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DIFFERENTIAL POPULATION AND INCOME MIGRATION IN THE GREAT PLAINS, 1995-1998

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ABSTRACT—The depopulation of the Great Plains continues to draw the attention of rural scholars. However, a number of aspects of migration in the region remain poorly understood. For example, what differences exist among migrants in terms of their economic characteristics? Recent research shows that there is tremendous variability in the amount of income each migrant brings to or takes from a region. Using county-level Internal Revenue Service data for migration flows between 1995 and 1998, we explore the spatial patterns of income and population migration, while contrasting the income flows of in-migrants versus out-migrants. The results show that income flows out of the Great Plains exceed what might be expected given the pattern of net out-migration, and that many of the migration flows into the region may be reinforcing pockets of poverty. These findings should concern local officials worried about preserving public and private services in rural areas in the face of a declining population and tax base.

KEY WORDS: income, migration, depopulation, rural decline, economic impact, public services

Introduction

Since 1900, net out-migration has been the predominant trend for most counties in the Great Plains (Popper and Popper 1987). In the wake of this

exodus, social scientists have developed a large literature to examine the nature of migration from the region. Many aspects of out-migration and population loss have been explored, especially the extent of the migrant flows in terms of numbers and/or geography, along with a few of the associated impacts (Oyinlade and Baer 1991; Albrecht 1993; Nickels and Day 1997; Rathge and Highman 1998). However, many of these studies assume the impact of each migrant into or out of the Great Plains is the same, especially with respect to economic losses and/or gains (e.g., Adamchak et al. 1999). This assumption can produce a misleading picture of the role and significance of migration in regional change because the economic status (or income level) of each person moving to or from a region can vary tremendously (Plane 1999a). Clearly, a more sensitive analysis of the economic impacts associated with in- and out-migration for a region would study the actual income flows associated with that migration.

Recent data releases and new explanations for the broad economic changes taking place in the rural areas of the United States provide an excellent opportunity to examine the dynamics of migration and income change in the Great Plains. With respect to data, the Internal Revenue Service (IRS) now provides detailed annual information on in- and out-migration flows for counties—detail not available from Census Bureau estimates. More importantly for this study, these data also provide information on income flows, or the per capita income levels of the migrants who have moved from county to county. Researchers examining income and migration have developed more sophisticated techniques for analyzing these flows (Plane 1999a). Additionally, scholars have developed new ideas on the migration of the poor that help us understand differences between income flows and population flows (Lobao 1990; Fitchen 1995; Nord et al. 1995).

Aspects of this type of analysis have been completed at the state level (Plane 1999a) and county level (Manson and Groop 1999) for the entire United States. However, only recently have researchers started to utilize these methods for region-specific analysis (Shumway and Otterstrom 2001). As we will show, understanding the differences between income versus population migration is important because in many parts of the Great Plains, income flows that lead to counties losing more money than would be suggested by the level of out-migration are likely to exacerbate problems already associated with population decline. These problems may include declining demand for products from local retail and service establishments, along with reduced government services that rely on a stable tax base. The

objective of this paper is to inform scholars and officials interested in the dynamics of migration and income change at the county level in the Great Plains. More specifically, we would like to explore how the flows of migrants versus incomes systematically differ from place to place, and what factors are associated with the movement of people with different incomes. From this analysis it may be possible in future studies to more finely assess the specific impacts of migration—impacts that recognize the demographic *and* economic heterogeneity we find in all migration flows.

In the first of three sections, we introduce the IRS data set to be used in this study and discuss recent developments in methodology that permit researchers to decompose population and income migration flows at the county level. In the extensive results section, we examine differences in population and income migration for the Great Plains. We also show how gross income flows can be decomposed into income derived from population shifts, and income derived from differential income levels between in- and out-migrants. Finally, we introduce and test a theoretical explanation (based on a county's agricultural and socioeconomic structure) that may account for systematic differences in the per capita incomes of Great Plains migrants. We end the paper with several conclusions that crystallize the implications of this research and make suggestions for future research.

Methods

Data Sources

In this paper, we utilize IRS data on the migration flows of people and income to investigate several issues raised in the introduction. The IRS data are generated by matching tax returns for consecutive years to determine if there has been a change in residence from one county to another (Isserman et al. 1982; Plane 1999a). Since the returns have information on the number of dependents, it is possible to generate an estimate of the actual number of people who moved, along with their origin and destination. The migration data, first published in the early 1980s, now include information on the income levels of the migrants. As a result, it is now possible to monitor the flow of income as well as the flow of people from county to county. In addition to detailed information on the economic characteristics of migrants, probably the most significant aspect of the IRS data is its frequency—it comes out on an annual basis. This is the only database of its kind in the US for monitoring annual migration flows.

