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MIGRATION TO BAJA CALIFORNIA:
1900-1980

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MIGRATION TO BAJA CALIFORNIA: 1900-1980:

Abstract

This paper examines the sociodemographic factors affecting interregional migration to Baja California Norte between 1900 and 1980. Historical analyses reveal that migration patterns to Baja were influenced by: (1) political push and pull, i.e., the Bracero Program, (2) the proximity to the United States, and (3) demographic factors, e.g., distance among states and population size of state of origin. Our analysis suggests that the Bracero Program was the instigator of the larger flows of migration to Baja during its time. The program also caused some disruption of the usual distance regulator of Baja migration streams. The importance of the Bracero Program was further accentuated by the finding that flows to Baja subsequent to the program have returned to a distance-determined migration model.

MIGRATION TO BAJA CALIFORNIA: 1900-1980:

INTRODUCTION

In response to its very rapidly growing population, the Mexican government
has proposed revisions of population laws to include family planning programs
and to adopt other policy changes that would impact population growth and
distribution. Nevertheless, these policy changes may neither stem the growth of
the population nor decrease the tide of legal and undocumented immigration to
the United States. Therefore, Mexican population growth and distribution have
demographic implications for the Hispanic population in the United States, which
grows, in part, through higher Mexican fertility levels, as well as through
higher fertility levels of immigrants to Mexico's borderland regions and
subsequently to the United States (Pick et al., 1986b; Tamayo, 1986).

The border between the two nations is highly permeable. There is legal
and illegal immigration, border commuting, tourism, and over 600 factories
("plantas maquiladoras") that assemble parts sent to Mexico from the United
States into products that are returned to the United States with only a minimum
value added tax. Immigration through these porous borders has both short and
long-term implications for United States population growth. Besides the obvious
contribution of added population, such immigration causes longer term growth
patterns because of higher levels of Mexican fertility than that of Anglos in
the United States.

This paper presents an historical examination of migration patterns within
the Republic of Mexico to Baja California. It utilizes the 1900-1980 Republic of
Mexico censuses and examines the concepts of intervening distance/obstacles to
economic opportunities (Zipf, 1946; Whetten and Burnight, 1956; Lowry, 1966;

Rogers, 1968; King, 1978; Greenwood et al, 1981; Brown and Jones, 1985; Fukurai et al., 1986b).

There is ample indication that the intervening distance/obstacles hypothesis is a major factor in explaining migration patterns in Mexico, especially to the border regions. Also, the economic opportunity model of migration explains at least part of the two major, contrasting migration patterns now occurring in Mexico (for a contrasting view see Davis, 1981), one of which is to the Federal District and the other to the U.S. borderlands area, especially Baja California.

II. THE RESEARCH MODEL

The present study analyzes the distribution and characteristics of states of origin of internal migrants to Baja California over the period 1900-1980. The data consist of the Mexican Censuses of Population for 1900, 1950, 1960, 1970, and 1980. The research model uses computer mapping to analyze the geographical distributions of migrants' states of origin for the five census time points. Map sets are presented and discussed for the following two variables: raw number of migrants from state i to Baja California, and migration ratio, defined as migration divided by the total population of state of origin. Longitudinal consistency in the map sets is analyzed, including examinations of the rank orders of states of origin of percent of raw migrants for the five census years and testing for statistical consistency. The effect of characteristics of states of origin on the two migration variables is tested through regression analyses, which include the independent variables of distance between origin state and Baja, and the following characteristics of state of origin: total population, population density, literacy, percent economically active, basic activity (i.e., percent of economically active in farming

occupation), and unemployment. The results of the regressions are analyzed for internal consistency and compared with other similar studies in Mexico.

The research model is fully presented and results discussed in Sections IV, V, and VI. Section III reviews the migration history of Baja California prior to 1900. This is important because the research model examines changes over the eighty year period 1900-1980. However, it is important to understand the events and changes which preceded the study period. Section III concentrates on important studies of Mexican internal migration over the study period, with bearing on the present research.

III. HISTORICAL DEMOGRAPHIC BACKGROUND

Between 1821 and 1860, the Mexican population grew at a relatively slow rate (c. 1 percent/year). Reform laws of 1859 dismantled many of the large civil and religious land holdings, while Mexico City's role as a center of industrialization and transportation attracted migrations from rural areas leading to its primacy as a population center. During this period, Mexico was at war with the Texans. Other wars and conflicts of varying intensity were eventually ended with population transfers and with the Gadsden Purchase (1853), the net result of which was to reduce Mexican territory by almost 50 percent. The urban system that the Spaniards had developed before independence changed to a "highly regionalized, weakly articulated urban system in which cities were consumers rather than producers" (Kemper and Royce, 1979:271).

Porfirio Dias ruled Mexico from 1877 to 1911, during which time the first census of Mexico was taken (1895). Diaz, a dictator, encouraged international investment to assist in industrializing Mexico. He actively promoted the development of national railroad system (Portes and Bach, 1985). Sparked by developing railroads and industrialization, urbanization of some parts of the country occurred at a rapid pace. Formerly important urban areas, bypassed by

the railroads, declined; ports on the Western coast became isolated. Cities on the railroad, on the other hand, were stimulated economically resulting in urban growth over relatively short periods (Garza, 1985).

Between the 1910 and 1921 censuses, a Revolution took place, which decreased the population from 15.2 million in 1910 to 14.3 million in 1921 (Alba, 1984). During this overall decline, however, Baja California's population increased from 9,760 in 1910 to 23,537 in 1921, an increase of 128% (see Table 1). Also while the number of smaller settlements decreased drastically, the urban population rapidly increased (from 11.7% to 14.7%).

During the late 1930s, because the government's focus was on agrarian reform programs, urbanization slowed (Tamayo, 1986; Unikel, 1977). For example, large scale irrigation projects in the northwest region drew many migrants to the border area. By 1940, 15 percent of the Mexican population lived in places 15,000 or larger; the Mexico City urban area had 4.6 million residents (Unikel, 1977).

Between 1940 and 1970, the Mexican population grew from 20 to 49 million and urbanization continued apace. The major stimulus for this growth was a decrease in mortality between 1940 and 1960. The Mexican gross mortality rate fell from 22.7/1,000 in 1940 to 11.1/1,000 in 1960; at the same time, life expectancy increased from 42.5 to 60.3. By 1980, the Republic of Mexico census counted 67.5 million people. The rapid population growth between 1940 and 1980 is accounted for by declining mortality rates while fertility rates remained high. Mexico's fertility has declined in the last decade, so that the Mexican total fertility rate in 1986 is about average for Central America and 19 percent above the world's rate (Population Reference Bureau, 1986).

TABLE 1

POPULATION OF BAJA CALIFORNIA:

1900-1980

	Total Population (1)	Decennial Growth Rate (2)	Immigration* (3)
1900	7,583		1,664
1910	9,760	28.7	3,223
1921	23,537	128.4	16,251
1930	48,327	117.0	33,434
1940	78,907	63.3	47,691
1950	226,965	187.6	148,576
1960	520,165	129.2	323,739
1970	870,421	67.3	358,813
1980	1,177,886	35.3	545,361

*These are cumulative totals because
the way in which the questions were
asked in the censuses.

Since 1940 the development and expansion of large-scale irrigated agriculture has continued to contribute to a population shift toward the northern borderlands. Similarly, the Bracero Program drew millions of workers to the U.S. and its adjacent borderlands areas where three of the largest Mexican cities are located on the U.S.-Mexico border -- Ciudad Juarez, Tijuana, and Mexicali. Smaller border cities include Nogales, Nuevo Laredo, Reynosa, and Tecate. The Bracero Program, lasting from about 1942 to 1964, encouraged and made legal the importation of Mexican farm workers into the U.S. (Stoddard, 1983; Rochim and Bollanger, 1983). The program started during World War II with a government sanctioned arrangement for the importation into the U.S. of Mexican farm workers, because of shortage of domestic farm workers due to the war effort. It continued after the war, and was legally sanctioned with Public Law 78, in effect from 1950 to 1964, which gave the U.S. Secretary of Labor authority to recruit Mexican workers for employment, including illegal Mexicans, provided they had resided in the U.S. for over five years. The Bracero Program indirectly spawned some of the rapid population growth in Baja California in the 1940s and 50s. Mexican workers bound for Bracero jobs in California often migrated to Baja California as a first stage in the process of eventual immigration to the U.S. Partly as a result, migrants remained in Baja, and in addition, some returning migrants from the U.S. stayed on in Baja. Baja's decennial growth rates reached all time highs of 188 percent in the 1940s and 129 percent in the 1950s, versus corresponding rates for Mexico of 31 percent and 35 percent.

Mexico currently has a wide range of economic development patterns (Stern, 1973). Large-scale irrigated agriculture is being developed in the north, while small-scale, seasonal agriculture continues to exist in the central and southern highlands. The population has essentially become more urban, with the obvious

core concentration in Mexico City. Population growth into the 1970s took

place in northern borderlands and in particular in Baja California, at rates

only slightly higher than for the nation (Winnie, 1981).

III.I STUDIES OF MEXICAN MIGRATION, 1900-1980

This section of the paper reviews important studies of Mexican migration

which have a bearing on the present study.

Mexican Urban Growth and Internal Migration. Mexico's urbanization in the

twentieth century has been startling, but perhaps less so considering rapid

urbanization in the mid-century throughout the Third World. Mexican urban

growth is important to the present research, because of Baja's high level of

urbanization. Baja California in 1980 was 85.2 percent urban, second only to

the Federal District (SPP, 1982-85). In 1930, Baja was 54.3 percent urban,

third in the country. The 30.9 percent urban increase 1930-80 was due in part

to the internal migration streams studied in the present research.

For Mexico as a whole, Mexico's rural population increased from 12.2 to

27 million between 1900-1970 (a 2.2 fold increase), its urban population

increased during this period from 1.4 million to 22 million (a 15.7 fold increase).

Spurring this urban population increase was natural increase, that is, an excess

of births over deaths. Since 1950, natural increase has been roughly twice as

important as migration in increasing the urban population (Table 2). This is

noteworthy in the analysis of Baja California, since migration appears at first

glance to be more important than natural increase.

Among urban centers, the dominant city is Mexico City. In Alba's words,

"all other cities and the country as a whole gravitate around it. It is clearly

a classical primary city." Two other cities are important enough to be termed

TABLE 2

REPUBLIC OF MEXICO:

NET INCREASE IN URBAN POPULATION, 1940-70,

DIVIDED INTO COMPONENTS OF CHANGE

Period	Total Increase*	%	Natural Increase	%	Increase due to Migration %	
1940-50	2,822	100	1,167	41.3	1,655	58.7
1950-60	4,883	100	3,122	63.9	1,731	36.1
1960-70	8,433	100	5,684	67.4	2,749	32.6
1970-80	3,702	100			389[1]	

*Population expressed in thousands

[1]1975-80 Increase due to migration (total of inmigrants - total outmigrants)

"subdominant" --Monterrey and Guadalajara. One sign of Monterrey's advanced growth phase is that its central unit is gradually losing population while its peripheral areas are gaining. Guadalajara as a "subdominant" city is not mature as Monterrey. Tijuana and Mexicali are not at very mature phases of metropolitan growth, owing to their "integration into the zone of influence of U.S. cities" (Alba, 1984).

Unikel's (1977) analysis of Mexican urbanization included components of change, regional differences within Mexico, and projections of future change. The vast increase in Mexico's urban population is seen in Table 3. Important trends shown in this table are the increase in the primacy of Mexico City, and the urbanization trend, reflected at higher levels for Baja.

