DETERMINANTS OF NET MIGRATION IN MONTANA

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DETERMINANTS OF NET MIGRATION IN MONTANA

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ABSTRACT—The Great Plains has experienced population loss for most of the 20th century while the Rocky Mountain region has experienced rapid population growth in the past few decades. This paper examines net migration by county for Montana between 1995 and 2000 disaggregated by age and educational level. Montana was chosen because it straddles the Great Plains and Rocky Mountain regions and thus provides an opportunity to compare and contrast net migration and population change in two regions undergoing fundamentally different population processes. Regression analysis was applied to determine the predictor variables responsible for net migration between 1995 and 2000. Dependent variables concerned economic, demographic, and environmental characteristics of each of the counties. Overall, median household income and the Rocky Mountains explained the greatest amount of variance in the dependent variables, suggesting that both economics and the environment play a role in migration patterns in Montana.

Key Words: amenities, internal migration, Montana, population change

INTRODUCTION

The Great Plains and the Rocky Mountains are two physical regions of the United States that evoke contrasting images to the average American, a contrast made that much greater by the two regions being contiguous to each other. The Great Plains is often viewed as a monotonous landscape whereas the Rocky Mountains conjures images of scenic vistas. What the two regions have in common is a general image of rurality, which appears in one instance to have driven people away and in another instance to have attracted individuals. The Great Plains has been a region of net out-migration and population loss (Archer and Lonsdale 2003; Rathge 2005) for much of the 20th century. By the 1920s, this region began to lose population as technological innovations in farm equipment reduced the need for an agricultural labor force. By the 1970s, agribusinesses and the consolidation of family farms led to further depletion of the Great Plains’ population and spawned a mass movement to the cities both within and outside the Great Plains in search of employment opportunities (Hudson 2003). In contrast to the mass exodus of population from the Great Plains, the Rocky Mountain region has experienced continued population growth over the 20th century (Nelson 2005). Much of this growth has come from migrants seeking natural amenities in non-metropolitan counties.

While economic motives have long been predominant in migration patterns in the United States and may well account for the majority of migration, the search for natural amenities unrelated to employment has surfaced within the past several decades to become a major generator of migration (Johnson and Beale 2002). As early as the 1950s, Ullman (1954) noted that an amenity such as climate was an important contributor to migration streams. Within the past 50 years, additional variables relating to the landscape have surfaced as major determinants of net migration to rural counties in the United States. These variables include the amount of forest coverage, amount of open water, and topographic variation (McGranahan 2008).

By the latter part of the 20th century, a greater percentage of the U.S. population was elderly, and the availability of social security allowed these individuals to pursue retirement locations without regard to employment opportunities (Johnson et al. 2005). Although these individuals made up a small percentage of the total migrant population, they required a labor force to perform healthcare, banking, retailing, and other services that attracted working-age individuals to these same locations (Sutton
and Day 2004). Further developments in transportation linkages and communication technology attracted highly educated individuals to regions with high levels of natural amenities, further spurring growth in select regions of the country (Shumway and Otterstrom 2001).

Although numerous studies have been completed concerning the depopulation of the Great Plains and the rapid population growth of the Rocky Mountains, I am aware of no studies that examine a cross-section of these two regions. Most studies on net migration have examined hundreds of counties in the Great Plains (Albrecht 1993) or Rocky Mountains (Shumway and Davis 1996) and have made generalizations about net migration in association with certain economic, demographic, and environmental variables pertaining to the counties. What is missing from the literature is a disaggregation of the net migration flows by age and educational level. These are two of the most important characteristics that determine migration behavior. In classic economic terms, young adults have longer periods in which to translate a move into earning power (Sjøastaad 1972). However, longer life expectancies and retirement portfolios have allowed older individuals to pursue attractive locales unrelated to economic motive. Another major difference in migrant characteristics pertains to educational levels of the population, in that more highly educated individuals are likely to have the resources and the contacts to search wider areas for employment opportunities than their counterparts with less education (Shryock and Nam 1962; Long 1973), and thus, net migration, which is not disaggregated by skill level, can often be difficult to interpret.

The purpose of this paper is to examine the determinants of net migration between 1995 and 2000 by age cohort and educational level for Montana by county. Major migrational movements within the United States are examined in the first section of the paper. The second section of the paper examines population change in the western and eastern parts of Montana from 1930 to 2000. Thirdly, the spatial distribution of population change by county and net migration between 1995 and 2000 is examined. In the fourth section regression analysis is used to determine which factors contributed to net migration exchanges between 1995 and 2000. The conclusion suggests avenues for further research.