Benefits aside, the IRS data do have some technical deficiencies. For example, since the data are based on IRS returns, those who do not file income tax returns and who move are not documented. These "nonfilers" could include tax cheats, people who do not meet the income thresholds required to file a return, people in college and the military, and the unemployed. Overall, estimates on the number of people not accounted for range from 15% to 25% of the actual flow (Plane 1999b). Although this represents a sizeable percentage of the total migration flow, many scholars believe the data set still provides a fairly complete and reliable measure of the actual flows of people *and* income between states and counties in the United States, especially when we take into account that the data come out annually (Cromartie and Nord 1997; Manson and Groop 1999; Plane 1999a).

The data used in this study come from moves for three time periods: 1995-96, 1996-97, and 1997-98. In all calculations, the measures of income and population change are based on three-year averages, in an effort to reduce the year-to-year variability common in annual data. The data were collected for 381 counties in the Great Plains based on a regional delineation shown by Scott (1985). In general, these are counties west of the 98th meridian and east of the Rocky Mountains (except for Denver and Front Range metropolitan counties). Considerable debate surrounds the geographic extent of the region. However, we believe this delineation is adequate for the current analysis, and that changes along the margins would not significantly affect the results. Of the 381 counties, 5 were omitted from the analysis because of a lack of IRS data. The migration flows for these counties—scattered in the most remote parts of the Great Plains—were too small to be included in the data because of confidentiality concerns.

Analysis of Population and Income Migration with IRS Data

Migration can be measured in a number of ways. One approach is to simply use gross flows of in- and out-migrants for a region to obtain total net migration, simply the difference between the two gross flows. However, this measure is directly related to the size of the region's population and is not very useful for comparing migration flows between regions, especially flows that directly affect population change in a region. A preferable method is to develop migration rates where the gross flows of migrants are weighted against the at-risk population for migration (the migrants who can potentially move). For example, the out-migration rate is simply the number of migrants for a given year divided by the at-risk population, which is the population of the given region. The same is often done for in-migration

rates, although theoretically, the at-risk population is the entire United States, not simply the region's population. As a result, the net migration rate that is derived as the difference between the two gross rates is considered to be problematic by many scholars (see Rogers 1990 and Plane 1994 for a discussion of this issue).

As an alternative for measuring the net flow of migrants, researchers now rely on the concept of demographic efficiency (also called demographic effectiveness). Demographic efficiency is a measure of the migration into and out of a region that actually results in population change in a region, and is a preferred measure of migration (compared to net migration) for many researchers examining population change. Demographic efficiency is calculated as follows:

$$(1) \qquad E_i = 100\ (IM_i - OM_i) / (IM_i + OM_i)$$

where E is efficiency and IM_i and OM_i represent in- and out-migration flows for county i. As noted above, the raw data used are annual so the demographic efficiency rates calculated for the entire 1995-98 time period represent an average of efficiency rates for each of the one-year time periods.

Inasmuch as migrants sort and self-select themselves for migration based on demographic differences (Rathge and Highman 1998), they do the same in terms of economic status (Nord et al. 1995). This means that a simple analysis of migration—an analysis that focuses solely on the number of people moving in and out of a region—may hide a large amount of information pertinent to the economic impact of migration on the region. The degree to which income and population migration differ can be shown through a comparison of efficiency measures for demographic change (population migration) and economic change (income migration) for this same time period, 1995-98. The methodology for calculating income efficiency is the same as outlined above for demographic efficiency. Once the rates are calculated for each county, systematic differences between the rates can be examined using a combination of descriptive statistics for different types and/or categories of counties (e.g., by state or economic structure), and through a cross-tabulation analysis of a county's population migration and income migration efficiency rates.

Decomposing Income Migration

Previous studies have shown that income and population migration rates significantly differ from each other, at multiple geographic scales of

analysis (Plane 1999a; Shumway and Otterstrom 2001). Ultimately, what causes the divergence of income efficiency rates from demographic efficiency rates has to do with the fact that people have different incomes, and the further these diverge from one another with respect to in- and out-migrants, the greater the difference in efficiency measures. It is useful to decompose these gross income flows to discern what amount of the aggregate income change comes from larger versus smaller migration flows between in- and out-migrants, and to what extent these differences evolve from income-level differences among the migrants themselves.

