

MIGRATION, ECONOMIC OPPORTUNITY, AND THE QUALITY OF LIFE:
AN ANALYSIS FOR THE UNITED STATES ACCORDING TO
RACE, SEX, AND AGE

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Abstract

In recent years, the increased concern with environmental matters and the quality of life has led to a propagation of studies on these topics. The present paper attempts to add to this literature by analyzing the impact of the quality of life on interstate migration in the United States over the 1965-1970 time period according to race, age, and sex traits of migrants. The results imply that such factors as climate, medical care, and pollution were all important factors.

Introduction

In recent years, the increased concern with environmental matters and the quality of life has led to a propagation of scholarly studies relating to man's social and cultural milieu. Although many of these studies have been abstract in nature, there have been a few studies relating empirically to the impact of the quality of life on human migration. However, those studies which have been concerned with the migration impact of more than simply a single token quality of life variable have merely examined patterns of total migration [2]. Thus, studies dealing principally or extensively with the migration patterns according to race, sex, and age group.

This paper seeks to provide deeper (and presumably more meaningful) insight into the influence of quality of life variables on migration by focusing upon the flow of migrants according to race, sex, and age characteristics. The paper investigates the impact of four quality of life variables and two "purely economic" variables on interstate net migration in the United States for the period 1965-1970.

The Migration Model

To investigate empirically the impact of the quality of life on migration, the following migration model of net migration is postulated:

$$(1) \quad M_i = M_i(T_i, S_i, D_i, P_i, W_i, Y_i),$$

where M_i represents net migration (in-migration less out-migration) to state i , T_i is a measure of cold weather in state i , S_i is a measure of the amount of

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sunshine in state i , S_i is a measure of the amount of sunshine in state i , D_i is a measure of the availability of medical care in state i , P_i is a measure of the amount of air pollution in state i , W_i is a measure of the level of welfare benefits in the i th state, and Y_i is a measure of per capita income in state i .

Net migration (M_i) to states over the 1965-1970 time period was categorized according to race (white or black), sex (male or female), and age group. There were three age groups of migrants considered: age 20-39, age 40-64, and age 65 and over. Obviously, then, the empirical analysis in this paper is concerned with the migration patterns of some 12 different groups of people. To control for variations in the population among the states, the variable M_i assumes the form of the ratio of net migration in each of these 12 individual groups of migrants to state i between 1965 and 1970 to the 1965 population in each of these groups in state i . The migration data for whites were assembled for all of the states except Alaska and Hawaii. Migration data for blacks were available for only 34 states, with Alaska and Hawaii again being among the states excluded from analysis.

This analysis of the impact of the quality of life includes two climate variables, T_i and S_i . T_i is the mean number of days per year when the minimum temperature in state i falls to 32° Fahrenheit or below. It is assumed here that, ceteris paribus, people on average prefer mild or warm climates to colder climates. Thus, it is hypothesized that $\partial M / \partial T_i < 0$. The variable S_i is the average proportion of daylight periods when there is sunshine in state i . Clearly, the larger the value of S_i , the greater the average amount of sunshine in the i th state. It is hypothesized here that, on average, migrants prefer areas with greater amounts of sunshine to those with less sunshine, ceteris paribus. Thus, it is argued that $\partial M_i / \partial S_i > 0$.

No analysis of the relationship between migration and the quality of the environment would seem complete without explicitly treating the matter of pollution. To measure air pollution, P_i , we use the amount of suspended particulate matter per cubic meter of air. Suspended particulate matter consists of the more "visible" forms of pollution, such as smoke, soot, and dust. In this study, we use specifically the mean amount of suspended particulate matter per cubic meter of air observed in the 48 states in the year 1966 to measure the air pollution levels. Since air pollution presumably lowers the quality of the environment through its effects on health, housing maintenance, the appearance of the environment, etc., we would expect that $\partial M_i / \partial P_i < 0$.

With regard to welfare assistance, Brehm and Saving have found that welfare "...recipients are like the remainder of consumers in that they react to economic incentives [1, p. 1018]. Accordingly, this paper argues that would-be migrants who are likely to be welfare recipients will tend to respond to (be attracted by) the "economic incentive" of higher welfare payments, other things held the same. On the other hand, by virtue of the fact that welfare benefits represent a redistribution of income through a tax-transfer process from the economically better-off to the economically worse-off, these "benefits" may in effect represent an economic disincentive to the "better-off." Thus, the higher the level of welfare benefits in an area, the less attractive it would likely be to the economically better-off, ceteris paribus.

