</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td>(Holmes 1986; Costa 1996; Felix 2003; Rosenblatt 2006)</td>
<td></td>
</tr>
<tr>
<td>13. Family physician</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td>(Holmes 1986; Costa 1996; Felix 2003; Rosenblatt 2006)</td>
<td></td>
</tr>
</tbody>
</table>
Table 1 continued: Factors Affecting Recruitment in Previous Studies

<table>
<thead>
<tr>
<th>Factor</th>
<th>Independent Predictor</th>
<th>Reference</th>
<th>Statistical Correlate</th>
<th>Reference</th>
<th>Self-Reported Factor</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>10. Area lifestyle issues (school quality, community compatibility, cultural opportunities, etc.)</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(Scammon 1994; Costa 1996; Tolhurst 2006; Daniels 2007)</td>
</tr>
<tr>
<td>11. Low socioeconomic status (SES)</td>
<td>X</td>
<td>(Madison 1994)</td>
<td>X</td>
<td>(Bowman 2007)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Male sex*(Rabinowitz 1999a)</td>
<td>X</td>
<td>(Fryer 1997; Rabinowitz 2001)</td>
<td>X</td>
<td>(Leonardson 1985)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. Rural physician role model/contact/mentor</td>
<td></td>
<td>X</td>
<td>(Leonardson 1985)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. Continuing education availability</td>
<td></td>
<td></td>
<td>(Leonardson 1985)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17. Flexible scheduling</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td>(Tolhurst 2006; Bowman 2007; Daniels 2007)</td>
</tr>
<tr>
<td>18. Medical school with institutional commitment to rural medicine</td>
<td>X</td>
<td>(Wheat 2005)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19. Honest and forthcoming recruiter</td>
<td>X</td>
<td></td>
<td></td>
<td>(Schwartz 1989; Mitka 2001)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20. Liked facility and medical partners</td>
<td>X</td>
<td></td>
<td></td>
<td>(Mitka 2001; Tolhurst 2006)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21. Adequate pay</td>
<td>X</td>
<td></td>
<td></td>
<td>(Leonardson 1985; Mitka 2001)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22. Rural experience outside of medical education (community service, travel, etc.)</td>
<td></td>
<td></td>
<td></td>
<td>(Tolhurst 2006)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Retention

Despite media caricatures of small communities with physician retention problems - *Northern Exposure* or Australia’s *The Flying Doctor*, for example - three of four relevant studies show that retention is actually comparable in rural and urban settings, and is also equivalent between more and less underserved rural areas (Tilson 1973; Horner, Samsa et al. 1993; Kerstein, Pauly et al. 1994; Philo 2003; Pathman, Konrad et al. 2004). However, keeping physicians in rural areas remains crucial because they are so difficult to replace, and efforts are now being made to retain doctors in rural areas *even longer* than average to help offset this poor recruitment.

A focus on retention has also been advocated in light of studies that show significant differences between the factors that influence recruitment and retention (Rabinowitz 1999a; Brooks 2002; Coffman 2002; Mayo and Mathews 2006). Based on these studies, it appears that practice-related and lifestyle factors such as compatibility with the medical community or parenting a minor-aged child play much more of a role in retention than “pre-determined” factors such as upbringing, training, and community service orientation. In other words, physicians appear to be generally willing to continue to practice in initially “undesirable” or unfamiliar communities once they become settled; those who experience intolerable and unmodifiable circumstances move away at rates similar to urban areas. The more flexible factors that *do* matter in terms of retention include *workload, financial sustainability of practice, compatibility with the local medical community* and *sociocultural integration* (Table 2).
Despite its importance in maintaining the rural physician supply, retention has unfortunately been much less studied than recruitment, as evidenced by the predominance of simple frequency analyses and exploratory qualitative studies, and by the confusing mix of factors implicated and refuted in these studies. As a result, the factors in Table 2 are loosely arranged in theoretically similar groupings, but no attempt was made to rank them. The conflicting nature of some of the factors indicates a need for a more process-based approach that describes the relationships between these factors. For example, several studies of physicians and other health professionals found that "sociocultural integration," community satisfaction, and overall job satisfaction were by far the most important factors influencing a decision to stay or leave, while specific practice characteristics and income were less important (Teplin 1994; Pan 1995). However, practice characteristics and income clearly inform overall job satisfaction, so the question of how and when they take effect is essential for the implementation of effective health policy measures.

Cutchin has begun to address some of these processes in his studies on place integration, but the applicability of his model for recruiters, hospital administrators, and others remains unclear, as it tends to focus on large theoretical concepts such as "freedom" and "identity" that are difficult to link to specific programs or interventions (Cutchin 1994; Cutchin 1997a; Cutchin 1997b; Cutchin 2003). Further work stands to provide new retention strategies by teasing apart these concepts and identifying key points at which specific interventions could be effective.
Table 2: Community-Related Factors Affecting Retention in Previous Studies

<table>
<thead>
<tr>
<th>Community Factor</th>
<th>Independent Predictor (Multivariate Analysis)</th>
<th>Reference</th>
<th>Statistically Significant Correlate (Univariate Analysis)</th>
<th>Reference</th>
<th>Self-Reported Factor (Qualitative or Frequency Analysis)</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sociocultural integration/Participation in community activities outside of work</td>
<td>X</td>
<td></td>
<td>X</td>
<td>(Cutchin 1994; Scammon 1994; Pan 1995; Cutchin 1997a; Pathman, Steiner et al. 1998; Hegney 2002; Cartier 2005; Han 2006)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Close and satisfying relationships with patients</td>
<td>X</td>
<td></td>
<td>X</td>
<td>(Scammon 1994; Cutchin 1997a)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Lifestyle issues&quot;/ Compatibility</td>
<td>X</td>
<td></td>
<td>X</td>
<td>(Rabinowitz 2001; Hegney 2002; Han 2006)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quality of local services and attractions</td>
<td>X</td>
<td>(Humphreys 2002)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feeling of preparedness for living in a rural community</td>
<td>X</td>
<td>(Pathman 1993)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Living close to work location</td>
<td>X</td>
<td>(Pathman, Steiner et al. 1998)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parenting a minor aged child</td>
<td>X</td>
<td>(Pathman, Kuhrad et al. 2004)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quality of local schools/housing</td>
<td></td>
<td></td>
<td>X</td>
<td>(Cutchin 1994)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4 As stated previously, multivariate analyses were defined as studies that used multiple logistic regression to identify independent predictive factors, univariate analyses showed a significant statistical correlation between a single factor and a predicted outcome but did not control for confounding, and qualitative/frequency analyses tabulated factors or themes that respondents believed were associated with recruitment, but did not use statistical testing to verify their effects on this outcome.
<table>
<thead>
<tr>
<th>Practice-Related Factor</th>
<th>Independent Predictor</th>
<th>Reference</th>
<th>Statistical Correlate</th>
<th>Reference</th>
<th>Self-Reported Factor</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personality and practice compatibility</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>(Cutchin 1994; Cutchin 1997a; Rabinowitz 1999a; Hart 2002; Hegney 2002; Han 2006)</td>
</tr>
<tr>
<td>Job satisfaction</td>
<td></td>
<td></td>
<td>X</td>
<td>(?ari 1995)</td>
<td>X</td>
<td>(Cutchin 1994; Cutchin 1997a; Rabinowitz 1999a)</td>
</tr>
<tr>
<td>Reasonable workload &amp; call schedule</td>
<td>X</td>
<td>(Humphreys 2002; Pathman, Konrad et al., 2004)</td>
<td>X</td>
<td>(?ari 1995)</td>
<td>X</td>
<td>(Pan 1995; Rabinowitz 1999a)</td>
</tr>
<tr>
<td>Financial sustainability of practice (reasonable overhead, adequate reimbursement, sufficient patient volume, etc.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>(Brown 2005)</td>
</tr>
<tr>
<td>Opportunity to teach medical students/residents</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>(Cutchin 1994)</td>
</tr>
<tr>
<td>Owning one's own practice</td>
<td>X</td>
<td>(Pathman, Konrad et al., 2004)</td>
<td></td>
<td></td>
<td>X</td>
<td>(Cutchin 1997a)</td>
</tr>
<tr>
<td>Availability of specialist consultation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>(Cutchin 1997a)</td>
</tr>
<tr>
<td>Confidence in medical abilities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>(Cutchin 1997a)</td>
</tr>
<tr>
<td>Challenging and diverse medical work</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>(Cutchin 1997a)</td>
</tr>
<tr>
<td>Personal/Educational Factor</td>
<td>Independent Predictor</td>
<td>Reference</td>
<td>Statistical Correlate</td>
<td>Reference</td>
<td>Self-Reported Factor</td>
<td>Reference</td>
</tr>
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<td>-----------------------------</td>
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</tr>
<tr>
<td>Ability to deal with lack of anonymity and privacy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>(Cutchin 1997a)</td>
</tr>
<tr>
<td>Agency, ability to develop health care delivery system</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>(Cutchin 1997a)</td>
</tr>
<tr>
<td>Developed sense of self and place</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>(Cutchin 1997a)</td>
</tr>
<tr>
<td>Rural residency program</td>
<td>X</td>
<td>(Pathman 1999)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural upbringing <em>(Pathman, Konrad et al. 2004)</em></td>
<td></td>
<td></td>
<td>X</td>
<td>(Rabinowitz 2001)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working in a state where one grew up</td>
<td>X</td>
<td>(Pathman, Konrad et al. 2004)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sense of connectedness to outside communities and resources</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>(Cutchin 1994)</td>
</tr>
<tr>
<td>Being pragmatic about the advantages of rural life and practice</td>
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<td>X</td>
<td>(Han 2006)</td>
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<tr>
<td>Extremely supportive spouse</td>
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<td></td>
<td>X</td>
<td>(Cutchin 1997b; Han 2006)</td>
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<tr>
<td>Employment opportunities for spouse</td>
<td></td>
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<td>X</td>
<td>(Federal Office of Rural Health Policy 1995; Rabinowitz 1999a; Mitka 2001; Han 2006)</td>
</tr>
<tr>
<td>Participation in a rural-focused medical school track</td>
<td>X</td>
<td>(Rabinowitz 2001; Daniels 2007)</td>
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<td>Attending a rural undergraduate institution</td>
<td>X</td>
<td>(Rabinowitz 2001)</td>
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<tr>
<td>Rural medical school rotation <em>(Pathman 1999)</em></td>
<td></td>
<td></td>
<td>X</td>
<td>(Rabinowitz 2001)</td>
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<tr>
<td>Osteopathic (rather than allopathic) training</td>
<td></td>
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<td>X</td>
<td>(Council on Graduate Medical Education 1998)</td>
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Integration

The middle ground between recruitment and retention – *integration*, the process by which physicians and others incorporate themselves into their places, communities, and practices – remains even less characterized than either recruitment or retention. Existing studies emphasize the variability of integration and its dependence on environmental and personal factors, but differ significantly in their approaches and specific results. For example, using a grounded theory approach, Cutchin (1997) paints a picture of integration as an obligatory and ongoing process in which physicians confront the problem of maintaining their *security, freedom, and identity* in a particular location. While reaching satisfactory solutions to these issues, physicians interact with their “places” in a way that effectively integrates them into these communities/spaces, barring intolerable conditions that force them to leave (Cutchin 1997a; Cutchin 1997b).