Plane (1999a) has outlined a method for disaggregating income flows to illustrate these differences. Using his terminology, we see that the net income change that takes place in a region can be calculated as follows:

$$Y_N = Y_N{}^{NMC} + Y_N{}^{DIC} \tag{2}$$

where Y_N is net income change, $Y_N{}^{NMC}$ is the net migration component of net income change, and $Y_N{}^{DIC}$ is the differential income component of net income change for a region. The net migration component simply reflects the income change that would take place assuming in- and out-migrants have the same per capita income levels, while the differential income component reflects the income change that results from in- and out-migrants having different per capita incomes (Plane 1999a). Following from the above identity of net income change, $Y_N{}^{DIC}$ can be calculated as follows:

$$Y_N{}^{DIC} = {}^1/_2\, dT \tag{3}$$

where T is the sum of all migration in and out of the county and d represents the difference between in- and out-migrant per capita incomes. This leads to a simple calculation for the net migration component $Y_N{}^{NMC}$ as the difference between net income flow and the differential income component:

$$Y_N{}^{NMC} = Y_N - Y_N{}^{DIC} \tag{4}$$

As with the comparison of income migration and population migration efficiency measures, a useful way of analyzing the nature of these rates is through cross-tabulation analysis that compares the two components of income migration for in-migrants versus those for out-migrants.

Results

Patterns of Income and Population Migration

Over the past few decades, research on population change in the Great Plains has focused primarily on population losses through natural decrease and out-migration (e.g., Albrecht 1993). In many parts of the region, these losses continued through the 1970s and 1990s, decades when most nonmetropolitan counties in the United States experienced reversals in long-term downward population trends (Fuguitt and Beale 1996; Vias 1999). An examination of the demographic efficiency rates for 1995-98 shows that this depopulation trend remained strong, with 292 out of 376 showing negative values for demographic efficiency. Mapping these rates for the Great Plains counties (see Fig. 1) shows the losses were especially severe in parts of the Northern Plains and eastern New Mexico.

In general, the overall pattern of income efficiency is similar in many ways, especially the net outflow of income that matches population losses. However, there are a number of counties where the efficiency rates diverge in unusual ways. To highlight significant differences between the measures, Figure 2 shows a cross-tabulation analysis in a diagram based on whether counties had negative or positive signs for their respective demographic and income efficiency rates. For most counties, migration and income flows were in the same direction—both either positive or negative. However, for about 10% of the counties, the efficiency rates actually have opposite signs. This indicates that for these counties, population was increasing (decreasing) while income was decreasing (increasing) as a result of migration.

Another interesting aspect of the diagram centers on differences in the magnitude of the efficiency measures. If we assume that migrants have similar per capita incomes, we expect the demographic and income efficiency measures to be of roughly the same magnitude. However, for counties that experienced both negative income and demographic efficiency rates, the data show that four times as many counties had income efficiency rates larger in magnitude than their demographic efficiency rates (see upper left box in Fig. 2 in which 219 counties are above the diagonal versus 52 counties below). The reason for this divergence is that the per capita income levels of the out-migrant flows were greater than the per capita income levels of the in-migrant flows. On the other hand, for growing counties we found that twice as many counties had income efficiency rates smaller in magnitude than demographic efficiency rates. In this case, the findings