Unikel's projections of the population of Mexico's largest cities to 1980 and 1990 are shown in Table 4. These large cities are projected to increase by 11.4 million persons in the 1980's. In addition, the border cities of Tijuana and Mexicali are expected to be two of the largest Mexican cities in 1990, with a combined population of 1.8 million. Another area of research of importance to the present study consists of analyses of geographical patterns of internal migration in Mexico. An earlier study by Whetten and Burnight (1956) utilized state of birth data from the Mexican Censuses of 1940 and 1950 to analyze internal migration in Mexico but also discussed earlier Mexican migration.

There was little internal migration in Mexico before 1910. This was primarily a result of the dominance of the hacienda system which kept hacienda workers "virtually bound to the soil as indentured labor." Other reasons that have been advanced for the lack of movement included a very poor Mexican

TABLE 3

URBANIZATION IN MEXICO, 1900-1970

	Percentage of Total Mexican Population							
	1900	1910	1920	1930	1940	1950	1960	1970
Urban Population	10.5	11.7	14.7	17.5	20.0	28.0	36.5	44.9
Mixed urban/ rural population	8.3	8.3	8.3	8.1	7.6	7.8	7.9	8.1
Rural population	81.2	80.0	77.0	74.4	72.4	64.2	55.5	47.0
Population of Mexico City urban area	2.5	3.1	4.6	6.3	7.9	11.1	14.1	17.0

(Source: Unikel, 1977)

TABLE 4

PROJECTIONS OF THE POPULATION OF THE 8 LARGEST MEXICAN CITIES,

1980 AND 1990 (THOUSANDS)

	1980	1990
Mexico City	13,853	20,790
Guadalajara	2,303	3,708
Monterrey	1,808	2,775
Puebla	844	1,486
Ciudad de Juarez	722	1,117
Leon	630	1,015
Tijuana	580	965
Mexicali	529	841
Total	21,270	32,697

(Source: Unikel, 1977)

economy, poorly developed transportation and communication networks, and lack of information about employment opportunities (Whetten and Burnight, 1956).

The Mexican revolution, beginning in 1910, required a mobile population. Although many soldiers never returned to their families, others settled in new regions along with their families. A further stimulus to internal migration after the Revolution was the land reform movement and breaking up of the haciendas. Subsequently, internal migration was facilitated by the construction of highways, industrialization, and pressures in rural areas of surplus population (Whetten and Burnight, 1956:141). In examining the geographical mobility of surplus populations, it is of great significance to examine sociodemographic conditions of the origin state from which migrants were migrated. For example, Whetten's and Burnight's data analysis of interstate migration utilized the census data on state of birth (asked for the first time in 1950). The question was used to indicate the origin state of persons in 1950.

In 1950, Baja California was highest of all states in percent of population born in other states -- 63.3% versus an average for all states of 12.9% (Whetten and Burnight, 1956). Curiously, the greatest loss through net migration in 1950 was for the State of Mexico, which in the 1980's was one of the most rapidly growing areas in Mexico. Whetten and Burnight analyzed many of the 992 possible internal migration streams between 1940-50, the years just prior to the Bracero Program, which had a substantial impact on migration to Baja California. Of the 29 most important long distance streams, three were to Baja California, all from states in the West region, using the regional designations of the World Fertility survey (SPP, 1979).

A study which updates the Whetten and Burnight study, based on 1980 census data (Fukurai et al., 1986b), examined flows of migrants between and within

major Mexican regions. If the WFS regions are again utilized, this study collaborated Whetten's results on region of origin. For instance, the leading regions sending lifetime migrants to the Northwest Region (which includes Baja and four other states) were the West (46.5 percent of interregional migrants), Central (25.5 percent), and North (17.4 percent). For migrants 1979-80, the major sending regions were West (41.6), Central (23.2), and North (22.5). This study also examined all flows between Mexican regions, based on five regionalization concepts.

Another set of studies analyzed influences on interstate migration in Mexico based on regression and LISREL analyses. These studies are somewhat similar to the regression analyses in the present study. They differ in that they analyze migration between a set of origins and set of destinations, whereas the present paper examines migration between a set of origins and one destination.

King (1978) studied causes of migration flows between Mexican states based on a regression analysis of 1970 Mexican Census data. The dependent variable was the interstate migration rate, measured as the number of people migrating from one state to another in the period 1969-1970 divided by the population of the origin state. In all four one-sex samples, distance was dominant and negative.

Greenwood, Ladman, and Siegel (1981) studied lifetime interstate migration rates for Mexico in 1950, 1960, and 1970. The model used was somewhat similar to King's but methodologically superior. The dependent variable was an usual lifetime migration rate, defined for origin state i and destination state j, as the ratio of persons born in state i and enumerated in state j to the number of persons born in state i and enumerated anywhere in Mexico. Again the negative effect of distance was the most significant result for all three years. The

second most significant effect, for all three years, was the positive one of population of destination. The results reflect rural-urban migration patterns of the forties through the sixties. A positive significant effect not noted by King was one of earnings at destination. Another very significant effect was a positive one from the border states dummy for destination, 1950 and 1960. This positive effect was attributed to the attractiveness of border states as a destination for staging temporary or permanent migration to the U.S.

Fukurai et al. (1986a) applied a latent structural equation model to data from the 1980 Mexican Census to examine the relationship among the development of economic segmentations, labor markets, income inequality, distance, and adjacency of states, and how they affect interstate migration. Results showed distance again to be a major negative factor in examining interstate migration. Adjacency had a lesser positive effect. The study also found that organizational structure had a significant positive effect upon the extent of service and support sectors, as well as a significant positive effect on income inequality. After controlling for the two variables just mentioned, income inequality had a significant positive effect on interregional migration.

Overall, these multivariate studies point to distance as the consistently most important negative influence on interstate migration. Other influences varied between studies, and it was unclear whether origin or destination characteristics were more important. In Section VI, results from these studies will be compared with the specific regression results in the present study. Another type of study in that focusing on particular cities. These studies look more intensively at one urban destination area than in the present research. The two studies below are important in suggesting independent variables for the present study, e.g., basic activity, literacy, distance, and unemployment.

One study of migration to Monterrey examined migrant selectivity with the purpose of establishing whether or not migrants were representative of the populations from which they came (Browning and Feindt, 1969). Monterrey is of great interest since historically it has been one of the largest cities in Mexico and it has continued to grow rapidly. Migration selectivity was ascertained by comparing migrants to Monterrey with Census data for the residential population in the city for 1940 and 1960. The major findings are as follows: (1) migrants were positively selective of the populations from which they originated; they had, on the average, higher educational and occupational attainment than their original populations and (2) migrants became less selective over time, with migrants from more rural and backward areas increasing over time. Migration to Monterrey prior to 1941 was much more of a "pioneer" phenomenon than later migration. Industrialization that began after World War II led to substantial road construction and the establishment of bus routes that made movement much easier. In addition, the mass media brought "city life" into many formerly isolated rural communities and kindled an interest and a desire to more. Thus, after World War II, there was an increasing trend from "pioneer" to "mass" migration. "Mass" migrants were more likely to be made up of married men and their families than were "pioneer" migrants (Browning and Feindt, 1969).

Another important migration study of the Federal District and surrounding urban areas analyzed the growth of the Federal District and addressed urbanization and population redistribution in Mexico D.F. (Van Arsdol et al., 1977). In the 1970's, much of the population of Mexico, D.F. "overflowed" into the State of Mexico. The population migrating to Mexico City, at least until the 1970's, was primarily from the central part of the country, that is, Hidalgo, Guanajuato, Michoacan, state of Mexico, Puebla, Veracruz, Tlaxcala, and Jalisco (Munoz, et al., 1977). Women and individuals of age 20-59 were

overrepresented. Van Arsdol et al.'s path model of migration to Mexico City included the following: (1) gross migration, (2) distance, (3) population size, (4) industrial capital, (5) secondary industry employment, (6) income, and (7) migrant stock. Their analysis suggested that both demographic and socioeconomic factors propelled the rural exodus to Mexico City.

Although the present study utilizes data at the state level, prior research at the municipio level is important in revealing significant variations within states, signaling caution for drawing conclusions at the state level. Three such municipio-based studies offer significant analysis of Baja California. Beegle et al. (1960) studied the magnitude and geographical distribution of numerious socioeconomic variables for 1950 at the municipio level in six Mexican border states, including Baja California. Although Baja contains only four municipios, there was considerable variation for the state for many variables. Migration was not included. A recent study performed a similar analysis based on 1980 Census data. Of nine sociodemographic variables analyzed, most showed substantive variation among Baja's municipios. Inmigration 1979-1980 to Baja was very high, but varied substantially among its municipios. Such variation suggests that the present study may hide socioeconomic geographical trends based on migration streams from sending municipios to receiving municipios. Unfortunately, however, the Mexican Census data do not allow a more detailed analysis.

A study of inmigration and labor force in squatter settlements of Mexicali (Romero et al., 1984), used summary techniques to circumvent some of the census data limitations. Among Romero's conclusions were the following: (1) that sending states to Mexicali were in the central part of Mexico, such as Jalisco, Guanajuato, Sinaloa, Zacatecas, Michoacan, Nayarit, Durango, and Sonora, (2) many migrants were from rural areas in these sending states with about 40% of

the migrants to urban Mexicali having formerly worked in agriculture and another

22% having had no principal occupation before migrating, and (3) almost 15% of

the "humanos irregulares" (squatters) lived in the United States just prior to

moving to Mexicali. Most of these migrants were in the service sector rather

than in industrial or commercial work.

Geographical Origins of International Migration to the U.S.

It may be hypothesized that internal migration streams from Mexican states

to Baja California bear resemblance to migration streams from Mexican states to

Southern California, as regards points of origin. In the first place, some

international migrants may not migrate directly to the U.S. but follow instead a

series of stages, say Jalisco to Baja for a temporary stay and then to

California. Also if the attraction is economic at destination (whether, say,

for Baja or California), places of origin in Mexico may be similar in the two

cases. Therefore, it is worthwhile to look at several literature studies of

origins of undocumented migrants, especially those with California as

destination. In Section VI, results from these lifetime studies will be

compared to the present study's on origin of internal migrants.

Dagodog (1984) analyzed origins of undocumented immigrants based on the

INS sample of 3,204 apprehended in the Chula Vista district in 1973. He used

place of birth rather than place of residence data because this more accurately

reflected locational origin. The two leading sending states were Jalisco and

Michoacan, accounting for 26 and 21 percent respectively of inmigrants seized.

Next in importance as sending states were Zacatecas and Guanajuato. Maps were

constructed showing origins in Mexico, as well as a more detailed map of places

of origin in Michoacan. A theory of multi-stage migration is not applicable

since movement from origin to California was largely a one-stage process.

Jones (1984) summarized Dagodog's and other findings using the concept of channelization, which is defined as a disproportionate size of a migration stream _from an origin_ or _to a destination_ for a set of possible migration streams. Dagodog's results are less channelized than for those based on the South Texas INS District. For the South Texas sample, the major sending states, all located in northeast Mexico were Coahuila (24.5 percent of immigrants), Nuevo Leon (13.1 percent), Tamaulipas (12.6 percent), Guanajuato (12.0 percent), and San Luis Potosi (11.7 percent). For south Texas, he also noted close relationship between channelization measures and distance from origin to south Texas destination. On the other hand, for the Chula Vista data, this conclusion weakens, reflecting the disproportionate influences of Jalisco and Michoacan, located at substantial distance from California.

