THE MIGRATORY RESPONSE TO A NATURAL DISASTER
THE 1972 MANAGUAN EARTHQUAKE

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ABSTRACT

THE MIGRATORY RESPONSE TO A NATIONAL DISASTER:
THE 1972 MANAGUAN EARTHQUAKE

By

Kevin Francis Byrnes

The balance of economic and social opportunity has favored urban development in Latin America for many years. Increasingly, however, the growth of large metropolitan areas has been viewed as a problem in those developing nations which are struggling to provide adequate education, employment, health care, and foodstuffs for this rapidly-expanding population. To a large extent, this growth is due to rural-urban migration flows which carry poor, illiterate rural area residents and unemployed villagers into the primate city. In this process, the rural migrant's perception of both opportunities and the quality of life of the urban environments are important considerations to understand a major force which is shaping the future of the developing world.

The purpose of this study is two-fold; first, to determine the validity of certain generalizations regarding the stage migration process in the context of Managua as a Central American primate city and, second, to describe and explain the migration systems, both pre- and post-earthquake, of four secondary cities located near Managua to determine what effect the disaster may have had on the

attractiveness of these cities as intervening opportunities in the Managua migration system.

An historical review of the urban development of Nicaragua shows that colonial centralization policies contributed to the evolution of Managua as a primate city. Despite numerous occurrences of severe earthquakes, the city continued to grow, and the establishment of the strong, autocratic administration of the Somoza family enhanced the concentration of wealth and power in the national capital.

Statistical analysis of survey data collected after the disaster and provided by government authorities shows that the pre-earthquake migration system fits the classic stage migration pattern. Migrants tended to leave secondary cities for Managua, while they were replaced by in-migrants from rural areas. The only trace of direct rural-urban migration into the capital occurred from those rural areas adjacent to Managua. Unlike a similar study of Guatemala City, there is little indication that the stage migration process has broken down in more recent years.

After the earthquake, among those factors which were important in explaining the choice of resettlement location were distance from Managua, the presence of family relations at the point of destination, and the importance of economic considerations to the refugee migrant.

The pervasive nature of the stage migration process as seen in both the primate and secondary migration systems suggests that Managua has attained a threshold size and

importance which may sustain continued high growth rates despite government attempts to de-centralize the urban population. Rural migrants are still seeking local secondary city destinations in preference to the national capital, thereby demonstrating a normal stage migration pattern. However, if Managua continues to grow without taking measures to decentralize the national economy among several growth pole areas, the capital may become an intervening opportunity in the migration system of many secondary cities and be inundated by a flood of rural migrants seeking "the good life."

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CHAPTER I

INTRODUCTION

Over the past decade, the urbanization of the world's population has attracted considerable attention from scholars and politicians, alike. The growth of large metropolitan urban areas is traced often to the economic advantages of this settlement pattern. Large cities provide economies-of-scale attractive to manufacturers seeking a source of labor and a market for their product. Moreover, location in a major city is important to minimize the costs of distance between the point of production and the market place. Additionally, large cities support specialized services and higher-order goods.

On the other hand, urban primacy can have deleterious effects as well. The domination of a nation's economy by a primate city may lead to a form of "internal colonialism" (Stavenhagen, 1970, p. 257). In such an instance, a dualistic economy develops in which the rich urbanites prosper at the expense of the rural sector.

National development policies which blindly favor or encourage the rapid growth of primate cities and high rates of urbanization without careful planning, can result in undesirable conditions. In both developed and developing

countries, primate cities can be characterized as sprawling, chaotic, congested urban centers wherein the provision and extension of goods and services to residents of the city may occur by opting either for higher social or economic costs or both. For example, the early decision to develop and encourage the use of public transportation facilities would have far-reaching impact on the over-all social and economic costs of providing transportation in urban areas.

Another area in which pro-urban development policies can have important impact is that of housing. Inadequate housing conditions appear prevalent in most primate cities. The processes which affect the location and growth of these sub-standard housing areas may differ greatly, but their residents share certain common characteristics. Here families tend to have lower incomes, lower levels of education, and, in some areas, higher crime rates than for the city as a whole. Frequently the residents of lower-class housing are victims of a social or cultural system which discriminates against those less able to compete favorably in the capitalistic labor market.

Since World War II, the United States has experienced a phenomenon often referred to as the "flight to the suburbs," which has had significant effects on the social and economic characteristics of many major cities. After the war, economic conditions favored the wide-spread growth of suburban residential communities. In time, commercial and

industrial site planners found it advantageous to move out to the suburbs where they could attract a skilled labor force and cater to the growing suburban consumer market. As the suburbs prospered, the central cities suffered an economic decline with the loss of businesses, industry, and population. The slow erosion of the tax base resulting from this exodus caused the development of "urban blight," or the creation of urban slums in the central city.

Conversely, in developing countries, the flight from the rural sector and small towns has determined, in part, the residential, commercial, and industrial location patterns of the urban centers. Due primarily to the influx of migrants, many urban areas are growing faster than the urban economy can absorb their increasing population. The reasons for this major rural-urban movement are many, but most are attributed to conditions in the origin and destination areas for the migrant families. Factors "pushing" residents out of rural areas include poor sanitary conditions and inadequate health care facilities, natural hazards (drought, flood, and earthquake), rural isolation, low agricultural productivity, stagnation of the local economy and repressive social customs in some traditional rural societies. The larger urban areas, on the other hand, offer health care and educational facilities; centralized markets, offering a broad range of goods and services; urban employment opportunities and the comparative

security of the urban areas in countries where rural violence may be common. What the migrants may find in the primate cities, to the outside observer, may seem no better than what they left behind, but in their own minds, the primate city is "where the action is."

The Process of Urbanization

One of the most significant processes shaping today's world is the rapid urbanization of the world's population. This process is very important in the developing areas of the world where countries strive to establish urban and technological societies modeled after those of North America and Western Europe. The proportion of population for major regions of the world which can be classified as urban, varies from 22.7 percent in South Asia to 76.5 percent in North America (Table 1). Latin America ranks fifth (60.1%),

Table 1. Urban and Rural Population Distributions for the World and Major Areas, 1975

Area	Urban Population (Millions) 1975	Rural Population (Millions) 1975	Percentage of Urban in Total Population 1975
World Total	1,548	2,439	38.8
Europe	318	156	67.1
USSR	154	101	60.5
Northern America	181	56	76.5
Oceania	15	6	71.2
South Asia	288	980	22.7
East Asia	199	706	20.8
Africa	96	305	24.0
Latin America	196	130	60.1

Source: Adapted by author from: United Nations, The World Population Situation in 1970-1975 and its Long-Range Implications, Population Studies, No. 56, p. 33.

very close to the Soviet Union (60.5%).

However, Latin America's relatively high level of urbanization is a recent occurrence. From 1960 to 1970, Africa and Latin America had the highest regional urban growth rates in the world (Table 2.). However, official

Table 2. Estimated Annual Percentage Rates of Growth in Total Urban and Rural Population, 1960-1970 and 1970-1975

Area	Total Population		Urban Population		Rural Population	
	1960-1970	1970-1975	1960-1970	1970-1975	1960-1970	1970-1975
World Total	1.9	1.9	3.0	3.0	1.4	1.3
More developed regions	1.0	0.9	2.1	2.0	-0.6	-0.9
Less developed regions	2.3	2.4	4.1	4.2	1.8	1.7
Europe	0.8	0.6	1.6	1.4	-0.6	-0.8
USSR	1.3	1.0	2.7	2.3	-0.4	-0.9
Northern America	1.3	0.9	1.9	1.5	-0.4	-1.0
Oceania	2.1	2.0	2.7	2.4	1.0	1.1
South Asia	2.5	2.6	4.1	4.3	2.1	2.2
East Asia	1.6	1.6	3.3	4.0	1.2	0.7
Africa	2.6	2.7	4.8	4.9	2.1	2.0
Latin America	2.7	2.7	4.3	3.9	1.3	1.1

Source: United Nations Population Study No. 56, p. 34.

estimates for the period from 1970 to 1975 demonstrate a decided change, inasmuch as urban growth in Latin America appears to be slowing. While Africa continues to lead and,

in fact, has shown an increase in the rate of urbanization, Latin America has been replaced by East and South Asia, where the population of the rural sector is much larger. The future for these developing regions may be one of phenomenal urban growth, unparalleled in modern history.

However, this rapid growth has not occurred equally for all urban areas in developing countries. The primate cities; e.g., the cities of over one million inhabitants, have been growing at an accelerated rate (Table 3).

Table 3. Number and Population of Million-Cities, and Percentage of Total Population in Million-Cities, 1960 and 1975, in the World and Major Areas

Area	Number of Million-Cities		Population of Million-Cities (Millions)		Percentage of Total Population in Million-Cities	
	1960	1975	1960	1975	1960	1975
World Total	109	191	272	516	9.1	12.8
More developed regions	64	90	173	251	17.7	21.9
Less developed regions	45	101	99	265	4.9	9.2
Europe	31	37	73	93	17.3	19.3
USSR	5	12	13	25	6.1	9.7
Northern America	18	30	52	80	26.2	32.9
Oceania	2	2	4	6	24.7	26.9
South Asia	16	34	32	88	3.7	6.8
East Asia	23	45	60	131	7.7	12.9
Africa	3	10	6	22	2.4	5.5
Latin America	11	21	31	71	14.5	21.9

Source: U.N. Population Study No. 56, p. 36.

During the period 1960 to 1975, the percentage of Latin America's population which lived in these metropolises increased from 14.5 percent to 21.9 percent of the total regional population.

While the primate cities appear to be the focus of the urbanization process, the growth in urban population is due to several causes. High rates of natural increase can cause some areas to achieve urban classification, based on a minimum total population, between the taking of two censuses. Also, high rates of in-migration may cause a tremendous increase in a smaller city's population between census counts. Furthermore, the actual population growth of a city, due to natural increase and migration, may result in the expansion of the physical boundaries of the city with the addition of the residents of the annexed areas to the urban population.

As might be expected, there is substantial variation in the levels and rates of urbanization of the countries which make up a region. Within Latin America, the population characteristics of the twenty-six nations illustrate a complete demographic variety, from countries in the first stages of the "demographic transition" to countries which appear to have completed this demographic cycle (Table 4.). This "demographic transition" model, commonly used to illustrate a country's population growth, describes the move from a balance of high birth and death rates to one of low birth and death rates.

Table 4. Latin America: Demographic Indicators, 1960-1975

Country	Population 1972 (millions)	Population Growth (Annual Average Rate)		Urban Population as Those of Total Population (Percentage)	
		1960-1970	1970-1975 (projected)	1970	1975 (projected)
Argentina	23.9	1.4	1.3	77.4	79.9
Bahamas	0.2	4.4	...	51.9	53.5
Barbados	0.2	0.3	0.5	43.5	45.3
Bolivia	5.2	2.4	2.5	34.6	37.2
Brazil	98.9	2.9	2.9	55.0	59.4
Chile	10.0	2.4	1.8	76.8	80.0
Colombia	22.5	3.3	3.2	57.1	61.6
Costa Rica	1.8	3.3	2.8	36.3	37.8
Cuba	8.8	2.0	2.1	58.9	61.2
Dominican Republic	4.3	3.2	3.3	39.7	43.9
Ecuador	6.5	3.4	3.3	38.7	41.7
El Salvador	3.8	3.4	3.2	38.7	40.1
Grenada	0.1	1.9	...	....	....
Guatemala	5.4	2.9	3.0	33.5	34.8
Guyana	0.8	2.8	2.2	31.7	33.5
Haiti	5.1	2.4	2.5	19.1	21.2
Honduras	2.7	3.1	3.5	26.8	29.2
Jamaica	1.9	1.5	1.5	37/0	40.9
Mexico	52.9	3.3	3.3	59.3	63.1
Nicaragua	2.0	3.0	3.3	45.2	48.1
Panama	1.5	3.0	2.8	48.1	51.4
Paraguay	2.6	2.5	3.2	36.8	38.3
Peru	14.5	2.9	3.0	53.8	57.1
Trinidad and Tobago	1.0	1.3	1.1	24.1	25.1
Uruguay	3.0	2.2	1.2	79.9	82.6
Venezuela	11.0	3.3	3.0	78.8	82.6

Source: United Nations, 1974 Report on the World Social Situation, Department of Economic and Social Affairs, p. 36.

The Colonial History and Urban Growth of Latin America

When the Spanish arrived in the New World, they encountered four major advanced Indian civilizations. In the central highlands of Mexico were the Aztecs, while the Mayan civilization were found in the Guatemalan highlands and the Yucatan Peninsula. The Incan society was discovered by the Spanish, isolated in the high Andes of Peru and Bolivia. The Chibchas, of somewhat lesser significance, were located in the highlands of the Eastern Cordillera of Colombia.

These Indian civilizations developed in the highland basins to escape the tropical diseases endemic to the lowlands. In the mountains they found rich mineral resources, including malleable precious metals and brilliant jewels from which they fashioned various artifacts, including adornments, tools and symbols of their religious beliefs. The highland basins provided ample land for agriculture and the Indians prospered with the development of their indigenous agricultural technology.

The Spanish arrived in small exploring parties to claim all the lands which they had "acquired" as the dominion of the Spanish Crown under the provisions of the Treaty of Tordesillas, signed with Portugal in 1494. To Indian tribes that accepted colonial domination, they offered trinkets, Christianity, and the protection of the Spanish Crown. For those opposed to their rule, they countered with their advanced military strength.

In the aftermath of the wars fought to achieve Spanish colonial domination, the conquerors superimposed a colonial urban hierarchy and transportation network over the existing Indian structures. James notes that the distribution of the Indians was the most important single factor which determined the centers of the Spanish conquest (1969, p. 16). Within the empire, colonial cities developed with specific functions. Some were administrative centers, like Mexico City, Lima, Guatemala City, Quito, and Bogota. Others were important transshipment centers, such as the ports of Cartagena, San Juan, Santo Domingo, and Acapulco; and trading centers such as Porto Bello (Panama) and Guadalajara (Mexico).

Webb cites four aspects of the colonial period which lend support to the development of primate cities in Latin America (1972, p. 26). Colonial rule was highly centralized under the "audencia," a ruling body which combined the functions of the executive, legislative and judicial branches, all in one office. The pervasive nature of this governing form has tended to discourage the de-centralization of national governments and might be viewed as the precedent for the establishment of dictatorships in place of more democratic and de-centralized forms of government. The Spanish also instituted a rigid class system to maintain their hold over the native subjects. To this day, the impact of this strict class structure has brought resistance in modern Latin society towards upward social

mobility.

Additionally, the colonial rulers were able to capitalize on the control and influence which the Catholic Church exerted over the Indians. Some observers of Latin society theorize that this strong religious faith in an institution which advocated obedience and respect for civil authorities, served to dampen any feelings of revolt among the Indians. Finally, the Spanish cononial mercantilist economic system, based on the colonial power's monopolistic control of all human and natural resources, fostered the contemporary imbalance of trade which plagues many present Latin American nations. The early practice of developing only those resources which were of value for export has caused the neglect of the local economy and the dependence on imported finished products, further jeopordizing their trade balance.