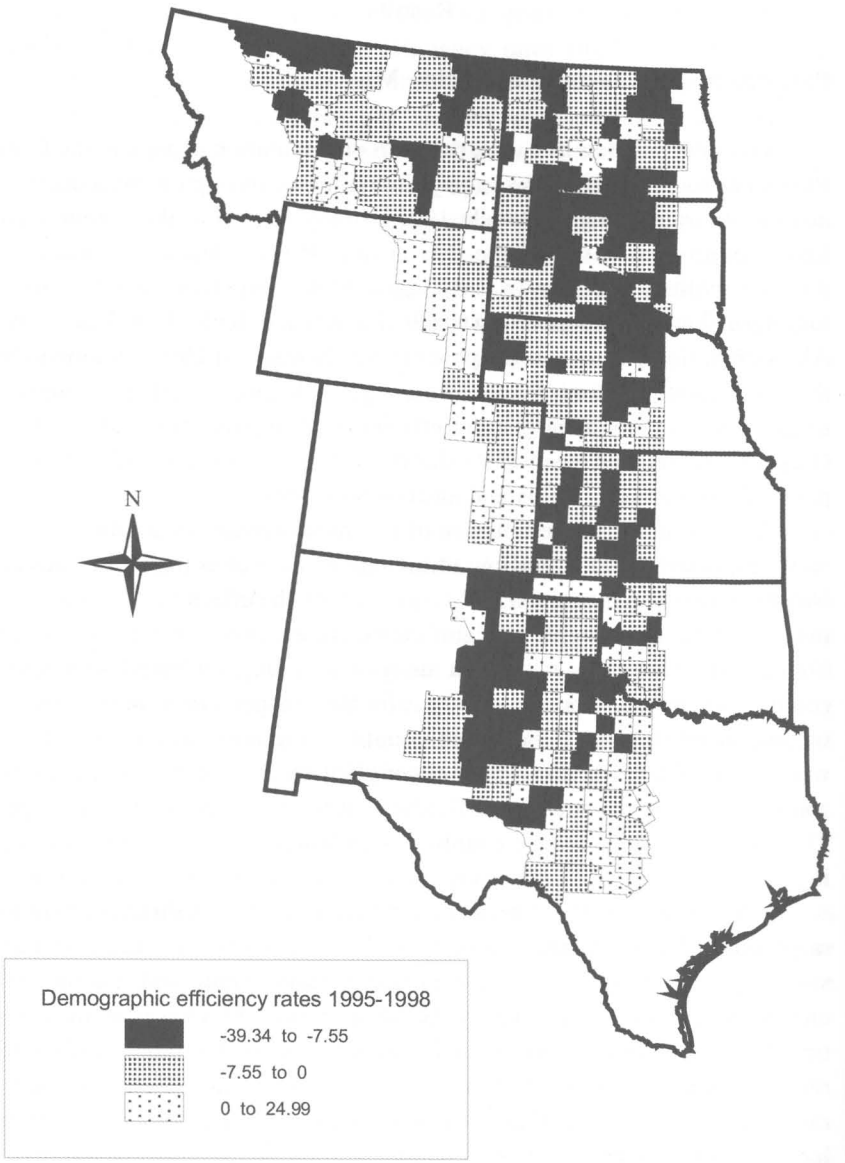

Figure 1. Demographic efficiency rates of Great Plains counties, 1995-1998. Counties lacking data are unshaded. (Source: IRS, 1995-98.)

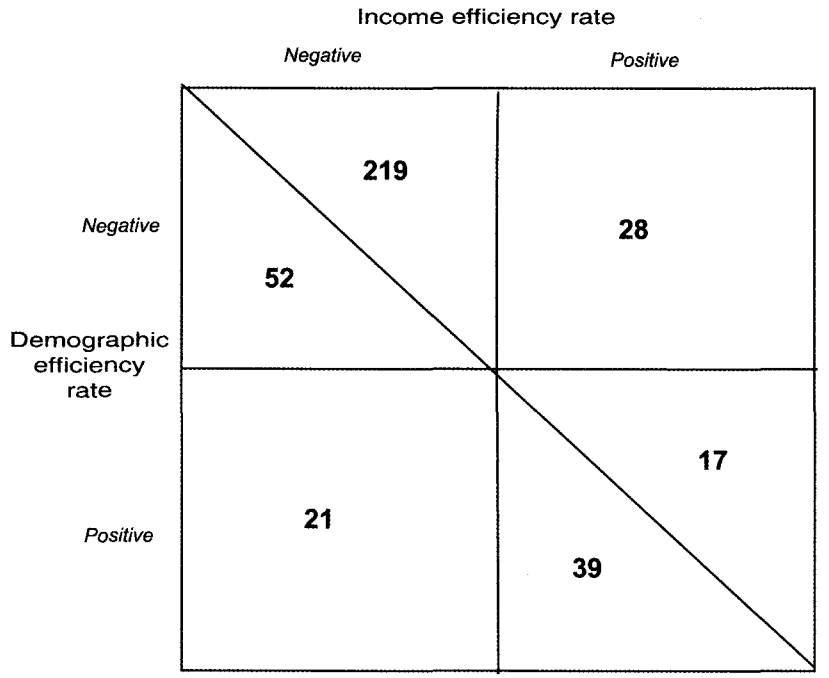

Figure 2. Comparison of income versus demographic efficiency for Great Plains counties, 1995-1998. All numbers to the right and above the diagonal are counties where the income efficiency rate is greater in magnitude than the demographic efficiency rate. (Source: IRS, 1995-98.)

indicate that the per capita income levels of the in-migrant flows were lower than the per capita income levels of the out-migrant flows. For either situation, the data demonstrate that the economic impacts of migration are often worse than would be suggested by analyzing population migration flows alone. In the end, it is clear that there are some significant differences between these two efficiency rates that warrant further investigation, especially with respect to the factors that may account for differential income flows.

Another way of examining differences between income and population efficiency rates, and to determine if these rates vary systematically, is to categorize the counties based on several economic and geographic typologies. Table 1 shows a comparison of these rates for counties in different states, for counties with different economic structures (based on

TABLE 1

DIFFERENCE IN THE AVERAGE DEMOGRAPHIC AND INCOME EFFICIENCY RATES BY STATE, ADJACENCY TO METRO AREAS, AND ECONOMIC TYPE, FOR GREAT PLAINS COUNTIES, 1995-1998

	Mean efficiency rate	
All counties by state	**Demographic**	**Income**
(*n* = 376)	-5.25	-7.32
CO (*n* = 16)	.09	-3.02
KS (*n* = 46)	-6.88	-10.23
MT (*n* = 36)	-3.99	-4.39
ND (*n* = 43)	-9.75	-14.43
NE (*n* = 50)	-5.12	-7.68
NM (*n* = 8)	-7.63	-8.30
OK (*n* = 23)	-3.89	-8.59
SD (*n* = 41)	-8.80	-11.49
TX (*n* = 103)	-3.39	-3.79
WY (*n* = 10)	1.83	5.31
Metro area		
Adjacent (*n* = 69)	-3.11	-3.98
Nonadjacent (*n* = 307)	-5.74	-8.08
By economic type		
Farming/Ranching (*n* = 251)	-5.87	-8.19
Mining (*n* = 33)	-5.26	-9.42
Manufacturing (*n* = 2)	-4.23	-4.67
Government (*n* = 19)	-2.83	-1.58
Services (*n* = 41)	-2.92	-3.09
Diversified (*n* = 30)	-4.91	-7.39

Sources: Beale 1993; Cook and Mizer 1994; IRS 1995-98.