A similar but more recent study (Cantu, 1986) utilized data from the ETIDEU survey, sponsored by the Consejo Nacional de Poblacion (CONAPO). The survey was taken in 1984 on a sample of 9,361 Mexican workers deported by the U.S. and located at the time of interviews in 12 major border cities, including Mexicali and Tijuana. The summary gathered responses on state of origin, migration pathway, place of entry to the U.S., duration of stay in the U.S., migrant characteristics, etc. Similar to Dagodog's results 11 years earlier, for deported undocumented workers who had entered the U.S. via Tijuana, the two leading states of origin were Jalisco (19.8 percent) and Michoacan (19.6 percent). The next two most important states were Oaxaca (8.0 percent) and Guanajuato (6.4 percent). Baja California was eighth in importance, accounting for only 5.1 percent. The study showed Tijuana had a dominant role as a port of entry to the U.S. In fact, 58 percent of the entire sample had entered the U.S. through the Tijuana municipio. (No other municipios accounted for more than 10 percent). Survey results showed that many migrants bound for the U.S. spent

varying periods of time in temporary residence in border cities, especially

Tiajuana awaiting permanent migration. Often such a "transmigrant" needed to

seek employment in the border city to obtain funds to support movement into the

U.S. The "informal labor force" generated by transmigrants had a major impact

on the labor market and economics of major Mexican ports of entry.

Two rather different studies elucidate the relationships of Mexican

internal migration to international migration to the U.S. Reichart (1984)

studied types of migrants and migration motivations in a small town in

Michoacan, a significant sending source for international migration. He divided

the town's outmigrants into three groups: (1) illegal migrants to the U.S., (2)

legal migrants to the U.S., and (3) internal outmigrants, i.e., usually destined

for Mexico's major urban centers. For all these categories, migration was

motivated by land shortage, poor agricultural conditions, low wages, lack of

jobs, and/or expanding population. Vasquez (1984) studied the relationships of

internal and international migration. His major conclusions were as follows:

(1) generally internal and international migration affect distinct population

groups; (2) overall, there is a relatively small group of international migrants

with prior internal migration experience; (3) an exception to (2) is the sample

of international migrants residing in border municipios, about half of whom had

had prior internal migration experience; and (4) international migrants with

prior internal migration experience tend to have lower socioeconomic status than

those without. Point (3) is important in the present study, since it again

confirms an important component of intended international migrants in the

internal migration streams to Baja.

IV. RESULTS: A GRAPHIC VIEW

This section presents computer mapping results on states of origin of

migrants to Baja, 1900-1980. The set of maps presents two measures of

migration, (1) migration and (2) migration ratio. These are also the dependent

variables for the regression analysis in Section V.

Migration is defined as the number of lifetime migrants from each sending state

to Baja California. Actually the 31 "sending states" consist of 30 states plus

the Federal District, actually a federal entity.

Migration ratio is defined as

$$\frac{\text{Number of lifetime migrants from each sending state to Baja California}}{\text{population of sending state}}$$

Both measures average migrants over a range of years. However, due to Mexico's

rapid population growth, both measures are weighted toward recent migrants.

Migration to Baja California - 1900. The migration ratio analysis in 1900

reveals a very strong inverse distance effect (see Map 1), with northern Pacific

coast states having the highest migration ratios. One possible reason for a

stronger north-south rather than east-west migration ratio is the topographic

barrier of north-south mountain ranges and deserts. Furthermore, the main

transportation routes flow north-south because of these geographic barriers.

The two, nearby, coastal sending states of Sinaloa and Sonora had the

highest ratios. A prominent exception to the distance rule was Baja California

Sur, in the lowest migration ratio category. The most likely explanation for

this was the lack of transportation, since travel between Baja California and

Baja California Sur was very rugged in 1900. It was not until the 1940's that

a highway was built connecting the two states (Butler and Pick, 1983).

Map 2 shows the cumulative number of lifetime immigrants in 1900 from

sending states to Baja California. Since the migration measure does not control

MAP 1

MIGRATION RATIO IN 1900

0.1171 - 0.0101

0.0062 - 0.0024

0.0020 - 0.0013

0.0011 - 0.0007

0.0006 - 0.0000
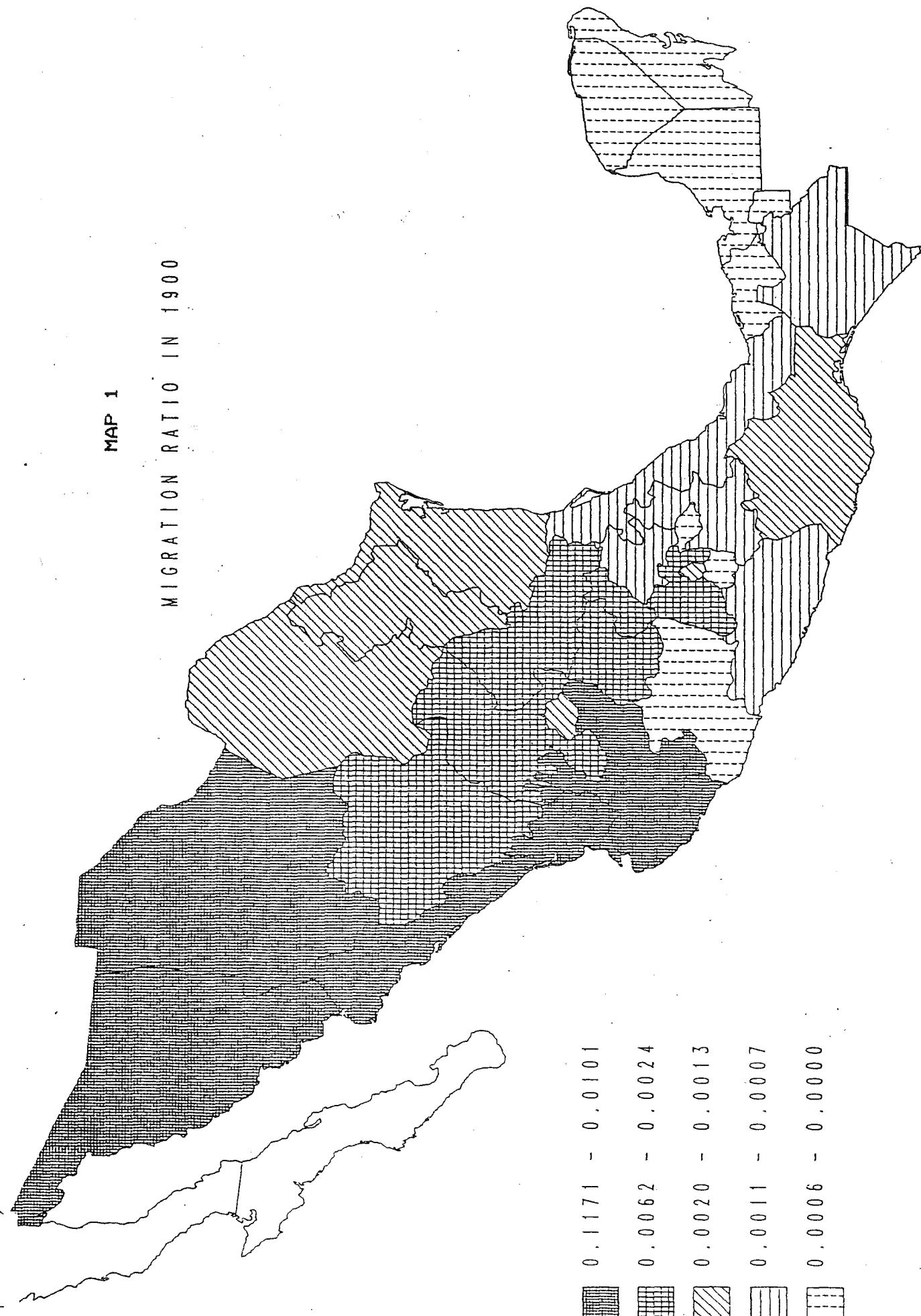
MAP 2

MIGRATION TO BAJA CALIFORNIA IN 1900

264 – 39

24 – 12

10 – 4

3 – 2

1 – 0
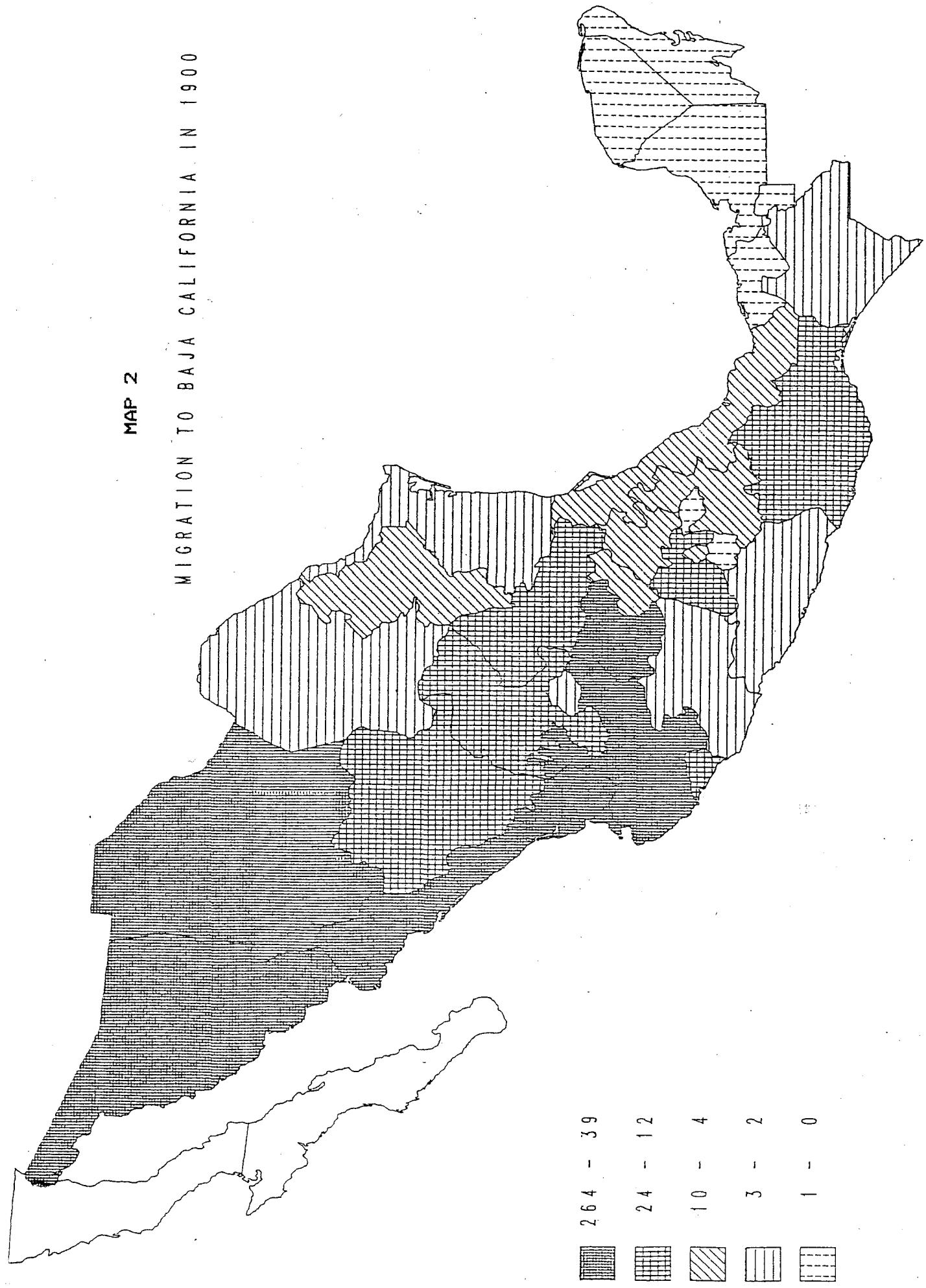
for the population size of sending states, the populous state of Jalisco was more prominent than when using the migration ratio. Again, an inverse relationship with distance was very apparent. In 1900, there was a small number of migrants from all states.