This study is one of the first to describe the forces that drive integration, rather than individual factors that are “associated” with it. It is also unique in describing how the process interacts with time and place, which many studies tend to ignore or downplay in their focus on physicians’ personal characteristics. Unfortunately, however, the applicability of this model is limited by a lack of theoretical understanding of the processes and strategies physicians use to confront challenges. Physicians are essentially described as passive actors who either arrive at a state of contented integration or leave town, making the design of interventions difficult.
Meanwhile, in another qualitative study of the complexities of physicians and place integration, Han, et al. (2006) examined the assimilation of international medical graduates (IMGs) in Australia and developed a typology. The extent of integration ranged from “the integrated” – physicians who appreciate rural life and practice, are able to live as a minority, and are pragmatic about the limits of rural communities – to “satellite operators,” those with families in the city who commute to a rural practice until allowed to move to an urban setting (Han 2006). The integration process was a subtext here, since the focus of this study was to develop a useful typology, but it emphasized the importance of community engagement in integration. Another study surveyed rural IMGs in Australia after an orientation program and showed that recent arrivals would have appreciated “more information on the community and its facilities” (55%), “information on job for spouse” (45%), “family orientation to the community” (30%), “developing local contacts before arrival,” (25%), and “support from another medical family,” (25%) (Carlier 2005). In other words, physicians retrospectively identified an informational orientation and solid community contacts as two essential pieces to effective integration.

Finally, a program to increase retention in the Mississippi River delta found through factor analysis that “nurturing” of physicians by recruiters, other physicians, and community members significantly eased the transition to rural practice and eventually resulted in higher retention rates (Felix 2003). This type of mentorship has been effective in numerous other settings in which people are transitioning to new social, occupational, and physical environments (Wilson 2004; Leners, Wilson et al. 2006; Colalillo 2007)
All of these studies suggest that integration is a varied and modifiable experience that has important effects on retention, but little work has been done to describe it in "practical" terms, such as psychological models that identify key features that might be addressed by recruiters, community groups, or health policy. This is surprising given the depth of work on place integration in the fields of immigrant and refugee health, place-based education, environmental psychology, geography, philosophy, and anthropology (Tuan 1977; Seamon 1980; Aronowitz 1984; Pred 1984; Giuliani and Feldman 1993; Hummon 1993; Fullilove 1996; Derr 2002; Stedman 2002; Stokowski 2002; Cutchin 2003; West 2003; Stedman 2006). Each of these fields offers data, models, and methodological approaches that paint a nuanced picture of the ways in which people come to know and become a part of new places, and offer great potential for a more developmentally-minded understanding of integration in health policy, recruitment, and retention efforts.

Mitigation Efforts

Despite a lack of a clear theoretical understanding of recruitment, retention, and integration, extensive efforts have been made to mitigate rural health physician shortages. These interventions range from health professions exposure programs for rural children to loan repayment programs for recent residency graduates (Knopke 1986; Rabinowitz 1999b; Porterfield, Konrad et al. 2003; Urbina 2003). This continuum of programs has often been

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5 For the remainder of this paper, "proceed-based" and "developmental/developmentally-minded" will be used interchangeably, despite their differing connotations in the psychological literature. My intention is to emphasize that sense of place, community participation, and self-actualization operate over the entire life course, not just during childhood and adolescence.
characterized as a pipeline where a fixed number of potential candidates enters on one end and passes through a number of stages - college, medical school, and residency - on their way to rural medical practice. Attrition is conceptualized as "leakage" from the pipeline, and the finished product is a practicing rural physician. Various interventions can be made along the pipeline to prevent leakage (Geyman 2000).

The pipeline perspective is important because it allows for comparison of various interventions and prioritization of these strategies. Unfortunately, however, policy does not appear to be following research; most mitigation efforts to date have focused on medical and graduate medical training and loan repayment programs, despite equivocal findings on their effectiveness. While medical and graduate programs have been shown to produce important "crops" of rural physicians (Rabinowitz 1999b), multivariate analyses have shown that the selectivity of these programs for rural applicants rather than the programs themselves may be the most important factor in their success, and that the only independent predictors of sustained rural practice are rural upbringing and plans for family medicine upon medical school enrollment (Xu 1997; Rabinowitz 1999a; Geyman 2000; Dunbabin 2003; Urbina 2003; Bowman 2005; Bowman 2007). Why these programs are not independently effective is not clear, but some clues are found in studies in Japan and Norway that show that extensive rural training opportunities may provide modest results; it is possible that most programs are simply not long enough to allow for sufficient integration in rural communities (Tollan 1993; Inoue 1997).
Meanwhile, retention for participants in loan repayment programs is significantly shorter than retention for non-loan physicians, and is only partially explained by fixed physician, practice, or community variables (Pathman 1992; Porterfield, Konrad et al. 2003); loan repayment programs may actually attract some contingent of physicians who never intend to stay. Instead, it appears that it might be more cost-effective to attract and prepare rural high school students to enter the health professions, though this has not been a priority in the past (Kamien 1990). In addition, programs to ease the transition of physicians into rural practice may potentially prevent significant attrition "late in the game" (Carlier 2005). Continued research into and assessment of these various strategies is essential to the development of a coordinated effort to alleviate shortages of rural health professionals.

A New Focus of Recruitment and Retention Research

In the preceding discussion, I have highlighted four major findings of research on physician shortages in the past few decades, namely that (1) poor recruitment is the major cause of physician shortages, even though good retention can help alleviate the effects of poor recruitment; (2) by far the most important predictor of rural recruitment is a "rural upbringing"; (3) little is known about how a rural upbringing eventually results in a tendency to return to rural practice settings; and (4) even less is understood about the effects of a rural upbringing on retention.
Given these findings, it seems imperative to develop a *process-based* understanding of how childhood exposure to rural environments affects eventual practice location, and to understand what role, if any, a rural upbringing has on retention. Models of this sort have been essential to informed programmatic and health policy interventions in the past and allow these interventions to be made at various points along a progression (Tuckman 1965; Prochaska 1992; Barone 2004). For example, Prochaska and DiClemente’s (1992) model of the “Stages of Change” has been applied to situations of behavior modification ranging from addiction counseling to corporate overhauls. Moving from “pre-contemplation” to “action,” this model has allowed individuals and organizations to plot their progress along a continuum and design strategies to facilitate movement toward a desired goal. In the case of physician shortages, such a model could allow progress toward the goal of an improved physician supply.

The challenge of describing the retention process is that it draws from a variety of disciplines with well-developed and sometimes conflicting literatures, including rural identity politics, philosophical understandings of “place” and place attachment, psychology literature on self-actualization, and sociology literatures on adversity and social capital. Also, in addition to speaking to these literatures, this analysis must also allow physicians to speak for themselves. I will therefore begin with a brief theoretical background, and then build on that foundation with the stories and opinions of practicing rural physicians.
II. Informing the Initial Model: Theoretical Underpinnings

Rurality

When policy analysts talk about the importance of a “rural upbringing,” they are pointing to a very heterogeneous entity. Rurality is exceptionally variable across culture, space, and time, and is often defined as “that which is not urban,” making any “positive” definition difficult (Hart 2002; Christman 2004; Woods 2005). However, as Raymond Williams (1973) reminds us in his literary and cultural analysis of rural places in *The Country and the City*, rurality is a cultural idea that has been remarkably persistent through time, and continues to manifest in country music, geographic polarization in post-Soviet eastern Europe, and cultural hierarchies in Trinidad, among many other examples (Bell 1992; Halfacree 1994; Beggs 1996; Ching 1997; Kahn 1997; Lockhart 1999; Vanderbeck 2003). Ching and Creed (1997) go so far as to declare that rurality is a fourth axis of identity that has been sidelined but not erased by modernity’s obsessive mobility and quest for a globalized marketplace. In other words, where you come from is an essential part of who you are, and rural people in particular construct identities around this fact (Proshansky 1983; Fried 2000). While its precise meanings are debatable, to call someone a “country bumpkin” has far-reaching implications.

Geographers generally define rural as an area of low population and material resource density compared to the urban (Christman 2004), while psychologists and educators describe rural landscapes as places where people experience greater interaction with land and reliance on natural resources (Lockhart 1999; Woods 2005; Howley 2006). Put more
simply, compared to city dwellers, rural people live in smaller communities, must travel a greater distance to access a full range of goods and services, and are more likely to have some sort of contact with nature, whether through hunting, farming, photography, firefighting, gardening, or other activities.

The relative scarcity of material and social resources, coupled with the unpredictability inherent in natural cycles, creates rural-specific challenges that are difficult to overcome, even in an age of ever-increasing technological interconnectivity (Zollo, Kienzle et al. 1999; Alonzo 2000; Elder 2000; Biederman, Faraone et al. 2002). In addition, many rural residents face a constant tension between remaining “in place” and choosing to migrate, as well as the choice or obligation to relocate to an urban context for work, education, healthcare, and other reasons. This represents a source of considerable stress, anxiety, role confusion, and at times grief and mental illness (Fullilove 1996; Howley 1996; Baine 2000; Matthews 2000; Shields 2004; Bhugra 2005; Corbett 2005; Johnson 2005). A theoretical understanding of a rural upbringing must therefore take community, interrelationship with place, and adversity into account (Figure 2).

Rurality and Resilience

Much has been written about the causes and effects of adversity, but it is clear that in moderate amounts, it can actually stimulate positive social and psychological growth for people of all ages (Affleck and Tennen 1996; Linley 2004) and for communities (Brown 1992; Howley 1996; Steinberg and Clark 1999). This phenomenon has been variously
termed "resilience," "adversarial growth," "posttraumatic growth," "stress-related growth," "positive adjustment," and "positive adaptation." Studies of this type of "growth" have described various effects, including positive changes in life structure, increased "sense of meaning," perceiving other people as being kinder and gentler, and improved self-esteem (McMillen 1999).

While often a natural response to hardship, resilience is also conditioned – by socioeconomic parameters, family support, and previous experiences with adversity – and modifiable, in the sense that interventions can foster resilience at individual, family, and societal levels (Gilligan 2000; Schoon 2002; Olsson 2003).

Adversity and resilience matter in the context of a rural upbringing because manageable challenges associated with isolation, scarcity and reliance on natural resources promote the development of skills and behaviors necessary to cope with the challenges of rural living at a later time, as well as attitudes compatible with living in locations with limited resources. For example, one of the most defining characteristics of well-integrated international medical graduates in Australia was their pragmatism about the limits of rural communities, which enabled them to more effectively assess and use available resources to build a satisfying life for themselves (Han 2006). While some of these reactions likely arose "naturally" in response to challenging circumstances, prior experience with adversity also facilitates subsequent coping with similar situations (Affleck and Tennen 1996; McMillen 1999; Linley 2004)
In addition, adversity and subsequent resilience have also been shown to promote close social ties that serve as a resource – "social capital" - during future challenges (Brown 1992; Sobel 2004). This social capital has been shown to facilitate adjustment to new environments, such as a college or university, and might potentially be an important resource for physicians attempting to integrate into new communities (Shields 2004; Corbett 2005; Johnson 2005; Howley 2006). The role of resilience in integration and retention is therefore an important ingredient of this analysis (Figure 2).