In the analysis below, attention is focused most fundamentally upon two types of migrants: white migrants and black migrants. From the above arguments, black migrants may well react differently, on the average, from white migrants. In particular, since a much larger proportion of blacks than of whites is eligible for welfare benefits, it may be expected that the level of welfare benefits will act, *ceteris paribus*, generally as a much stronger attraction to black migrants than to white migrants. In addition, whites on average may view the redistributive taxes associated with financing the welfare benefits as unfavorably redistributing income away from themselves to others. Accordingly, would-be white migrants may view areas with higher welfare benefit levels as redistributing income more unfavorably than areas having lower such levels. In part, then, this paper investigates whether in fact welfare benefits tend to have those opposing effects on white and black migrants. To measure welfare benefits, data on average monthly payments in the year 1965 to welfare recipients in the form of aid to dependent children by state or, for the aged, in the form of old age assistance by state, were gathered.

On the premise that it is most logical to relate white migration to white income levels and black migration to black income levels, the data on per capita income were assembled according to race. In particular, for white migrants the variable \bar{Y}_i is the per capita income level of whites in the i th state in the year 1969, while for black migrants variable \bar{Y}_i is the per capita income level of blacks in the i th state in 1969. Before postulating the relationship to be expected between migration and per capita income, it should be pointed out that this relationship may not necessarily be the same for all of the age groups considered in this study. The use of some variable to measure per capita income or wage rates is a standard procedure in most migration studies. The conventional argument in these studies is that migrants are, *ceteris paribus*, attracted to areas offering higher incomes (wages). However, since the elderly (age 65 and over) as opposed to other age groups, are by and large not full time participants in the labor force, we argue that, *ceteris paribus*, income (wage rate) differentials among states are likely to exercise little or no impact over the migration of the elderly (age 65 and over). On the other hand, in accord with orthodox migration theory, for the other age groups it is postulated that migrants are attracted by the prospect of higher incomes, *ceteris paribus*.

The Data

The data on migration according to race, sex, and age group were assembled from the 1970 Census of the Population [10, Tables 2, 3]. The data on cold weather, pollution and sunshine were obtained from the Statistical Abstract of the United States: 1968 [8, Tables 263, 262, and 273]. The data on physicians per 100,000 population and on welfare benefits were obtained from the Statistical Abstract of the United States: 1973 [11, Tables 89, 490]. Finally, the income data were obtained from the 1970 Census of the Population [9, Table 57].

Empirical Results

A multiple least-squares regression was run for each of the 12 migrant groups. The results are summarized in Table 1. Overall, they are quite encouraging. Of the 72 coefficients obtained, only 12 had the "wrong" sign. Of those with the wrong sign, only one was statistically significant at even the ten percent level. The coefficient of determination (R^2) ranged from a low of 0.11 (for elderly black males) to a high of 0.58 (for both elderly white males and for black males, age 20-39).

Turning now to specific results, the temperature variable had the hypothesized sign in only seven of the 12 cases. In addition, of the six regressions on white migration, it was significant at the five percent level or better in three cases and at the ten percent level in one other case. Thus, the temperature variable had a perceptible impact on white migrants. These results are consistent with several recent studies [3,5]. On the other hand, this variable had no apparent impact on black migration. To some extent, this may be a reflection of anticipated adverse discrimination in the South (the warmer states). The sunshine variable had the correct signs in all but one case (white females, age 20-39), which case was insignificant. In all cases, the elderly were quite responsive to this sunshine variable, a result consistent with the idea that since the elderly are by-and-large not major participants in the labor force they tend to be less responsive to economic variables and perhaps then more responsive to non-economic variables than other age groups. Aside from the elderly, black migrants in the 20-39 age bracket were the only ones to be responsive to this variable. Taken as a whole, then, the climate variables exercised a perceptible impact over most of the migrant groups studied.