Migration to Baja California - 1950. Migration between 1900 and 1950 followed a similar pattern but with the following differences (see Map 3):

1. Baja California Sur increased significantly in migration ratio.

2. The overall magnitude of migration ratios increased by about 60 times (see map legends). Such a large increase in migration ratio, which controls for population of the sending state, reflects several factors. First the remote, frontier status of Baja California in 1900 may have served as a deterring factor. Second, the population of all major Mexican regions increased substantially due to high fertility and lower mortality rates. Third, overall rates of internal Mexican migration presumably increased between 1900 and 1950 because of substantial advances in transportation technology. Forth, the Bracero Program undoubtedly pulled many people to the border regions.

The migration pattern in 1950 was similar to the one established by 1900. As shown on Map 4, Jalisco and Michoacan (to the south of Jalisco) constituted minor exceptions to the distance rule owing to their large populations. The very large increase in the volume of migrants, 1900-1950, reflected the combined influences of increasing intensity of migration and increasing population growth (2.5 times during this time period for the nation). As shown in Table 1, Baja

MAP 3

MIGRATION RATIO IN 1950

18.560	1.180
0.940	0.202
0.170	0.080
0.070	0.050
0.040	0.020
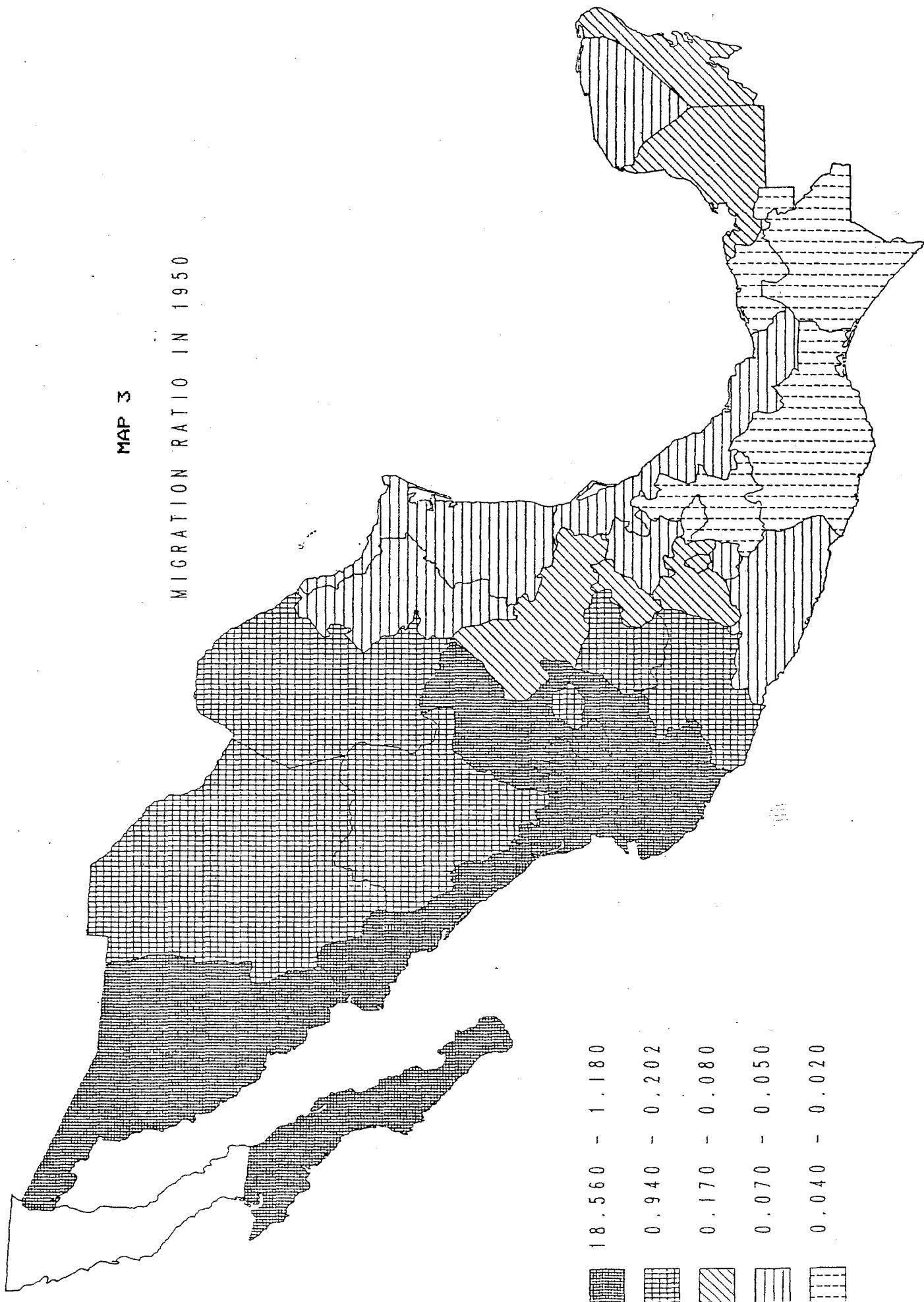
MAP 4

MIGRATION TO BAJA CALIFORNIA IN 1950

27078 — 11030

7858 — 1825

1456 — 568

551 — 272

258 — 45
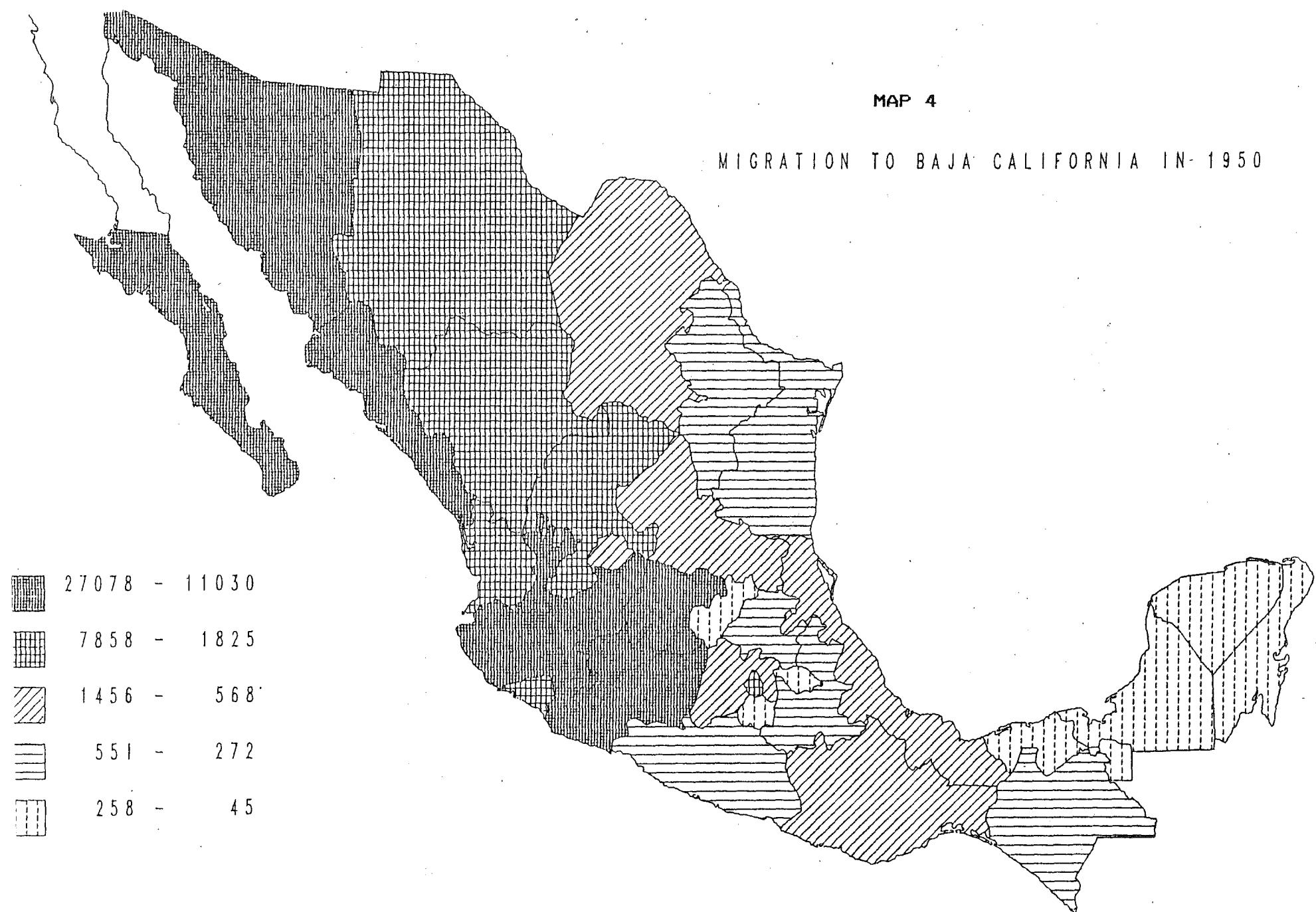
grew faster than other Mexican border states. The intensity of its migration is illustrated by 59.2% of its 1950 population having being born in some other state (Beegle et al., 1960).

Migration to Baja California - 1960. The geographic distribution of the origin of migration remained virtually unchanged from 1900 to 1960, with the exception of reversal in importance among the two leading sending states, i.e., Sonora reversed with Sinaloa (see Maps 5 and 6). The magnitude of the migration ratio between 1950 and 1960 increased by about 50 percent. Possible factors accounting for the increase were (1) improvements in transportation technology; and (2) the influence of the Bracero Program in the 50's and 60's, which encouraged a greater volume of migration to Baja California. (See Table 5).

Migration to Baja California - 1970. The similarity in migration ratios of the 1950-60 period continued for 1970, in spite of rapid population growth. The average magnitude of migration ratios stabilized by 1970, owing perhaps to the transportation network being in place and the discontinuation of the Bracero Program. Again, the absolute numbers of migrants followed earlier established patterns with one minor departure, migration from the Federal District to Baja California being relatively higher in 1970 as opposed to 1950 and 1960. (See Maps 7 and 8).