US Department of Agriculture classification—see Cook and Mizer 1994), and for counties adjacent and nonadjacent to metropolitan areas (see Beale 1993). For the Great Plains as a whole (*n* = 376), there are clear differences between these efficiency rates, with the income efficiency rate lower in magnitude than the demographic efficiency rate. This finding supports the

data shown in Figure 2—the loss of income was of a greater magnitude than the population losses that took place in the region. This trend was generally found in all types of counties, except for counties dominated by government employment. Additionally, for almost all counties both rates were negative, except for the state of Wyoming, which continues to benefit from an energy boom. The data also show that both rates were generally lowest for many of the counties in the heart of the Great Plains, the Dakotas and Kansas, and that nonadjacent counties far from metropolitan areas generally fared worse than counties adjacent to metro areas. Finally, focusing on the economic typology, service and government counties did much better than the other economic types, although the negative trends still dominated in almost all economic types. This finding fits with well-known processes associated with growth and economic restructuring in other nonmetropolitan counties around the United States (Vias 1999).

Overall, the general patterns of net out-migration that have persisted in the Great Plains for decades are apparent in the data for the 1995-98 period. More importantly, we found that any analysis of population flows alone hides a great amount of diversity in income flows to and from the counties of the Great Plains. If most of the counties in the Great Plains were growing in population, the fact that income flows have been smaller in magnitude than population flows might be worrisome, but not a paramount problem. However, the fact that income is flowing out of the Great Plains even faster than people should be very troubling for a region already experiencing problems associated with significant depopulation trends.

Components of Income Migration

The decomposition of income flows can be assessed more easily by performing a cross-tabulation of the two measures for each county, and then by creating a figure similar to that shown in Figure 2 (Plane 1999a). In this case, Figure 3 represents four simple categories based on the signs of the income components, along with information on the magnitudes of each component for a county (see note in Fig. 3).

Reviewing Figure 3, note that for a majority of the counties in the Great Plains (57%), the signs of both income components are negative. That is, these counties lost income in two ways: as a result of a larger number of out-migrants than in-migrants and also because out-migrants had higher per capita income levels than in-migrants. Conversely, a sizeable number of counties (about 9%) gained income both because of net in-migration and

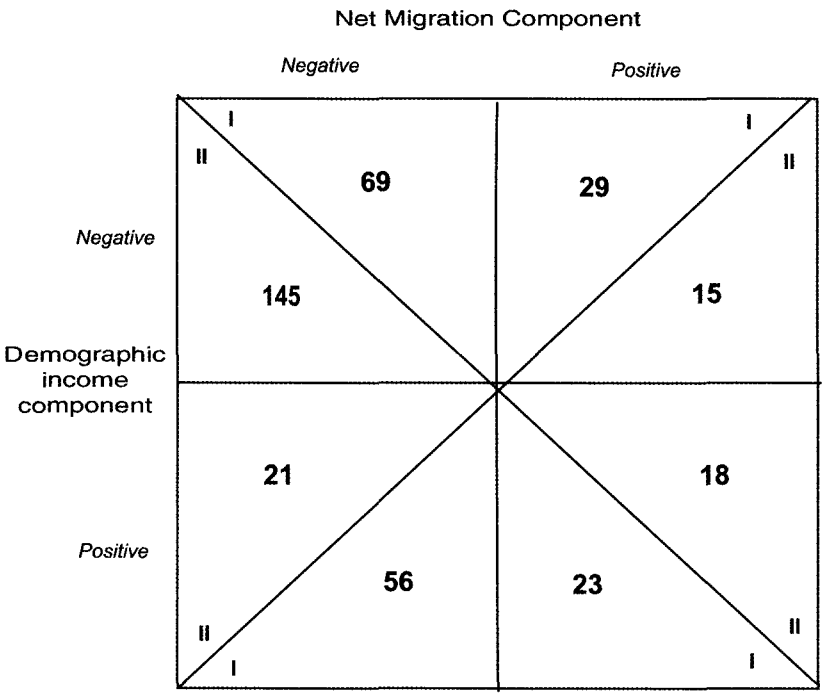

Figure 3. Comparison of the net migration components versus differential income components of gross income change for Great Plains counties, 1995-1998. Within each box, Category I indicates the absolute value of DIC is greater than the absolute value of NMC, and vice versa for Category II. (Source: IRS, 1995-98.)

because the in-migrants had higher per capita incomes levels than the out-migrants.