**U.S. POPULATION MIGRATION TRENDS**

The United States experienced its major westward push of migration past the Mississippi River during the 1800s, but much of the interior of the Great Plains and Rocky Mountains was bypassed in favor of the Pacific coastal region (Otterstrom 2001). Although several areas of the eastern Great Plains were settled after passage of the Homestead Act of 1862, the aridity of the western Great Plains was less suited to agriculture. For the Northern Great Plains, residents would have to deal with not only limited precipitation but also cold temperatures. The Rocky Mountain region was also largely bypassed due to isolation, steepness of terrain, and its unsuitability for agriculture.

The second major migrational flow in the United States was the flow from rural areas to urban areas, which began in earnest in the early 1900s. However, there have been three decades during the 20th century when nonmetropolitan counties grew at a faster rate than metropolitan counties (Johnson 2006). One of these decades was the 1930s when the Great Depression made movement less likely. The second time was during the 1970s, which became noted by demographers as the rural renaissance or nonmetropolitan turnaround. The end result of this reverse in previous migration patterns to metropolitan counties was an increase of approximately 1 million individuals in nonmetropolitan counties between 1975 and 1980 (U.S. Bureau of the Census 2003). This unprecedented change in migration flows was attributed to three factors: economic restructuring, shifts in age distribution, and technological change (Frey 1990). By the 1970s, the United States was no longer at the forefront of manufacturing power. Corporations searched for lower-cost operations overseas or in rural areas, which caused many industrial regions to undergo a profound decline in not only manufacturing occupations but also in associated industries. By the 1970s, the baby boomers (individuals born between 1945 and 1964) had begun to enter college, which increased populations in nonmetropolitan areas. Technological innovations and improvements in transportation linkages made living in nonmetropolitan areas a reality by the 1970s. During the 1990s, another reverse occurred favoring nonmetropolitan counties and may be associated with the leading edge of the baby boomers who now are entering their retirement years (Perry 2002). Plane et al. (2005) noted that there was increased migration down the urban hierarchy from 1990 to 2000 and suggested that this was a result of congestion and negative externalities associated with larger metropolitan areas and the preference for smaller areas for the population over 30 years of age.
NET MIGRATION AND POPULATION CHANGE IN THE GREAT PLAINS AND ROCKY MOUNTAINS

Albrecht (1993) examined net migration to the counties in the Great Plains between 1970 and 1980 and found that economic structure was related to changes in net migration. Those counties with a more diversified economic base lost less population than those reliant on agriculture. White (2008) examined determinants of population change in the Great Plains between 1900 and 2000 using a percentage of population employed in agriculture as the key predictor variable for population change. White found no evidence of a relationship between farm dependence and population change before 1940 (the premechanization period) but a strong relationship between farm dependence and population change after 1940. However, the use of population change instead of net migration was likely to be complicated in this longitudinal analysis. Fertility levels were much more important in the pre-1940 period than they were in the latter decades of the 20th century, when migration was a much more powerful force in population change. Another longitudinal analysis of net migration in the Great Plains was undertaken by Gutman et al. (2005). The authors found that two types of net migration were underway and both involved environmental factors. During the 1930s and 1940s, net migration was largely determined by massive depopulation of the Great Plains as a result of drought, whereas during the 1980s, net in-migration occurred largely in association with environmental amenities defined as counties with higher elevation and surrounded by water. It may well be that much of this growth took place in the far western part of the Great Plains, which could actually be considered similar to characteristics of the Rocky Mountain counties to the west. Cromartie (1998) found some evidence that the Great Plains experienced positive net migration between 1994 and 1996. Counties that experienced positive net migration tended to be ones with higher levels of urbanization, available natural amenities, as well as an increase in manufacturing and service jobs. Much of this growth occurred in the western part of the Great Plains at the transition line with the Rocky Mountains.

Shumway and Otterstrom (2001) categorized counties in the western United States according to the type of economic structure, with Old West counties heavily reliant on extractive industries and New West counties more service oriented. In an examination of the growth of the Mountain West counties between 1970 and 2000, Otterstrom and Shumway (2003) found that much of the net migration was concentrated in relatively few counties. Between 1990 and 2000, 47% of net migrants were found in only 10% of the nonmetropolitan counties of the Mountain West while 86% of net migrants were found in 30% of the top counties. The counties that experienced the greatest amount of net migration were adjacent to metropolitan areas and/or were retirement or recreational counties. Booth’s (1999) results concur with this study, but Carruthers and Vias (2005) found that much of the growth seen in counties between 1982 and 1997 took place in true rural areas, categorized as rural counties at least 150 miles away from a metropolitan center.