Migration to Baja California - 1980. From 1960-80, the absolute numbers of migrants increased only moderately. Since population approximately doubled between 1960 and 1980, the slight increase in number of migrants reflected a

MAP 5

MIGRATION RATIO IN 1960

15.622 - 2.287

1.682 - 0.402

0.321 - 0.173

0.142 - 0.110

0.078 - 0.042

MAP 6

MIGRATION TO BAJA CALIFORNIA IN 1960
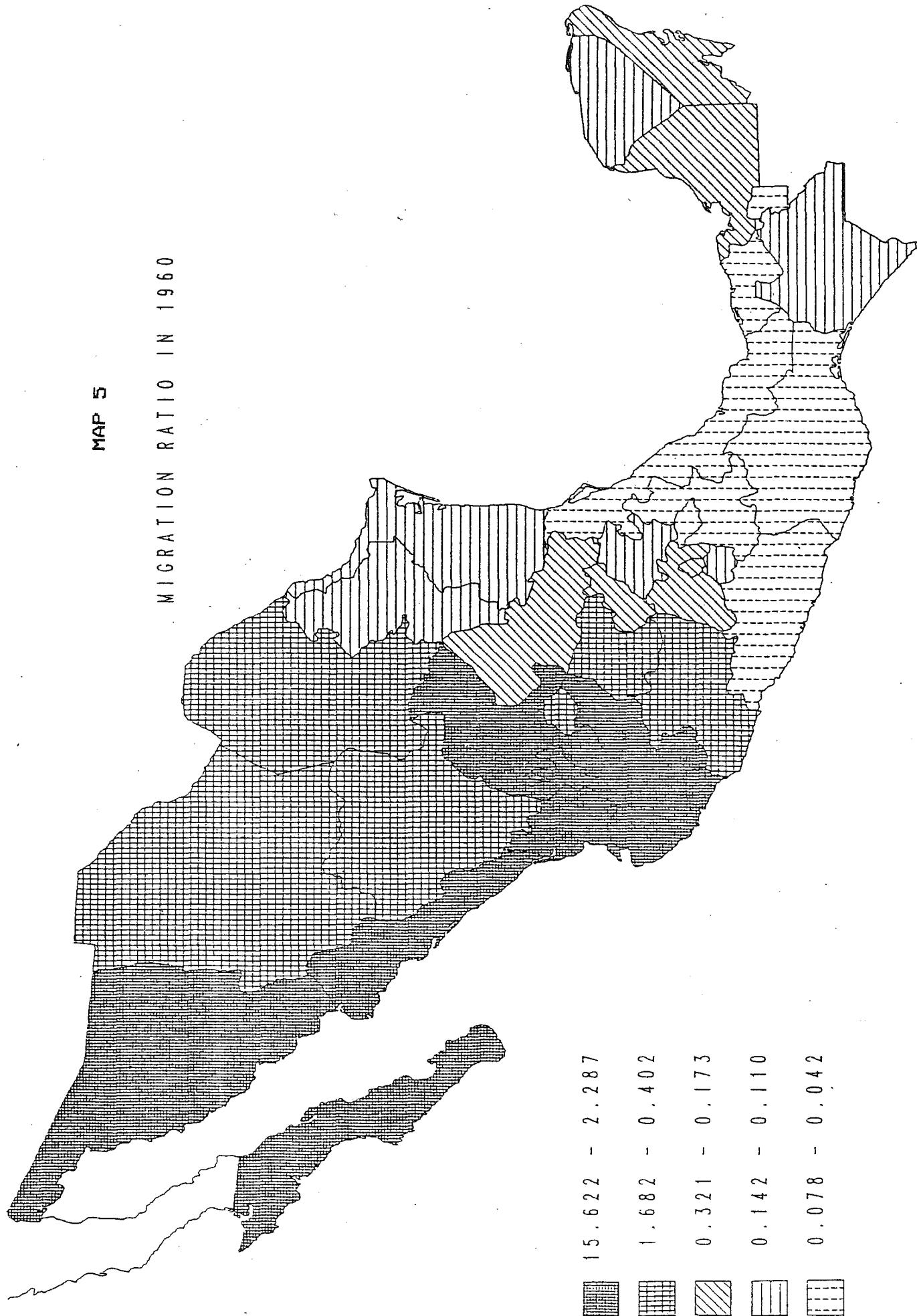
66840	– 18707
12810	– 4365
3976	– 1719
1423	– 675
544	– 160
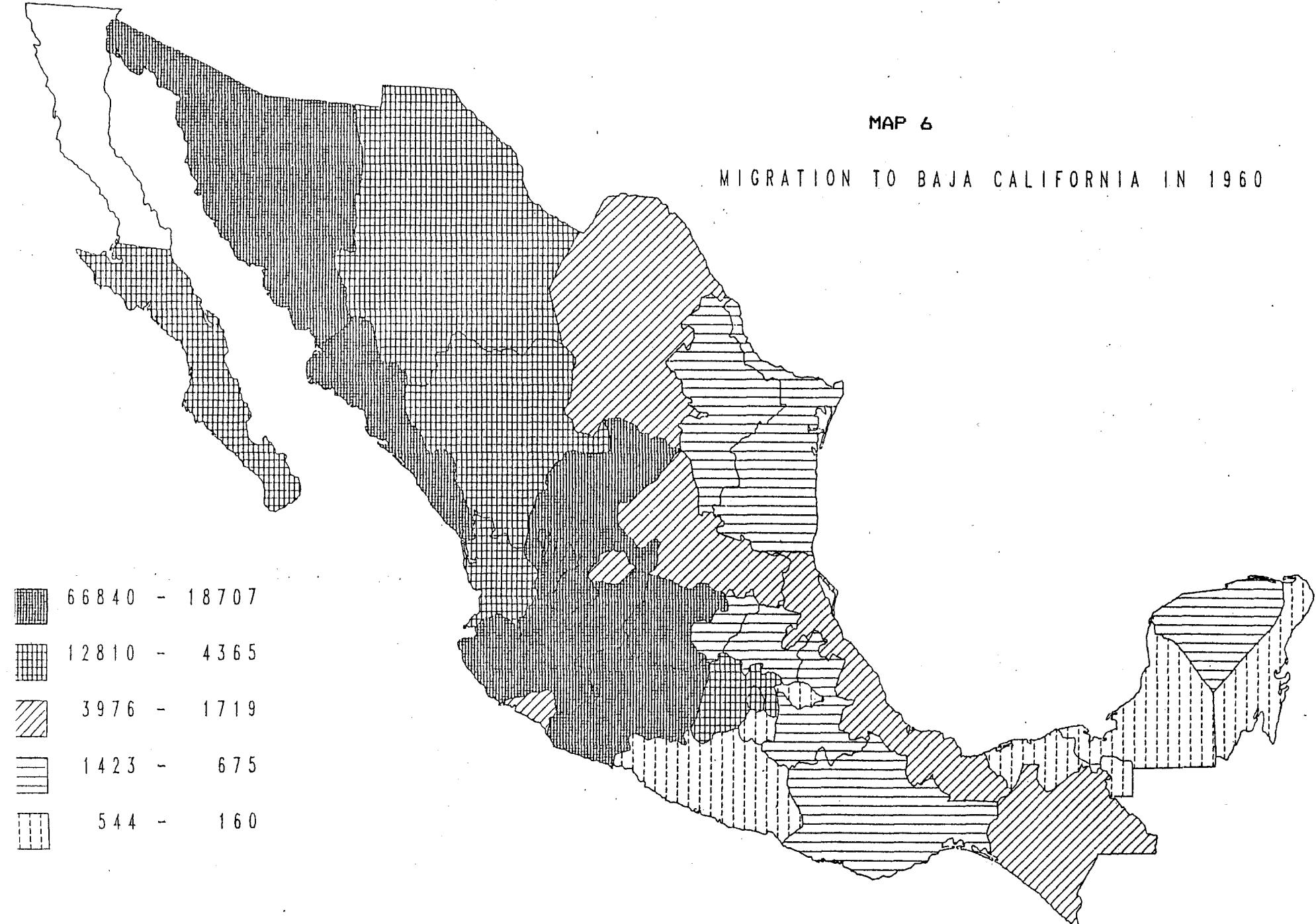
TABLE 5

TEMPORARY WORKERS ADMITTED TO THE U.S. DURING THE

BRACERO PROGRAM (THOUSANDS)

1942 = 4.2	1950 = 67.5	1958 = 432.9
1943 = 52.1	1951 = 192.0	1959 = 437.6
1944 = 62.2	1952 = 197.1	1960 = 315.8
1945 = 49.5	1953 = 201.4	1961 = 291.4
1946 = 32.0	1954 = 309.0	1962 = 195.0
1947 = 19.7	1955 = 398.7	1963 = 186.9
1948 = 35.3	1956 = 445.2	1964 = 177.7
1949 =107.0	1957 = 436.0	

(Source: Bustamante, 1975)