Interestingly, the figure also shows that for a number of counties, these flows were the opposite of each other. For instance, in 12% of the counties the net migration component was positive while the differential income component was negative. This means that in these counties there was net in-migration, but the income effect of this net in-migration was mitigated to some extent because the per capita income levels of the in-migrants were lower than the out-migrants. In some cases, this counterflow was large enough to change the overall sign of the income flow, leading to a negative income efficiency rate. For 20% of the counties the opposite situation was found, where the county had a negative migration income component and a positive differential income component.

What is apparent from these results is that differences in per capita income (the differential income component) can often dominate the flow of income to and from counties, leading to economic impacts not readily apparent from the study of population migration alone (reflected in the net migration component). On the plus side, for some counties these per capita income differences can mitigate the economic impact of population losses if the in-migrants have high per capita incomes. Unfortunately, in most cases the differential income component simply intensified the already negative effects of population losses, making the income impacts even greater because the small number of in-migrants had lower per capita incomes than the larger number of out-migrants.

Explaining Systematic Differences in Migrant Per Capita Income Levels

Over time, these income flows can have a considerable impact on the per capita income level of the county itself, depending on: difference in per capita income between migrants; difference in per capita income between the migrants and those who remained in the county; and the overall net migration rate (Plane 1999a). Rather than focusing on the ultimate impact of the migrants on per capita income levels of a county, a topic investigated extensively by other researchers (see Cromartie and Nord 1997 and Plane 1999a for this type of examination), we chose to investigate in greater detail the factors that account for these differential per capita income flows. That is, what characteristics are associated with counties that have high- or low-income migrant flows?

Developing a complete understanding on the factors driving differential income migration is beyond the scope of this paper and represents an emerging area of research for social scientists (Plane 1999a). However, to help us understand and interpret at least one important component of these flows—the movement of low-income migrants into certain counties—we find the work of rural sociologists on the spatial concentration of poverty in rural areas to be especially useful (Fitchen 1995; Nord et al. 1995). This body of work on poverty and mobility posits that the poor in any community, rather than staying put, tend to move and concentrate in other poor communities over time. These researchers argue that the poor are rational decision makers but of a different sort—they are people simply trying to cope with a difficult working and living environment. As Nord et al. note, "[A] high poverty rate in a locale results not from the lack of opportunity but rather from an opportunity structure that attracts the poor more than it

attracts the nonpoor" (1995:411). In poorer communities, there is a wider array of low-skilled jobs, along with a lower cost of living because the community is economically depressed. In fact, the flow of the poor to a depressed community may take place even if that community has high unemployment rates. This is explained because of the perception of greater opportunities, especially in contrast to urban areas (Fitchen 1995). From this perspective, it makes much more sense that the poor might move from relatively prosperous urban areas where some jobs may exist, but where the cost of living has increased over time. This theory on the movement of lower-income migrants may offer an explanation for selected aspects of the income migration flows taking place in the Great Plains today.

An important component of the above theory is that certain types of local economies offer a better opportunity structure in terms of employment. Although it is clear that the type of economic structure described by Nord et al. (1995) exists in various parts of the United States, it is also likely that this economic opportunity structure can exist in different forms. For example, in parts of the rural South, this structure may be the result of low-skilled manufacturing jobs that employ the poor. We suggest that in other rural areas of the United States this low-wage structure may be the result of an agriculturally based economy that has often employed large amounts of low-wage and low-skilled labor. As agricultural restructuring in regions like the Great Plains leads to a reduction in the number of family-owned farms using family labor, more and larger corporate-owned farms are created that require increasing numbers of hired and/or contract labor (Lobao 1990). Additionally, while a majority of the counties in the Great Plains do rely on farming, in a small number of counties low-wage, low-skilled opportunities may also exist as a result of jobs in such industries as food processing (e.g., meatpacking). Finally, another important aspect of rural counties in the Great Plains that may be attractive to the poor is the generally low cost of living, a situation that would be expected, given broad declines in the dominant economic activity of farming (Nord et al., 1995).

In the end, what we have are two complementary theories that together may explain certain aspects of the differential per capita income flows in the Great Plains, especially the movement of the poor to certain counties that provide a cheap place to live and potential opportunities for workers with minimal skills. Furthermore, agricultural communities in the Great Plains may offer this type of economic and social environment, making them attractive for the poor, and unattractive for the nonpoor with higher per capita incomes. Finally, further restructuring in the agricultural sector may

actually be reinforcing the likelihood that the poor will move to these same areas.