Background History of the Study Area

The colonial history of Nicaragua is full of intra-regional conflict. From 1519 to 1523, Gil Gonzalez de Avila led expeditions from Panama through Nicaragua, travelling as far north as the Gulf of Fonseca. Upon his return, Pedrarias, the governor of Panama, sent Francisco Hernandez de Cordoba and Hernando de Soto to establish permanent settlements in Nicaragua. In 1524, this party founded the city of Granada along the shores of Lake Nicaragua.[1] Cordoba's men pressed northwestward and, in 1527

[1]Squier places the founding of Granada in 1522, rather than 1524.

established the city of Leon along the shores of Lake Managua.[2]

Until the time of independence, the country was administered by the captain-generalcy office in Guatemala City. On September 15, 1821, the five Central American colonial states declared their independence from Spain. This action had two significant effects upon the political climate of the region. Existing local rivalries within each state were inflammed, while the governors of the five states sought to maintain autonomous local rule in place of some form of regional government. However, the five states, namely, Guatemala, Honduras, El Salvador, Nicaragua, and Costa Rica, agreed to form a federal union of Central American states, known as the "United Provinces of Central America," with a constitition modeled after that of the United States of America.

When representatives of the five states gathered in Guatemala City to declare their independence, they also debated the preferred form of government in a body called the National Constituent Assembly. Within the Assembly there were two major political factions, the "Liberales" and the "Conservadores." The Liberals favored broad political reforms modeled after the philosophies of liberty and equality which inspired the French and North American revolutions. Within Nicaragua, the residents of Leon backed

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[2]Leon was re-located to its present site in 1610.

the Liberal movement, while the Conservatives, representing the interests of the clergy and landowners, found strong support among the residents of Granada. The irreconcilable differences between these groups ultimately led to a civil war within the "United Provinces."

Indicative of the early prominence of the Liberal party within the Union, Leon was selected as the first national capital of Nicaragua. With the resurgence of the Conservatives, however, the capital was taken out of Leon after the Conservative army ransacked the Liberal capital in 1845. Fearing possible reprisals, the Conservatives began to centralize the governmental functions in Managua and in 1855, Managua was recognized as the official capital of Nicaragua.

Besides Leon, Granada, and Managua, several other cities had developed by the mid-nineteenth century (Squier, 1858, p. 373). For example, Masaya, the second largest city in the country, with a population in 1854 of 16,000 inhabitants, developed as an important Indian handicraft and trade center. Further south, the small city of Rivas, its early growth hampered by the scourges of the civil war and several earthquake disasters, was another important trading center. Established after the founding of Granada and Leon, Rivas provided an important link in the overland trade route that extended southward to Panama. Also, Rivas was centrally-located to an area densely-settled by Indians and served as their marketing and trading center.

Furthermore, it was conveniently located near the narrowest part of the isthmus between Lake Nicaragua and the Pacific Ocean. It was here that the United States and the European countries had envisioned the construction of the first inter-oceanic canal to connect the Gulf of Mexico and the Pacific Ocean (Squier, 1860, p. 657-691).

The city of Chinandega, with a mid-eighteenth century population of 15,000, and its neighboring port city, Realejo, grew rapidly during the years of the civil war when Leon residents fled their homes. Chinandega continued to grow as agricultural interests expanded along the western coastal plain and cotton and sugar cane plantations sprang up everywhere.

By 1850 most of the other cities of any size or importance were located in the mountainous North Central region of the country. These cities included the provincial capitals of Segovia and Matagalpa, and the mining "boom towns" of Ocotal, Jalapa, Acoyapa, and Depilto (Figure 1).

The Growth of Managua: The Evolution of a Primate City

Managua did not undergo any significant growth until the late 1920's when the population regained its pre-Columbian size of approximately 40,000 inhabitants (Kates, 1973, p. 8). The city was struck by a devastating earthquake in 1931 which, like the one which hit the capital in 1898, virtually destroyed it. Despite these setbacks, the city continued to grow, and by 1940, it had a population of

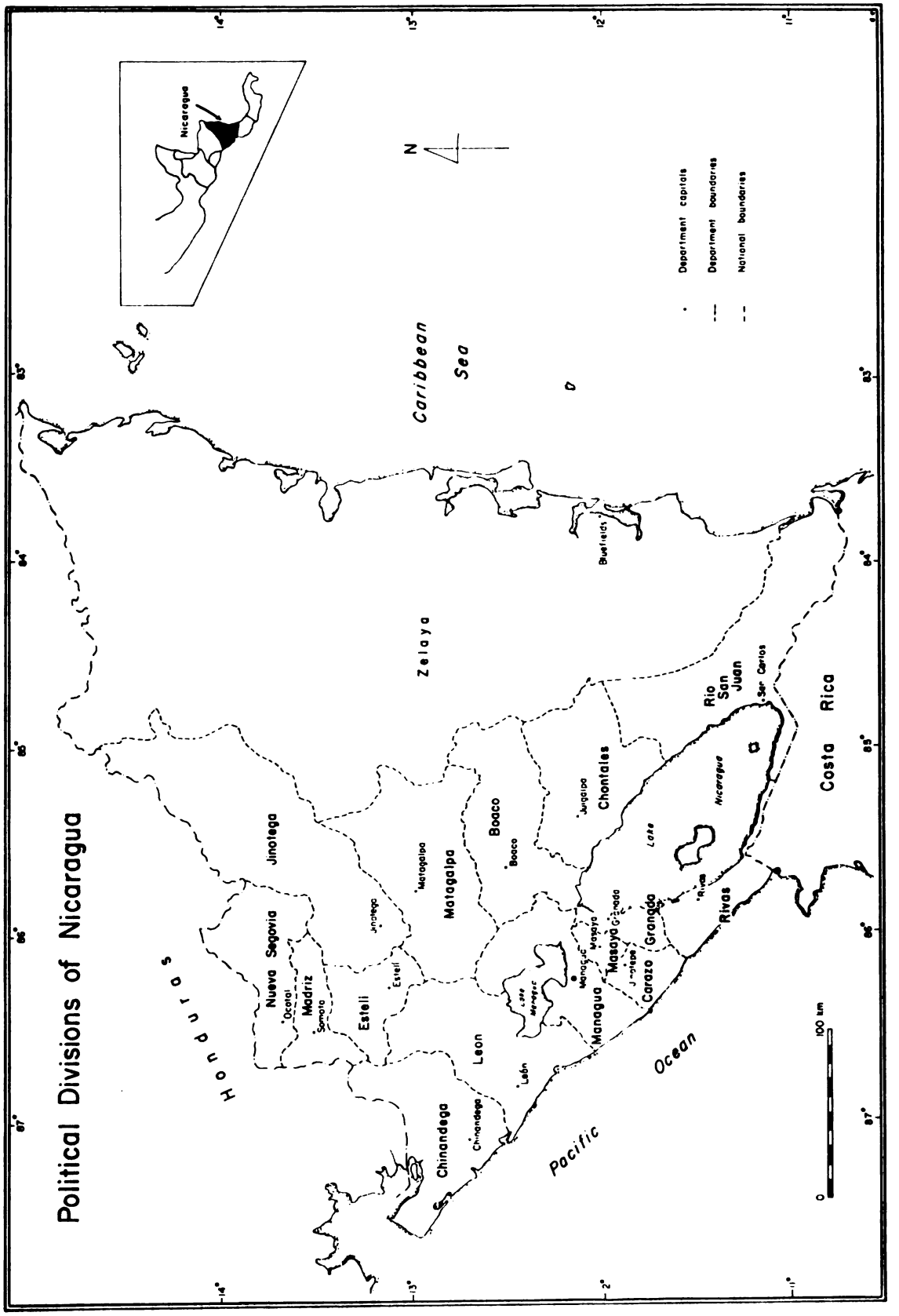

Political Divisions of Nicaragua
Nicaragua
Caribbean Sea
Pacific Ocean
Honduras
Costa Rica
Zelaya
Jinotega
Nueva Segovia
Madriz
Estelí
Matagalpa
Boaco
Chontales
Rio San Juan
Chinandega
Leon
Managua
Masaya
Granada
Carazo
Rivas
Department capitals
Department boundaries
National boundaries
N
100 km
0

Figure 1.

over 50,000 residents. The rapid growth of the capital since that time is evidenced by the 1950 and 1963 national censuses, which show that the Department of Managua experienced a population increase of 97.4 percent. This period may be described as the "take-off" stage in terms of Managua's primacy status. It was during this time that Nicaragua attracted the attention of many foreign investors, and the main focus of this attention was the capital city.

During the next intercensal period, 1963 to 1971, this accelerated growth continued. The national census of 1971 recorded a population of 504,126 in the department of Managua, again most of this growth occurring in the capital (Table 5). On the eve of the disastrous earthquake which struck the city on December 23, 1972; Managua had an estimated 409,196 inhabitants or 20.5 percent of the national population.

By 1972, the capital city had assumed many of the characteristics of a Latin American primate city. In the area of health service and facilities, Managua accounted for 43 percent of all the hospital beds in the nation. With respect to public utilities, transportation and communications, Managua provided 51 percent of the potable water service, consumed 92 percent of all electrical power, and accounted for 20 percent of all paved roads, as well as 76 percent of all telephone calls (Censo Estadistico, 1972). Furthermore, Managua produced an estimated 63 percent of all nationally-manufactured goods (Ryan, 1970, p. 244).

Table 5. Nicaraguan Population Totals and Intercensal Variations by Departments, 1950-1971

	1950 Population	% of Total	1963 Population	% of Total	1950-1963 Average Annual Growth	1971 Population	% of Total	1963-1971 Average Annual Growth
The Republic	1,049,611	100.0	1,535,588	100.0	3.56	1,877,952	100.0	2.78
The Pacific Zone	585,593	55.8	869,973	56.8	3.73	1,116,473	59.4	3.53
Chinandeaga	81,836	7.8	128,624	8.4	4.40	155,286	8.3	2.58
León	123,614	11.8	150,051	9.8	1.64	166,830	8.8	1.40
Managua	161,513	15.4	318,826	20.8	7.49	485,850	25.8	6.55
Masaya	72,446	6.9	76,580	5.0	.44	92,152	4.9	2.53
Granada	48,732	4.6	65,643	4.3	2.66	71,102	3.8	1.04
Carazo	52,138	5.0	65,888	4.3	2.03	71,134	3.8	1.00
Rivas	45,314	4.3	64,361	4.2	3.23	74,129	3.9	1.90
The North and Central Zone	387,202	37.0	560,976	36.6	3.45	595,139	31.7	.76
Chontales	50,529	4.8	75,475	4.9	3.81	68,802	3.6	-.12
Boaco	50,039	4.8	71,615	4.7	3.31	69,187	3.7	-.13
Matagalpa	135,401	12.9	171,465	11.2	2.04	168,139	8.9	-.13
Jinotega	48,325	4.6	76,935	5.0	4.55	90,640	4.8	2.22
Esteli	43,742	4.2	69,257	4.5	4.48	79,164	4.2	1.78
Madriz	33,178	3.2	50,229	3.3	3.95	53,423	2.8	.80
Nuevo Segovia	25,988	2.5	45,900	3.0	5.89	65,784	3.5	5.41
The Atlantic Zone	76,816	7.4	104,639	6.8	1.10	166,340	8.8	7.37
Rio San Juan	9,089	0.9	15,676	1.0	5.58	20,832	1.1	4.11
Zelaya	67,727	6.5	88,963	5.8	2.41	145,508	7.7	7.95

The Impact of the 1972 Earthquake

At 12:29 a.m. on December 23, 1972, Managua was rocked by a violent earthquake. The foreshocks which began about 10:00 p.m. that night, caused some people to evacuate their homes and sleep outdoors. The major shock which occurred at 12:29 a.m. measured 6.25 on the Richter seismic scale and was followed, at 1:17 and 1:19 that same morning, by two less severe shocks. Aftershocks continued for several weeks.

The extensive damage of the earthquakes, despite their relative low intensity, has been attributed to their shallow focus (Kates, 1973, p. 16). Research conducted in a small barrio (neighborhood) of the capital, after the 1968 Managuan earthquake, indicated that conditions were optimum for further seismic activity such as the earthquake which followed in 1972. The shallow focus of the shock suggests to seismologists that the earthquake was probably produced by volcanic rather than fault motion.

The initial damage reports were confusing and contradictory, and final government estimates of the damage can be described in terms of the physical and demographic effects. Thirteen square kilometers of the downtown area were completely destroyed, while an additional fourteen square kilometers of the city suffered extensive damage to permanent structures and the interruption of water and electrical service. Without water, the city was helpless to combat the widespread fires which broke out. Four

hospitals, providing 1650 beds, were lost or severely damaged. 740 classrooms were destroyed and the total financial loss from the disaster approached $850,000,000 (U.S.).

The demographic and social impacts of the earthquake are far more difficult to measure. While initial estimates of the death toll ranged from 3,000 to 10,000 fatalities, final estimates claim the loss of 6,000 to 8,000 persons. The estimates of the displacements which occurred as a result of the earthquake are even more varied. One report cites the loss of 100,000 refugees who fled the city within the first eighteen hours after the disaster, while other estimates indicate that between 220,000 and 250,000 persons fled the city (Kates, 1973, p. 21).

As the city began to re-build in the aftermath of one of the worst disasters to strike urban Latin America in recent years, politicians, geophysicists, architects, and social planners debated alternative urban re-development plans. Almost everyone agreed that some change in the urban land use pattern was desireable, but no agreement had been reached regarding the nature, extent, or rate of this redevelopment. Within a few months following the earthquake, urban planners in Managua, who had hoped that the threat of a recurrence of the disaster might discourage in-migration until the rubble had been cleared away and plans finalized and implemented for the re-construction of the city, noticed that squatter settlements were springing

up and existing housing areas for the disaster refugees around the outskirts of the city were filling. Managua, like the phoenix rising from the ashes, was restoring itself. Within a year-and-a-half, the urban population grew to 500,000, surpassing the pre-earthquake population.

The important contribution of migration in the regrowth of Managua cannot be denied. Government officials grew concerned as to whether migration would continue as a primary contributing factor in the future development of the city. This study is an attempt to answer some of their questions.

CHAPTER II

REVIEW OF THE LITERATURE

Migration research is an important step in understanding the causes and effects of social and economic change (Shaw, 1975, p. 1). However, the complex nature of the topic is evidenced by the variety of social science disciplines which address the problem, each developing their own paradigms. The net effect of this proliferation and diversification of research activity has been the accumulation of knowledge in the absence of a general formulation of theory and models upon which to develop our understanding of the migration process (Jackson, 1969, p. 6).

Shaw identifies six lines of inquiry in the area of migration research: migration selectivity and differentials, economic aspects of migration, spatial aspects of migration, behavioral aspects of the decision to migrate, migration probabilities and the mover-stayer continuum, and the stochastic modeling of the migration process (1975, p. 12). While Shaw's review of migration research includes studies conducted in Latin America, his typology of research efforts overlooks the variety of factors associated with the spatial aspects of the migration process. In addition to those research foci enumerated by Shaw, Thomas cites the

efforts to study the characteristics of the origin and destination areas in the migration system, as well as descriptive accounts of the migration process in the Latin American context (1971, p. 104-110). Due to the diversity which exists in the field of migration research, this literature review takes narrow focus on the spatial aspects of the migration process and some of the work done on the impact of natural disasters on the human environment, with special attention to the human migratory response.