Winkler et al. (2007) expanded upon Shumway and Otterstrom’s (2001) classification, placing communities in the Intermountain West on a continuum from Model New West, New West, Old West, and Classic Old West. They found that in both the New West communities there was a greater percentage of individuals from out of state, a greater percentage of the workforce in Finance, Insurance, and Real Estate (FIRE), professional services, and tourism, a greater percentage of housing that was constructed between 1995 and 2000, and median housing prices that were higher than either of the Old West communities. In terms of spatial distribution, 26% of Model New West Towns were within a one-hour drive of national parks, while only 4% of Classic Old West Towns were so located. The major difference between the two types of New West communities was that the New West communities were more urban than the Model New West, which explains why New West communities have higher median income levels than the Model New West communities. These results are consistent with the Vias and Carruthers (2005) study, which found that measures of population growth and land-use density between 1982 and 1997 in the New West counties were somewhere between those of metropolitan counties and the Old West counties.

NET MIGRATION AND POPULATION CHANGE IN MONTANA

The Great Plains of eastern Montana was less populous than the Rocky Mountains of western Montana until the early 1900s (Wykoff 2006). Mining was the first economic activity in Montana, and only by the late 1800s did settlers begin to populate the Great Plains part of the state in search of agricultural opportunities. Studies that examine Montana’s population change by county usually begin with 1930, which was the year that the boundaries and county seats of the 56 counties were in place. Figure 1 displays counties in Montana as designated by the Economic Research Service/U.S. Department of Agriculture (ERS/
USDA) to be part of the Great Plains versus the Rocky Mountains. Montana’s population increased by 67.8% between 1930 and 2000 (Fig. 2). The 1950s (14.3%), 1970s (13.3%), and 1990s (14.3%) recorded the highest growth rates during the time period. Overall, both the Rocky Mountains and Great Plains counties grew between 1930 and 2000, but only the Rocky Mountain counties experienced continued increase over the time period. In contrast, counties in the Great Plains experienced a decline in population during the 1930s but rebounded during the 1940s and 1950s. During the 1960s these counties again experienced an overall decline, followed by increase in the 1970s, a slight decline in the 1980s, and a healthy increase during the 1990s. Gloege (2007) in his analysis of population change in eastern Montana noted that 25 out of 38 counties lost population between 1930 and 2000. As of 2000, the counties of the Rocky Mountains contained 47.5% of Montana’s population. Although Montana’s Great Plains counties contained over one-half of the state’s 2000 population, 27.9% of the state’s population resided in counties contiguous to counties of the Rocky Mountains.

From these figures it is obvious that the Rocky Mountain counties of Montana had a more favorable population increase over the 70-year time frame. My analysis is concerned with net migration between 1995 and 2000. The state of Montana had a net migration loss of 5,166 individuals between 1995 and 2000, a rate of -6.1%. An examination of net migration between 1995 and 2000 provides the most recent portrait of migration behavior in Montana. The Rocky Mountain counties of the state had a net migration gain of 12,858 individuals while the Great Plains counties of Montana had a net migration loss of 11,140. Figure 3 displays net migration by county between 1995 and 2000 while Figure 4 displays population change during the same five years. Net migration rates as well as

Figure 1. Classification of Montana’s counties.
Determinants of Net Migration in Montana • Evelyn D. Ravuri

Population change are the highest in the western (Rocky Mountain) portion of Montana as well as a few counties with larger urban populations in the Great Plains. Most of the counties in the Great Plains (eastern part) of Montana lost migrants. However, most of these counties had small populations, and the Great Plains of Montana as a whole gained population through natural increase. Ravalli and Lake counties experienced the highest net migration gains while eight counties (Beaverhead, Carter, Garfield, Madison, Philipps, Prairie, Rosebud, and Roosevelt) had at least a 10% decline in net migration.

Although the majority of counties in Montana experienced negative net migration between 1995 and 2000, most of the counties in the Rocky Mountains managed to increase their populations. The exceptions were Deer Lodge, Park, and Silver Bow. The selectivity of migration among different age groups largely explains the growth in the Rocky Mountain counties. Young adults not only are more representative in the West but they also transfer their childbearing behavior to these same counties, thus contributing further to population growth. In the Great Plains part of the state, aging in place is likely at work. Young adults eschew these counties, leaving a residual of older individuals who have already progressed through the childbearing years. Furthermore, crude death rates are higher in these counties given that a greater percentage of the population is older.