Rurality and Close Social Ties

As alluded to above, another frequently observed ingredient in a rural upbringing is the presence of close social ties, particularly between family members (Beggs 1996; Johnson 2005). This phenomenon, termed gemeinschaft by the German sociologist Ferdinand Tönnies, is both a mythical and actual characteristic of rural communities (Aldous 1972). On average, rural Americans have a smaller number of longer-term, exchange-intensive relationships with more representation of family members than their urban counterparts. Rural Americans are also more likely to give and receive financial assistance within their families (Hofferth 1998).

With respect to physician affinity for rural areas, this has several implications. First, rural children become accustomed to this pattern of social networks and tend to seek out similar social milieus in their adult years; again, the role of conditioning and familiarity is prominent (Holmes 1986; Tolhurst 2006). In addition, close relationships generally
promote resilience (Gilligan 2000; Schoon 2002) and are also essential in the
development of positive relationships with rural places. Research has shown that the
most frequent source of attachment to a remembered childhood home was its association
with loved family members (Chawla 1992; Low 1992; Derr 2002). In other words,
people form bonds to places largely through positive social interactions in a specific
location – lounging at the old kitchen table, the school gymnasium, the local coffee shop
(Relph 1976), and these interactions may be facilitated by the close social ties present in
rural areas (Figure 2).

**Rurality and Sense of Place**

As discussed previously, rural environments, by virtue of their sparse populations and
limited resources, engender substantial interaction with natural cycles and resources.
This facet of rural life is not without consequence: in the process of living in and
interacting with physical environments, people form affective bonds with them (Bell
have been termed a “sense of place,” “place attachment,” place identity, topophilia,
insidedness, rootedness, and are discussed at length by authors in fields ranging from
psychology to philosophy to architecture (Heidegger 1962; Relph 1976; Tuan 1977; Low
1992; Massey 1994; Fullilove 1996; Ching 1997; Malpas 1999).

From a psychological, process-based perspective, a positive “sense of place” could be
described as a relationship that produces a sense of security and rootedness when one is
in that place, regret or distress (i.e., homesickness) when one is removed from that place, and that entails appreciation of that place not only for its satisfaction of physical needs but for its own intrinsic qualities (Chawla 1992). It is important to note that “place” in this context refers to the multidimensional nature of a given location and includes both the “natural” and “social” aspects of that site. As a result, a sense of place also includes human relationships and the ties that they imply, and people frequently describe them as intertwined (Tuan 1977; Seamon 1980; Bell 1992; Gruenewald 2003a).

Sobel (1996), Hay (1998), Matthews, et. al. (2000), and Chawla (1992) have described the development of a sense of place as a process that mirrors the formation of relationships to places in childhood and moves from empathy for the familiar around ages 4-8, to expanding exploration of the home range – particularly natural places such as woods, forts, streams, and lakes – around the ages of 8-11, and social action, where adolescents move their focus back into town and become more involved in the community, social interaction, and the application of their knowledge. This progression describes attachment to both rural and urban contexts.

Other authors have paid more attention to the characteristics or qualities of a mature sense of place. Martin Heidegger coined the term Dasein (being-there, dwelling) to describe the natural human condition of relationship to place; for Heidegger, there is no point at which we can be consciously existing and yet separate from the world. In addition, he argues that this relationship is inherently a caring one: “Care” is the way
Dasein comports itself to the world. Indifference is strictly not possible (Heidegger 1962; Heath 2003)

A chorus of other authors have built productively on Heidegger’s foundation, including the humanistic geographer Yi-Fu Tuan (1977), who shifted the discussion of place toward a more psychological framework that described sense of place formation as the development of a “center of felt value” mediated through the physical body – “a stone’s throw,” “shouting distance.” Tuan believed that caring about and connecting to a place required long residence, full engagement, and reflection. More recently, social psychologists such as Stedman (2002) and anthropologists such as Altman and Low (1992) have continued to clarify, operationalize, and test concepts related to the idea of “sense of place,” but have struggled due to the significant lack of consensus and theoretical clarity about the meaning of a “sense of place” across and within disciplines.

Nevertheless, a focus on a psychological, behaviorist perspective of “sense of place” narrows the field substantially, and while theoretical overlap still exists, five main constituent concepts emerge. These include:

A. Knowledge/Familiarity: A mature sense of place is characterized by intimate knowledge of that place, which holds both practical and psychological value for the knower. These details include knowledge of seasons and other cycles, weather, predominant animal and plant life, political and social structures, economies, place names, and other details that would not be noted without
devoting significant time and attention to a place. Subjects often express pride and comfort in this knowledge (Basso 1996; McAndrew 1998; West 2003).

B. Identity: When people dwell continuously in a particular place, memories of defining life events come to be associated with that place, and with these layers of place-based memories and meanings comes an identity that is rooted in place (Proshansky 1983; Hummon 1993). People might say, “I’m this way because I grew up in the desert,” or “that old house will always be a part of me,” meaning that place is a mechanism through which their sense of self is defined and situated. Places frequently serve as either a display of identity, in the sense of a uniquely decorated house, or an affiliation that is used to demonstrate or construct some aspect of identity. In particular, the identification of a place as “home” is a strong marker of place identity because it indicates a person’s belonging to and connection with that place (Hummon 1992).

C. Attachment: This concept grows out of the psychological understanding of the bond between a mother and child, and expands that idea of attachment to the relationship between people and places (Low 1992). It is often described as a positive affective (as opposed to the more cognitive nature of identity) association between people and places that creates feelings of happiness, comfort, security, and satisfaction (Shumaker and Stokols 1982; Fullilove 1996; McAndrew 1998). Behaviorally, this attachment is signaled by long residence and plans to stay (Hummon 1992). While this overlaps somewhat with the idea of rootedness
(below), the emphasis here is on the emotional component of this choice, and less on a sense of belonging.

**D. Rootedness:** Studies have shown that people with a strong sense of place generally experience a sense of rootedness, a feeling that this place is “where I belong” (Pretty, Chipuer et al. 2003), and a sense that they are part of or intertwined with the place (Hay 1998). This sense of belonging is distinct from either attachment, which implies more of an emotional connection than the more physical connection of rootedness, or identity, which emphasizes the way that place has been incorporated into the person, rather than the way that the person has become incorporated into the place. Calling a place home, in addition to indicating attachment and identity, has also been noted as a marker of rootedness.

**E. Health and Well-Being:** This aspect of sense of place is emphasized by the experience of refugees and other displaced people, who characteristically feel ill when taken away from a beloved place and healed when finally able to return to it (Fullilove 1996; Frumkin 2003; West 2003). In some cases, the distress accompanying relocation can be so intense that it leads to physical symptoms such as nausea, vomiting, and depression (Fried 1963; McAndrew 1998), while the sense of elation upon returning home can be equally dramatic, as described by some Native American university students upon their return to beloved home places (West 2003).
While sentimental and often intangible, people's sense of place has defining and far-reaching influences on their personal choices. High school students from rural Appalachia, for example, have been shown to aspire to a sense of place at the expense of high-profile career tracks and even a living wage (Howley 1996). Other studies have shown similar results, where people undergo hardship and reject opportunities for career advancement in order to reside in or be near a certain place (Sarbin 1986; Bott 2001).

The valuation of places, attention to their details, and appreciation of their intrinsic qualities is a learned skill that can be promoted by targeted educational programs, including natural history, cultural journalism, and action research (Pruneau 1999; Gruenewald 2003b). It can also be fostered by family and educational environments that promote the acquisition of detailed knowledge of places, the capacity for observation, and a sense of care and rootedness (Sobel 1996). Like resilience, sense of place is a skill that can develop out of natural circumstances, and can also be fostered through intentional interventions.

Other Influences: Familiarity

While many subtle factors come into play in physicians' decisions about where to live and work, it is important not to underestimate the force of habit and the draw of familiarity. Research has shown that medical students tend to practice in communities in the general size range of their hometown with statistically significant regularity (Costa 1996; Bowman 2005). Several qualitative studies have also determined that a major
factor articulated during practice-location decision making is a desire to return to a
community similar to the one where the prospective applicant was raised (Holmes 1986;
Kazanjian and Pagliccia 1996; Tolhurst 2006). Finally, twin studies have shown that
residential environment as a child accounts for more than 50% of the variance in
residence choice for younger adults (Whitfield 2006).

In the broader literature on familiarity and habitual choice, prior knowledge of people,
places, and products has been shown to facilitate their continued acquaintance and use,
even when it would be more beneficial to choose differently. Familiarity influences both
perception and action; people perceive familiar faces as happier, less angry, and more
attractive; they invest more in familiar companies; and they continue to use familiar
products and services when better options are available (Huberman 2001; Murray 2007;
Claypool in press). Explanations for this phenomenon include that fact that familiarity
produces feelings of comfort, liking of others, and decreased anxiety, and that people
prefer to act in contexts where they consider themselves knowledgeable and competent
(Huberman 2001; Leahy 2001). In addition, sticking with the same or similar option
reduces cognitive “search costs” and “switching costs” associated with looking for and
learning the intricacies of a new product, environment, or personality. This “cognitive
lock-in” has been shown to play a major role in a wide range of decisions (Murray 2007).

Though it is well established that medical school graduates tend to return to familiar
locations, and people in general tend to “seek the known,” the role of familiarity in the
larger process of residence location decision making is not. This analysis will attempt to
understand the relationship between familiarity and other factors implicated in that process (Figure 2).

**Figure 2. Theoretical Underpinnings: Rurality, Resilience, and Sense of Place.**

**Other Influences: Self-Actualization**

In addition to wanting a comfortable and familiar home, physicians are also driven to create happy and satisfying lives for themselves, regardless of their geographic context.
This idea has been articulated in Western philosophy since the time of Aristotle, and more recently in the work of Kurt Goldstein, a major figure in Gestalt psychology (Fiscalini 1990). Later, self-actualization took more applicable form in Abraham Maslow’s hierarchy of needs, which suggests that people work to satisfy increasingly complex “longings,” moving from basic physiological needs to a need for morality, creativity, and truth (Maslow 1954; Wilson 2004) (Figure 3).

While Maslow’s work has been extensively criticized for being excessively individualistic (Geller 1982), nativistic (Neher 1991; Trigg 2004), and not reflective of the multiple motivations and strategies that people employ in the pursuit of fulfillment (Geller 1982; Heylighen 1992; Keil 1999), it is also widely used and intuitively understandable in fields ranging from business to education (Heylighen 1992; Keil 1999). Therefore, despite limitations, Maslow’s hierarchy serves as an effective jumping off point for this study because it provides an applicable framework for administrators, policy makers, program directors, and future researchers. In addition, Cutchin (1997) has shown that “security” – the second tier of Maslow’s hierarchy - is a foundational requirement for successful physician retention. The linkage of this observation to a well-developed model provides a framework upon which further theory can be built.
Taking Stock

In the preceding discussion, I have attempted to show that the literature on rurality, resilience, and place suggest some important foundations to any model of the effects of a rural upbringing on future practice location and retention. First, rurality, as defined by geographers and psychologists, entails increased interaction with natural cycles and resources, and concurrent geographic isolation and limited resource availability. This creates situations of adversity and scarcity, which people are often able to respond to in a resilient manner, building a foundation for future resilience in comparable situations.
Secondly, interaction with natural resources and cycles also promotes relationship and attachment to places, which facilitates sacrifice and commitment to those locales. The development of this relationship or "sense of place" has been characterized as a progression from empathy to exploration to social action and is facilitated by extended time spent in that place and the mentorship of a caring adult.