General Migration Theory

Perhaps the most universal finding in migration research is that the incidence of migration between two areas is inversely-related to the distance between them. However, the cause of this phenomenon has been explained in terms of three models: the basic gravity model, the intervening opportunities model, and the information diffusion model.

Migration was first studied by physical scientists in the context of molecular structure and interaction. Physicists observed that the two bodies exerted an attractive force upon one another where the force was a function of the product of their masses and inversely-proportional to the distance between them. Astronomists later found this relationship in the study of the interactsion of heavenly bodies. Around 1850, H.C. Carey noted that physical and social phenomena must be related to a basic set of

universally-fundamental laws. He reasoned that if man's body functions in accordance with certain inviolable natural laws, then man must behave in accord with similar laws governing their interactions; e.g., that must be governed by gravitational forces (1956, p. 94).

In 1898, Ravenstein released the results of his famous English migration study. He found that migration movements tended toward large population centers and that the volume of the migrant stream decreased as the distance between the "areas of dispersion" (out-migration areas) and the "areas of absorption" (in-migration areas) increased. In a similar effort, Young hypothesized that the relative volume of migration to a given destination from each of several source areas varies directly with the destination's force of attraction and inversely with the square of the distance between the source and the destination (Carrothers, 1956, p. 95).

The gravity model was formalized, however, by the work of Zipf and Stewart. Both returned to the physical Law of Gravitation to describe the force of interaction between two bodies or, in this case, population centers. Zipf's model considers the force of attraction to be the product of the population of the two areas and the highway mileage between them (Karp and Kelley, 1971, pp. 7-8). Zipf measured the deterministic value of this expression by comparing the predicted "energy of interaction" between two cities with such interactive means as telephone calls,

passenger bus traffic, and newspaper circulation.

As researchers found the basic gravity model to be inconsistent and inaccurate, they attempted to modify it by altering the distance exponent to reflect increased "friction of distance" along certain routes (Carrothers, 1956, p. 97). Others suggested that the friction of distance exponent itself is an inverse fuction of either the population component (Anderson, 1955) or the distance component (Carrothers, 1956).

Following the earlier work with the gravity model, another interpretation of the role of distance in the determination of migration flows is provided by Stouffer. He proposes that the number of persons going a given distance is directly proportional to the number of opportunities at that destination and inversely-proportional to the number of intervening opportunities (1940, p. 846). In a later modification of his theory, Stouffer added the factor of competing migrants. The number of competing migrants and intervening opportunities, he said, was an inverse function of the number of migrants travelling between two points (1960, p. 9). Much of Stouffer's work has been replicated in other parts of the United States with similar results in each case.

However, Stouffer's operational definition of intervening opportunities has been attacked. Some view Stouffer's methodology as an exercise in circular logic, in that his variables are inter-related, yielding an artificially

high correlation between the predicted number of migrants and the absolute migration flow calculated by his model (Karp and Kelley, 1971, p. 9). Furthermore, his model tends to view all opportunities as economic or employment related, which is a fallacious argument inasmuch as migrants respond to a variety of motivations and opportunities, in addition to purely economic factors.

The information diffusion model is more complex because it is more descriptive than deterministic. In the context of this model, the role of distance impedes the diffusion of information about the benefits of city life. (See Morrill and Pitts, 1967). The operational factor in this model is the sphere of influence or the "mean information field" of each urban area. The broader the range of influence of a city, the more likely that information about it will be shared by others in that area. The spatial extent of this sphere is a function of the degree to which the transportation and communication networks are developed to carry information and the receptivity of the rural inhabitant to accept that information.

Frequently, diffusion theory discusses only the process of technological diffusion; i.e., the spread of adoptive behavior through a social system of some technological innovation. However, one can conceive of this model as a useful explanation for the increasing attractiveness of a primate city or other receiving center as more rural residents become dissatisfied with their local environment

and move to the city.

Wolpert provides a useful conceptual framework for understanding migration as a behavioral process. He views it as a form of individual or group adaptation to perceived changes in one's environment, a recognition of marginality with respect to a stationary position, and a flow reflecting an appraisal by a potential migrant of his present site and situation as opposed to other potential locations (1965, p. 161). Moreover, Brown and Moore suggest that migration is an adjustment process whereby one residential location is substituted for another in order to better satisfy the needs and desires of each intended migrant 1970, p. 1).

The Decision-to-Migrate as a Behavioral Process

The first step of the migration process is the decision to seek a new residence, and is based on a potential migrant's evaluation of the local environment in terms of its ability to satisfy their needs and minimize the feelings of stress imposed by a hostile or unsatisfying environment. When the individual perceives this problem, they may decide either to restructure their environment or to move. If moving appears to be the preferred solution, the intended migrant establishes a set of criteria upon which to evaluate the alternative destinations. Among the general factors which may be weighed in the consideration are: accessability, physical or environmental characteristics,

quality of services and facilities in the area, the nature of the social environment, and the individual site and dwelling characteristics (Brown and Moore, 1970, p. 5). In addition to the site characteristics which determine the relative "place utility" of the location, migrants must evaluate the situational aspects which affect their life in the new location, e.g., occupation and social contacts.

After evaluating the criteria for selecting a new residence, an intended migrant engages in information-gathering activity about alternative locations and begins to assess each in terms of the place utility which it offers. Information sources may be quite varied, and include personal experience, commercial and governmental sources (real estate agencies or government re-location and housing programs) and the mass media (Rodgers, 1972, p. 354). Based on the relative credability ascribed to each source, the decision-maker evaluates each piece of information according to the location's ability to serve his needs. Numerous research efforts have identified many of the negative factors associated with the migrant's origin (see Flinn, 1970 and McDonald, 1968). The importance of distance as a limiting factor in the search behavior activity is easily understood. Within a constricted "action space," the potential migrant must make the decision to re-locate with less than complete information regarding the variety and location of sites which will satisfy the selection

criteria.

Another aspect of the migration process is the informational link between a successful migrant and those members of the family and friends who are contemplating a similar move. Previous urban migrants are common sources of information for those contemplating a move to the city. These migrants frequently encourage additional migration to the urban areas since they convey a positive impression of urban life. Conversely, new in-migrants may reinforce these positive impressions of the city by referring to the rural area of origin as backward and unsatisfactory in comparison, thus discouraging any return migration to the rural source area by those older migrants who may have considered retiring to their place of origin or those that wish to retire from urban life. The incidence of return migration is often influenced by the stigma of personal failure attached to those wishing to return to their home. Return visits commonly become an opportunity for the migrant to show-off one's success to family and peers, reinforcing the attractiveness of the city.

The operation of a behavioral process as complex as migration, evidences itself in three frequently-cited patterns: namely, direct rural-urban migration, stage migration and step-wise migration. Rural to urban migration refers to a move, by direct or indirect means, from a rural place of origin to an urban place of destination. Stage migration refers to the process whereby migrant

families move up the urban hierarchy over the course of one or more generations. Ravenstein emphasizes that stage migration refers to the process whereby a migrant's place in the population of a secondary urban center is replaced by a migrant from a smaller and more rural origin when that migrant moves up the hierarchy (1895, p. 198). Step-wise migration refers to a series of progressively-urban moves by the same group or individual, usually culminating in the migrant's arrival in the capital or the primate city.

Cross-Cultural Comparisons of the Migration Process

One may assume that migration patterns vary from one region of the world to another as do many cultural traits. Byerlee summarizes the migration research in Africa, concluding that the African case provides two departures from accepted migration theory (1974, p. 9). In many African countries, the land tenure system encourages rural to urban migration and helps to maintain the close links between the migrant and the community of origin. Return migration is a common occurrence in many African nations due to the strong religious ties between an individual and his "native" land. Also, the out-migration from rural areas of educated rural youth is quite common and acts as a "brain drain," tapping the rural community of potential manpower and skills that could affect positive change.

Harvey and Riddell offer one of the few African migration studies which focuses on the step-wise pattern of

the migration process. They find that the urban migration flow has evolved as a positive feedback mechanism, in which the town has become a major focus of population movement, while at the same time inducing further movement (1972, p. 271). Their analysis of migration flows is based on two factors: the distance between the origin and the destination, and the level of urbanization in each area. They identify four factors which strongly influence the incidence of step-wise migration: 1) the existence of a strong local urban focus, 2) the relative isolation of the origin from a large urban center, 3) the proximity of the origin to an intermediate urban center, and 4) the predominance of urban attractive forces on the migration system.

On the other hand, the prevalence of step-wise migration in Asian countries is uncertain. Migration flows in Taiwan focus on the capital, Taipei, and originate in the rural areas (Gallin, 1975). This may be due, in part, to the general accessability of most areas. However, in a study of internal migration throughout the island, Speare notes that major net flows were from urban or rural townships to the cities. In addition, he states that there was a smaller net flow from rural townships to urban townships, compensating in part for the net flow from urban townships to the cities. This process appears similar to the step-wise migration patterns observed by Ravenstein (1974, p. 309).

In a macro-analysis of urbanization in South-East

Asia, Jackson attributes most urban growth to direct rural to urban migration and cites little evidence of significant step-wise migration (1974, p. 26). But his generalizations lack the concurrence of many researchers. For example, Sternstein provides a different view with his study of migration streams to and from Bangkok, Thailand. He found that over half of the migrants had experienced urban living prior to their move to the Thai capital, and that only one-sixth of the migrants came from remote villages (1974, p. 141). Moreover, Elahi suggests that step-wise migration is a common occurrence in Bangladesh, although he notes that this is a difficult phenomena to measure in a country where migrants literally "float" from location to location during the rainy season, with no apparent intention of establishing permanent residency (1972, p. 5).

Thomas and others provide several studies of migration patterns in the Latin American context. With Catau, Thomas finds that the physical distance between the origin and the destination has a pronounced influence on the incidence of step-wise migration. As the origin of the migrant becomes more remote, the probability increases that the first move will be to a nearby secondary city (1974, p. 116). However, a close reading of this work, much like that of Harvey and Riddell, suggests that the authors' work more closely describes the stage migration process than the step-wise migration pattern. Curiously, these

authors fail to consider the question of social distance in their Guatemalan study.

Earlier we noted that migration rates in less-developed countries are affected positively by improvements in transportation and communication facilities and the broader diffusion of information about the urban environment. Thomas and Mulvihill demonstrate the impact of this temporal factor on the stage migration process (1974, p. 6). They find that the percentage of migrants originating in rural areas increases over time as transportation networks extend from the primate city to provide better access to the urban environment (1974, p. 9).

Both of these works by Thomas draw upon field work data collected in Guatemala City, Guatemala. However, Guatemala may be somewhat unique in Central America in that the national population is fairly well-distributed throughout the highlands and along the southwest coast, even though the capital contains roughly one million inhabitants or approximately 20 percent of the national population. Furthermore, the Guatemalan people still reflect the strong cultural heritage of the Mayan Indian civilization, as nearly 50 percent of the population is considered full-blooded Indian.

In view of the large proportion of the population which is Indian, one may question the applicability of these findings to countries with a culturally more homogeneous population. In order to assimilate into the urban

society, the Guatemalan Indian must adopt western dress, learn to speak Spanish and adjust to an urban life-style. An individual who can make this cultural transition is identified as a "ladino." However, this identity implies that a social class distinction exists which differentiates the Indian from other elements of Guatemalan society.

Nevertheless, while these Guatemalan studies may not provide a complete explanation, they do illustrate how the population of Latin American secondary cities is maintained by the replacement from rural areas of the population lost to larger urban centers.

In a Colombian study, Thomas and Byrnes focus on the migration field of the often-ignored secondary city, demonstrating that the migration field of a larger urban center or primate city can have a determinable effect on the shape and extent of the migration field of a secondary urban center (1975, p. 8).

Migration and Natural Disasters

As Shaw notes, much research has been done on the characteristics of the rural origin and urban destination in a migration system. Generally, the origin is associated with a variety of socio-economic attributes which tend to force or push people off the land. These pressures include the lack of adequate education, the monopolization of the best agricultural land by a few owners with the declining productivity of marginal land, primitive cultivation

techniques and the threat of rural violence. On the other hand, the urban areas attract rural migrants with the lure of employment opportunities, educational and health facilities, entertainment and the opportunity for crime (Thomas, 1970, p. 105).

However, in a broader, more theoretical work, Wolpert suggests that migration is a behavioral response to the perception of environmental stress (1966, p. 92), defined as any influence that arises from the internal environment or the external environment which interferes with the satisfaction of basic needs or which disturbs or threatens to disturb the stable equilibrium (1966, p. 93). Most of these perceived push and pull forces can be seen as negative and positive social stresses which are internal to the potential migrant's environment. On the other hand, natural hazards represent an external force which disrupts the existing social order, causing stress on the social system. In this sense, the study of the impact of natural hazards is relevant to our understanding of the broad eco-system within which man functions (Burton, 1971, p. 11).

Natural disasters result from the occurrence of natural processes at excessive magnitudes for the response capacity of the environment. Floods result from excessive rainfall and rapid run-off, drought conditions develop in response to extended dry spells, and serious earthquakes represent seismic shocks of stronger intensity than those of lesser degree which occur daily throughout the world.

Natural disasters are, therefore, defined in terms of the environment's limits of tolerance (Burton, 1971, p. 12). The extent to which the occurrence of disasters may be damaging becomes a function of the sociological and technological flexability of an individual to withstand the strain of that event. The measure of a community or an organism's strength, is the ability of its weakest element, either social or phycical, to withstand the strain of external forces; i.e., an ecological parody of the expression that "a chain is as strong as its weakest link." To identify a place as more hazardous than another, for whatever reason, is to identify that place as the weakest link among the totality of places. If man can identify the disastrous weak link successfully, planning may enable society to avoid the risk or minimize the losses which may result from the occurrence of that hazardous event.

The study of human perception and avoidance of natual hazards is important to both academician and policy-maker. The study of hazard perception is important in order to understand the broader information-gathering and decision-making processes which lead to a change of residence. Moreover, the definition of the existing decision-making environment is important in assessing the effects of future disasters. To the policy maker, the value of hazard research is more practical, understanding the impacts of disasters provides a basis for planning efforts to circumvent or ameliorate the harmful effects of a

disaster.

While scientists have studied the effects of individual disasters for many years, only more recently have they taken a broader view of the possible impacts, both physical and social, of natural disasters upon the ecosystem. Burton suggests that the realization of the "spaceship earth" concept, as well as growing public awareness of the increasing complexity of technological developments, have created the mental set necessary to promote the closer study of the complex interrelationships between an individual and the environment (1971, p. 3).

Hewitt provides one of the more comprehensive reviews of the impact of various natural disasters on the human environment, specifically in the context of a more developed country. The authors believe that researchers need to adopt a broader, more ecological orientation in order to develop a better understanding of man-environment interactions in response to the gamut of environmental stresses. In his concluding remarks, he notes that the impact of environmental hazards upon the way one perceives the environment is a topic worthy of closer investigation by researchers (1971, p. 147).