According to Martin and Young (2002), much of the growth in the western and southern parts of Montana was a result of the major wholesale and retail trade centers, business, health services, and high-tech firms. Mining developments also experienced some growth in the 1990s, while retirement destinations are also associated with this region. However, Nelson (1999) found that several counties in eastern Montana had rebounded in population due to an influx in investment income.

NET MIGRATION DISAGGREGATED BY AGE AND EDUCATION

Table 1 displays migration data for Montana by age and educational attainment. In the descriptive and analytical sections that follow, it is important to remember that there is no disaggregation of data by both age and education level. For the 15- to 29-year age cohort, net migration was negative, while for the rest of the age groups net migration was positive. Montana lost 11,850 individuals in the 15- to 29-year age range, which contributed to Montana having a negative net migration for the time period. This age cohort is the most mobile, and it is likely that young individuals pursue educational and employment opportunities in other states and that Montana is less attractive for these age cohorts who may seek more cosmopolitan areas. Net migration by education...
level revealed that individuals with bachelor’s degrees experienced negative net migration. These individuals were likely young individuals who left Montana after completing their education. Nationwide, individuals with bachelor degrees and higher were more likely to out-migrate from nonmetropolitan counties to metropolitan counties in 2003–4 than their less educated counterparts (Domina 2006).

Of greater interest is the net migration of Montana by Rocky Mountains or Great Plains disaggregated by age and educational level. The age 15–29 cohort experienced an increase of 2,081 net migrants to the Rocky Mountain counties of Montana, but lost 10,886 net migrants from the Great Plains counties (Table 2A). It is likely that much of this age cohort from the Great Plains either relocated outside Montana or moved to the Rocky Mountain part of the state. The 30–49 and 50–64 age cohorts experienced positive net migration for both the Rocky Mountain counties and the Great Plains, and it is likely that many of these individuals originated from outside Montana. The 65–74 age cohort experienced positive net migration in the Rocky Mountains (+667), but negative net migration in the Great Plains (-192), perhaps a result of relocation to retirement counties that are located in the West. The over 75 age cohort experienced positive net migration in both the Rocky Mountains and Great Plains (+651 and +119, respectively).

Educational levels reveal an additional complexity to the net migration patterns (Table 2B). Individuals with less than a high school diploma had a positive net migration of 51 for the Great Plains and 3,395 for the Rocky Mountains. It is likely that many of these individuals
Individuals holding a high school diploma or an associate’s degree as their highest educational level experienced a net loss of 1,492 migrants from the Great Plains but accrued 6,233 to the Rocky Mountains. Much of this may have been in response to employment opportunities in the western part of the state. The Rocky Mountain counties lost 2,422 net migrants with bachelor’s degrees while the Great Plains counties gained 614 such individuals. Both types of counties gained individuals with graduate degrees in equal numbers (808 and 775, respectively). Distance of migration and educational level are usually positively correlated. Individuals with higher education are able to search a wider territory and are able to expend the money necessary to make a long-distance move.

METHODS

My specific interest in this paper is to determine if the counties of the Rocky Mountains were more attractive to migrants of different age and educational cohorts than were the counties of the Great Plains. A cursory examination of net migration shows that the Rocky Mountain (western) part of Montana is more attractive than the Great Plains region. Through regression analysis, several variables concerning the economic structure and amenity type are examined. The model does not predict how an individual migrant will respond. In order to draw those conclusions, actual survey data on migrant behavior is needed. It is predicted that when migration streams are disaggregated by age and educational level of migrant, different predictor variables will explain the migration behavior.
Aggregate net migration data were taken from the county-to-county migration flows published by the U.S. Bureau of the Census, while migrant data disaggregated by age and educational level were taken from the CEIC Montana 1995–2000 Web site. Net migration is defined as the difference between the number of in-migrants and out-migrants to each of the 56 counties of Montana. Net migration is divided by the total county population to render a percentage net migration for the study period. Disaggregated migration data are also divided by the requisite age or educational level of the population in those categories to secure a rate of migration for each county. The question that I seek to answer here is whether migrants are attracted to the Rocky Mountain region. Additional independent variables were taken from the Summary Tape Files 1 and 3 and the ERS County Typology Codes. Independent variables include the percentage change of labor force engaged in agriculture, the percentage of labor force employed in low-wage services, median household income, percentage change in professional jobs, total county population, one dummy variable representing rural-urban continuum, and one ordinal variable representing the Rocky Mountains. The regression equation takes the form

\[ N_{\text{mig}} = RM + Ag + S + MI + P + Pr + UR + e. \]