In addition, rurality often entails tight-knit social networks that promote resilience and serve as social capital during difficult times: the myth of the tight-knit small town still rings true in many cases. Finally, familiarity and self-actualization act as guiding forces in the paths of all physicians as they attempt to create comfortable and satisfying lives for themselves and their loved ones. This theoretical context is summarized in Figure 2.

The ways in which rurality, resilience, and sense of place interact and what they entail in the lives of physicians is therefore central to the question of how a rural upbringing influences eventual practice location and retention. This study uses qualitative methods to more fully explore these relationships and develop a model that provides a practical framework for policy and programmatic decision making.
III. Methods

In this study, a semi-structured interview guide and demographic questionnaire were administered to twenty-two committed primary care physicians in rural northeastern California and northwestern Nevada during June and July of 2006 and 2007.

Recruitment

Following approval of the study protocol by the UC Berkeley Institutional Review Board, an initial cohort of physicians was recruited at a December 2005 meeting of the Valley Emergency Physicians’ Medical Group, a professional corporation that staffs rural clinics and emergency rooms throughout California and the American West. Subsequently, snowball sampling of physicians in nearby communities was conducted to increase sample size and diversity. Physicians were initially contacted by mail and fax, and then by phone and email, to arrange meeting times and locations. I then traveled to the physicians’ communities of residence to conduct interviews at their home or workplace.

To be eligible for study participation, physicians were required to be actively practicing primary care medicine in a rural community in which they also maintained a full-time residence. Because this study focused on “committed” rural physicians, inclusion criteria also included residence in the community of practice or its outskirts for five years or more. This number represents “longer than average” retention time based on several

“Rural” is defined using the California Office of Statewide Planning and Development (OSHPD) definition of Rural Medical Service Study Areas (MSSAs). Unlike the Federal Office of Management and Budget definition, which creates a simple dichotomy between metropolitan and non-metropolitan counties based on the presence or absence of a city of 50,000 people, the MSSA system uses census tracts, which are generally smaller, more homogenous, and more appropriate for the western U.S., where counties can be very large. To be designated rural, a MSSA must report population density of less than 250 persons per square mile, and contain no census-defined place with population exceeding of 50,000 within the area. This definition has been championed by the California State Rural Health Association and has been shown to most accurately identify hospitals and clinics in sparsely populated areas in need of funding and other support (Christman 2004).

The region in which the study was conducted is often referred to as the Great Basin or intermountain west (McPhee 1981), and has been historically characterized by a low population density and difficulty recruiting and retaining physicians due to its remoteness (Larson 2003). Because there is a need for primary care in rural compared to urban areas (including the Great Basin) and the majority of rural practitioners are specialized in primary care, this study excluded specialist physicians (Pathman, Konrad et al. 2004). Primary care specialties were defined to include family medicine, general medicine,
internal medicine, geriatrics, pediatrics, and emergency medicine (Sam 1999). While emergency physicians are commonly excluded from definitions of primary care practitioners in urban areas, their scope of practice in rural settings is much closer to that of a family physician, and many rural emergency rooms are actually staffed by family physicians (Williams 2001; Peterson 2006).

**Data Collection**

Following acquisition of written informed consent, interviews were digitally recorded and transcribed. Field notes and demographic questionnaires were compiled following each interview to provide opportunities for triangulation and comparison to other interview samples. Interview length averaged 50 minutes, with a range of 20 to 80 minutes.

Initial interview domains and questions were developed through an extensive review of literature on place and sense of place in psychology, geography, philosophy, education, and sociology. Domains included place and upbringing, place and training, recruitment, community profile, community integration, place and retention, and future plans. Following initial coding of the first few interviews, adversity, resilience and community/mentorship were also added to capture the range of responses. Physicians were also asked to rate their satisfaction with their job, community and place on a scale of 1-10, and estimate the number of years they would remain in their current residence.
Satisfaction ratings were averaged and compared to each other using a Student’s t-test, and standard deviations were calculated.

**Data Analysis**

Thematic codes were generated from literature on place and community integration and the repetition of key words/phrases and common plot structures (Cresswell 1998; Lockhart 1999; Varaki 2007). The intent of these code groupings was to capture common *waypoints* and *processes* physicians used to become established in their communities. To facilitate consistency and rigor, a comprehensive codebook with definitions of each code was developed and reviewed on multiple occasions by the investigator and second coder, and was modified as the coding process continued. A second coder also verified accuracy and consistency of codes and categories on four initial coded transcripts and reviewed two later transcripts to ensure consistent application of new codes.

In addition to verification by a second coder, prolonged engagement in the field and member checking were used to ensure the validity of categories and relationships (Cresswell 2000). I resided in the area of study from May 2006 through August 2007 and worked in an underserved rural health clinic as a telemedicine coordinator, and also participated in numerous civic activities and public events. I discussed the emerging results of my study with numerous physicians and community members and sought their feedback and insight.
To preserve of physician participants, demographic characteristics were compiled and reported in composite. In addition, pseudonyms were substituted for all place names and other potentially identifying data.

**VI. Results**

**The Sample**

Interviewees were generally representative of rural primary care physicians (Hart 2002). All were white, married, and middle aged, with an average age of 54.9 years and a range of 40-74 years. Seventy-seven percent of interviewees were male, 82% had children, and 50% grew up in a rural area. On average, interviewees had 2.46 children, with an average age of 20.9 years (Table 3).

All physicians completed medical school and a primary care residency, with 55% (11) board certified in family medicine, 23% (5) in emergency medicine, 14% (3) in internal medicine, and 9% (2) in pediatrics. Sixty-

| **Table 3: Selected Demographic Characteristics of Physician Participants** |
|---------------------------------|------|
| **Age (mean, years)**           | 54.9 |
| **Sex**                         |      |
| Male                            | 16   |
| Female                          | 6    |
| **Ethnicity**                   |      |
| White/Caucasian                 | 22   |
| Other                           | 0    |
| **Upbringing**                  |      |
| Rural                           | 11   |
| Urban                           | 11   |
| **Relationship Status**         |      |
| Married                         | 22   |
| Other                           | 0    |
| **Mean Number of Children**     | 2.46 |
| **Mean Age of Children**        | 20.9 |
| **Employment Status**           |      |
| Full time                       | 17   |
| Part time                       | 5    |
| **Income (gross, before taxes)**|      |
| >$200,000                       | 9    |
| $150,000-199,999                 | 4    |
| $125,000-149,999                 | 3    |
| $100,000-124,999                 | 2    |
| $85,000-99,999                   | 1    |
| $70,000-84,999                   | 2    |
| **Medical School**              |      |
| Public                          | 15   |
| Private                         | 6    |
| Osteopathic                     | 1    |
| **Specialty**                   |      |
| Family Practice                 | 11   |
| Emergency Medicine              | 5    |
| Internal Medicine               | 3    |
| Pediatrics                      | 2    |
| **Practice Type**               |      |
| Solo - Private                  | 3    |
| Group - Private                 | 8    |
| Group – Public                  | 11   |
eight percent attended a publicly funded medical school, with just one of the twenty-two (5%) attending osteopathic school. Eighty percent of physicians worked full time (more than 32 hours per week), and their median income was $187,000 per year from all sources. Average retention time in their current position was 20.7 years, with a range of 5 to 44 years (Table 3).

The communities represented in this study were impoverished and bordered on remote. Based on 2000 U.S. Census Data, they had an average population of 3,026 residents, and were located in counties with an average population density of 9.8 people/square mile, qualifying as "frontier" by the Medical Services Study Area definition. Half of the communities in the sample qualified as "frontier," while the other half fell on the small end of "rural." Mean household income in the physicians' communities was $30,251, 73% of the national average, and an average of 14% of families had incomes below the federal poverty line. Mean age of community residents was 41.3 years (Table 4).

<table>
<thead>
<tr>
<th>Table 4: Aggregate Demographic Characteristics of Study Communities</th>
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<tbody>
<tr>
<td>Average Population</td>
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<tr>
<td>Average County Population Density (people/square mile)</td>
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<tr>
<td>MSSA Designation</td>
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<tr>
<td>Rural Frontier</td>
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<tr>
<td>Average Household Income&lt;sup&gt;6&lt;/sup&gt;</td>
</tr>
<tr>
<td>Average Age (years)</td>
</tr>
<tr>
<td>Average percent of families below federal poverty line</td>
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<sup>6</sup> For comparison, national averages are indicated in parentheses.
Retention: Pathways and Processes

As mentioned previously, this study began as an investigation of the ways in which previous exposure to rural environments promoted rural recruitment and retention. As such, the theoretical framework initially focused on processes and outcomes related to place and sense of place. However, over the course of the interviews, it became apparent that “sense of place” did not capture the breadth of reasons and pathways by which physicians entered and chose to remain in rural practice. Therefore, interview domains and codes were expanded to include “adversity,” “resilience,” and “self-actualization.” The resulting model suggests that there are four main pathways to successful and satisfied rural practice – familiarity, community, sense of place, and self-actualization – with respondents fairly evenly split among the four categories.

A. Familiarity

Thematic coding revealed that seven of twenty-two respondents chose rural practice because they wanted to live in a familiar natural and social environment. Being in a familiar place gave them a sense of trust, comfort, and ease, and required far less cognitive and social effort than attempting to integrate into a new type of community. Some physicians expressed a desire to return to rural areas because of their upbringing, and others because of prior recreational experience as a child or young adult. Still others expressed a desire to return to a particular rural area because of previous visits to that
place, and some expressed the role that familiarity played for their spouse or partner, which consequently had an effect on their decisions.

**Rural Upbringing:** Fifty percent of physicians in this sample grew up in rural areas. Many stated that they felt most comfortable in rural places as a result of this experience, despite extensive urban and suburban living during college, medical school and residency. For some, this familiarity was principally concerned with the cultural and social environment of the small town:

> I tried to live in the big city because I grew up in a small town...Littleville, near LittleCity, nothing, so I wanted to experience the big city and it just never stuck. I just migrated back up here. I grew up in small towns, I was familiar with small towns, I wasn’t familiar, used to, or accustomed to all the things that BigCity offered, so I didn’t miss any of that stuff. I wasn’t missing anything by coming up here, and I was gaining a lot. I mean, I like small towns. I think it was just comfort level.

Meanwhile, for others, familiarity played itself out in terms of the natural environment and the recreational opportunities that it offered.

> Well, [I came here because of] the physical attributes, really. The change of seasons... I grew up where there was a change of seasons, so I like that, and the kinds of activities that I love to spend my time doing...[skiing, hiking, working in my garden]...

In both cases, interviewees felt at home in a place that reminded them of their childhood residence, and this played a major factor in their choice of residence and practice location.
Rural Recreation/Education: For physicians who grew up in urban and suburban communities, recreational and educational experiences as a child and young adult often played an important role in exposing them to rural environments and creating an affinity for these types of places.