For developing countries, however, there is no comprehensive study of the impact of natural hazards on the human environment. Many developing countries lack sufficient and/or recent demographic data which are used to

assess the impact of a natural disaster. Also, these countries may lack the local research capabilities to carry out this research. Moreover, geographic location has a certain limiting effect upon the variety of disasters which may occur; i.e., tropical countries are more limited in the climatic variation which may cause a catastrophe than are countries in a temperate climate. Sheehan and Hewitt find that countries with lower per capita incomes suffer higher mortality rates due to natural disasters than do more developed countries, while the latter tend to experience higher property loss and fewer deaths (1969, p. 17). Fertility research in developing countries has suggested that these areas evidence higher fertility rates to counterbalance the effects of high infant mortality and shorter life expectancies. If countries tend to anticipate high death rates as a result of natural disasters, and they know that their birth rates will soon replace those lost in a disaster; they may feel less compulsion to study the impact of disasters which seem to serve as a natural check on their population growth.

In Latin America, only a limited amount of work has been done to evaluate the impact of natural disasters, and generally these works tend to measure the immediate physical effects. A few, however, have examined the impacts on the human environment. Brooks analyses the human response to drought in northeastern Brazil and finds that

wide-scale out-migration from the affected areas to be an immediate response (1971, p. 44).

Kates' attempt to evaluate the impact of the 1972 Managuan earthquake is based on information gathered in Managua shortly after the catastrophe. His report summarizes the behavioral response in the post-disaster period and provides some initial official damage estimates. It does not, however, provide a perspective on the redistribution of the population or the impact of the earthquake on the attractiveness of the capital or any other city for future migrants.

CHAPTER III

THE RESEARCH PROBLEM

This study attempts to answer two questions. Are the findings from the Guatemalan studies by Thomas and others applicable to other Central American countries; i.e., does distance affect the incidence of stage migration and what role does time play, if any in the stage migration process evident in the Managuan migration field? Furthermore, how does the development of a primate city effect the migration field of other secondary cities in the same region?

The Research Hypotheses

The first set of hypotheses describes the relationship between distance and the incidence of stage migration. In order to allow comparability of results, this study will adopt the hypothesis offered by Thomas and Catau in their work on distance; namely, that the probability that "stepwise" migration will occur is a function of the distance of the origin from the primate city. Furthermore, the incidence of stage migration can be expected to decrease over time.

Secondly, the attractiveness of the secondary cities

as receiving centers for the displaced refugees after the earthquake will be a function of three factors: the distance from the disaster area, the position of the secondary city in the urban hierarchy of the country, and the prevalence of existing or former family ties in the city of destination.

The Data Set

This study is based on data from a survey of family heads in Managua, Masaya, Granada, Jinotepe, and Tipitapa; taken in 1974. The survey was designed and administered by a research team composed of members of the faculty of the Universidad Centro-Americana, the O.A.S. Decentralization Program research team, and the staff of the Central American Business Administration Institute (I.N.C.A.E.). Due to the extensive damage suffered by the middle-income housing areas in downtown Managua, one goal of the multi-faceted study was to measure the impact of the earthquake upon the demand for low-income housing and to inventory the quality of housing in Managua. Consequently, the Managua data reflects a heavy bias for the low end of the income scale. Similarly, the survey was intended to provide some measure of the effects of the earthquake upon the labor market and to determine the extent to which the disaster had caused a change in the occupational structure of the population and reflects a bias for unskilled labor demand. In the four other cities involved in the

study, the survey was designed to sample the total population in order to evaluate the impact of the earthquake on housing conditions among all socio-economic levels.

The sampling design used in Managua was a stratified random sample weighted to reflect the relative size of each barrio (neighborhood). The city was divided into six sectors based on the type and location of a variety of low-income barrios. Each of these six zones was sub-divided into barrio units, producing 45 sampling areas, each of which then was given an identification number. A table of random numbers was used to select 13 barrios for the survey (one for the pre-test and twelve for the study, see Figure 2).

After the area sampling process, which produced a broad sample of public and private housing areas, the twelve selected sampling areas were sub-divided into multiple-block sampling units which were delineated through the use of aerial photographs, maps, and field observation. The block groups were assigned an identification number and by a similar random-selection process as previously described, a target set of blocks within each barrio were identified. The number of block groups to be used in the survey was calculated on the basis of the estimated population size and spatial extent of the entire barrio. This weighting of larger barrios in the sample, however, may have introduced some bias for those characteristics of the larger neighborhoods. Nevertheless, within each selected

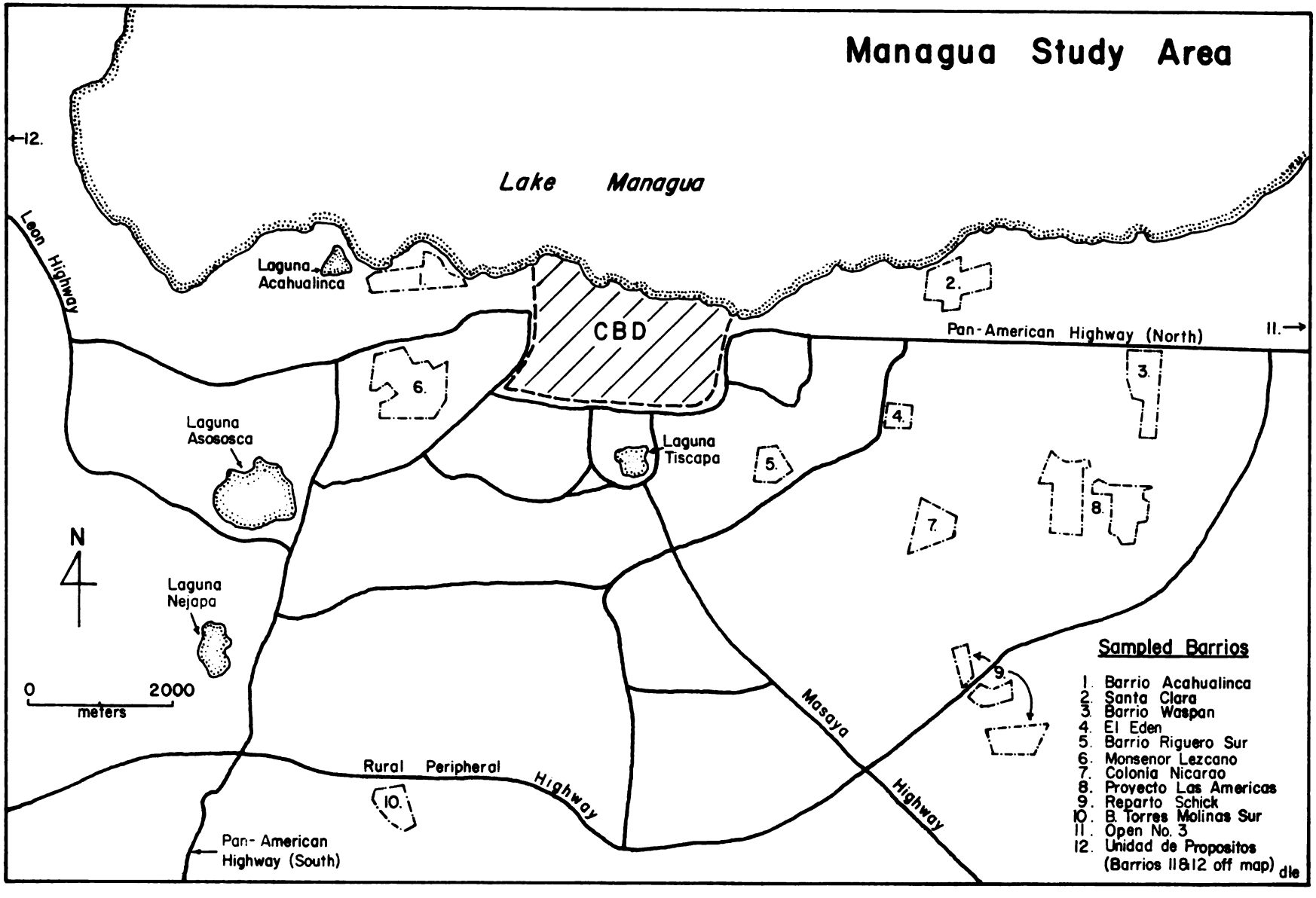

Managua Study Area
Lake Managua
←12.
Leon Highway
Laguna Acahualinca
CBD
2.
Pan-American Highway (North)
11.→
3.
6.
4.
Laguna Asososca
Laguna Tiscapa
5.
7.
8.
N
Laguna Nejapa
0 2000
meters
9.
Masaya Highway
Rural Peripheral Highway
10.
Pan-American Highway (South)
Sampled Barrios
1. Barrio Acahualinca
2. Santa Clara
3. Barrio Waspan
4. El Eden
5. Barrio Riguero Sur
6. Monsenor Lezcano
7. Colonia Nicarao
8. Proyecto Las Americas
9. Reparto Schick
10. B. Torres Molinas Sur
11. Open No. 3
12. Unidad de Propositos
(Barrios 11&12 off map)
dle

Figure 2.

block group, interviewers attempted to reach 100 percent of the family heads (including a series of call-back visits). When a family head reported a family income above the national poverty level, the response was excluded from the sample with the assumption that the response was given to invalidate the results. This sampling procedure produced a response rate of 97.7 percent of the target sample population. Subsequent efforts to determine the size of the sample relative to the total population were unsuccessful.

The survey questionnaire was pre-tested in the thirteenth barrio drawn from the sample universe and after reviewing the results, the principal investigators made minor modifications to the questionnaire to produce the final survey form (Appendix). The interviewing in the survey was done by a team of twelve college students from La Universidad Centro-Americana, who were given instruction in survey and interviewing techniques. This group also performed the questionnaire pre-test and reviewed the results with the researchers to understand better the survey routine.

The survey results had been collected, coded, and key-punched prior to this author's participation in the study. More careful consideration of the intent of the questions and the hypotheses to be tested would have been advisable Open-ended questions were used extensively in the survey and when the interviewer met with no response, the question

was by-passed for the next, seemingly in an attempt to complete the interview quickly. Also, superfically-adequate answers were accepted by the interviewer where more information was needed to fully answer the question. Due to these problems in interpreting the many blank responses coded in the data, the author re-coded as many of the remaining original questionnaires as available to produce a new data set, composed of 525 heads of households. To aid in the interpretation of the original questionnaires, the author spent three days administering the original form among a variety of neighborhoods in Masaya. This exercise proved invalueable in providing insight to the structural problems of the questionnaire as well as experiencing the living conditions of the people in the secondary cities.

This study examines two sides of the internal migration question. Chapter IV discusses the role of several factors in determining the migration pattern of an evolving primate city, Managua, prior to the disastrous earthquake of 1972. Chapter V examines the impact of the earthquake upon the attractiveness of several surrounding cities within the southwestern region of Nicaragua.

CHAPTER IV

THE ROLE OF THREE FACTORS IN THE STAGE MIGRATION PROCESS

The migration field of a major city reflects the underlying processes which determine the volume, rate, direction, and composition of the migrant streams to that city. While some of these processes may be socio-economic or political in nature, more basic are such factors as time, space (or distance), and the urban hierarchy; all are important considerations in the analysis of migration patterns of Latin American primate cities.

While many major cities of North America are grappling with the problems of population decline, Latin American cities are faced with burgeoning populations that defy most planning efforts. A major part of this growth can be attributed to the influx of migrants from smaller cities and the rural countryside. Recent literature also describes this migration flow as one that occurs in stages or steps, as the migrant and his family ascend the urban hierarchy until they attain residency in the primate city. This chapter reviews some of the evidence of the Managuan migration experience to determine the role of three factors in the stage migration process.

Hypotheses Re-Stated

This research is guided by earlier work done by geographers who have attempted to explain the relationship between time, distance, and urban hierarchical structure, and the stage migration process, specifically in the case of the primate city in Latin America. Drawing upon their work, we might expect three urban spatial relationships to exist in the analysis of the Managuan migration data. A positive relationship will exist between the probability of migrating from a departmental *cabecera* to the primate city and the distance between the origin and the destination of the migrant. This is due to the social and physical distance that separates more distant rural origins from the capital or primate city. As distance from the primate city increases, the attractiveness of the nearest urban center increases. Thus, migrants from these areas would be more likely to come from the local urban center, where they may gain employment, education, or living experience that would increase the likelihood that a future transfer to the primate city would be a successful one.

We can expect a postitive relationship between the probability of migrating from a *cabecera* and the percentage of the department population which is resident in the *cabecera*. In areas where a strong local urban focus exists, higher rates of migration would be expected from that urban center as its migration field or sphere of influence would dominate that of a more distant opportunity.

A positive relationship is also hypothesized between the migration probability and the population size of the cabecera. As Thomas and Catau put it, the proportion of a cabecera's contribution to a primate city's migration stream should increase as the cabecera's population increases (1974, p.115). Additionally, we anticipate that present-day rural populations will show a greater tendency to move directly to a primate city than they did in earlier periods. As a primate city and a nation develop more complex and extensive modes of mass communication; as transportation facilities improve, making remote areas more accessible; and as the educational system has greater effect upon the literacy levels of the population; we might expect that the residents of more rural areas would be more receptive to re-location in a major city.

In traditional societies, where folk customs are closely adhered to and family kinship represents one of the strongest influences upon the individual, we might expect these ties to play a major role in the individual's decision and ability to migrate. In an urban-industrial environment, where economic motives are a strong consideration for the individual competing in a more de-personalized society (than that of the rural area), economic incentives would play a more important role in the decision-to-migrate. Thus, we would expect that as a primate city develops through time, economic incentives would replace family ties as the primary criterion in the migration

decision-making process.

Data and Analysis

Fifteen months after the Managuan earthquake of December 23, 1972, a survey of heads of household was conducted in low-income housing areas of the capital. This survey yielded a sample which included 331 migrants out of 525 family heads, and simple correlation analysis of the dependent and independent variables was performed (Table 6).

Table 6. Simple Correlation Matrix of Managuan Data

	Y	X_1	X_2	X_3
Y	1.0000			
X_1	.3450 (.239)	1.0000		
X_2	-.2360 (.778)	-.5041	1.0000	
X_3	.2456 (.220)	.2454	.1332	1.0000

where: Y = the percent of migrants which originated in the cabecera
X_1 = highway distance,
X_2 = the percent of a department's total population which is resident in the cabecera
X_3 = the number of migrants per 1000 population in the cabecera
(.239) = significance level of correlation coefficient, r

An examination of the distribution of Managuan migrant origins suggests that the volume of in-migration to the capital city is inversely-related to the distance from the

origin (Figure 3). As hypothesized, a positive relationship (r = .3450) is found between the propensity to migrate from the cabecera and the distance between the cabecera and Managua. As distance increases between the cabecera of origin and the primate city, the percentage of migrants which originate in the cabecera increases.