Following is further explanation of these variables and a rationale for the inclusion of these variables in the regression equation:

**Rocky Mountain (RM).** RM is an ordinal variable that subdivides Montana counties into three components. Sixteen counties are classified as Rocky Mountain and 29 counties are classified as Great Plains. Eleven counties lie along the transition line between the Rocky Mountains and the Great Plains, and it is argued that the attractiveness of these counties would be somewhere in between the Rocky Mountains and Great Plains. The Rocky Mountain counties are represented by 2 in the regression equations while counties along the transition line and the Great Plains are represented as 1 and 0, respectively.

**Percentage Change in Labor Force Engaged in Agriculture (Ag).** Even though agriculture is no longer an important employment sector in the Great Plains, it still plays a role in the economy of the Great Plains. An inverse relationship is predicted to exist between the percentage change in the labor force employed in agriculture and net

### Table 1

**Net Migration for Montana by Age and Education Attainment, 1995–2000**

<table>
<thead>
<tr>
<th></th>
<th>Montana (net) external migration</th>
<th>Western Montana internal migration (Rockies)</th>
<th>Eastern Montana internal migration (Great Plains)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total net</td>
<td>-5,166</td>
<td>12,858</td>
<td>-11,140</td>
</tr>
<tr>
<td>Age 15–29</td>
<td>-11,850</td>
<td>2,081</td>
<td>-10,886</td>
</tr>
<tr>
<td>Age 30–49</td>
<td>1,641</td>
<td>3,938</td>
<td>41</td>
</tr>
<tr>
<td>Age 50–64</td>
<td>3,125</td>
<td>3,085</td>
<td>580</td>
</tr>
<tr>
<td>Age 65–74</td>
<td>311</td>
<td>667</td>
<td>-192</td>
</tr>
<tr>
<td>Age 75+</td>
<td>580</td>
<td>651</td>
<td>119</td>
</tr>
<tr>
<td>Less than high school diploma</td>
<td>1,617</td>
<td>3,395</td>
<td>51</td>
</tr>
<tr>
<td>High school diploma or associate’s degree</td>
<td>5,181</td>
<td>6,233</td>
<td>-1,492</td>
</tr>
<tr>
<td>Bachelor’s degree</td>
<td>-2,234</td>
<td>-2,422</td>
<td>614</td>
</tr>
<tr>
<td>Graduate degree</td>
<td>1,472</td>
<td>808</td>
<td>775</td>
</tr>
<tr>
<td>Total population in 2000</td>
<td>428,961</td>
<td>473,234</td>
<td></td>
</tr>
</tbody>
</table>

migration, signifying that counties with a higher loss of the agricultural labor force would be likely to lose more migrants than they would gain.

**Percentage of Labor Force in Low-Wage Services (S).** Services was identified as an important indicator of net migration to the Great Plains (Oyinlade 2003). However, within the services category, several occupations with different skill levels are aggregated. Food preparation, personal services, and maintenance were separated from health services and protective services to construct this variable. Negative relationships between low-wage services are predicted for net migrants with higher education levels, given that these individuals have the skill

### TABLE 2A
STEPWISE REGRESSIONS FOR NET MIGRATION IN MONTANA BY AGE COHORT, 1995–2000

<table>
<thead>
<tr>
<th>Cohort</th>
<th>Y-intercept</th>
<th>Beta</th>
<th>Partial coefficients</th>
<th>Adjusted R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age 15–29</td>
<td>-73.350</td>
<td>0.394</td>
<td>0.441</td>
<td>0.539</td>
</tr>
<tr>
<td>Counties with larger populations***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Counties with higher growth rates in professions*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Counties with higher percentages in low-wage services**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Counties located in Rocky Mountains**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age 30–49</td>
<td>-6.511</td>
<td>0.254</td>
<td>0.269</td>
<td>0.379</td>
</tr>
<tr>
<td>Counties located in Rocky Mountains*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Counties with higher incomes**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Counties with higher percentages in low-wage services**</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Counties with higher growth rates in professions**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age 50–64</td>
<td>6.756</td>
<td>0.359</td>
<td>0.391</td>
<td>0.311</td>
</tr>
<tr>
<td>Counties adjacent to metropolitan areas***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Counties located in Rocky Mountains***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Counties with higher percentages in low-wage services*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age 65–74</td>
<td>-3.307</td>
<td>0.284</td>
<td>0.292</td>
<td>0.167</td>
</tr>
<tr>
<td>Counties located in Rocky Mountains**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Counties adjacent to metropolitan areas**</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Age 75+</td>
<td>-14.059</td>
<td>0.495</td>
<td>0.517</td>
<td>0.299</td>
</tr>
<tr>
<td>Counties with larger populations***</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Counties adjacent to metropolitan areas**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Higher percentage change (loss) of labor force employed in agriculture*</td>
<td></td>
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</tr>
</tbody>
</table>