As a child I camped with my folks at Lake Teewog. At the time the road was a one-lane twisty thing through the trees...I very much enjoyed those trips...I also took some small backpacking trips in conjunction with summer camps and then...[longer] backpack trips in the summer with a Scout group. And so I very much became enamored with this area and the mountains in general...and I wanted to have an opportunity to live near the mountains.

For some, these recreational experiences, in addition to creating a familiarity with rural and natural environments, opened their eyes to places and regions they were previously unacquainted with.

I went to a place called Fish Lakes in Michigan that was several miles of quiet, slightly rolling ground. And I really, really liked that...then I started driving out west to go to places where there was more wilderness and I got a chance to see the Tetons and the glacier and it just wowed me. The contrast was terrific. Because [while] Michigan is quite civilized, there's plenty of parks out here that just aren't, which really appealed to me. So it kinda pulled me this way.

In both cases, respondents who became acquainted with rural areas through these means tended to be drawn more to "natural" amenities than social or cultural ones, and their choice of practice location was therefore more focused on natural beauty and recreational opportunities than community characteristics.
**Acquaintance with a particular rural setting:** In some cases, recreational exposure to rural environments had a more specific effect of opening physicians’ eyes to the possibility of practice in a particular place, but not necessarily rural areas in general. For these physicians, “living where I play” was an important priority in their decision making.

_I had already been exposed to the Little Valley [before I came to work here]. I had an uncle with a ranch up by Littleville and we always used to go up there with my folks and go camping... and then I came up to Small Town and Little Creek to fish, and then when I was in college, each summer I’d come up and do a two week hike up in the mountains..._

Family members and friends were also an important part of the draw to these places – a partial social network already in place, providing connections and social capital that helped ease the transition. One physician described how her partner’s associations helped her get acquainted with a particular rural area.

_In fact that’s what attracted me to Smallville in the first place, when I first met [my husband], he was telling me that he was thinking about buying a summer house up here and he brought me up here... that first kind of interested me... and then we took a backpacking trip up here almost yearly until we moved up here._

While backpacking and camping were frequently cited recreational opportunities, other respondents also mentioned hunting, fishing, working on family farms, waterskiing, and so forth. The style and location of the recreation seemed to matter less than the fact that it put people in close contact with natural settings and a different lifestyle, and allowed them the opportunity to develop connections that facilitated their eventual relocation to that place.
Partner Familiarity: As suggested above, having a partner who was familiar with rural areas via upbringing or recreation also facilitated a choice to settle in a rural place. In some cases, the partner was already familiar with the particular area where the physician chose to practice.

*She actually came up and had several summers where she was at a little camp over here by German Creek. So she actually knew about Tinytown from her childhood.*

In other cases, the partner’s familiarity with rural living in general was the key.

*He’s not from a small town, but he’s a geophysicist, and he’s spent time in various and sundry rural areas doing research and fieldwork, so he’s used to camping and roughing it and being out in a small place, and he’s just really all about living in a small place.*

While generally not sufficient for full integration, previous experience with rural environments formed a foundation of comfort and allowed a physician who would have otherwise been reluctant to consider such a move to successfully transition to a different lifestyle.

B. Community

Nine of twenty-two respondents cited community-related motivations for choosing rural practice, including a desire to work in a community with a large underserved population, meeting unmet needs, or a desire to work closely with patients because it gave them a
sense of satisfaction. For these respondents, a sense of fulfillment was derived from feeling like a valued and important member of the community who was able to fill a previously vacant niche. They frequently participated in community service and described intimate relationships with staff, patients, and other community members. They also seemed to effectively minimize the costs that such a tight-knit community can entail, such as a lack of privacy and increased professional demands.

The foundation for this pathway was, in almost all cases, some experience with tight-knit community that appeared to facilitate physicians’ adjustment to a similar situation in their current practice and personal life.

You know, we had relatives. We didn’t have a lot of friends, but my aunt and uncle, my grandparents, a couple of close friends, and relatives of relatives... [there was always] Christmastime at my grandparents house, and the tree, and we just had a lot of traditions like that, and every weekend in the summer, my various sundry relatives came over to BBQ and play in the pool...

These same physicians also described what has been previously termed a “community service orientation” (Madison 1994; Tolhurst 2006; Daniels 2007). When discussing their choice of practice location, they articulated a preference for working with underserved populations despite known challenges and hardships involved in this type of work, and when asked why, they stated that they simply “felt a responsibility,” “knew it was right” or were motivated by religious or spiritual reasons.

Medicine was a desire to work in an area where I felt I was needed and it seemed that the rural areas where there was a need. And I was interested in both medicine and making an impact on a community. After I finished my training I
did E.R. work for a couple of years, but that wasn’t very fulfilling. So I eventually looked around and ended up at the Smalltown Clinic where there was a need and then opened a practice over here and I’ve continued since then.

These physicians also demonstrated a vision of healthcare that was centered on community needs, and often sacrificed their time and income to serve patients more effectively.

*We were the hippie doctors. We wouldn’t turn anybody away. We saw the welfare patients, everybody. One time I had a patient who had stiffed me twice. I delivered two of [her] babies and they came in a third time and I accepted [her] even though they hadn’t paid me a cent for the first two babies and I took care of [her] and delivered [her] again.*

The most satisfied physicians in this cohort were also those who most clearly and frequently described tight-knit community ties and involvement in the community outside of their work. Many served on local nonprofit and school boards, took on community health education campaigns, coached soccer, and mentored local students with an interest in medicine. When asked what they would miss if they moved away, they most frequently mentioned the friends and relationships they had developed over the course of their career.

*If I had to use a particular word...that has meaning in this context it would be connectiveness. You’re so connected with people. I know so many people involved in so many different things and they’re one phone call away or a block down the road. And so that connectiveness provides a great deal of meaning in what I would call a very fragmented world.*

Through this community-based work, many physicians saw both immediate and long-term results in the form of consolidation and creation of social capital.
We've had up to 6,000 people show up July 4th morning to walk and run. It's all volunteer. And we've taken the profits and transformed the downtown. If you go downtown you'll see trees; you'll see street lamps; you'll see street clocks; you'll see mini-parks; you'll see a skating rink up the way a little bit. We've put hundreds of thousands of dollars from the proceeds of this little fun walk into the community. That has been a very satisfying experience...communities would give their right arm to have what we have on that July 4th morning.

One of the keys to accessing social capital and actualizing a motivation toward community service was finding an effective mentor, either medical or otherwise.

Depending on the needs of the physician, mentors ranged from financial advisors who helped get physicians’ practices off the ground to physicians-colleagues who helped them navigate the physical, social, and political landscape.

He came from the same program he knew my training...which was huge...because you can use that person as a mentor to help you with just the day to day workings. Where do you find the form to get an x-ray in the hospital? What's the procedure of getting your privileging done? Where do you shop in town? [We'd also] talk about different cases and what we would do and bounce [ideas] back and forth... Plus he's an outdoors guy so we'd go on these monster hikes...He was my guide in the mundane medical world, but also the guy who [kept an eye on me] so I didn't fall off some cliff somewhere...

In short, previous experience with tight-knit communities and a “service orientation” allowed physicians to form lasting connections that improved their quality of life and provided them with a sense of support and belonging. These connections anchored them to the community and supported them in the face of challenging, ever-changing circumstances.

C. Sense of Place
Six of twenty-two respondents expressed a desire to move to a place where they felt connected, inspired, and at peace, and that satisfied their desire for outdoor recreation of some kind. For these physicians, fulfillment centered on living in and around environments that provided them with a sense of solace, freedom, and rejuvenation. Furthermore, even for physicians who did not cite "place" as one of their principal reasons for choosing rural practice, it became a major source of satisfaction over the course of their career. Physicians in this sample rated their satisfaction with the natural environment as an 8.84 on a 10 point scale, significantly higher than community satisfaction (7.9, p<0.01) and higher than job satisfaction (8.35, p<0.10).

Twenty-one of the twenty-two respondents described a strong connection to and appreciation of their natural environment, in some cases to the point of putting a monetary value on it.

_I mean, the reason I designed this building this way, with my office having a door that faces west to the mountains, was so that I can go out the back and open the door for fresh air, so that when I get all wound up...I just open the door and look where I live, and I realize that 99% of the U.S. comes here on vacation, and I live here, and that's worth a lot...I'm always going to earn less than my peers. Always. But the view out my back window is worth about $15,000 to me. Brings me about up to par._

The foundations of these physicians' connections to place were once again found in their childhood and previous experience in rural and natural environments.
However, as opposed to a connection based simply on familiarity, many physicians also seemed to have acquired skills in getting to know places well. When asked how they would recommend a new physician acquaint him- or herself with a community, many described sophisticated strategies and attitudes that facilitated their building of knowledge and connection to place.

This process began with the development of empathy through a range of activities, including gardening, animal husbandry, cultural activities, local crafts, and home improvement. Analogous to Sobel’s developmental stages (Table 5), the emphasis during this time was on safety, security, and taking stock of the immediate surroundings in order to get a better sense of them. As one physician put it,

*When you first get to a town, ... you stop, you don’t really commit to anything, you get your bearings, you get some of the political landscape -- you’re just an information sponge for the first couple of months, and then you kind of decide what you want to be involved with... you have to pick and choose.*

Following this phase of “taking stock,” the respondents then moved on to progressively enlarging circles of exploration, both physically and socially.

*We started [out] just driving up to the mountains and through the hills... and then we started taking dirt roads off into the rocks, and then we started doing some*
hiking... and then I started going to the lake, and then we started taking different roads... it was kind of a gradual thing, starting out with something very immediate that we could very easily find our way back from, until we learned the lay of the land, I guess, in a very literal sense, and then we started branching out from what we knew.

Either simultaneously or subsequently, physicians also started to put this newfound knowledge to work in the form of social action. Their energies were focused through four main channels: community service, child-related activities, communities of faith, and their work itself. In each of these cases, their service/action reinforced and deepened their ties to the community and place at the same time that it relied on these ties for effectiveness.

_If we left, we’d very definitely miss church. We attend a Baptist church that’s grown to the point that we hired somebody to start a construction project and that didn’t work out, so for several years now I’ve been one of the people who’s been involved in keeping the construction going, and we’re kind of in sight to finish the sanctuary building, so I would certainly miss our church family and the responsibilities I’ve had there._

The outcome of this process was a continually created “sense of place” that provided a strong foundation for continued residence in their community. This “sense of place” was comprised of five main attributes, which describe the qualities and behaviors of someone who was well-integrated into their place of residence (Table 6).

**Table 6: Domains of a strong sense of place described by physician interviewees**

<table>
<thead>
<tr>
<th>Sense of Place</th>
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<tbody>
<tr>
<td>- Knowledge/Experience</td>
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<tr>
<td>- Rootedness</td>
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<tr>
<td>- Place-based identity</td>
</tr>
<tr>
<td>- Attachment</td>
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<tr>
<td>- Health/Well-being</td>
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</table>

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1. Knowledge/Experience: Physicians who were well integrated into their communities and surroundings described detailed knowledge of these places and their physical, social, political, and economic attributes. This knowledge was a resource, comfort, and point of pride for them.

[First it was] becoming intimately familiar with the topography and the ecology. Getting to know where [different types of] trees lived and where the trails ought to go and where the creek ran and where the waterfall was...And then getting to where I understood the variations in climate...getting a sense of when it was gonna rain and knowing when to plant, that sort of thing...And then getting to where I could move around up in the [mountains] spring, summer, fall, winter; in the snow, in the heat and always feel happy and comfortable. Particularly being able to go up there in the winter and hang during heavy periods of weather was really a revelation for me. That was magic and it really let me feel at home.