MAP 7

MIGRATION RATIO IN 1970

7.320 - 2.190

1.590 - 0.460

0.450 - 0.180

0.140 - 0.100

0.090 - 0.040

MAP 8

MIGRATION TO BAJA CALIFORNIA IN 1970

78468 — 20921

17184 — 6899

5277 — 2670

2307 — 1074

758 — 277
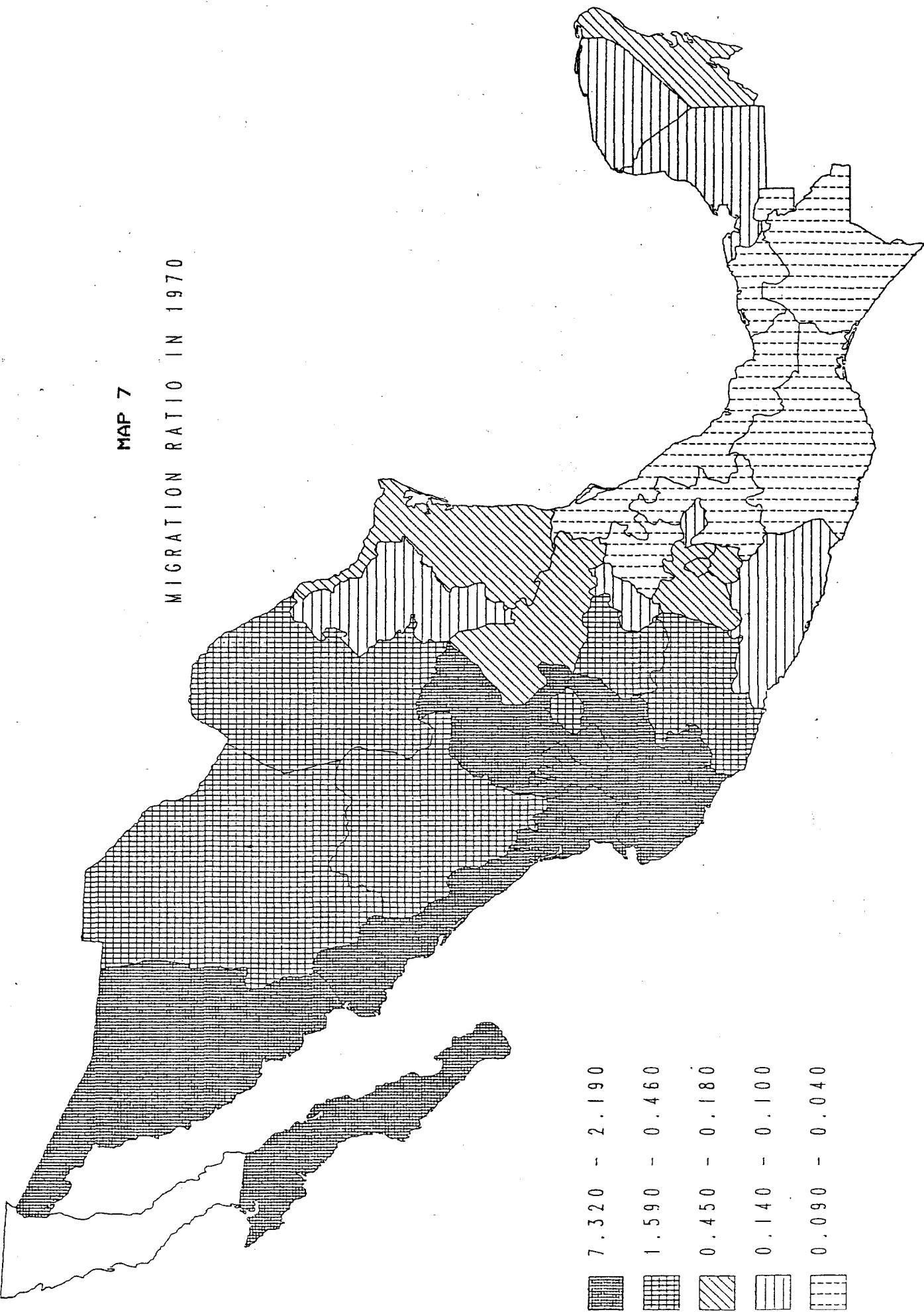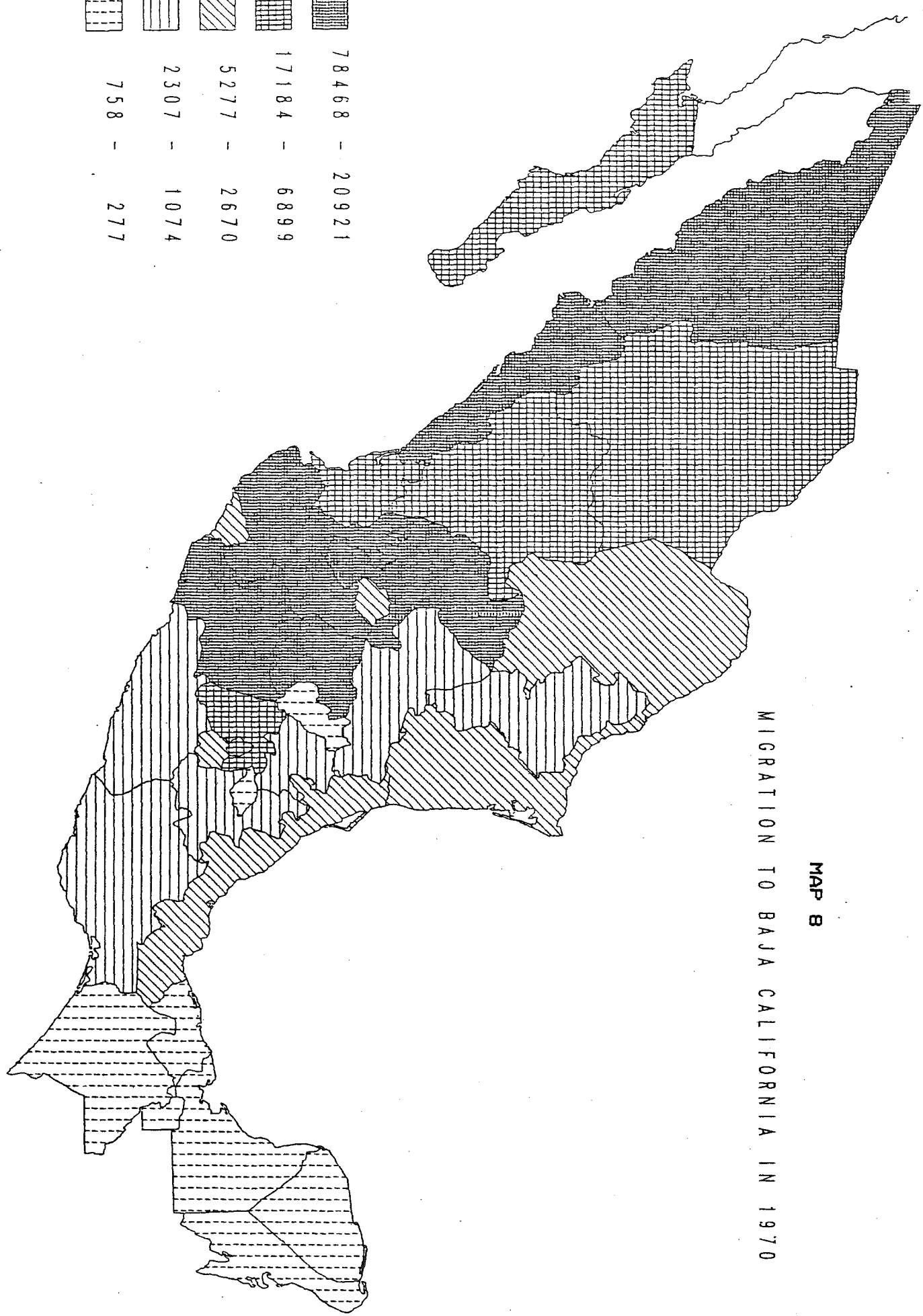
slowing of inmigration to Baja. Thus, between 1970 and 1980, net migration to Baja may have approached zero. (See Maps 9 and 10).

In general, migration patterns described for earlier years continued. The following differences, however, may be noted.

1. An increase in the migration ratio from Durango.

2. The state of Zacatecas diminished in importance for inmigration, from a secondary position it held over a 70 year period.

3. A decrease in the overall magnitute of the migration ratios by about one third. This drop probably reflected the end of the Bracero Program in the late 60's, as well as an increase in the number of northward migrants with final destination of the U.S. rather than Baja California. That is, a hypothesized "substitute effect" might account for this drop, since immigration from Mexico to the U.S. increased substantially in the 1960's, to average perhaps 500,000 annually for the decade.

Such a stable social phenomenon between 1900-1980 in a country of rapid population growth requires careful scrutiny and comparison with similar studies in the international migration literature.

Table 6 shows the rank of each state and its percentage of accumulated migrants over the time periods just discussed. The origin states of migrants over the eighty-year period have reamined relatively stable despite great increases in the volume of migrants. The major changes involve the increased contribution of Baja Sur during the 1940's and 1950's and its subsequent decline, and the beginning and continuing greater contributions of migrants from the Federal District, beginning in the 1950's.

MAP 9

MIGRATION RATIO IN 1980

2.763 - 1.302
1.121 - 0.422
0.257 - 0.110
0.100 - 0.065
0.064 - 0.029

34

MAP 10

MIGRATION TO BAJA CALIFORNIA IN 1980

60101 - 20620
17563 - 8161
5940 - 2456
2291 - 740
683 - 151
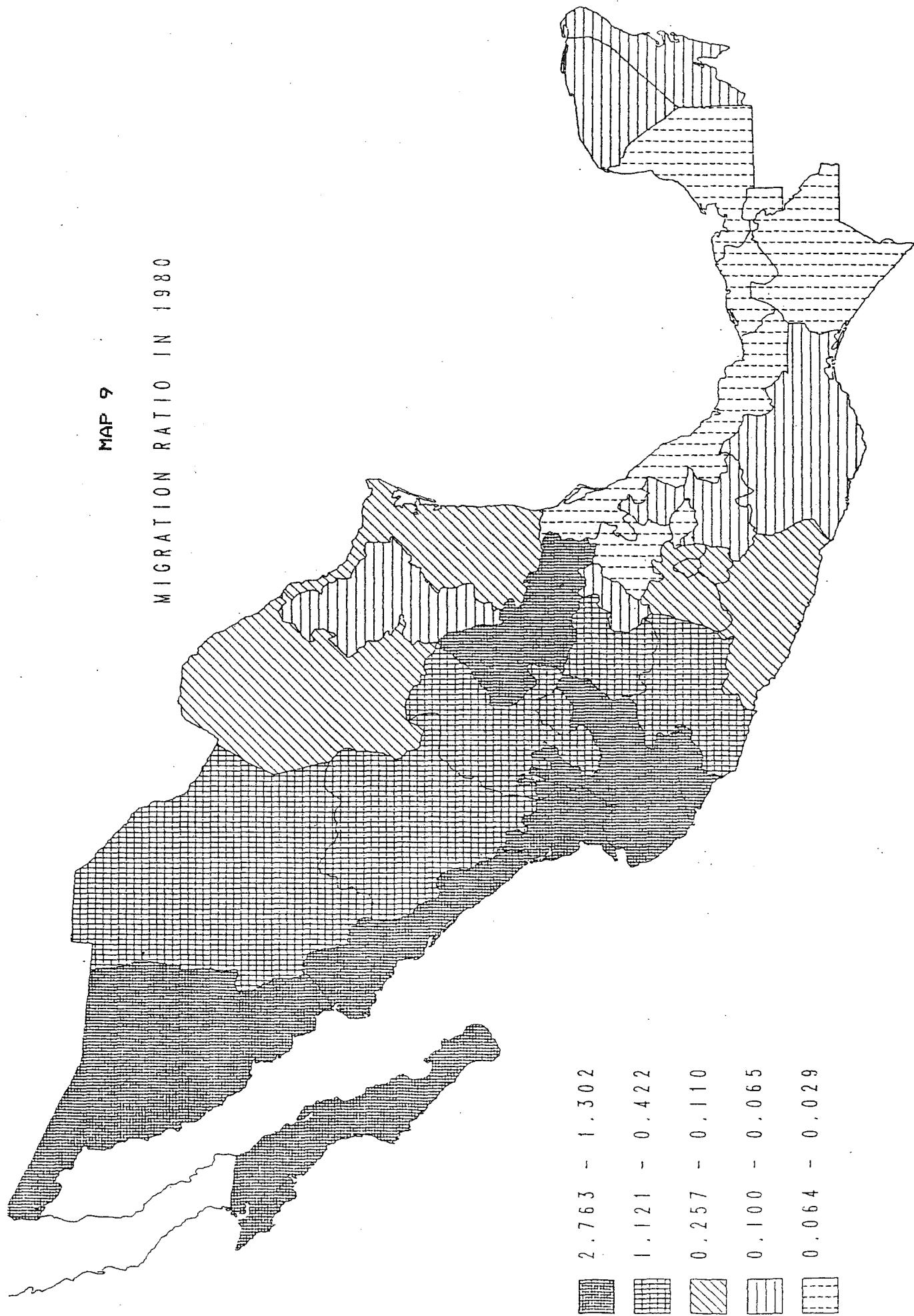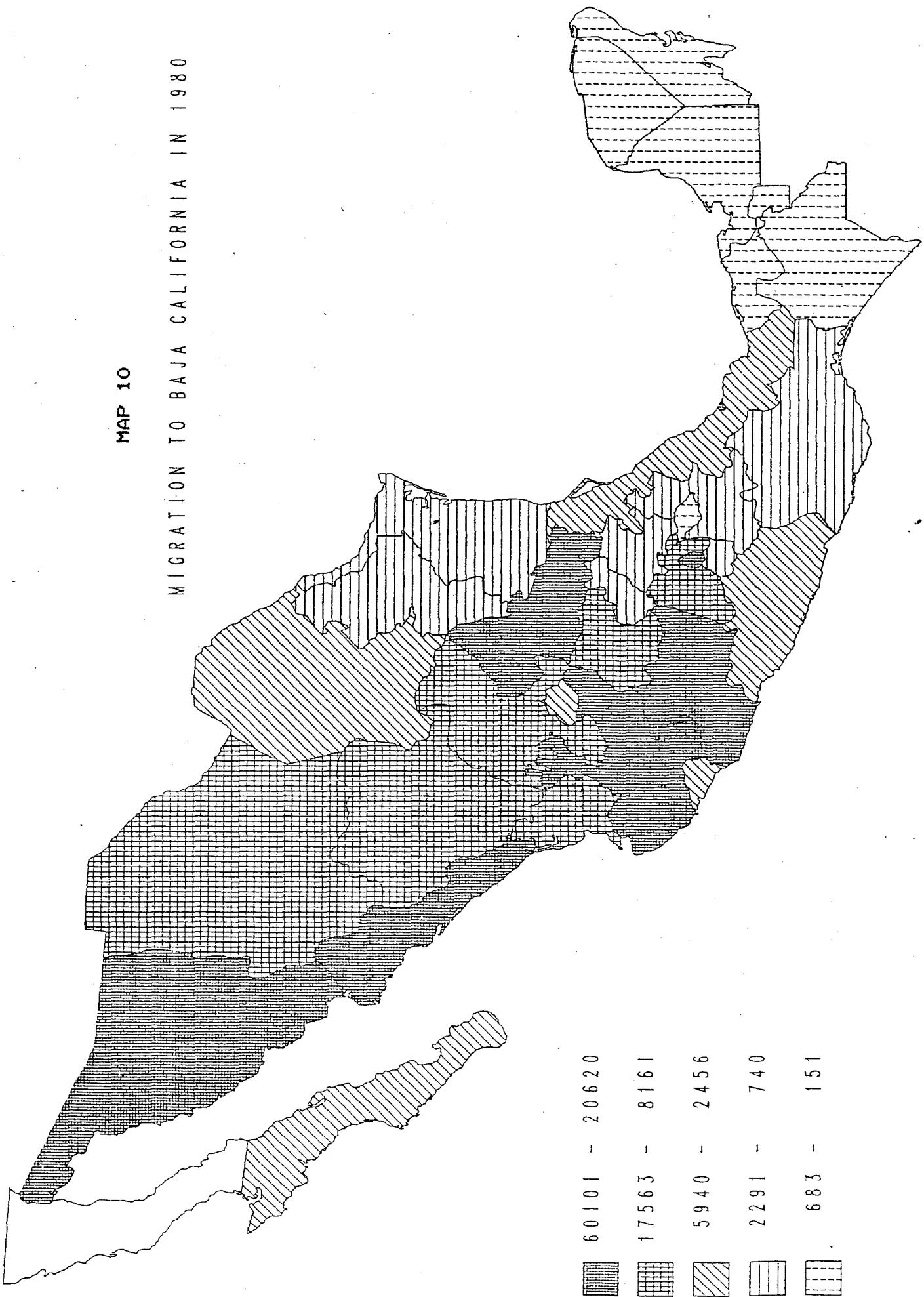
Table 6