A negative relationship (r = -.2360) exists between the propensity to migrate from the cabecera and the proportion of the department's population which resides in the cabecera. This suggests that as a greater percentage of a department's population resides in the cabecera a declining percentage of the migrants from that department can be expected to move from the cabecera to the primate city. These results are contradictory to the findings of Thomas and Catau in Guatemala, where the propensity to migrate is positively-related to the percentage of a department's population resident in the cabecera. A possible explanation may lie in the level of development of the urban hierarchy in Guatemala vis-á-vis that of Nicaragua. While Guatemala has a large rural population, there is a pronounced urban hierarchy as well, with several large cities located amidst the densely-populated rural highlands. In Guatemala, the large secondary cities may serve as generating centers due to the social gap that exists between the rural highland Indians and the urban resident of Guatemala City. On the other hand, in Nicaragua the population is more centralized in the rural villages and

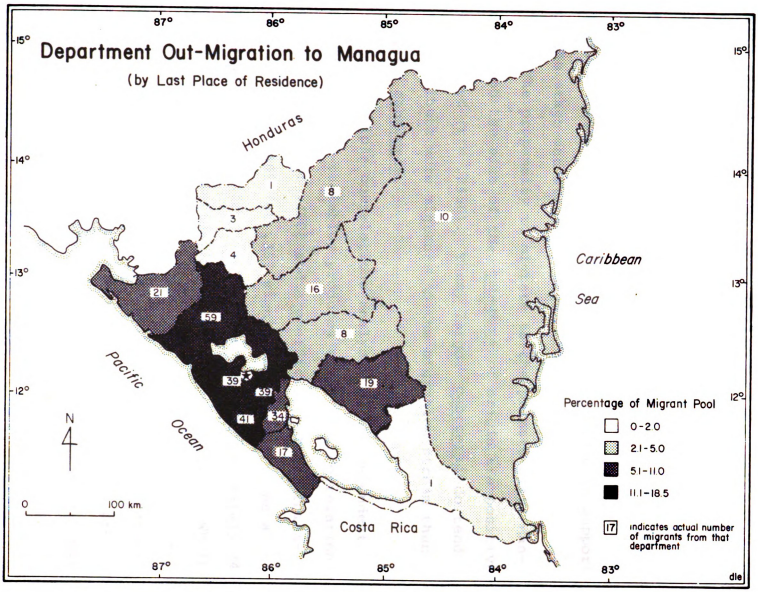

Department Out-Migration to Managua
(by Last Place of Residence)
Honduras
Caribbean
Sea
Pacific
Ocean
Costa Rica
N
0
100 km
Percentage of Migrant Pool
0-2.0
2.1-5.0
5.1-11.0
11.1-18.5
17 indicates actual number of migrants from that department
87°
86°
85°
84°
83°
15°
14°
13°
12°
1
8
3
10
4
16
21
59
8
39
19
59
41
34
17
1

Figure 3.

municipio cabeceras. Also, there is less heterogeneity with regard to the ethnic composition of Nicaragua than that of Guatemala. Department cabeceras may be by-passed by the Nicaraguan rural migrant, after learning of the opportunities in the national capital, or one of the larger department cabeceras within commuting distance of Managua. Thus, the results may indicate further evidence in support of the stage and step-wise migration pattern.

The propensity to migrate to the primate city, Managua, and the size of the cabecera of origin are positively related (r = .2456). Thus, larger cabeceras do tend to contribute more migrants to the migration stream than smaller cabeceras.

A multiple correlations analysis of the dependent and independent variables produces a multiple correlation coefficient (R) of .4908 and a coefficient of determination (R^2) of .2409 (at .367 significance level). As a result, the independent variables explain approximately 24 percent of the variation in the dependent variable. While the level of explanation is low, it indicates that other factors account for the variation in the migration rates, and that modifications of the model may improve its predictability. The Guatemalan study which serves as a model for this work had more cases to analyze and the author suspects that an increased number of cases would produce more favorable results in this study. Also, the importance of the distance factor and the associated weight

ascribed to the friction-of-distance which reflects the relative accessibility of all locations, cannot be ignored. For this study, the distances along water transport routes were doubled to reflect the increased travel time for travelers using those routes. The researcher recognizes the somewhat arbitrary nature of this friction-of-distance factor and future research might explore alternative distance-weighting factors to achieve higher levels of explanation.

The migration data gathered in the family-head survey exhibits a strong tendency towards direct migration to Managua. Of the 331 migrants in the head of household sample, almost 82 percent were individuals who had moved directly from their place of birth to the national capital. However, plotting the balance of the migrants by the date of their last move reveals an interesting trend (see Table 7).

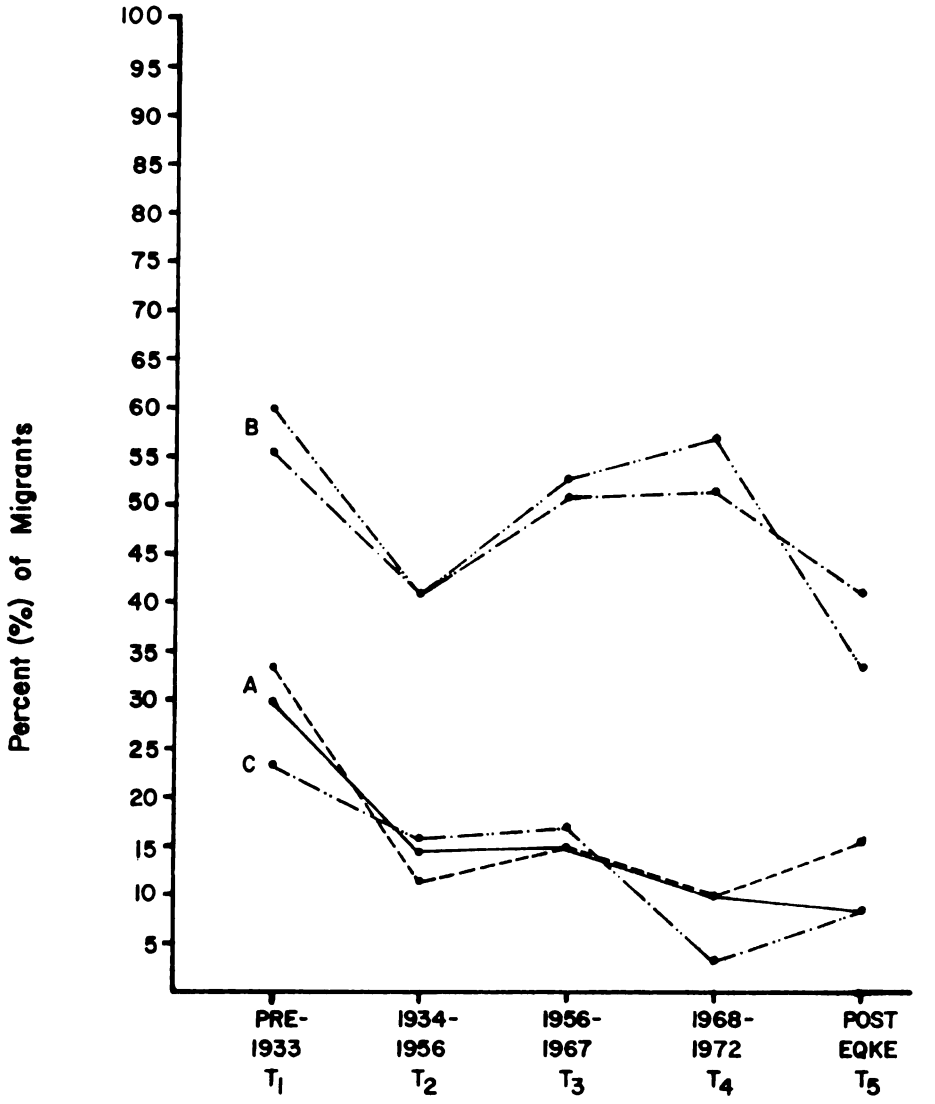
Table 7. Stage Migration to Managua

Time Period	No. of Step Migrants	Total Migrants	Percent
T_1 Pre - 1933	3	30	10.0
T_2 1934 - 1956	24	160	15.0
T_3 1957 - 1967	17	91	18.6
T_4 1968 - 1972	16	38	42.1

From Table 7 it should be obvious to the reader that from the first time period (T_1) through the last period prior to the earthquake (T_4), the percent of the Managuan migrant pool with step migration experience prior to their residence in Managua, increased from 10 to 42.1 percent, and most dramatically between periods T_3 and T_4. At least tentatively, we can say that stage migration appears to have been on the increase prior to the occurrence of the Managuan earthquake of 1972.

We expect to see an increase in the participation of direct rural migrants to Managua over several periods of time. However, the data indicate that migrants from rural backgrounds are less common than during earlier time periods (see Figure 4). Recognizing that the definition of rural origin will have a significant effect on the outcome of this analysis, two definitions of rural areas were utilized with similar results. If we incorporate a rigid definition of rural areas as those which lie outside any departmental or municipio cabecera (trend line "A"), we reveal a steady decline in rural participation. If we broaden our definition of rural areas to include all areas outside of the department cabecera the trend line shows more variation but a similar downward trend. Moreover, trend line "B" indicates that the inclusion of rural municipio cabecera contributes greatly to the size of the sample. It also reinforces the notion that stage migration may increase as additional rural municipios assume the role of

Rural Participation in the Managuan Migration Field



Rural Participation, by Place of Last Residence

Rural Participation, by Place of Birth

Rural Participation (non-cabecera), by Place of Last Residence

Rural Participation (non-cabecera), by Place of Birth

Rural Participation (inc. EQKE. victims), by Place of Last Residence

Source: Calculated by author

Figure 4.

dle

generating centers for Managuan-bound migrants who were born in the rural area and then moved to the local village for a short time prior to re-locating in Managua.

One might suspect that, by some process, the impact of the earthquake of 1972 may have been to select more rural migrants. However, if we include in the Managuan sample those migrants who were compelled to move to other cities due to the earthquake but who were resident in Managua before the disaster, we find that the trend line ("C") for rural participation still demonstrates a steady decline through each time period.

Of great interest to planners, politicians and academics are the factors which serve to provide incentive to the migrant, which include not only the positive aspects of the receiving center, but also the negative aspects of the generating areas. In the survey, heads-of-household were asked why they chose to leave their origin and what factors were important in their selection of a destination. The responses fell into two major response categories, family-influenced considerations and economic incentives (both positive and negative). Family-influenced considerations include decisions effected by the location of the extended family. Economic incentives include the pursuit of broader career and employment opportunities, improved living conditions and standards of living and broader educational opportunities. The percentage of all migrants for each time period which fell into one of these two

response groups was then graphed (Figure 5).

While the inverse relationship between economic and family incentives is obvious and as hypothesized, the researcher notes certain difficulties with this analysis. It is likely that a higher percentage of migrants in the more recent time periods acted as individual decision-makers, responding to economic motivations, while earlier migrants arriving at a younger age may have moved in response to a decision made by their parents or relatives. Similarly, older family heads at the time of the survey were more apt to have moved at an earlier age because of a family decision, thus the percentage of family-influenced moves would be likely to decline over time as the actual migrant grew older and assumed the role of decision-maker. Still, the Latin custom of identifying the oldest member of the household as the "head of household" lends some credence to the hypothesized relationship inasmuch as the older the respondent at the time of the survey, the better the chance they could have acted as an independent decision-maker when they were a migrant. Also the development of Managua as a primate city is relevant to this discussion. As the city assumed a greater degree of primacy, it would tend to monopolize the economic, educational, and social opportunities available within the country. This perception might be inferred from the increase in the percentage of economically-motivated migrants in the sample. Furthermore, urbanization, industrialization and modernization

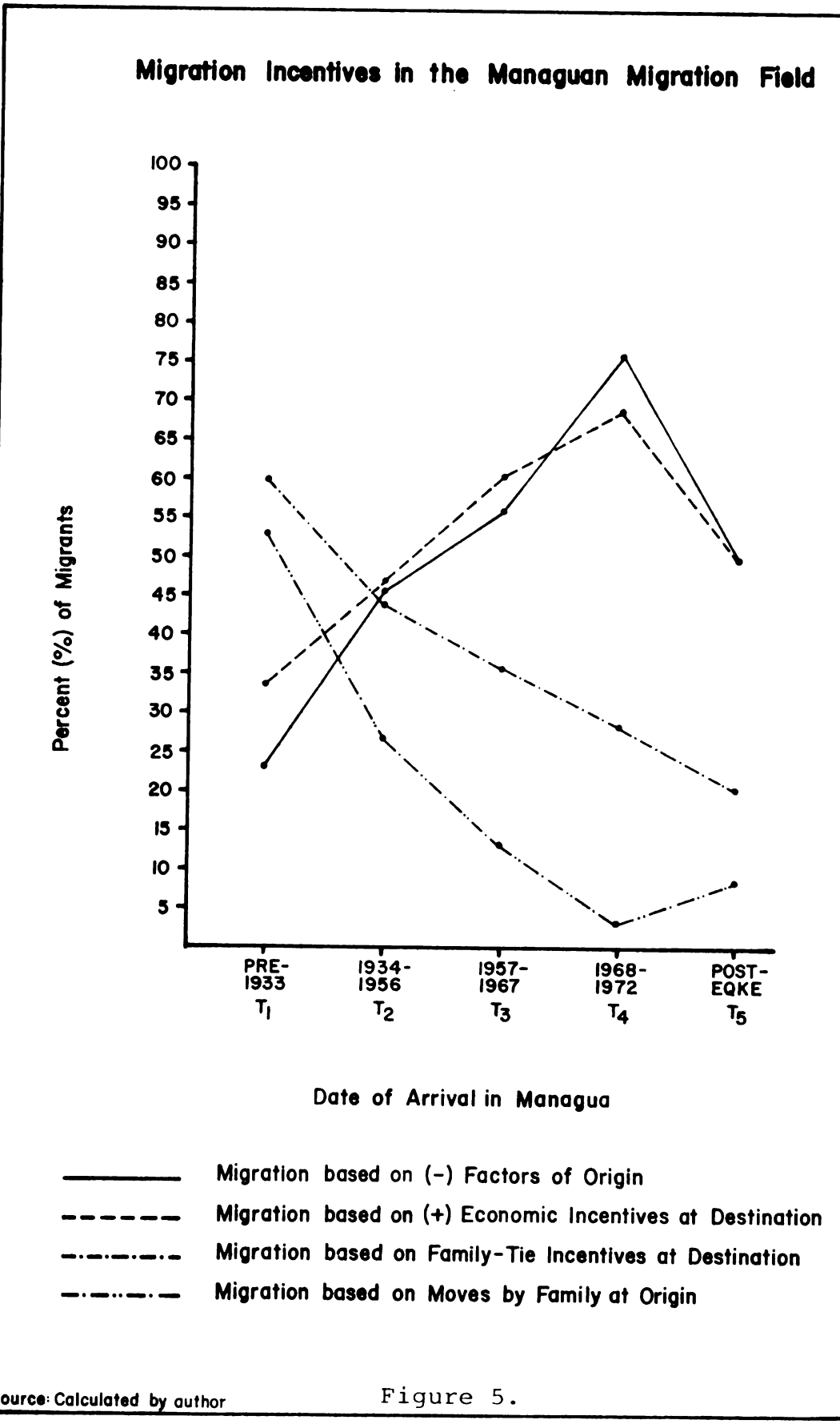

Migration Incentives in the Managuan Migration Field
Percent (%) of Migrants
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
PRE-1933 T1
1934-1956 T2
1957-1967 T3
1968-1972 T4
POST-EQKE T5
Date of Arrival in Managua
Migration based on (-) Factors of Origin
Migration based on (+) Economic Incentives at Destination
Migration based on Family-Tie Incentives at Destination
Migration based on Moves by Family at Origin
Source: Calculated by author
dle

Figure 5.

have tended to disrupt the traditional family structure in Western societies, breaking up the extended family into a more conjugal family form (Goode, 1964, p. 108 and Rodgers, 1972, p. 169-170). If the western example can be accepted as descriptive of the Nicaraguan case, then it follows that as Managua assumed higher levels of primacy and as the rest of the country became more urbanized, the extended Nicaraguan family would break down somewhat and be less a factor in the decision-to-migrate.