Depending on their upbringing, residence, and interest, different physicians described knowledge of different facets of their communities; some were experts at tree identification, while others focused much more on the origins and challenges of the main immigrant populations in town. Nevertheless, detailed understanding of some subset of their place was a consistent marker of successful integration, and one that was constantly being developed as circumstances changed.

2. Rootedness: Well-integrated physicians also described a sense of belonging and an almost physical connection to their surroundings. All physicians in this sample described their residence and community as “home,” and most had no plans to leave.

I’ll die here. In fact I got my parents buried in my back yard and they came from Louisiana. I plan on being buried in my back yard and I plan on staying here forever.
Meanwhile, the less integrated — those who described lower satisfaction with their job, community, and natural resources — also expressed uncertainty about whether they would stay after retirement, their children graduated from high school, or some other temporal landmark.

3. **Place-based identity:** Places and their various intricacies and landmarks reinforced physicians' sense of identity and status. For many, their work was visible in the form of landmarks, buildings, gardens, and surgical scars, and their memories were stored in places: the local diner, the back office, the school auditorium. These memories provided them with a foundation of meaning and history upon which they lived their current lives.

*Any time you stay in one place for awhile it's very special. Because you have a history. People have a history with you; you have a history with them...it's special and I actually think it's an investment. It takes a little bit of courage to stay put in one place and make the best mark you can on your community...and hope that you're making a difference and that people generally think well of you...[and] when all is said and done you've left [something positive].*

Physicians with children were also able to observe the creation of place-based identities in their kids' reactions to home as they grew older.

*When we built the house...[there] was a sandbox that I built for the kids. And Alex once, he came and he saw that we demolished the sandbox. He said, "You've taken away part of my childhood!"*

Finally, for many physicians, their identity was reinforced by the status and esteem they experienced as one of few educated professionals in a small place.
I think I’m respected in the community. I think things I say people do pay attention and take notice. I know when we had a bond issue recently...people would ask my opinion...and they probably even voted accordingly because they respected how I felt about those things. I wouldn’t call myself a community leader or anything like that but I guess I would definitely say I think I’m respected within the community.

This respect imparted a simultaneous sense of pride and responsibility, further solidifying the physician’s identity as an important and influential person in the community.

4. Attachment: In addition to a sense of identity, physicians also experienced feelings of safety, comfort, and happiness when well integrated – the marks of healthy attachment. They specifically remarked on the physical beauty, the sense of peace and quiet, and the uniqueness of their particular location.

There’s this deep sense of peace and quiet that you get when hiking in a big wood lot. Sometimes it’s magic... just hiking around a forest, particularly one that you might know well. There’s a couple of trails that run down this canyon here that are just terrific... And there are a couple of groves of trees that are... unbelievably beautiful.

Again, this attachment is distinguished from a sense of rootedness by its strong emotional component and because it tended to fulfill needs for comfort, security, and satisfaction. As a result of this attachment, many were also involved in campaigns to protect their communities from commercial development, renovate the downtown, or make other changes that would preserve the community and place for future generations.
5. Health/Well-being: Interviewees expressed a sense of health and well-being associated with being at home, and a sense of distress or dis-ease when removed from it.

And of course the natural beauty is something that is inspiring. It also provides a significant refuge from what you're doing every day in the grind. So I think the contrast, the open space; the ability to take a breath and breathe from the fast pace is really of the greatest value of [this place].

This was often in stark contrast to how they felt in other places:

[Some years ago] I took my kids to a park nearby our house in BigCity...and just 3-4 feet from the merry-go-round in plain sight there was some kind of exchange happening where...white powder was exchanged for money. I mean, in clear view, they weren't shy at all. As I was watching all that happen, I decided that we could never live here, I didn't want my kids growing up in that environment, [so we decided to move].

Physicians specifically mentioned feelings of relaxation, safety, and appreciation of clean natural resources.

We have clean water and clean air, and we felt good about raising our kids here.

In short, physicians felt like their towns were “good places” to live, raise children, and grow old. They experienced both visible (beauty) and less visible (safety) indications of well-being in these locations, which tended to offset other concerns about isolation, availability of services, and other obstacles.

While these domains – knowledge, rootedness, attachment, identity, and well-being – retain distinct characteristics in these interviews, they also overlap significantly. For
example, attachment promoted long residence in a place, which encouraged the development of rootedness and a place-based identity. In addition, a "sense of place" describes the general phenomenon of connection to a given location, but does not fully encompass the breadth of each of its component terms. Therefore, the model of the components of a healthy sense of place that emerges from these interviews emphasizes the interaction and overlap between these terms (Figure 4).

Figure 4. A Process-based model of the development of sense of place among rural physicians.

D. Self-Actualization

The final seven respondents felt that their connection to rural areas was the result of their ability to lead a happy and successful personal and professional life there; rural environments provided a supportive and nurturing environment for their journey toward self-actualization. Personally, these physicians described rural places as good locations to raise children, settle down, and make a life for themselves, and professionally they felt
that their practices provided sufficient variety, autonomy, and opportunities to "make a difference" that they generally felt happy and fulfilled.

Physicians perceived their communities as places capable of meeting the range of their needs, beginning with basic physiological needs for water, food, and shelter, and moving through security and emotional needs toward a sense of creativity, meaning and purpose.

*I get to be a doctor here. And that's probably the biggest thing. Self actualization...I'm happy. I'm doing well. We're saving people's lives out here because if we weren't here there would be nobody. There is no health care, so we're providing care where there is none. And to put it bluntly, I'm well compensated...and I can make my own schedule.*

In particular, physicians chose rural practice because they believed and observed that it met their need for professional self-actualization, including a sense of *variety, efficacy,* and *freedom.*

*I think I've done almost everything except major surgery, and in my earlier days I assisted in surgery and gave... about 20,000 anesthetics, and I'm sure [I did] a thousand deliveries and a couple of thousand autopsies along the way, and so I think I've made quite a contribution medically to this area.*

The themes mentioned previously – place integration, community integration, and familiarity – also intertwine with self actualization, since feeling part of a place and community and leading a comfortable life also fall within the realm of basic needs that physicians strive to meet.

**E. Hardiness**
External circumstances clearly played a role in physicians’ familiarity, community attachment, sense of place, and self-actualization; those practicing in harsh political or financial environments fared less well and were less satisfied than their counterparts with greater support. Respondents faced multiple challenges, including a lack of basic services, financial constraints, feelings of alienation and “outsidedness,” a lack of professional opportunities and opportunities for children and partners, intrusions into their private life, and the personal and professional challenges that came with geographic isolation (Table 7).

**Professional Challenges:** Professionally, challenges generally stemmed from the isolated nature of rural practice compared to urban settings, and the resulting demand on practitioners to fill multiple roles, be on call for long periods of time, and deal with complex issues on their own.

*It’s... somewhat stressful. You’re by yourself with a person bleeding in front of you and, “Oh God! I have no backup. What do I do? This person’s dying!” So you gotta be ready to accept those situations. And you do things that you’re not trained for. You do them because you do what you gotta do.*

In addition, many physicians found it difficult to meet their need for professional development, such as regular consultations with specialists and conference attendance.
I do miss not having more professional stimulation, having other doctors around, conferences. I enjoy medicine very much both for the subject matter and for the satisfaction derived from dealing with the patients. So in some ways I wish I had more opportunity to be with other doctors and rub shoulders and compare cases.

Others found difficulty satisfying their need for professional advancement, particularly in academic and administrative capacities.

After I finished my residency I did a fellowship in Family Medicine which was part a junior teacher kind of thing, and I really enjoyed that. In fact, about 10 years after I came, the program came to me and asked me if I wanted to teach full time. From a professional standpoint, I thought wow that would be a really great thing, but from what I was doing here...I couldn't do it, but I've always had that notion that if they wanted me then, maybe they'll be interested...down the line.

Finally, the financial constraints resulting from work in underserved rural communities were difficult for some, though certainly not all. Those in solo private practice tended to express the greatest difficulties and reservations, and many were in the process of or had recently changed to a group practice or contract position with a guaranteed salary.

I'd almost have to discourage [someone considering going into rural practice], because I don't think you can survive, it just costs too much. I mean literally, I could put $9000 on the books per month, but it was costing me $10,000 to do it. There was nothing more I could change. If I wanted to make money, I would have to either work more hours, charge more per hour, reduce overhead, and I did all of that, and I don't think I could have trimmed it down anymore...

Personal Challenges: Personally, physicians also encountered challenges related to geographic isolation, including limited services and opportunities for themselves, their children, and their partners.
I think a big reason a lot of docs don't go to rural areas is because of the lack of opportunities for the kids...we came here and my wife and I, we...made a decision that if our son or daughter need[ed] dance lessons or music lessons or this and that, we ha[d] to be prepared to take Saturday and go to BigTown or BigCity and get them those. Or if they want[ed] to play in the youth orchestra, or sports. Or if they really want[ed] to study with somebody or play tennis at that level we [were] going to have to drive on Saturday morning.

In addition, the lack of social opportunities and anonymity represented a considerable obstacle to a happy and satisfying life.

Music. Music...one thing I loved about being so close to New York or Philadelphia was that I could go to a concert and be home again that night, that I could go in the middle of the week and I didn't have to take the day off from work, and I didn't need a hotel room because I didn't have to drive home, you know, four hours through pitch-blackness at two in the morning and these kinds of things. I miss going to concerts all the time, classical and rock or what have you. That I feel like I'm really missing.

Finally, finding a likeminded community in a place with unfamiliar political, social, and economic characteristics was also difficult.

I would say on a social level and even on a church level that...in a city you can kind of find your "tribe," so to speak - people that are like-minded; you can engage with them on similar topics and a similar intellectual level. [Unfortunately] it's not like this community is brimming over with those kinds of people that I would naturally engage with on a social level.

While personal challenges with rural living weren't generally so overwhelming as to force physicians to leave, they strongly detracted from overall satisfaction and a sense of well-being, influencing decisions about whether to stay or leave.

Resilience
In the midst of these personal and professional difficulties, many physicians described critical turning points where ingenuity, perseverance, and luck allowed them to stay in their practice or community when other factors threatened to force them out (Table 8).

*The obstacles we faced to start out with were insurmountable – [including] getting sued for millions of dollars. When we first took over the hospital, the government was here all the time... The day after we bought it, the government came in and said we needed a new roof; we needed a new sprinkler system. I mean huge budget items. I'm saying, "Well you guys just inspected this place two months ago, how could all of a sudden this be not right?...So we had to fight. We didn't have a million dollars. We had to hire a lawyer and we had to go to court. I mean those are the kind of obstacles where a normal person would say, "You know what, keep it."*

Others described how day-to-day coping strategies allowed them to deal with the consistent challenges of their practice, including humor, optimism, maintenance of an internal locus of control, and effective use of technology.