These ideas can be evaluated in a general sense with the data from the IRS, agricultural census, and decennial census, with the aim of measuring factors that distinguish income flows for the Great Plains, especially the movement of low-income migrants into particular counties of the region. To do that, we collected 23 variables relating to the agricultural, social, and economic structure of Great Plains counties. Rather than measuring the association of 23 variables that relate to the above theories, two sets of factor analysis were done (see Table 2 for a list of the variables used and factors developed). First, 11 variables relating to farm structure from the Agricultural Census (USDA 2000) were reduced to three factors that explain 74% of the variance between the variables. These factors, followed in parentheses by a descriptive variable(s) that loads high on the factor, are: farm size (percentage of small farms), farm ownership (percentage of farms with corporate ownership), and farm labor (percentage of hired or contract labor). The same process was done with the 12 variables related to the socioeconomic structure of counties (US Census Bureau 2000), producing four factors that explain 76% of the variance between the variables. These factors, followed in parentheses by a descriptive variable(s) that loads high on the factor, are: demographic structure (county with young population and/or growth), socioeconomic status (county with high poverty levels and low cost of living), and two different aspects of the employment structure (county with professional occupations and/or service economy and county with low-skilled labor occupations and high percentage of minorities).

Next, in-migrant per capita income levels for all counties were ranked and categorized into quintile categories that represent the low and high ends of county in-migrant per capita incomes. Finally, these factor variable values were simply averaged for each of the quintile categories for in-migrant flows. The objective was to see if there are systematic differences between low- and high-income migrants related to these factors. A regression analysis was contemplated, especially to account for interactions between the variables and/or factors; however, it was decided that because per capita income does not represent an ideal measure of central tendency in terms of income for a county (the distribution is highly skewed), the results would be unreliable (Kohler 1988). With the chosen methodology, by simply grouping counties into broader categories of per capita income levels, the analysis would be more reliable, although not as precise or definitive as a regression that utilizes continuous variables and that controls for multiple variables simultaneously.

TABLE 2

FACTOR ANALYSIS OF VARIABLES ON FARM AND SOCIO-ECONOMIC STRUCTURE OF GREAT PLAINS COUNTIES

Variables	Factor	Factor Name	Sign
Farming/Ranching structure (1997)			
Farms fully owned by farmer (%)	1	Farm size	+
Small farms (%)		*(Small farm +)*	+
Farms partially owned by farmer (%)			-
Farmers working off-farm (%)			+
Large farms (%)			-
Farmers getting govt. payments (%)			-
Family-owned farms (%)	2	Farm ownership	-
Corporate owned farms (%)		*(Corporate +)*	+
Tenant farmers (%)			+
Farms with hired workers (%)	3	Farm labor	+
Farms with contract workers (%)		*(Hired labor +)*	+
Socioeconomic structure (1990)			
People over 65 (%)	4	Demographic structure	-
Population 22-29 years age (%)		*(Young/Growth county +)*	+
Population growth 1930-1990 (%)			+
Families below poverty level (%)	5	Socioeconomic status	+
Families earning $5K-$10K year (%)		*(High poverty +)*	+
Median gross rent			-
Population 25+ with 4-yr college degree (%)			-
Employed in services (%)	6	Economic structure I	+
In professional occupations (%)		*(Service/Professional +)*	+
Employed in agriculture (%)			-
In laborer occupations (%)	7	Economic structure II	+
Population Hispanic (%)		*(Laborer/Minority +)*	+

Variables in parentheses in Factor Name column represent a descriptive variable and name that loaded high and positively on that factor, after Varimax rotation. Sign column represents negative or positive association with Factor. (Data sources: IRS 1995-98; USDA 2000; US Census Bureau 2000.)

Based on the above theories, we expected to find the following general relationships between in-migrant per capita income and the seven factors. Low per capita income levels for in-migrants would be associated with counties having low numbers of small farms (Factor 1) and with counties

having high levels of hired and/or contract labor (Factor 3) and corporate ownership of farms (Factor 2). We believe this is so because smaller farms (in more prosperous counties) offer fewer opportunities for nonfamily labor, while counties that have farms owned by corporations are more likely to hire off-farm labor, leading to less-prosperous communities featuring a lower standard of living. In terms of the county's socioeconomic conditions, we expected low per capita income levels for in-migrants to be associated with counties having high poverty levels and a low cost of living (Factor 5), along with counties having a high percentage of low-skilled laborers and a high percentage of minorities (Factor 7). We also expected to see high levels of in-migrant per capita income in counties with young, growing populations (Factor 4), and with counties having a professional workforce oriented to services (Factor 6). Based on the above discussion, counties high in poverty, low in cost of living, and with a low percentage of high-skilled labor offer more living and working opportunities for the poor. On the other hand, counties that are growing are likely to cost more to live in and to exhibit an employment structure emphasizing services and professional occupations that are more attractive to higher-income migrants.