***Significant at the 0.01 level
**Significant at the 0.05 level
*Significant at the 0.1 level
and educational credentials to seek out more lucrative employment than their less-educated counterparts.

**Percentage Change in Professions (Pr).** This variable represents the change in professional jobs between 1990 and 2000 for each of the counties. It is predicted that an increase in these types of jobs would attract migrants to those counties.

**Total Population (P).** Counties with larger populations usually have a larger number of employment opportunities, greater choices in living arrangements, and more cultural amenities available to inhabitants, and thus are likely to attract greater numbers of migrants. These same counties are likely to provide opportunities for individuals already living there and thus should decrease the rate of out-migration. A positive relationship between net migration and total population is predicted. In order for total population to assume a normal distribution, it was necessary to perform a log transformation on the variable.

**Household Median Income (MI).** The economic motive for migration is often noted as the most important determinant of migration. Net migration is predicted to be positively associated with higher household median incomes. Higher household incomes not only attract migrants but also retain potential out-migrants. Low median household incomes may not necessarily expel individuals, but it is likely that low median incomes would not attract so many in-migrants and thus deflate the net migration rates.

**Rural-Urban Continuum (UR).** The Economic Research Service (ERS) (2004) constructed rural-urban continuum codes for counties in the United States, which

### Table 2B

<table>
<thead>
<tr>
<th>Cohort</th>
<th>Y-intercept</th>
<th>Beta</th>
<th>Partial coefficients</th>
<th>Adjusted R²</th>
</tr>
</thead>
<tbody>
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<td>Less than high school diploma</td>
<td>-9.292</td>
<td>0.364</td>
<td>0.380</td>
<td>0.304</td>
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<tr>
<td>Counties located in Rocky Mountains***</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Counties with higher incomes**</td>
<td></td>
<td>0.329</td>
<td>0.348</td>
<td></td>
</tr>
<tr>
<td>High school diploma or associate’s degree</td>
<td>-21.795</td>
<td>0.394</td>
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<td>Counties with higher incomes***</td>
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<td>0.323</td>
<td>0.383</td>
<td></td>
</tr>
<tr>
<td>Counties with higher growth rates in professions*</td>
<td></td>
<td>0.193</td>
<td>0.237</td>
<td></td>
</tr>
<tr>
<td>Bachelor’s degree</td>
<td>30.221</td>
<td>-0.474</td>
<td>-0.466</td>
<td>0.203</td>
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<td>Counties with higher percentages in low-wage services***</td>
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<td>0.256</td>
<td>0.274</td>
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<tr>
<td>Graduate degree</td>
<td>23.445</td>
<td>-0.322</td>
<td>-0.335</td>
<td>0.118</td>
</tr>
<tr>
<td>Counties with higher percentages in low-wage services**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Counties located in Rocky Mountains**</td>
<td></td>
<td>0.278</td>
<td>0.285</td>
<td></td>
</tr>
</tbody>
</table>

***Significant at the 0.01 level
**Significant at the 0.05 level
*Significant at the 0.1 level
provides nine categories for U.S. counties by metropolitan and nonmetropolitan status. By the 1970s, many large metropolitan counties experienced negative net migration while metropolitan counties with smaller central cities experienced increased in-migration. This phenomenon was largely a result of the preference for smaller urban areas. Rural counties adjacent to a metropolitan area have also been more highly favored in the past several decades than have rural counties in more remote areas. It is predicted that counties adjacent to a metropolitan county would experience a positive relationship with net migration regardless of whether they are rural or urban. The following counties classified under the ERS categorization were coded as 1: metropolitan, with a population of 50,000–499,999 (3); adjacent nonmetropolitan with a population of 20,000–49,999 (4); adjacent nonmetropolitan with a population of 2,500–19,999 (6); and adjacent rural (8). Nonadjacent nonmetropolitan (5 and 7) and rural nonadjacent counties were categorized as 0. Types 1 and 2, which under the ERS classification are large metropolitan areas with a central city of 1 million or 500,000, respectively, do not exist in Montana.