*So I'm raring to go early in the morning and I can move mountains with the quietness from about 4:30 till 8... And then practice starts at 8, and I go strong from 8 till 4. I see about 20 to 30 patients and do a lot of things that allow me to generate higher revenue. I do audiology. I do nerve conduction studies that are non-invasive. I have some pain equipment. I do my sigmoidoscopies. I brought cryosurgery to the area. I was trained well by a dermatologist...and feel comfortable doing a lot of skin surgeries. So I have a heavier procedure-oriented practice than a lot of my partners.*

### Table 8. Strategies used by physicians to overcome obstacles in their personal and professional lives.

<table>
<thead>
<tr>
<th>Pathways to Resilience</th>
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<tbody>
<tr>
<td>• Effective use of technology, especially the internet</td>
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<tr>
<td>• Internal locus of control</td>
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<tr>
<td>• Humor</td>
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<td>• Optimism</td>
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<td>• Pragmatism</td>
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<tr>
<td>• Flexibility/Adaptability</td>
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<tr>
<td>• Problem-solving approach</td>
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Continued flexibility and creativity were also essential.

When you come to a rural area it forces you to... be a lot more vulnerable and take on things that you may not feel are in your comfort zone... It forces you to expand your horizons. I think as physicians get older, they tend to narrow their scope of practice and do what they’re comfortable with... but in a general or rural practice you can’t do that... you have to... open your scope of practice and learn about things you wouldn’t normally spend some time learning, whether that means going off and doing continuing education or reading, or setting up telemedicine or whatever. But you can’t narrow the scope of your practice because [there’s no other option besides you].

When asked where they learned these coping strategies, respondents identified specific past experiences with adversity that fostered strength and the skills necessary to withstand the challenges of their current situation. These experiences ranged from time spent in the military, to medical service overseas, to the death of a parent.

[One of my points of reference] is being in a refugee camp in Vietnam... I had a 120 bed hospital. I was there for two years. Half the time I was the only physician there. And we had 300 outpatients a day, 120 inpatients. Ten deaths a day. So you can imagine what kind of a stressful situation that would be. You have to do whatever you can and you triage and you learn to recognize what you can do and what you can’t do.

The cross-cutting theme in these previous experiences was resilience, be it through individual determination, family support, community ties, or some other avenue.

See, I was born right during the Depression, and then there was World War II and my dad was in the service during the time when I was age 10-13, a very formative time, and it would have been nice to have had a parent. That’s why Boy Scouts kind of became my family. I think Boy Scouts probably helped me as much as anything...
While not a necessary prerequisite, prior experience – and success – dealing with adversity seemed to inform physicians' experiences in their current practices, providing perspective, resources, and strength to accurately assess and respond to challenges in a way that fostered their growth rather than destroying their resolve.

F. Over the Threshold, Caught in the Balance

Most physicians envisioned circumstances in which they would have no choice but to leave, regardless of their attachments to people and places they loved. These “triggers” or “thresholds” represented basic needs that produced intolerable living situations if not met. The most committed physicians – those who planned to be buried in their towns of residence - described these thresholds as catastrophic events such as their house burning down, the hospital closing, or their practice becoming financially unsustainable.

*If we had a firestorm through here the place burned to the ground and everything was gone ... I think I might go for a time just because it would be very hard to be here. I think I'd replant the wood lot and I'd rebuild the home and all that sorta thing but I don't think I'd live here to do it. I think that would be just really hard.*

For those who were less certain about staying “forever,” the threshold was lower, though still significant – a difficult political or administrative environment, children settling elsewhere, a need for advanced medical care for them or their spouse as they grew older, or accusations of malpractice.

*If the hospital failed it would be very hard to have an office practice here, because you'd have people with MI's walking in the door. And probably there are*
certain conditions in the hospital that would make me leave... depending on the administrator.

Generally, circumstances with the potential to force physicians to leave were beyond the control of the physician and the health care organization they worked for – and therefore not generally modifiable through health policy, community development, or workplace improvement initiatives or the physician's own ingenuity and persistence.

Beyond these intolerable circumstances, adversity became a double-edged sword. In some circumstances, it promoted a sort of adversarial growth, taught physicians important lessons about their communities and themselves, and strengthened their resolve to "stay and fight" for their practice and their home. In others, continual challenges wore down physicians' determination. The difference between the two in terms of internal process seemed to be an orientation towards resilience, including the strategies mentioned above: maintenance of an internal locus of control, a focus on problem solving, effective use of technology, humor, optimism, and flexibility. Physicians who were able to modify or come to peace with these circumstances often viewed their transformation as one of the major and most important accomplishments of their career, and it became a source of pride rather than an inducer of grief.

The process by which physicians weighed their options was a constant balancing act between the previously discussed sources of adversity, on the one hand, and a variety of factors that encouraged them to stay, on the other.
Factors that encouraged continued residence included aspects of community and place integration, and factors relating to the fulfillment of needs at various levels of Maslow’s hierarchy. These specific factors are depicted above (Figure 5).

*Off and on through the years I've thought [about moving] a number of times. After I came here I got married and I had children, so that's been a very stabilizing influence. And once the children come you hate to disrupt their lives. So that's been a major influence.*

Recreational opportunities were also frequently cited as one of the top reasons why physicians chose to stay.
I notice that the people here... particularly the docs, really like the nature that's here... they're climbing the mountain, they're on the river, they're doing all this and that, and so they're willing to sacrifice some of the amenities they had in a large community for the beauty and... the autonomy they have here.

Professional reasons generally related to self-actualization, and included variety, efficacy/effectiveness, lack of pretense, and working for an effective organization where they were treated well. Effectiveness and variety often went hand in hand; physicians enjoyed both the breadth and acuity of cases they saw and the sense of accomplishment they felt at being able to handle those challenging patients.

*I think another thing that kept me here was... the small town work hospital environment... I mean, I've worked at the big hospitals... I was just lost there. Here you can actually do something, here you're part of the medical staff, you can make a change.*

They also appreciated working for effective organizations; the combination of small size and efficiency allowed them to accomplish more than they might have elsewhere.

*We've got an excellent medical community. The docs get along. They're skillful. There are no slackers... The hospital administration is very good, very responsive and responsible. It is a not-for-profit hospital, which I think is ideal because patient concerns come first and the bottom line second. And you don't feel you're involved in any kind of sleaze like some of the hospitals you [come across].*

In both personal and professional settings, physicians cited freedom, community, and sense of place as major reasons why they continued to practice in a rural setting.

“Freedom” encompassed both an absence of governmental regulation, and a flexibility of resources and administration that allowed for the development of innovative solutions.
Very little infringes upon my desire to do things here. I decide what I'm going to do. I decide which trails to work on and which firewood to cut...or what shape I want my house or whether or not I want pink paint. When you live in town there's restrictive covenants and you have to be responsive to the city ordinances. Out here none of that counts.

Meanwhile, "community" and sense of place referred to previously described concepts; they remained major reasons why physicians chose to stay, despite adversity they encountered in the process.

Constant comparison: In addition to balancing the costs and benefits they perceived in their own lives and practice, physicians also maintained an external point of reference by constantly comparing their place to others they had lived in previously or heard about through friends and peers.

Well, when I talk to friends in the cities their life is no bed of roses. One, they work hard. They have minimal reimbursement. They are always in fights with the insurers, the HMOs. Well we're a PPO, but HMOs are forever trying to cut you out and it's sort of a non-stop perpetual problem. And the only way that they can keep their income up is to either crank out lots and lots of patients or to limit their patients to the very high end, well insured people and cut out the MediCal. And we have never felt that we could really cut MediCal out of the practice.

This constant comparison seemed to validate the physician's choice to stay, as well as provide an alternative measuring stick upon which to judge their situation. However, because sense of place and community factors in other communities were generally unable to be assessed, physicians tended to compare communities based on more tangible factors such as salary or call schedule, and then conclude that even if the other
community had better basic amenities, they were willing to make a sacrifice in order to retain the intangible benefits of living in a familiar, beautiful, unique place.

F. An Integrated Conceptual Model

The process by which physicians choose to stay in rural practice is complex and varies greatly. Nevertheless, it is clear that rural exposure, via education, recreation, or upbringing, creates an important foundation for future rural practice, and it does so through four main mechanisms (Figure 6). First, rural exposure creates familiarity with rural environments and social structures, which increases physicians' feelings of comfort and "at-home-ness" and facilitates their return to rural environments. Newer psychological models such as cognitive lock-in also help explain the ways in which familiarity leads to continued repetition of the known, even when better options are available.

Prior involvement with tight-knit communities and effective mentors also smooth the "rural transition" and provide the support and social capital necessary to deal with the inherent challenges of rural living and practice. Well-integrated physicians demonstrate a sense of rootedness, community attachment, and an identity that is shaped by community participation.

Third, prior development of a strong sense of place through empathy, exploration, and social action allows physicians to more effectively relate to and form attachments with
rural communities and their natural environments. Well-integrated physicians describe rootedness and attachment to their local surroundings, as well as a sense of health and well-being that is precipitated by their time spent there.

Finally, some physicians view rural communities as places where they can most easily create a "good life" for themselves and their families. They cite freedom, flexibility, outdoor opportunities, tight-knit community and "quality of life" as ways in which this opportunity presents itself.

Each of these pathways is influenced by external factors, notably the wishes and needs of the physician's partner and/or children, the political and financial climate of the community, and unexpected crises. In addition, prior experience with adversity and successful coping can reinforce integration in its many forms and gives physicians tools and experience to deal with difficult situations. These factors are indicated in Figure 6 by large green arrows that do not lead to any particular process, alluding to their multiple and wide ranging effects.

In the end, all of these factors, both internal and external, are weighed in a constant cost-benefit analysis through which sources of adversity are balanced against the inherent benefits of tight-knit communities, access to outdoor recreation, feelings of attachment and well-being stemming from a strong sense of place, freedom, efficacy, variety of practice, and many others. Physicians also compare their practice setting to other rural and urban benchmarks in an attempt to make objective and well-informed decisions about
their practice location. At times, intolerable circumstances such as a house fire or malpractice accusations force physicians to move elsewhere, but most committed rural physicians find themselves in a balancing act where social and cultural preferences and feelings of community integration are the most influential factors in their decision whether to leave or stay.
Figure 6: An integrated conceptual understanding of how rural exposure and upbringing improve rural retention rates among practicing physicians.
V. Discussion

Most studies of rural physician retention focus on professional and community factors, developing lists of barriers that can be targeted by interventions (Myers 1997; Mayo and Mathews 2006). This study compliments and expands on the literature by describing the relationships between these factors and the *processes* by which physicians become interested in and remain in rural practice. It also considers the influence of childhood and training experiences on motivations for rural practice.

The resulting model suggests that exposure to rural environments through recreation, education, or long-term residence provides a foundation of familiarity, resilience, and place integration that is the main driver of interest in rural practice following medical school. These findings are consistent with several studies that have identified “rural upbringing” as the most influential factor in rural practice choice (Leonardson 1985; Holmes 1986; Costa 1996; Rabinowitz 1999b; Hegney 2002; SRPC 2004; Daniels 2007), but they also suggest that shorter-term experiences at summer camps, family farms, rural service projects, and other sites can leave lasting impressions on urban and suburban students. These findings are also consistent with Pathman and others’ assertion that preparation for *rural living* and community integration are at least as important as preparation for *rural practice* when attempting to retain rural physicians (Kazanjian and Pagliccia 1996; Pathman, Steiner et al. 1998).
In addition, this model suggests that students without rural exposure can acquire skills in place integration, community participation, and resilience in other contexts that can later be transferred to rural environments. These “rurally disposed” students include those who express a community service orientation and plans for family practice upon entry into medical school, a finding that is also consistent with previous studies (Madison 1994; Rabinowitz 1999a; Tolhurst 2006; Daniels 2007). These students could be identified and recruited during college or the medical school admissions process and, with effective support, could increase the percentage of rural-interested students in medical schools (Kazanjian and Pagliccia 1996; Rabinowitz 2005; Tolhurst 2006; Zastrow 2006).