MIGRATION TO BAJA CALIFORNIA: 1900-1980*

1900			1950			1960			1970			1980		
Rank	State	%	Rank	State	%	Rank	State	%	Rank	State	%	Rank	State	%
1. Sinola		27.0	1. Jalisco		20.0	1. Jalisco		23.1	1. Jalisco		22.8	1. Jalisco		19.9
2. Sonora		26.6	2. Sonora		14.3	2. Sinoloa		12.7	2. Sinoloa		11.8	2. Sonora		12.0
3. Jalisco		12.0	3. Sinoloa		12.8	3. Sonora		10.6	3. Sinoloa		10.7	3. Sinoloa		11.8
4. Chihuahua		6.3	4. Michoacan		9.8	4. Michoacan		10.3	4. Michoacan		10.4	4. Michoacan		8.1
5. Nayarit		4.8	5. Baja, Sur		8.3	5. Guanajuato		7.5	5. Guanajuato		6.3	5. Guanajuato		7.5
6. Guanajuato		4.0	6. Guanajuato		8.0	6. Zacatecas		6.4	6. Zacatecas		6.1	6. Distrito Fed		7.2
7. Zacatecas		2.5	7. Zacatecas		5.8	7. Durango		4.4	7. Distrito Fed		5.0	7. Nayarit		5.4
8. Durango		2.4	8. Durango		3.9	8. Baja, Sur		4.4	8. Nayarit		4.5	8. Durango		5.3
9. Colima		2.3	9. Chihuahua		2.8	9. Distrito Fed		3.3	9. Durango		4.3	9. Zacatecas		4.8
10. Mexico		2.3	10. Nayarit		2.7	10. Nayarit		3.2	10. Chihuahua		2.8	10. Chihuahua		3.3
			11. Distrito Fed		2.6	11. Chihuahua		2.2	11. Baja, Sur		2.7			

*Includes all states that contributed 2% or more in accumulated migration.

Table 7 presents the rank order correlations for the sending states presented in Table 6. All are statistically significant correlation coefficients except the one between 1900 and 1960, which is only slightly under the p = 0.10 significance level. Correlations for all time lags of 30 years or less are highly significant. Generally the longer the time lag in a correlation, the lower the value of the coefficient. The average correlations with 10, 20, 30, and 50 plus year lags are .927, .840, .779, and .519, respectively. This analysis confirms the stability in the geographic origins of migrants during an 80 year period.

Outmigration from Baja California - 1980. Map 11 reflects responses to the census question which determined previous residence by residents outside of Baja California. For those answering Baja California, Map 11 shows the percentage distribution of outmigration from Baja to another state. The remigration streams essentially are the same as the migration flows to Baja.

V. RESULTS: REGRESSION ANALYSIS

Stepwise regression analysis was performed to examine the characteristics of the samples of sending states over the eighty year period. The two dependent variables were migration and migration ratio, the same ones utilized graphically in the last section.

Independent Variables

The following independent variables were included as eligible ones for stepwise regression:

TABLE 7

RANK ORDER CORRELATIONS OF MAJOR SENDING

STATES FOR INTERSTATE MIGRATION

TO BAJA CALIFORNIA

Census Years	1900	1950	1960	1970
1950	.520*			
1960	.471	.934***		
1970	.554**	.841***	.930***	
1980	.533*	.779***	.839***	.918***

* .10, statistically significant.
** .05, statistically significant.
*** .01, statistically significant.

MAP 11

RATIO OF POP FROM BAJA CALIFORNIA IN 1980

0.305 - 0.082

0.058 - 0.021

0.017 - 0.011

0.010 - 0.006

0.005 - 0.002
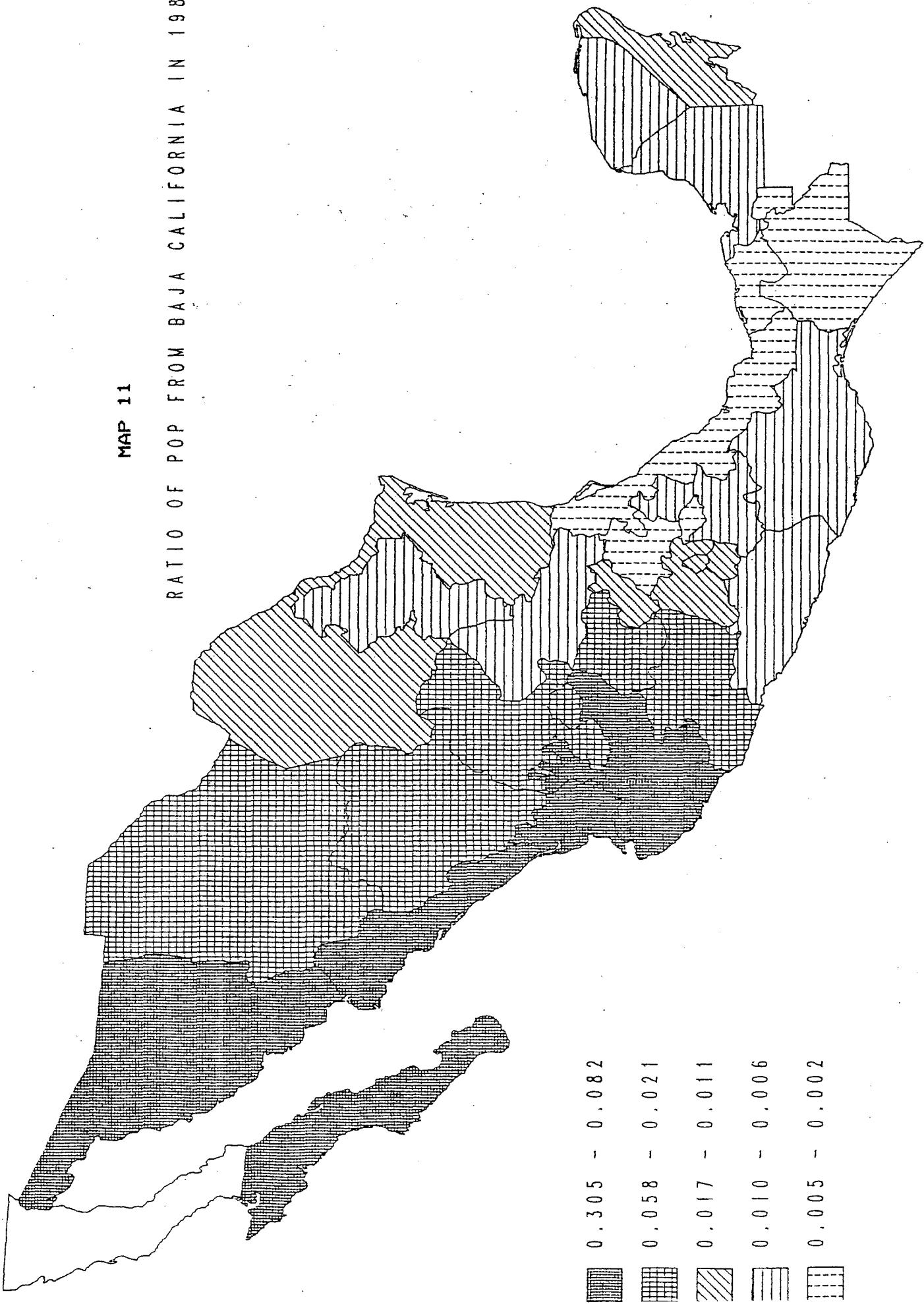
1. <u>Distance</u>. This is the straight line distance between the geographic centroids of a sending state and Baja California. It is included because of its importance in previous studies of Mexican internal migration (King, 1978; Greenwood et al., 1981; Fukurai et al., 1986b).

2. <u>Population Size</u>. This is defined as the population size of the sending state. It is included because of its moderate importance in the study of Greenwood et al. (1981).

3. <u>Population Density</u>. This is defined as the ratio of the population size of the sending state to the area of the sending state. It is included because of its large and negative importance in the combined, i.e., two-sex, sample of King.

4. <u>Literacy</u>. This is defined as the ratio of the literate population, 10 years and older, to population size. Literate population is defined as those having the ability to read and write. Literacy at origin state was included by King and was not significant. It is included in the present analysis because of its possible importance for "transmigration," i.e., migration characterized by intermediate stops. Since literacy was an important positive characteristics for international migration during the Bracero program, it is hypothesized that it also positively affected transmigrants and thus internal migration.

5. <u>Economic Activity</u>. This is defined as the ratio of the economically active population, 12 years or older, to the total population. Economic activity implies that a person has previously worked or is currently working. This variable represents the level of economic activity of the sending state, which reflects in turn the degree of labor force saturation of state of origin. It is hypothesized that high economic activity would lead to higher migration due to greater competition and fewer unfilled jobs in the labor force at state of origin.

6. _Basic Activity_. This is defined as the ratio of the number of persons in farming occupations to the number of persons economically active. As with literacy, this variable is included because of the transmigration phenomena in which many internal migrants are intending eventually to migrate into the U.S. Since a large proportion of international migrants and transmigrants are employed in agriculture, it is hypothesized that this variable will be important and positive during periods of increased international migration.

7. _Unemployment_. This is defined as the ratio of unemployed persons, 12 years and older, to the economically active population. This variable was found to be important at state of origin in King's male sample. It is included because the migration streams to Baja have included a greater proportion of males. This is hypothesized to reinforce King's results for males. Also, from a practical standpoint, the motivation to move to a better job either in Baja's relatively prosperous economy or in the U.S. would be stimulated by heightened unemployment in the prospective migrant's place of residence.