Social and economic variables are often correlated among each other, and so a test for multicollinearity was performed. The highest level of correlation between the independent variables was 0.503 and none of the variables registered below 0.500 on the statistical test for multicollinearity, suggesting that it is not a major problem. Stepwise regression was implemented. In this type of regression the variable with the most explanatory power is entered first, and subsequently other variables are entered until no more explanatory power can be provided. Given that several of the independent variables are correlated among themselves, stepwise regression allows variables to be removed if other variables provide better explanatory power. Variables are considered highly significant at the 0.01 level, significant at the 0.05 level, and marginally significant at the 0.1 level.

**DATA ANALYSIS**

**Age**

Migrants in the 15–29 age cohort selected counties with larger populations, higher growth rates in the professions, higher percentages of the labor force in low-wage services, and counties located in the Rocky Mountains (adjusted $R^2$ of 0.539). The attraction of this age cohort to counties with larger populations is likely associated with the urban amenities and employment opportunities located in such counties. Nationwide, young adults are noted for their movements to metropolitan areas (Plane and Jurjevich 2009). Not surprisingly, this cohort is attracted to counties with higher growth rates in professional employment. These individuals have likely finished their education or training and have selected counties with higher growth in professional employment. While young adults are pursuing their educational or vocational training, or entering the labor force for the first time, they may take jobs in the low-wage service sector, and this may explain the attraction of this age cohort to counties with a higher percentage of employment in low-wage services. The entrance of the Rocky Mountain variable indicates that these counties are attractive to this age cohort, but it is the least important predictor of migration. The chance for recreational opportunities would be an added benefit of these counties for these individuals. This cohort was not attracted to counties with higher incomes and this was likely a result of their inexperience in the workforce. Many of these individuals were completing education and/or entering the labor force and income would be of less significance.

The 30–49 cohort was attracted to counties with higher incomes, greater growth in professional occupations, and counties located in the Rocky Mountains, but this cohort was repelled by counties with a high percentage of the labor force employed in services (adjusted $R^2$ = 0.379). These individuals would be advanced in their careers and able to pursue employment opportunities in counties with a high percentage growth in professions and higher incomes. In contrast to their counterparts in the 15–29 age range who are attracted to counties with a high percentage of the labor force in low-wage services, these individuals avoid those counties. The 30- to 49-year-old migrants are generally well established in the labor force and are probably less attracted to employment opportunities at the lower pay levels. Rocky Mountains was an important variable, suggesting that individuals within this age group were not only concerned with economic motives for migration but also attracted to counties that offer a higher level of amenities.

Migrants in the 50–64 cohort were attracted to counties adjacent to metropolitan areas (urban continuum) and those in the Rocky Mountains but avoided counties with higher percentages of the labor force in low-wage services (adjusted $R^2$ = 0.331). The choice of a county within or contiguous to a metropolitan area suggests that these individuals are still interested in amenities offered in the metropolitan areas. Many of these individuals may have made moves to counties in which they will eventually...
retire, and these types of counties are overrepresented in the Rocky Mountains. Like their 30- to 49-year-old counterparts, these individuals avoid counties with a high percentage of the labor force in low-wage services. However, income was not significant for these individuals as it was for the 30–49 cohort, and is likely a result of the ability of these individuals to trade higher income counties for other amenities.

For the 65–74 cohort, net migration was explained by Rocky Mountains and urban continuum (adjusted $R^2 = 0.167$). The attraction to counties outside the metropolitan areas allows access to urban amenities while pursuing a more rural lifestyle. These individuals are likely healthy, relatively affluent, and able to pursue opportunities in counties with the highest prevalence of amenities, which explains the significance of Rocky Mountains in which all nine of Montana’s retirement counties (as designated by the ESDA) are located. The age 75+ cohort of migrants was attracted to counties with larger populations but repelled by counties adjacent to metropolitan areas (urban continuum) and counties that lost a higher percentage change of the labor force employed in agriculture (adjusted $R^2 = 0.299$). These individuals likely moved to larger cities to take advantage of health services or to move in with children residing in those locales. The negative association with urban continuum suggests that these individuals are not interested in living on the urban periphery, even if transportation systems are well structured. Given that Montana’s large cities are still small by national standards, it is likely that most of the suburban areas are contained within the central-city county. The negative association with agriculture indicates that counties that have experienced a greater decrease in agricultural jobs likely expelled migrants in the over 75 age range. Given the rural nature of these counties, the results are as expected. This is the only age cohort in which the Rocky Mountain counties was not a significant predictor of migration.