CHAPTER V

THE ROLE OF THE SECONDARY CITY

> "The next day, the city was under a pall of smoke and red dust. Thousands of refugees crowded the highways, carrying out what belongings they had been able to save."[1]

> "Four-fifths of Managua's population has fled the city... City authorities have warned people to plan on staying away for at least six months."[2]

The mass re-distribution of Managua's urban population as a result of the earthquake of December 23, 1972, is an interesting event in terms of the sociological and geographical impacts which the catastrophe had upon the Nicaraguan society. This was a disaster which struck the heart of the nation, killing thousands of persons, injuring many more, and leaving tens of thousands homeless. That such a disaster could occur in a major city where several previous earthquakes gave ample warning to those that persisted to risk their lives and property, raises questions as to why their level of hazard perception was so low. The official reaction to the disaster was to

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[1] "A City Dies in a Circle of Fire," Time, January 8, 1973, p. 22.

[2] "Rebuilding from Scratch," Newsweek, January 15, 1973, p. 33.

initiate the temporary evacuation of the central city, recommending that the public stay out of the core area for some six months until order could be restored.

The flood of refugees spread across the country, overburdening adjacent cities with populations which doubled and tripled overnight. The supply of goods and services in these cities became a municipal nightmare as the refugee population taxed the local facilities beyond their capacity.

This chapter examines the role of the secondary cities in Nicaragua, both pre- and post-earthquake in the country's migration system. The incidence of stage migration, the change in rural participation and the considerations of the migrant in the decision-to-move are examined to identify the similarities and differences which exist between the secondary and the primate city.

Hypotheses and Assumptions

One of the central themes of all migration research is the distance-decay function of human interaction; i.e., the level of migration response between two areas is inversely-related to the distance between the two areas. This study assumes that the flight of the Managuan refugee is no different than any other form of human migration, and will be limited by the distance between Managua and the destination chosen by the refugee. Of those wishing to return, this friction-of-distance factor should reinforce

their desire to minimize the effort and distance of the return trip.

We may expect that this migrant stream will exhibit certain directional biases which will affect a deviation from the re-location pattern created by the distance-decay function. Areas with available and/or inexpensive housing, job opportunities, etc., may be expected to attract larger numbers of migrants than might be expected under more normal circumstances. However, as an immediate reaction to the distressing crisis of the earthquake, these factors will be less important than the attraction of family ties in the area of re-location. These areas represent an environment which would be more comforting to the migrant inasmuch as some of the anxiety of moving to a new location is relieved by the migrant's familiarity with the area. Also, in a country where social security support systems are less developed, the family will provide the welfare relief (to the extent it is able), that might be unavailable from public sources for the disaster victims.

Upon closer examination, the migrants may choose to return to their last place of residence, and if such is the case, this return migration represents a reversal of the stage migration pattern described by their move to the primate city. The increased attractiveness of the secondary cities provides an opportunity to examine and identify the factors which make them attractive in comparison with the primate city. This knowledge is valuable

in determining what programs or incentives the government might offer to make the secondary cities more attractive to the displaced migrant and cause them to re-locate, thus relieving some of the burden on the primate city. However, due to the circumstances surrounding this particular migration event, it is assumed that such efforts would have less chance of success if based on the data herein described because of the over-riding response of fear and hazard evasion which is assumed to motivate the migrants discussed herein.

Data and Analysis

The data for this portion of the study was obtained from a questionnaire administered to a randomly-selected group of family heads in four cities in southwestern Nicaragua. It was conducted in March and April of 1974, simultaneous to the Managuan survey, and the cities include three department capitals, namely, Masaya, Granada, and Jinotepe, and one municipio cabecera, Tipitapa, in the Department of Managua.

The size of the migrant population in each of these cities varies between 26.6 and 75 percent, based on the sample taken. Due to the large influx of Managuan refugees after the earthquake, it may be useful to review the pre-earthquake situation in order to make more valid inferences as to the causes of any post-earthquake trends.

Among those migrants who came to the four cities prior

to the 1972 earthquake, in two cases between T_1 and T_2, there is a noticeable decline in the percentage of migrants with previous migration experience (Figure 6). However, during periods T_2 through T_4, there is an increase in the percentage of in-coming migrants with previous migration experience. The sharp increase in step-migration during the last, post-earthquake, period represents the addition of these former direct migrants to Managua who had to leave after the earthquake. Nevertheless, it appears that stage migration had been increasing throughout the country since as the percentage of these step-migrants to Managua increased, so too did the percentage of step-migrants to the secondary cities increase. The secondary cities were functioning as generating centers for migrants to Managua, while being supplied with in-migrants from the municipio cabeceras and the smaller rural villages.

Any clear impressions as to the level of rural participation in the migration "pool" of the secondary cities are difficult to formulate for several reasons. Limited sample sizes for the various time periods is one drawback. Also, the definition of rural origins leaves a broad area for interpretation. The effect of this variation can be seen, for example, in the case of Masaya and Granada, two cities which demonstrate similar migration patterns (Figures 7 and 8). When "rural origin" includes only rural villages and the countryside, the level of in-migration from these areas fluctuates between 10 and 20 percent over several

The Incidence of Stage Migration to 4 Secondary Cities

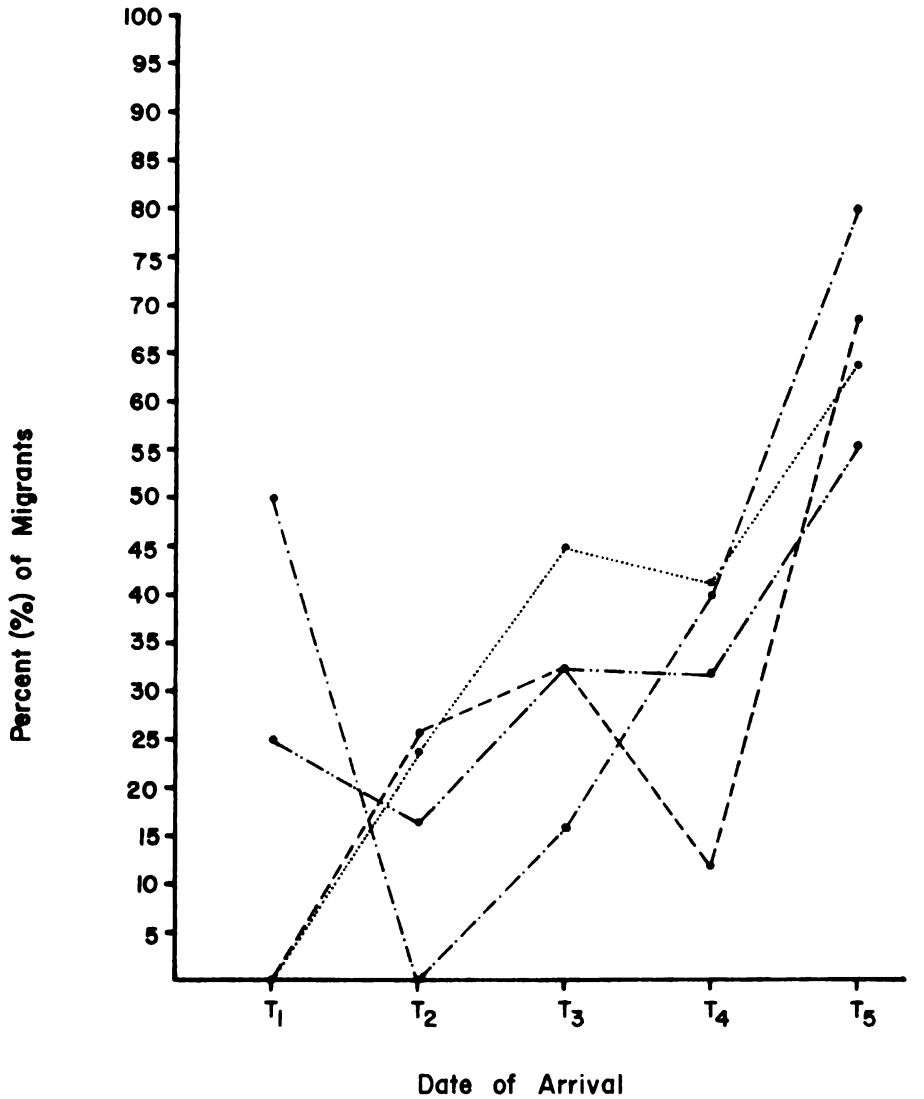

Figure 6.

Source: Calculated by author

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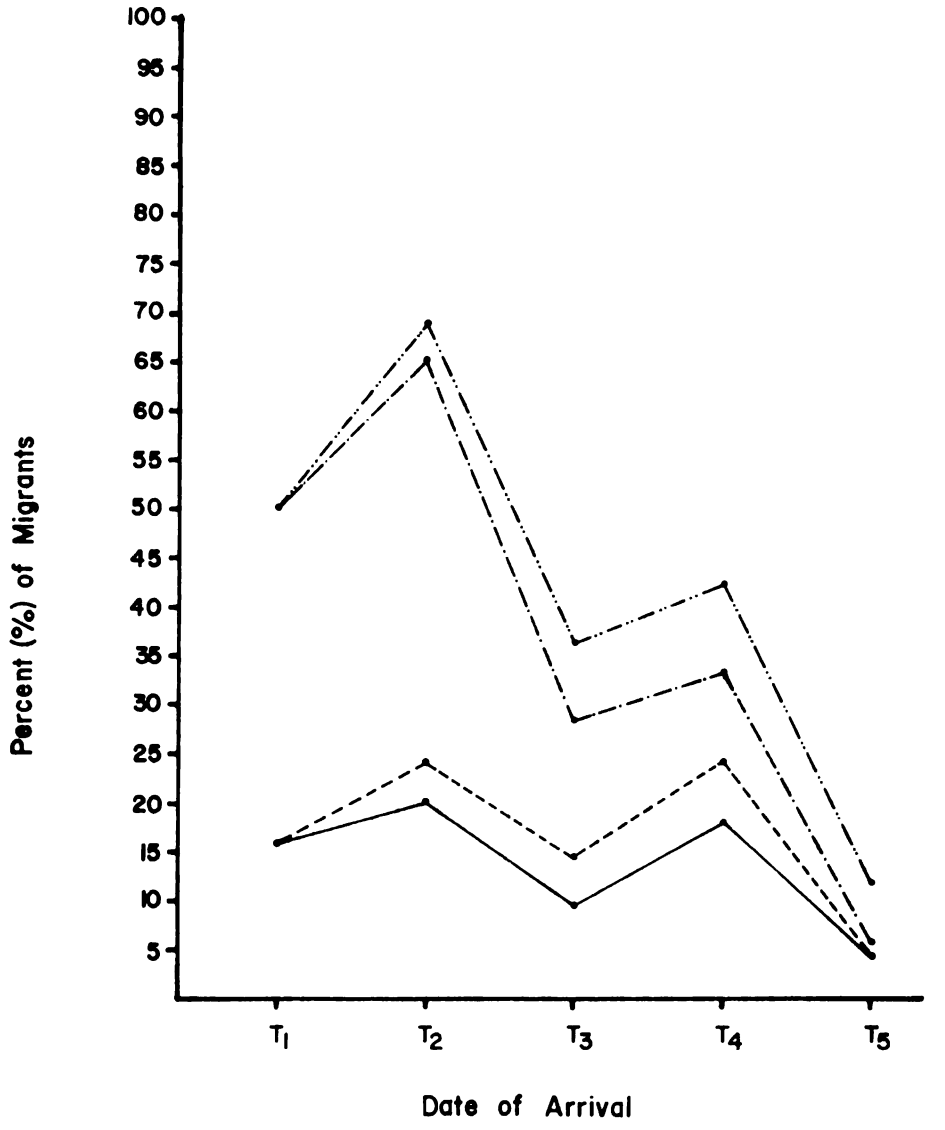
Rural Participation in the Masaya Migration Field



Rural Participation, by Last Place of Residence

Rural Participation, by Place of Birth

Rural Participation (non-cabecera), by Last Place of Residence

Rural Participation (non-cabecera), by Place of Birth

Figure 7.

Source: Calculated by author

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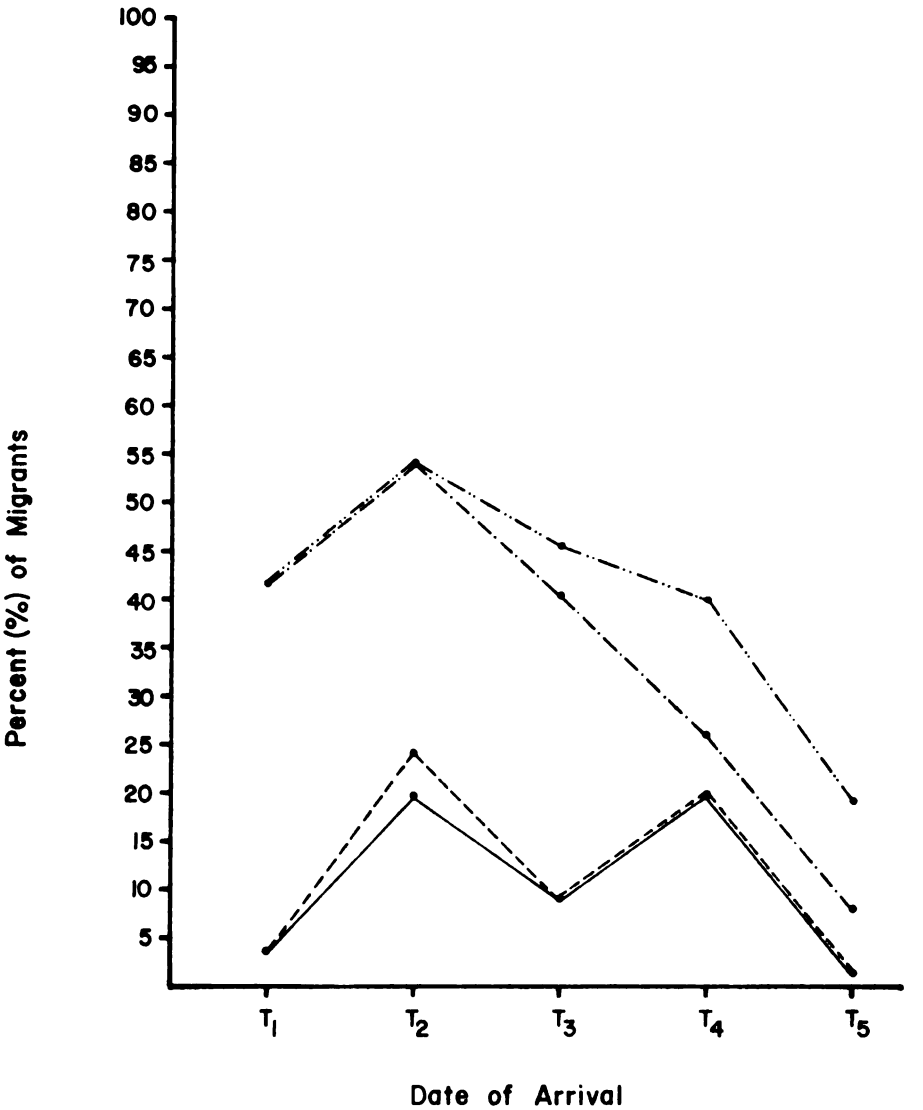
Rural Participation in the Granada Migration Field



Rural Participation, by Last Place of Residence

Rural Participation, by Place of Birth

Rural Participation (non-cabecera), by Last Place of Residence

Rural Participation (non-cabecera), by Place of Birth

Figure 8.