Statistical Analysis

Stepwise regression analysis was utilized for the present investigation. The variables were derived from the Republic of Mexico censuses. There is a slight comparability problem of variables across time; nevertheless, a variety of social and economic variables available allowed a relatively comparable analysis.

Results for Migration

Table 8 presents the results for migration.

For migration, distance is consistently negative and significant for every year except 1960. The next variable in overall importance is population size, which is positive and significant for 1950-70. It is logical that size of migration streams reflect population size at origin, while the lack of effect of

TABLE 8

BAJA CALIFORNIA

MIGRATION

(Standardized betas)

Independent Variable	Year					
	1900	1950	1960	1970	1980	1980[1]
Distance	-.685**	-.492**	-.0275	-.505**	-.651**	.654**
Population Size	---	.438*	.594**	.679**	.197	.279
Population density	-.108	-.295	-.312	-.533*	.068	-.076
Literacy	.027	.079	.195	.554**	-.171	.160
Economic activities	NA	.229	-.154	.308	.019	-.007[2]
Basic activities	NA	-.209	.204	.382	NA	NA
Unemployment	NA	.101	.257	-.108	NA	NA
Overall F	8.366**	2.410	3.196	3.01	3.453*	6.442**

* .05, statistically significant.
** .01, statistically significant.
   NA = Data not available

[1] outmigration from Baja California for 1979-80 period
[2] Partial coefficient controlling for 4 other exogenous variables due to F-level insufficient for further computation.

1900 and 1980 is surprising. The only other variables of significance are for 1970: population density is negative and literacy is positive. The overall regressions are significant at the .01 level only for 1900 and 1980.

Results for Migration Ratio

Table 9 presents the results for migration ratio.

For migration ratio, distance is consistently negative and significant. The only other variables of importance are for 1960 literacy (positive), for 1970 literacy (positive), basic activity (positive), economic activity (positive), and for 1980 population size (negative).

The significance levels of the overall regressions are higher for migration ratio, including significance at the .01 level for 1900, 1970, and 1980. In spite of some differences, the analysis using migration ratio is very close to that for migration for all years examined. The major reason for the similarity is the dominance of distance. It is important to point out the following resemblances between the mapping analysis and regression results: (1) both mapping results and regression results clearly show the negative effect of distance on both migration measures, and (2) both sets of results reveal very strong longitudinal consistency for both migration measures over the 80 year period.

Results for Outmigration

Although this study concentrates on inmigration to Baja California, regressions for outmigration were performed for 1980 only with the same set of dependent variables, in this case characterizing receiving states. Two dependent variables, opposite to the previous ones, were used:

Outmigration, defined as the number of migrants 1979-80 from Baja California to each receiving state.

TABLE 9

BAJA CALIFORNIA

MIGRATION RATIO

(Standardized betas)

Independent Variable	Year					
	1900	1950	1960	1970	1980	1980[1]
Distance	-.708**	-.331*	-.700**	-.610**	-.820**	.158
Population Size	-.239	.272	-.182	.094	-.323*	-.036
Population density	-.079	---	.163	-.327	.118	-.143
Literacy	-.021	---	.522*	.548**	-.026	.062
Economic activities	NA	-.115	.180	.390**	.038	-.149
Basic activities	NA	-.183	.414	.502**	NA	NA
Unemployment	NA	.248	-.277	.209	NA	NA
Overall F	7.530*	2.310	3.006*	4.620**	10.780**	0.388

* .05, statistically significant.
** .01, statistically significant.
NA — Data not available

[1]1979-80 outmigration divided by population of destination states.

<u>Outmigration ratio</u>, defined as

$$\frac{\text{number of outmigrants, 1979-80 from}}{\text{Baja California to each receiving state}}$$
$$\frac{}{\text{population of receiving state}}$$

The time period 1979-80 was chosen for outmigration to emphasize only the most recent trends. The results presented in the righthand columns of Tables 8 and 9 are as follows. For outmigration, the only significant effect is the negative one of distance. The overall regression is highly significant. For outmigration ratio, the results are non-significant. These results indicate a correspondence in the most recent time period between inmigration and outmigration -- namely distance is dominant, at least for the variables studied. The lack of significance for migration ratio may stem from discrepancies in the negative distance gradient in the states in the eastern and southern parts of Mexico. (See Map 12).

VI. DISCUSSION

The present research shows the major influence on migration to Baja, 1900-80, to be distance. This result must be taken within the limitations of the research design and the data at hand. For example, there is one destination point, so origin points and their characteristics are emphasized. Likewise the pull effects of the Baja and U.S. economies are not included.

Given these limitations, the inmigration and also the outmigration distance effects are in agreement with prior studies of interstate migration in Mexico. King estimated six regression equations to predict migration ratio (using this paper's terminology). The negative effect of distance dominates for four one-sex equations. For the other two-sec equations, it is in third place. These two equations, however, can be criticized as overdetermining migration as an independent variable. In Greenwood et al.'s regressions for predicting gross interstate migration, distance's negative effect is the most important one for 1960, 1970, and 1980, Likewise in Fukurai et al.'s path analysis of interstate

MAP 12

OUTMIGRATION FROM BAJA CALIFORNIA IN 1980

3589 – 1181

990 – 429

292 – 213

205 – 117

83 – 24
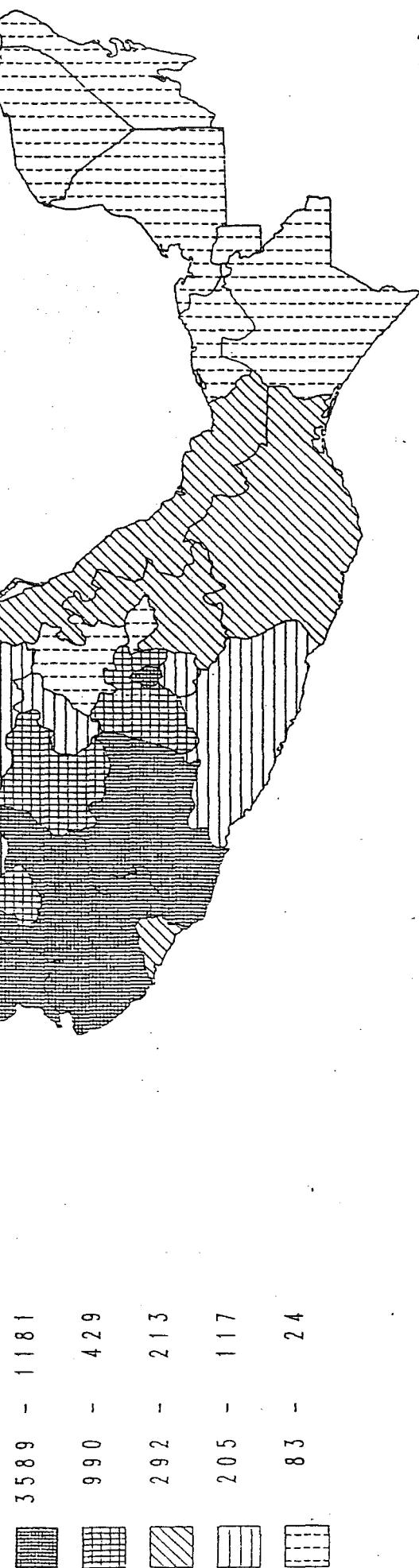
migration, distance is the most significant predictor for 1979-80 and 1975-79 migration. The present distance results point to the importance of Mexican geography and presumably associated transportation and access patterns in accounting for internal migration to and from Baja over 80 years. In future studies, this does not preclude the potential importance of other effects, but calls for careful examination of any such effects vis-a-vis distance.

Another important result is the appearance of 1970 as a year in which the ordinary dominance of distance is disrupted by other variables of comparable significance. Given the great importance of the Bracero Program to Baja's population growth, we shall attempt to interpret the 1970 regression coefficients in terms of the Bracero phenomenon. This is appropriate because the lifetime migrants in 1970 are centered in the years of the official Bracero Program from 1950-64.

The following discussion refers to results for migration ratio. Literacy's significant positive effect may have resulted from the benefits of higher literacy in improving information dispersal about the Bracero Program. Also, higher literacy would tend to better prepare migrants for an intermediate or staged move to the U.S. Although not the advantage of English literacy, Spanish literacy served as a great plus versus Spanish illiteracy for success in the Bracero Program.

Basic activity's significant positive effect is postulated to be related to a larger proportionate labor force pool of farm workers with appropriate skills for the Bracero Program. The significant positive effect of economic activity is interpreted more broadly as a general push effect for outmigration, but without specificity for Bracero migration.

In sum, the regression analysis shows 1970 to have greater prominence for non-distance effects, most of which may be interpreted as Bracero-related. This

implies that in a migration system characterized by very stable migration flows, special social and economic events may disrupt the stability.

In spite of the mild disruption of 1970 results, overall the research indicates remarkable stability over 80 years in distribution and characteristics of sending states. This is noteworthy given a revolution; varying political philosophies regarding foreign investment and economic development; tremendous population increase as a result of decreasing death rates and continuing high fertility rates, except at the end; a rural population becoming highly urbanized; the construction of railroads and highways; and the evolution of the Bracero Program. Further, while there were substantial differences in the volume of migrants to Baja between 1900-1980, the states of origin remained virtually the same. Although the present paper cannot scientifically determine the causes of such stability, several points should be noted. First Pick et al., comparing results to Beegle's earlier study, noted extremely stable patterns from 1950 to 1980 for certain variables in Mexican borderlands municipios. Among the stable variables were fertility, literacy, and urbanization. These results, together with the present ones, call for expanded research to analyze stable patterns in Mexico in the twentieth century. Among other things, such a study might look into the hypothesis of lack of substantial internal migration of ethnic populations as less disruptive to certain patterns of social geography.

In sum, the stable system of inmigration to Baja over 80 years may have lent some social stability to a rapidly growing population and economy in the state and reduced social disruption versus comparable regions of rapid growth.

Comparison of the present maps and statistics on origin states with similar results from the studies of Dagodog on origins of Mexican undocumented migrants to Southern California in 1973 and Cantu on origins of Mexican

undocumented departed to Tijuana in 1984 shows that the distribution of origin states remains essentially the same, whether for internal migrants to Baja or international migrants to Southern California. This similarity raises a number of questions. Have migrants leaving origin states decided firmly on destination, or do many proceed to Baja and then decide whether or not to migrate to the U.S.? Are migrants in the internal and international migration streams similar in socioeconomic characteristics? What are the relative volumes of the two streams longitudinally? These questions cannot be answered with present data, but await further studies.

Not answered by our analysis is what impact the northward flow of migrants has had on migration to the U.S. from Mexico. Some of these migrants may have been stepwise migrants, i.e., they migrated to Baja and then to the U.S. For now, the limited conclusion is that the national and international migration streams to Baja and Southern California are highly similar in distribution of origin states.

VII. CONCLUSION

This study has proposed a research model to analyze internal migration to Baja California 1900-1980 and recent internal migration from Baja. The model offers the following major conclusions:

1. Although Baja has undergone some growth and change, the distribution of Baja's origin states for migration changed little over the period. The continuing trend is remarkable and warrants further study.

2. The major factor influencing migration for the present model is distance between origin states and Baja.

3. For 1970 there are several other influential variables, namely basic activity, literacy, economic activity, and population. These can be largely explained by factors related to the Bracero Program. The importance of the Bracero Program was further accentuated by the finding that flows to Baja subsequent to the program have returned to a distance-determined migration model.

4. Population at origin is a positive influence on the dependent variable migration for 1950-70.

5. Origin patterns are similar for internal migration to Baja California and international migration to Southern California.

FOOTNOTES

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