Turning next to the medical care variable, the hypothesized sign was obtained in all 12 cases. In addition, this variable yielded results for white migrants which were significant at the one percent level in four cases and at the five percent level in the remaining two cases. The results were significant at the ten percent level for blacks in only two cases, those of males, age 20-39 and age 40-64. These results are consistent with other findings and imply that, at least for white migrants, the availability of medical facilities may be an important consideration in migration decisions.

The pollution variable worked reasonably well, having a negative sign in all 12 cases, and being significant at the five percent level in four cases, and at the ten percent level in two other cases. These results imply that pollution exercised a perceptible influence over the interstate migration decisions of several migrant groups over the 1965-1970 period. This results is in contrast to a recent study by Cebula and Vedder [2], where it was shown statistically that net migration (total) to SMSA's over the 1960-1968 period was relatively insensitive to pollution levels. Reflecting further on the present results, it appears that pollution had a distinctly greater overall impact on white migration than on black migration.

The welfare variable had the hypothesized sign in all six of the white migrant regressions; furthermore, it was significant at the one percent level in four cases and at the five percent level in another case. Overall, then, white

TABLE 1
DETERMINANTS OF MIGRATION, ACCORDING TO RACE, SEX, AND AGE GROUP

Variable	Regression	Temperature	Sunshine	Doctors	Pollution	Welfare	Income	Total R ²
White Male								
Age 20-39	-0.04900	0.09140	0.97896***	-0.05634	-0.54604***	0.42972*	.44	
Age 40-64	-0.04730**	0.02128	0.42993***	-0.10026**	-0.22691***	-0.04581	.52	
Age 65 & over	-0.10874***	0.50542***	0.18618**	-0.09809**	-0.13057	-0.20908*	.58	
White Female								
Age 20-39	0.00778	-0.33863	1.02934***	-0.08229	-0.71801***	0.53084**	.45	
Age 40-64	-0.03626*	0.11335	0.40104***	-0.09189**	-0.24261***	-0.03550	.52	
Age 65 & over	-0.07467***	0.39159***	0.14956**	-0.08877**	-0.17165**	0.04354	.50	
Black Male								
Age 20-39	0.07967	1.21696***	0.46064*	-0.21750*	0.35755**	0.25652*	.58	
Age 40-64	0.05516	0.24956	0.26841*	-0.10845	0.10630	-0.05498	.25	
Age 65 & over	-0.00347	0.09106*	0.00522	-0.02951*	-0.03034	0.01335	.11	
Black Female								
Age 20-39	0.01527	1.66135***	0.21762	-0.02541	0.71721**	0.47571*	.52	
Age 40-64	0.00093	0.07085	0.03903	-0.01863	0.03475	0.03517	.39	
Age 65 & over	-0.00312	0.15202***	0.03506	-0.01972	-0.01198	0.05486**	.33	

*** Statistically significant at one percent level.

** Statistically significant at five percent level.

* Statistically significant at ten percent level.

migrants appear, as argued above, to have an aversion to areas with higher welfare benefits. As for black migrants, the hypothesized sign was obtained in four out of six cases. Neither case with the wrong sign was significant at the ten percent level. Black migrants, at least in the 20-39 age group, appear to be quite attracted to areas with higher welfare levels. These results are consistent with recent studies by Sommers and Suits, and by Pack [7, 6].

Finally, the income variable had the correct sign in only 8 of 12 cases. In only one of the cases with the wrong sign (elderly white males) was the variable significant at even the ten percent level. By and large, elderly migrants (except elderly black females) are not attracted to the higher income states. Migrants in the 20-39 age bracket seem relatively attracted to higher income states, whereas none of the migrant groups in the 40-64 age bracket were at all responsive to this variable. Other studies have also found migration relatively insensitive to the income (wage) variable; such an insensitivity has been shown, however, to be quite compatible with conventional wage analysis once the costs associated with migration are accounted for [4].

Concluding Remarks

This study has examined the impact of quality of life variables on net interstate migration in the United States. Overall, it would appear that the quality of life has exercised a significant influence over migration patterns during the 1965-1970 time period, although this influence was certainly not uniform for all of the 12 groups included in this study.

What must now be examined is the implication for long-run economic health of a situation wherein factors such as pollution influence (distort) the pattern of resource allocation from what it otherwise would be. This, of course, is an issue beyond the scope of this paper.

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