Source: Calculated by author

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time periods. However, by including all towns except the department capitals or cabeceras as rural origins, along with the rural villages and the countryside, a decline in rural migration participation is noticed over several time periods. Adopting the latter definition may help throughout the country for longitudinal analysis with the urban life style of Managua.

Moreover, we see this decline in rural participation repeated in Tipitapa (Figure 9), where the percentage of the migrant pool from rural origins dropped from 75 percent in T_2 to roughly 16 percent in T_4. When taken together, the data for all four secondary cities suggest that they may have become more important as generating centers of Managuan-bound migrants and as receiving centers for migrants from smaller municipio cabeceras.

When we consider the evidence from the analysis of both primate and secondary cities together, it appears that some important differences exist between the conlusions drawn from the Guatemalan studies of stage migration and the Nicaraguan case. While the incidence of stage migration appears to increase with increasing distances from the primate city in both countries, in Guatemala this process appears to be breaking down, whereas in Nicaragua, the reverse is true. In Guatemala, the research of Thomas and others has shown that the percentage of direct rural migrants increases over several time periods, while in Nicaragua, stage migration appears to be increasing. Most

Rural Participation in the Tipitapa Migration Field

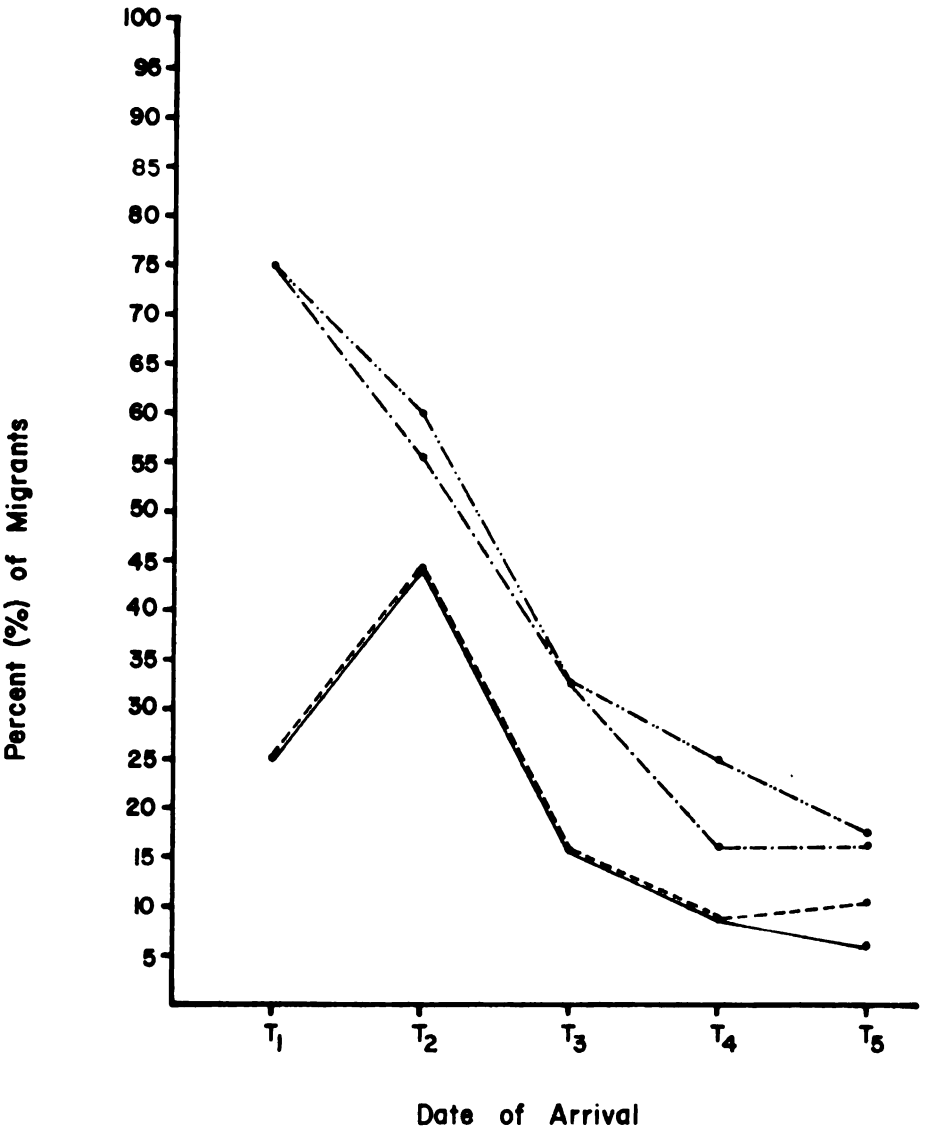

Figure 9.

Source: Calculated by author

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important of several possible causes for this difference, presumably, is the relative size of the two primate cities involved. It is logical to assume that Guatemala City, with a population of more than a million inhabitants, has a broader sphere of influence than does Managua, with 450,000 to 500,000 inhabitants. Central place theory says that the larger the size of the city, the more specialized or the more "higher order" the goods and services which it can provide and the broader the "range" of those goods (or the larger the hinterland of that central place). If Managua has not attained a comparable threshold size as that of Guatemala City, its sphere of influence or migration field may not reach out sufficiently to attract the rural residents who identify with their local urban center. In other words, the primate city has not attained, under these circumstances, the status of an intervening opportunity to the migration fields which surround the secondary urban centers.

The factors which affect the decision-to-migrate are associated with both the origin and the destination of the migrant. Primary among these in the Nicaraguan study seems to be family-tie considerations and economic incentives. An analysis of the factors which tend to force migrants from the origin reveals a similar pattern for Granada and Masaya, i.e., a decline in family-decision motivated moves and an increase in economic ones. Similarly, an examination of the factors attracting migrants to the secondary

cities shows a decline in family tie considerations and an increase in the importance of the economic attractions of the city. However, as noted earlier in the discussion of the Managuan example, these conclusions are rather tentative due to the inherent bias of the responses when compared on a longitudinal basis.

The data for Jinotepe and Tipitapa are less conclusive. This may be due, in part, to the small sample sizes. To use percentages with these smaller samples tends to exagerate the variation in the actual response levels. However, despite its smaller size, Tipitapa behaves more like Masaya or Granada than it does Jinotepe, a city of similar size. That Jinotepe should stand out with a unique response pattern is difficult to explain (Figure 10). Apart from having the smallest study population, other factors appear to affect Jinotepe's anamolous response pattern. While Granada, Masaya, and Tipitapa all are located along the major north-south highway route, Jinotepe is not. This easy access to Managua may allow the influence of the primate city to encroach on the migration fields of these cities more than the case of Jinotepe. However, more important than the accessability to Managua, the position of the city in the urban hierarchy may affect a change in its attractiveness to potential migrants. Jinotepe, while a departmental cabecera, shares its local urban identity with its twin-sister city, Diriamba. Consequently, the lack of a strong local urban focus, which Masaya, Granada,

Rural Participation in the Jinotepe Migration Field

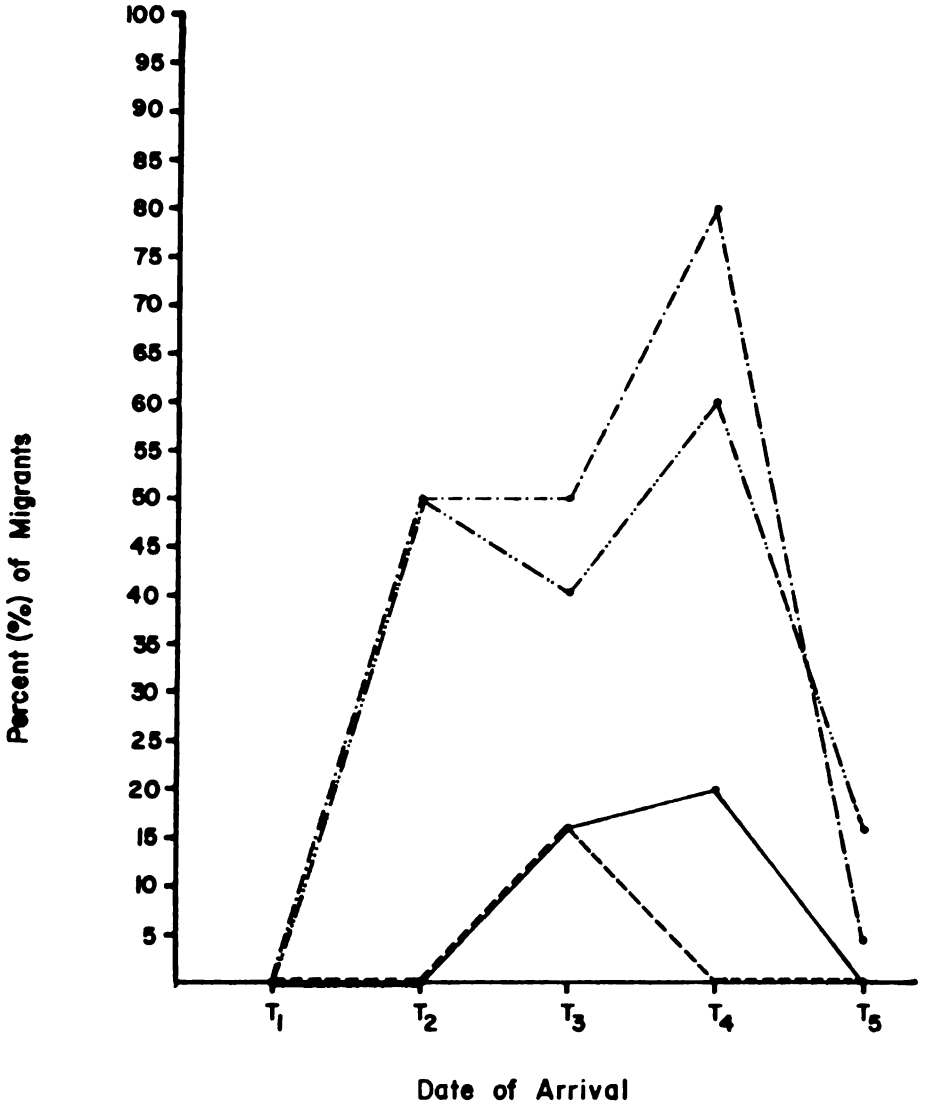

Figure 10.

Source: Calculated by author

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and Tipitapa provide, and the more inaccessible location of the city, may combine to cause greater variation in the responses from Jinotepe.

After the earthquake, for all four cities, economic incentives and family connections both declined as a percentage of the migrants' responses (Figures 11 and 12). During the post-earthquake period, the majority of the migrants came from Managua, and of the remaining in-migrants, economic factors were most often mentioned as the reason for leaving their last place of residence. Furthermore, family tie considerations were cited most often as the reason for choosing their destination in one of the four major cities. Rising expectations among the rural migrants is cited frequently as one of the principal migration incentives. However, we might expect a parallel gain in the economic incentive motivation at the destination if this were entirely the case. I suspect that the disenchantment with the rural or smaller urban area is created by the mass media and the images created by intra-family communication. In a centralized economy such as that of Nicaragua, where a monopolistic autocracy exists, job opportunities are realized frequently through the applicant's connections, as well as their personal qualifications. Family ties, then, become inextricably mixed with economic motivations, and indirect factors become more important than the obvious.

The Influence of Family Tie Location on the Decision-to-Migrate

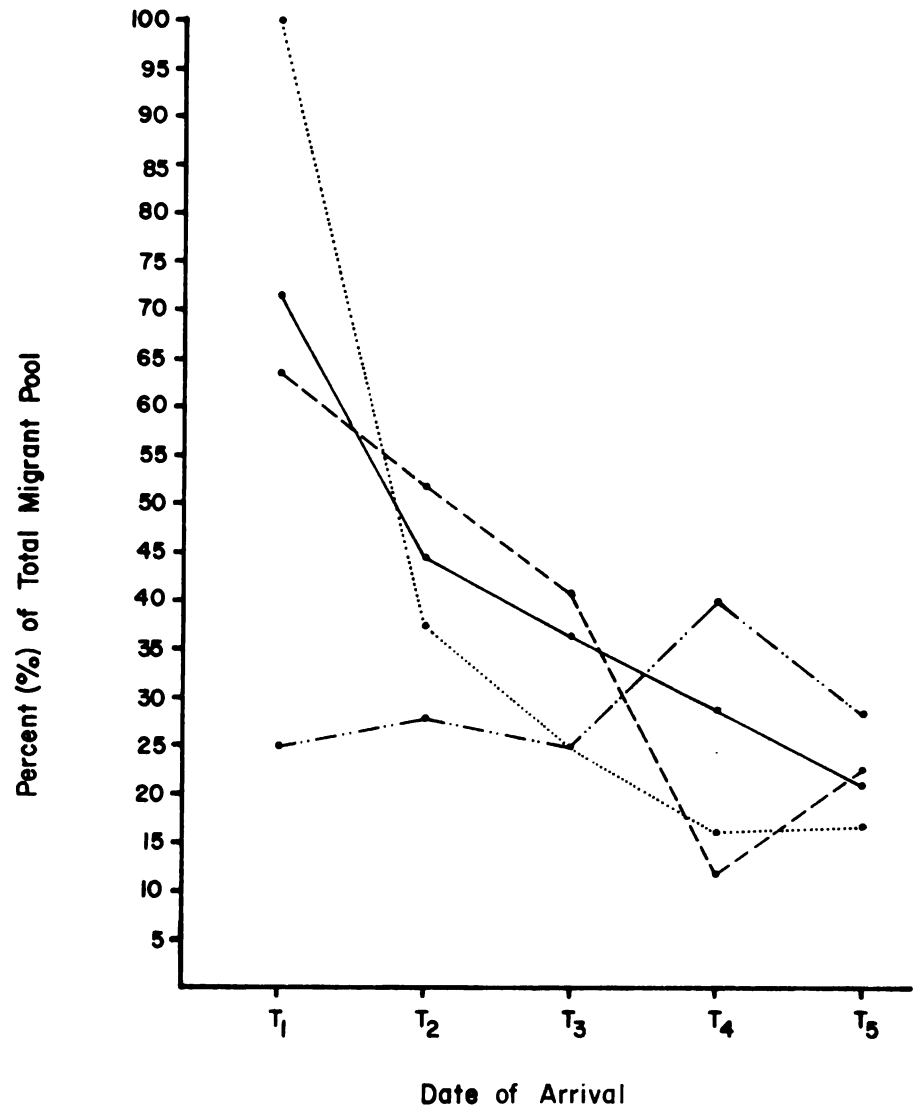

Figure 11.