**Educational Level**

Net migrants with less than a high school education were attracted to counties in the Rocky Mountains and to counties with higher incomes, for an adjusted $R^2$ of 0.304, while migrants with a high school diploma or associate’s degree were attracted to counties in the Rocky Mountains, counties with higher incomes, and counties with higher percentage change in professions (adjusted $R^2 = 0.451$). Vias (1999) found that population growth in Rocky Mountain counties stimulated growth in employment opportunities and may explain the entrance of higher income as a variable for these two educational categories. These individuals were likely expelled from agricultural counties as jobs in these counties became less available. The negative (insignificant) relationship with agricultural employment change suggests this to be the case. The negative association with a higher percentage of the labor force in low-wage services also indicates that these types of counties export migrants with lower education as well as repel potential in-migrants. Counties with a high growth rate of professional occupations also require a cadre of workers at all skill levels and thus may attract migrants with high school diplomas or associate’s degrees.

Individuals with bachelor’s degrees were repelled by counties with a greater percentage of the labor force employed in low-wage services and attracted to counties with a greater growth in professional occupations (adjusted $R^2$ of 0.203). Montana was a net exporter of individuals with bachelor’s degrees and it may be that a select group of individuals have migrated to counties with the greatest growth in professional opportunities. Not surprisingly, counties with a high percentage of the labor force in low-wage services repel these individuals. Migrants with graduate degrees were repelled by counties with a high percentage of the labor force in low-wage services and attracted to counties in the Rocky Mountains (adjusted $R^2 = 0.128$). These are individuals who could have settled anywhere in the country and through perhaps vacation or business opportunities have decided on counties in the Rocky Mountains that are high in amenities like recreation and retirement. Neither net migrants with bachelor’s degrees nor those with graduate degrees were attracted to counties with higher median incomes. This certainly does not mean that these individuals are not concerned with economics, but they are a select group of individuals who are able to target certain professional occupations in a wide variety of counties.

**CONCLUSION**

In the final analysis, is it quality of life and amenities (represented foremost by the Rocky Mountains and secondarily by the urban continuum) or economic variables (income, low-wage services, growth in professions, agriculture) that were more important in Montana’s net migration streams between 1995 and 2000? Ferguson et al. (2007) found in their examination of migration determinants between rural and urban areas nationwide between 1991 and 2001 that economic factors accounted
for between 5% and 56% of the variance in migration behavior while amenities such as those often associated with the Rocky Mountains explained between 3% and 50%.

In this study, economic motives were more important determinants of migration than amenities for the 15–29 and 30–49 age cohorts. These individuals were finishing education or training, beginning and advancing in their careers, as well as in the prime years of bearing and rearing children. In contrast, amenities were more important than economic motives for the 50–64 and 65–74 cohorts. These individuals were less likely to be in the labor force and to be able to draw on social security and savings, giving them freedom to settle in attractive counties, some of which are retirement counties. For the over 75 age cohort, neither economic nor amenity motives explained migration. Aging in place is typical for this age group, while those who migrate tend to rejoin family or relocate near healthcare facilities to aid in this life stage.

All educational categories, except migrants with bachelor’s degrees, were attracted to Rocky Mountain counties. It is likely that the two lower educational categories were pushed out of the counties of the Great Plains in search of economic opportunities in the Rocky Mountains while individuals with graduate degrees were pulled to the Rocky Mountains for amenity reasons.

Whether Montana’s counties of the Rocky Mountains are more attractive than their counterparts in Colorado and Wyoming to different age and educational categories would provide an interesting followup study. A dummy variable could be used to represent the Rocky Mountain counties of Montana to determine if these counties are less or more attractive than their counterparts in other states.

Lastly, it would be preferable to learn the actual intentions of migrants to Montana instead of aggregated county-level variables. Von Reichert (2001) accomplished this in her study of return and first-time migrants to Montana. Overall, little difference was found between the reasons for return and first-time migrants to Montana. Former out-migrants from Montana returned because of family still in Montana whereas employment opportunities were slightly more important for individuals who migrated to Montana from another state. The current study is concerned not only with in-migrants to Montana but also with redistribution of Montana’s population within the state, and thus unable to utilize such a database.

REFERENCES