My sample of twenty-two respondents was sufficiently varied in age, geography, practice type and reasons for choosing rural practice that the differences between respondents with rural and non-rural backgrounds were not clear. However, the elements hypothesized to be key to a rural upbringing, such as resilience and a community service orientation, were also observed in the narratives of urban-raised physicians, suggesting that these commonalities may be as important as potential differences. Further research could help distinguish between the experiences urban- and rural-born physicians and to tailor interventions to their differing needs, while building on their commonalities.

The pathways to retention uncovered by this analysis include familiarity, community participation, place integration, and self-actualization. Of these four, familiarity is perhaps the most predictable; it is generally held that rural students tend to return to rural
settings because they feel comfortable there (Costa 1996; Bowman 2005). However, a review of the literature on familiarity suggests other important mechanisms by which it encourages return to known environments, including decreased anxiety, decreased search costs, and "cognitive lock-in," where the consideration of an alternative represents a cognitive cost to someone who has a comfortable pattern of behavior (Murray 2007). These mechanisms suggest important ways in which rural health can be promoted to non-rural students: by introducing students to rural options in a comfortable and non-threatening setting, familiarizing them with rural options early and often (thereby decreasing cognitive lock-in), and decreasing the energy required to seek out rural preceptorships, residencies, and practice opportunities.

The second pathway to rural practice, an inclination toward and experience with community participation and service, has been discussed in several studies on recruitment (Madison 1994; Tolhurst 2006; Daniels 2007), but not on retention; this study is unique in making this temporal link. However, because this investigation focused on community as it relates to place, I developed only a limited understanding of how the habit and motivation toward community participation is created, aside from identifying the importance of previous experience with community, mentorship, and social capital. The literature on community participation and more focused studies stand to provide a better understanding of how students learn to "get involved," and to provide better guidelines for recruiting community-oriented medical school applicants (Clary and Snyder 2002).
Place integration as a pathway to rural practice has been alluded to in previous analyses, but this study makes significant headway in describing this pathway and its outcomes. Specifically, using Sobel’s often cited but infrequently applied model of sense of place development, I was able to show a stepwise progression of connection to place that mirrors the development of childhood place attachment. While simplistic, this process effectively captures the accounts of the majority of respondents and provides a comprehensible model for use by recruiters, administrators, and others. In addition, it emphasizes the importance of place-based education models that allow physicians to develop empathy for and explore new communities before saddling them with an overwhelming load of insoluble problems. “Windshield surveys,” assets-oriented community assessments, targeted mentorship and other methodologies are prime candidates for implementation in these situations. (Sobel 1996; Sharpe 2000; Sobel 2004; Corbett 2005; Semken 2005). While the details of these methodologies are beyond the scope of this discussion, they all give physicians the opportunity to develop a nuanced understanding of a community and its assets, and create a foundation for community integration and effective social change.

The variation in the intensity of interviewees’ connections with their communities/places is consistent with other studies that describe variations in sense of place depending on length of residence, community role, type of employment, home ownership, and other factors (Tuan 1977; Low 1992; Cross 2001; Stedman 2006). However, all respondents expressed a basic level of care and relationship to their place and community – a sense of Dasein - suggesting that efforts to facilitate connection are never entirely lost on them,
no matter how busy or harried they might be during their initial months of practice. In fact, physicians often desire more “orientation” than they are given, evidenced by previous studies that show that immigrant physicians desire more information about communities (Carlier 2005). Early mentorship increases recruitment and retention by creating important connections to resources, places, and community members (Felix 2003; Leners, Wilson et al. 2006).

The outcomes associated with sense of place (knowledge, rootedness, identity, and well-being) were found to be consistent with the psychological literature on place. No new categories were added to those developed from a review of relevant literature. This does not, however, suggest that further categories are non-existent, or that further work will not uncover new dimensions.

A new and unanticipated theme emerged as a fourth pathway to rural practice during the analysis of interview transcripts. Self-actualization has not been previously discussed directly in the rural health literature, though several of its components, including workload, satisfaction, and medical/professional diversity have been cited as motivations for rural practice (Pan 1995; Cutchin 1997a; Pathman, Konrad et al. 2004). Anthropologists, however, have previously taken notice. In his work on “biomedicine on the spatial periphery,” Lockhart described the choice to work in a rural health clinic as a “deeply meaningful quest for self-discovery and individual fulfillment that involved dramatic lifestyle changes” for previously urban-based practitioners (Lockhart 1999 p.168). Understanding rural residence as part of a journey toward self-actualization has
important implications for health workforce policy, including the necessity of tailoring recruitment programs to the needs of individual physicians rather than assuming that particular incentives such as loan repayment will meet the needs of all.

Despite the fact that these “pathways to rural retention” have been discussed separately, it is important to note that most physicians maintained multiple motivations for rural practice, and that their initial motivations opened the door to other pathways. For example, for rural-born physicians, familiarity with rural environments often allowed for place and community integration by increasing comfort and trust, thereby facilitating the development of new relationships, which in turn built social capital and resilience. Therefore, this model should be understood as “horizontally fluid”—pathways can interact with and influence each other (Pugh 2004).

As foreshadowed by the literature on rurality, adversity emerged as an important factor in almost every physician’s practice and personal life after they became established in a rural setting; rural practice remains fraught with challenges relating to isolation, unreliable natural resources, and the challenges of living and working in a small social circle. Meanwhile, resilience in the face of these challenges appears to be a key in the progression of all four pathways articulated above, transforming obstacles into accomplishments, or at least preventing them from continually tipping the balance toward a choice to leave. While the processes involved in resilience described here (use of technology, internal locus of control, etc.) are preliminary, they represent an important starting point for a better understanding of how resilience can be promoted among
struggling rural physicians, and a strong argument for the screening and selection of students who have overcome adversity.

Among the other factors that influence the progression of the four pathways, spousal/partner influences remained key, a finding that is consistent with numerous other studies (Kazanjian and Pagliccia 1996; Mayo and Mathews 2006). This suggests that integration must be viewed through the lens of the entire family, and that partners must be included in any effort to facilitate community integration, connection to place, and resourcefulness. In addition, changes in hospital policy, workload, and other professional concerns must be considered from the partner’s point of view.

The model of the retention process described here, where physicians must reach a threshold of security and satisfaction before weighing more subtle factors such as community integration, is generally consistent with other work (Borck 2007), though some models omit the threshold concept and view residence choice as a constrained optimum that is constantly being evaluated (Feridhanusetyawan 1996). Vietch (2002) has termed these strong community- and practice-related concerns “internal pushing factors” that push physicians away from rural practice, as opposed to “external pulling factors” such as the allure of an urban mall, and posits that internal factors are generally more influential than external ones. My findings support this model; physicians were pushed away more often than they were lured from the outside.
This study does not address the timing of threshold/balance process, which is more clearly described by Hays, et. al. (1997). They suggest that locality-specific “triggers” such as poor housing quality or a lack of on-call coverage influence physicians to leave their practices over time; while manageable at first, such triggers eventually become intolerable. These authors further suggest that early intervention is the key to preventing these “triggers” from continuing their effects; mentorship and other screening mechanisms allow for detection and management of problems before they come to a head.

In addition to providing a model for rural physician retention, this study also has important application in the explanation of current rural physician shortages. Recent changes in medical school admission policies have resulted in far fewer rural-raised matriculants. They have been replaced by younger, wealthier, and more urban applicants; 51.5% of 2004 admits had parents who earned $100,000 or more, up from 23.5% in 1997 (Bowman 2005). Because of their social class and geographic upbringing, these students are statistically less likely to have been exposed to adversity (Turner and Noh 1983; Hatch 2005), to opportunities to integrate with rural places (Lockhart 1999; Woods 2005; Howley 2006), or to have engaged in community participation (Bowman 2007), and are therefore less likely to be “predisposed” toward rural practice.

On the other hand, this model also suggests immediate ways by which this trend can be reversed. By recruiting and supporting more rural, place-oriented and community-focused physicians, along with those who believe that rural communities will allow them
to live a satisfying life, important strides can be made toward meeting the needs of rural and underserved communities and providing a better quality of life for those who call rural places home.

Limitations

This study has several limitations. First, physicians’ recollection of and understanding of the connections between their upbringing and training is a memory-guided endeavor that is subject to recall bias and the moderating influence of cognitive dissonance; triangulation with other people familiar with the physician or their past was generally not possible. In particular, physicians’ accounts of their place and community integration may have been colored by a desire to justify their decision to stay. Further work with physicians’ earlier in the integration process is necessary to better understand the obstacles they face and the strategies they use to overcome them.

The models proposed here are also limited by the difficulty of articulating internal psychological processes, which are not easily observed, tested, or manipulated, and are inherently subjective and highly variable between subjects.

Sample size and variation were such that the results of this study are not representative or directly generalizable. Some selection bias may exist due to the use of snowball sampling. The lack of racial/ethnic diversity is particularly notable, and was a result of both physician demographics in the study area and the bias of the sample toward older
physicians as a result of study inclusion criteria. In addition, the use of a single
interviewer working in a limited geographic area over a short period of time also limits
representativeness. Finally, caution should be used when applying this model, as it is
built upon theoretical generalizations about rural people which can be both inaccurate and
inadequate in the context of the huge variation of rural experience.
## Addendum: Policy and Program Design Recommendations

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<th>Pathway</th>
<th>Recommendations</th>
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| **FAMILIARITY**       | □ Support rural students with interests in the health sciences from an early age  
□ Recruit more rural and rural-exposed students. Screen for these students in the medical admissions process and implement admissions policies that give preference to these students  
□ Provide rural training experiences in medical school and residency, and facilitate access to these experiences |
| **COMMUNITY PARTICIPATION** | □ Screen for and admit students with an orientation towards community service  
□ Cultivate community participation and conduct further research about its antecedents  
□ Implement mentorship programs for all new rural physicians and training programs for mentors |
| **PLACE INTEGRATION** | □ Rethink the transition to rural practice from the perspective of place-based education  
□ Implement orientation programs that facilitate integration, knowledge building and connection formation  
□ Make space for empathy and exploration; be careful not to saddle new physicians with insoluble problems immediately. |
| **SELF-ACTUALIZATION** | □ Implement mentorship schemes that actively identify and address specific needs and professional development goals.  
□ Rethink incentive schemes in terms of flexibility and customization to physician goals. |
| **RESILIENCE**        | □ Screen for and recruit students who have overcome adversity  
□ Develop mentorship programs at all levels of medical education and practice; resilience is consistently facilitated by strong social ties and social capital  
□ Increase opportunities and funding for Continuing Medical Education, via telemedicine, sponsored attendance at regional conferences, and so forth.  
□ Attend to the needs of the partner, not just the physician |
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