Source: Calculated by author

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The Influence of Economic Factors on the Decision-to-Migrate

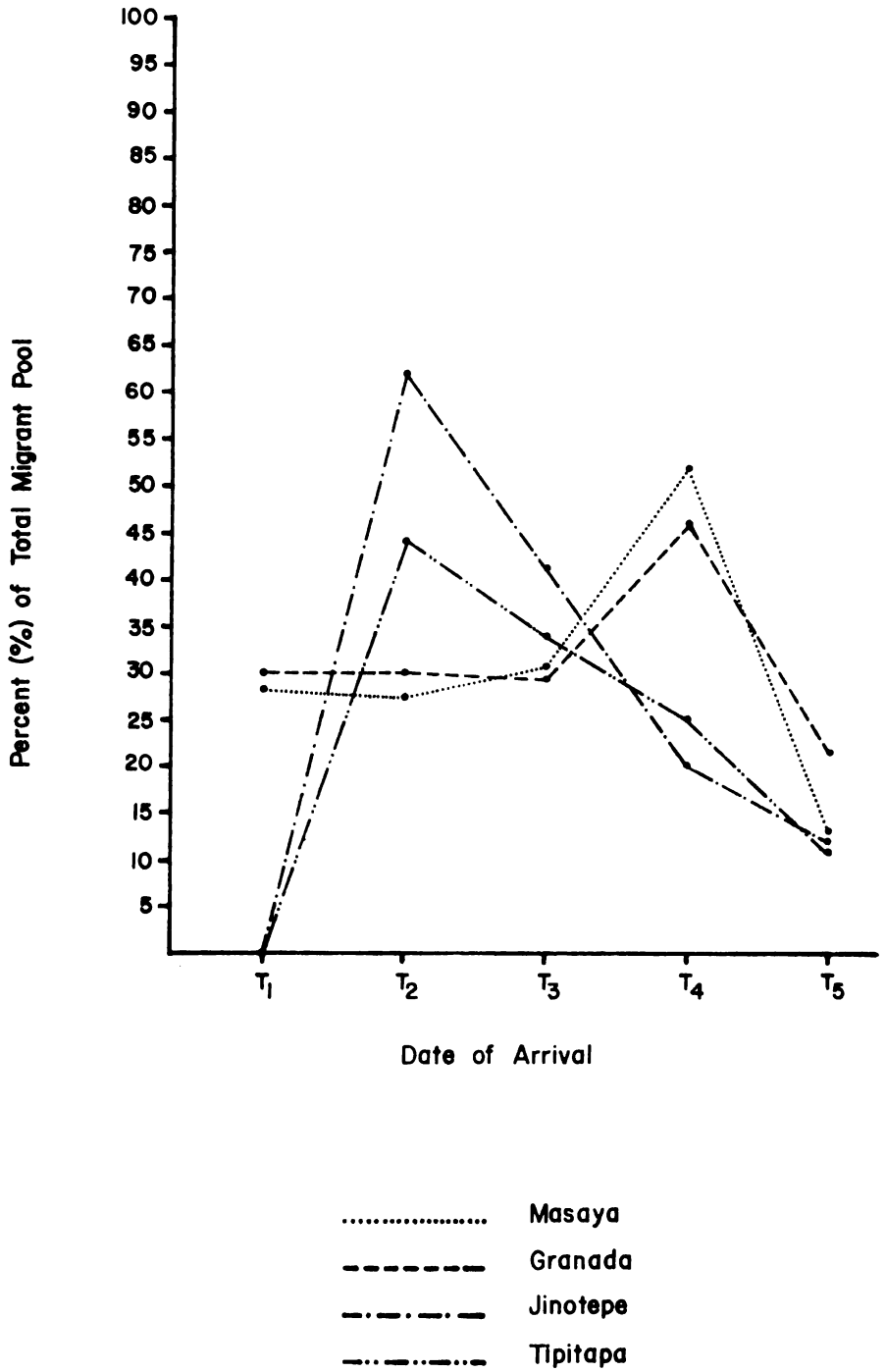

Figure 12.

Source: Calculated by author

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CHAPTER VI

SUMMARY AND CONCLUSIONS

The important role which migration has had in the urbanization of the Nicaraguan population is unmistakeable. Managua has grown into a sprawling, primate city which evidences all the urban problems of primate cities in Latin America and the rest of the world, including the supply of foodstuffs, water, energy, transportation, health care, housing, education, and employment. This study analyzes two aspects of the Nicaraguan migration question; the pre-earthquake pattern that contributed to the growth of this primate city, the impact of a devastating earthquake in the capital on the migration systems of surrounding secondary cities, and the factors which were influential in determining the direction and extent of the out-migration stream from Managua after the earthquake.

To explain the evolving Managuan migration system, four relationships were hypothesized. A positive relationship was expected, and found, to exist between the probability of moving from a department cabecera to the primate city and the distance between the migrant's origin and destination. This confirms the generally universal finding that migration is inversely-related to distance.

A positive relationship was hypothesized to exist between the probability of moving from a cabecera and the size of that cabecera relative to the total department population. The data, however, indicated a weak negative relationship between these variables, suggesting that as cabeceras increase their size relative to the total population of the department, they tend to hold their population rather than serving as generating centers for increased migration to Managua.

Migration probability and the absolute size of the cabecera are positively related, as hypothesized. This suggests that the largest cabeceras serve as the primary generating centers of migrants to Managua, when all other factors are constant. When all three variables are considered together in multiple regression analysis, they do not explain adequately the variation in migration rates to the capital.

Until the time of the 1972 Managuan earthquake, stage migration was an increasingly important factor in explaining the migration system, as was discussed in the Guatemalan case studies and hypothesized here. During four time periods, spanning almost 40 years, the percentage of incoming migrants who had moved at least once prior to locating in Managua increased from 10.0 to 42.1 percent. Also during this same time period, the participation of rural migrants in the migration system of the capital declined, indicating the strengthening of the stage migration process

during that time.

After the earthquake three factors were assumed to be most influential in determining the destination of refugees fleeing the city. The distance between Managua and the refugees' destination was expected, and found, to be inversely related to the volume of refugees seeking shelter at that location. Also, the existence of established family ties at the destination and the volume of in-migration was positively-related, as hypothesized.

Despite the threat of a reoccurrence of the Managuan disaster, the city regained its pre-earthquake population within a matter of a few months. The importance of Managua as the economic capital of the nation is clear. Interviews with Managuan earthquake refugees in Masaya indicate that many are afraid to return to the city but they cannot afford to cut their economic ties with the capital, where the wage scale is considerably higher than anywhere else in the country and employment was booming with the reconstruction efforts. While many have returned to Managua, some have chosen to live in one of the nearby cities and commute daily into the capital. Others live in the city with friends and family and return to their family on the weekend. The increase in commuters to Managua has created tremendous demand for transportation between the capital and the secondary cities, and the proliferation of small bus companies and car pools has created much heavier use of the inter-city highways than intended in their design,

with the resultant increase in traffic accidents and fatalities.

Meanwhile the re-construction of downtown Managua has been delayed while politicians and planners debate the relative risks of re-development of the central business district. While they debate public programs, commercial developers have turned their attention to extensive commercial and residential suburban developments which transform many acres of suburban arable land into costly developments which cater to the wealthy families who moved to the suburbs after the earthquake. At the same time, due to the sprawling development of the city, the provision of goods and services to the low-income families has deteriorated to the point where shopping trips are difficult and expensive. The demand for intra-urban transportation after the earthquake has caused an increase in its cost, hitting the low-income groups the hardest. To facilitate rapid transit, new, divided, semi-limited access highways were built around the city. The increased travel time to move around the city, coupled with the high demand for transportation, has brought about high travel speeds on these highways and created extremely hazardous conditions.

In view of the commercial and residential development of the outskirts of the city and with the return of many of those who had left in the first days after the earthquake disaster, one may wonder what has become of the secondary cities and their role in the urban future of Nicaragua.

Managuan planners debate the merits of land use planning and seismic-resistant architecture to avert another disaster, and politicians scramble to regain support in the transformed Managuan community. Prior to the earthquake, the national government correctly identified the potential problem with continued centralization of the national economy and initiated a program to study the problem and develop strategies for de-centralization. However, all these plans require re-arrangement of national priorities and substantial public investment. With the financial loss suffered in the earthquake, national priorities and available funds were channeled into the re-construction effort. This program is very important for the future development of the country and for the more orderly growth of the capital city. The author hopes that this study has helped to identify some important considerations which might facilitate the Nicaraguan planning efforts thereby restoring some semblance of normality in the lives of those most directly effected by the earthquake.

APPENDIX

SURVEY QUESTIONNAIRE

_____

_____

_____ _____

No. de la entrevista _____

Para uso del codificador.

Buenos días (buenas tardes), me llamo: _____

Varias Instituciones quieren saber algunos datos de estos Barrios para hacer programas de Desarrollo.

Le agradeceré que tenga la amabilidad de contestarme unas cuantas preguntas.

Barrio: _____

Ciudad: _____

Fecha: _____

1. Cuantás familias viven en esta casa?

   _____ (SI VIVE MAS DE UNA FAMILIA, DIGALE QUE QUIERE HABLAR CON UNA PERSONA DE CADA FAMILIA; Y HAGA UN CUESTIONARIO POR FAMILIA).

2. Quién es el jefe de la familia?

   1. ____ Hombre
   2. ____ Mujer

3. Qué edad tiene el jefe de la familia?

   _____

4. Cuál es la profesión o el oficio del jefe de la familia? (ESPECIFIQUE LO MAS QUE PUEDA)

   _____

5. Qué profesión u oficio desempeña ahora el jefe de la familia? (ESPECIFIQUE LO MAS QUE PUEDA)

_____

6. Desde hace cuánto tiempo desempeña esa profesión el jefe de la familia? (INDIQUE EL TIEMPO EN AÑOS, MESES o SEMANAS).

_____

7. Asistió a la escuela el jefe de la familia

1. ____ No

____ Sí, Cuál fue el último grado o año que aprobó?

2. ____ 1o. a 3o. de primaria
3. ____ 4o. a 6o. de primaria
4. ____ 1o. a 3o. de secundaria
5. ____ 4o. a 6o. de secundaria o normal
6. ____ Algunos años de universidad o de enseñanza superior.
7. ____ Terminó una carrera universitaria o superior

8. De qué departamento es el jefe de la familia?

_____ _____

9. Vivía el jefe en:

1. ____ una ciudad. Cuál? _____
2. ____ un pueblo. Cuál? _____
3. ____ en el campo? En qué departmento? _____

10. (AL JEFE DE LA FAMILIA)

Me puede decir por favor, dónde vivió?

1. _____ hasta los 14 años de edad.

2. _____ de los 15 a los 19 años.
3. _____ de los 20 a los 24 años.
4. _____ de los 25 a los 29 años.
5. _____ de los 30 a los 40 años.
6. _____ de los 41 en adelante

11. (SE EL JEFE NO ES DE LA CIUDAD EN QUE SE ESTA ENTREVISTANDO) Por qué se vino a vivir a esta ciudad el jefe de le familia? (ESCRIBA TODAS LAS RAZONES QUE LE DE)

_____

_____

Alguna otra? _____

_____

_____

_____

12. (SE EL JEFE NO ES DE LA CIUDAD EN QUE SE ESTA ENTREVISTANDO) Me puede decir, con quién vivió a su llegada a esta Ciudad? (LEA LAS ALTERNATIVAS AL ENTREVISTADO)

1. ____ Con familiares que vivían aquí antes
2. ____ con amigos o conocidos
3. ____ independiente
4. ____ otro (ESPECIFIQUE) _____

13. Piensa vivir en esta ciudad durante los próximos 5 años el jefe de la familia?

1. ____ Sí
2. ____ No sé
3. ____ No. A dónde piensa ir? _____

Por qué se va? _____

Alguna otra razón _____

_____

14. Cuáles cree Ud. que son los problemas más importantes de su barrio? (ESCRIBA LOS TRES PRIMEROS QUE LE DIGA)

1. _____

2. _____

3. _____

15. Cuántas personas de su familia viven en esta casa?

_____

16. Hay diferentes opiniones acerca de tener muchos hijos. Levoy a leer algunas para que me diga cual se parece más a su opinión personal.

El tener muchos hijos es:

1. ____ una bendición para el hogar

2. ____ Un problema

3. ____ Algo útil

4. ____ Algo indiferente.

17. (AL ENTREVISTADO)

Cuál cree usted que es el número ideal de hijos para una pareja?

_____

18. Qué prefiere tener usted. (LEA LAS ALTERNATIVAS AL ENTEVISTADO)

1. ____ Hijos varones

2. ____ Hijas mujeres

3. ____ De los dos

4. ____ Cualquiera le da igual.

19. (A LA MADRE DE FAMILIA O LA ESPOSA DEL JEFE)
Cuántos hijos ha tenido usted?

_____

20. (A LA MADRE DE FAMILIA O LA ESPOSA DEL JEFE)
Se la ha muerto algún niño despunés de nacido y menor de 5 años?.

1. ____ No.

2. ____ Sí. Cuál fue el niño que se le murió?

(ENCIERRE EN UN CIRCULO LA(S) REPUESTA(S) CORRECTA(S).
El 1o., el 2o., el 3o., el 40., el 5o., el 6o., el 7o., el 80., el 9o., el 10o., el 11o., el 12., el 13., el 14o.

21. (AL ENTREVISTADO)
Ha oido hablar de algún método para evitar los hijos?

1. ____ No

2. ____ Sí. De cuáles? _____

_____

22 (AL ENTREVISTODO)
A qué cree usted que se debe el que haya pobreza en Nicaragua? (ESCRIBA TODO LO QUE LE DIGAN).

_____

_____

_____

_____

_____

(AGRADEZCA LA ENTREVISTA)

OBSERVACIONES DEL ENCUESTADOR

A. Con qué persona de la familia habló?

_____

B. Esta familia vivo en:

1. ____ Una cuartería
2. ____ Una casa independiente
3. ____ Una casa construida en el patio de otra.
4. ____ Una casa de una colonia del INVI
5. ____ Otro (ESPECIFIQUE) _____

C. El material que predomina en las paredes de la casa es:

1. ____ Madera
2. ____ Taquezal o adobe
3. ____ Bloques o concreto
4. ____ Es una casa de ripios (cartón, zinc, etc).
5. ____ Otro (ESPECIFIQUE) _____

D. En esta casa predomina el piso de:

1. ____ Tierra
2. ____ Embaldozado
3. ____ Ladrillo
4. ____ Otro (ESPECIFIQUE) _____

E. A su parecer el aspecto de la casa es:

1. ____ Muy pobre
2. ____ Pobre
3. ____ Regular

4. _____ Bueno

5. _____ Muy bueno.

F. Observaciones del entrevistador:

_____

_____

_____

_____

_____

_____

_____

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_____

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_____

_____

ezm.-

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