Table 3 shows the seven factors and their respective levels for each of the five categories of per capita income for in-migrant flows. Values in bold are where a consistent downward or upward trend exists. Also included is information from ANOVA tests to determine if there are significant differences in the values between each quintile category (0.05 significance level). Looking at the results, we see that four of the seven factors have a consistent relationship between high- and low-income migrants, and in the direction expected. Although the results do not show a relationship between low-income in-migrants and counties with a high percentage of large farms, we do find that they are associated with counties having a high percentage of corporate farms and high percentage of hired contract labor. More significantly, low-income in-migrants are associated with poor counties with a low cost of living. On the other hand, in-migrants with high levels of per capita income are more associated with economies that feature a high percentage of workers in the service sector and in professional occupations. Finally, although the relationship is not consistent, there is a trend whereby low-income in-migrants are more associated with communities exhibiting a high percentage of low-skilled laborers. In terms of the hypothesized relationships, we find that most of the expected relationships between the variables and income flows are apparent in the data, and that in no case does a strong relationship appear opposite of what was expected. Overall, it is

TABLE 3

FACTORS ASSOCIATED WITH DIFFERENCES IN PER CAPITA INCOME LEVELS FOR IN-MIGRANTS TO GREAT PLAINS COUNTIES, 1995-1998

		Average values of factors for per capita income levels of in-migrants (5 Percentile Categories)				
Variable	ANOVA[a]	Very low	Low	Middle	High	Very high
Factor 1:						
Fully owned / Small farm	**N**	.015	.217	-.152	-.162	.141
Factor 2:						
Corporate farm	**Y**	**.291**	**-.050**	**-.055**	**-.061**	**-.141**
Factor 3:						
Hired or contract labor	**Y**	**.266**	**-.066**	**-.068**	**-.217**	**-.304**
Factor 4:						
Young population / Growth county	**Y**	.123	.064	-.214	-.176	.203
Factor 5:						
Poor population / Low wage / Low cost of living	**Y**	**.895**	**.189**	**-.136**	**-.248**	**-.702**
Factor 6:						
Professional labor / Service-oriented economy	**Y**	**-.444**	**-.099**	**.018**	**.093**	**.433**
Factor 7:						
Minority population / Low skill labor	**N**	0.91	.206	-.040	-.154	-.106

Note: Bold fonts indicate a regular upward or downward trend in values of variable for factor scores.

[a] ANOVA Test – are the factor scores significantly different between income categories? – Yes or No.

apparent that low-income migration can be generally explained within the parameters of the theories outlined in the beginning of this section, although more rigorous statistical tests would be needed to make the findings more definitive.

Summary and Conclusion

All too often, issues associated with migration focus on the movement of people from place to place. In recent years researchers have focused their investigations on characteristics of the migrants themselves, especially in terms of the income they bring into and take from communities. Recognizing that population and income flows may be different is important for understanding the severity of the social and economic problems facing the Great Plains.

The analysis undertaken in this paper demonstrates the degree to which population and income flows differ from one another in the counties of the Great Plains, resulting in income losses significantly larger than would be suggested by examining population losses alone. We also examined theoretical explanations that have been developed on the migration of the poor, all in an effort to understand differential flow of high- and low-income migrants in the Great Plains. The findings from this analysis show that there are systematic differences that can help us explain the flow of low- and high-income migrants to and from counties in the Great Plains. Especially interesting is empirical support for the notion that, for a variety of reasons, poorer people are moving to poor counties in the Great Plains, reinforcing patterns of poverty.

The continued loss of income for counties in the region represents a significant problem for both the public and private sectors. For example, a net outflow of income and a shrinking tax base will make it increasingly difficult to provide the range of services typically expected from local government agencies. Furthermore, it is possible that the arrival of low-income migrants may actually create the need for additional services not previously provided at the local level (e.g., bilingual education programs for recent immigrants). Finally, local businesses may have to contend with decreasing local demand for goods from the tertiary sector, a situation that will continue to hollow out the central business districts of small towns.

However, there are aspects of these income flows that need further research, especially some of the potential benefits that may underlie a few of the population and income migration patterns found in this investigation. In the short run, the in-migration of the poor into many areas does appear to have several negative implications. However, over time these migrants, who represent a counterflow to the exodus of people from the Great Plains, may be what is saving many of the most rural communities in the region. In the long run, any flow of people into the region, be they low-income or high-

income migrants, has to be a positive thing. Indeed, these migrants may represent new opportunities for industries like meatpacking that rely on low-wage labor (*Economist* 1999). Although there is some research on the social and cultural aspects of new migrant communities in the Great Plains (Campa 1990), the long-term impacts, especially with respect to restructuring in the local economy, need further investigation.

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