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A Historical Study of the Demographic Aspects of Urbanization in Utah, 1900-1960

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A HISTORICAL STUDY OF THE DEMOGRAPHIC ASPECTS OF URBANIZATION IN UTAH, 1900-1960

by

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Urbanization in Utah, 1900-1960

by

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In a historical frame of reference, this is a study of rural-urban migration to demonstrate the process of urbanization in Utah between 1900 and 1960.

This study estimates the amount of internal migration for the state of Utah. Selected demographic variables such as size, age, and sex of the migrating population are studied. Changes in the population composition of the sending and receiving areas as a complement of rural-urban migration constitute the crux of this study.

The indirect methods of estimating the net intercensal migration, census survival and life table survival ratio methods, are used in tabulations. Limitations were imposed, as for availability of the data, in usage of any direct methods of migration measurement. The survival ratio methods used, however, are the most reliable in this context.

The results, indicating the intercensal amount of internal migration for Utah, shed some light on the urbanization process of the state. The findings, for the first time, demonstrate the volume and direction of

the internal migration for Utah during the first six decades of the twentieth century. The results may substantially contribute to the state's future socio-economic plannings. Beyond a purely demographic analysis of the significance of migration lies the broad realm of manpower economics, institutional plannings, city plannings, rural problems, transportation, pollution, and a score of others. The population factor, naturally, cannot be separated from these social phenomena. The trends and directions of migration can, therefore, be used when and where future plans are formulated and past trends are studied.

(111 pages)

I. INTRODUCTION

Nature of the Study

Population changes from one geographic unit to another within a certain boundary, or migration[1], plays an important role in the size, composition, and characteristics of a population. Excluding the natural factors, mortality and fertility, migration is the only factor affecting the size of a particular population. Unlike the natural growth which moves rather slowly and takes a considerable time in working out its consequences, migration can be very rapid in its effects, transferring a large number of people in a short period. Besides the direct effects of migration upon the size and composition of the population, there are other significant factors associated with migration. These factors encompass the broad network of interactions that take place in a population. The impact of migration affects the institutional patterns of a given population. Ira S. Lowry[2], through a systematic analysis of population changes due to migration, demonstrates the significance of this process. The study indicates the positive correlation of net migration to:

1. The demand for labor
2. Changes in the resident labor force
3. Military employment
4. School enrollment
5. Income changes

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[1]Dorothy S. Thomas, Research Memorandum on Migration Differentials, Bulletin 43 (New York: Social Science Research Council, 1938), p. 4.

[2]I.S. Lawry, Migration and Metropolitan Growth: Two Analytical Models (San Francisco: Chandler Publishing Co.,1966),pp. 42-50.

The role which migration plays in influencing the composition of a population through affecting its institutional patterns is important. As changes in labor force, production, consumption, income, and military employment affect the economic institutions, the school enrollment affects the educational institution; and a chain reaction of changes takes place which as James Beshers states:

> Demographic problems can occur when the transition to modern society is proceeding well. Changing age distributions put new stress on economy, especially in the form of services for dependent populations, young and old. Migration and urbanization also produce pressures for new public service configurations--occupational skills, housing, and transportation must meet new demands.[3]

Migrations take place on different scales, according to the geo-political units, and differential volumes, according to the size of the migratory groups. The scale of migration varies from those on an international level between countries, and those on internal subdivisions within a country. The volume of migration and its measurement is significant when it is investigated from the standpoint of "sending" and "receiving" areas and from the standpoint of the migrating group itself.[4]

The literature written and processes of migration studied have mostly dealt with migration on the international level. Recently, however, with restrictions upon international migrations and a greater mobility of population within the "national" boundaries, there has been

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[3]James M. Beshers, Population Processes in Social Systems (New York; The Free Press, 1967), p. 180.

[4]G. W. Barclay, Technique of Population Analysis (New York: John Wiley & Sons Inc., 1958), p. 246.

a greater concern with the internal aspects of migration.[5] The study of migrations, on an internal level, becomes important not only for its recent emphasis and concern with the processes involved, but mainly because data are not readily available.

The process of urbanization, particularly on an internal level, depends upon the movement of people to urban places. The volume of the migrants to the city imposes a demographic problem worth considering if the process of urbanization needs to be better understood. Kingsley Davis, with reference to internal migration, points out that: "Undoubtedly the chief form of internal migration, and hence the world's greatest movement of people, has been the rural-urban migration of the last two centuries."[6]

In the United States, rural-urban migrations have played an important role in the process of urbanization. As Thompson and Lewis indicate:

> The increasing rate of urban growth in the United States after the middle of the 1800's was primarily a consequence of net migration from rural areas and from other countries. . . . Until quite recently, in fact, migration was the reason usually advanced not only for urbanization but for nearly all urban growth.[7]

Following the pattern of urbanization in the United States, the State of Utah has witnessed a similar pattern of urbanization. The figures for Utah indicate that in 1860 the population was 79.5 per cent rural. However, in 1960 the rural population was only 25.1 per cent, and this contrasts the urban population of 74.9 per cent for the same year.[8]

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[5] Ibid.

[6] Kingsley Davis, Human Society (New York: The Macmillan Co., 1948), pp. 588-89.

[7] W. S. Thompson and D. T. Lewis, Population Problems (5th ed.; New York: McGraw Hill Book Co., 1965), pp. 149-50.

[8] Urban, according to the United States Census definition, includes areas of 2500 inhabitants or more. (For precise definition see p. 7.)

These figures indicate a relatively high degree of urbanization taking place in Utah during the first half of the twentieth century.

Unfortunately, however, there have been no attempts to measure the flow of migration on the state level, from rural to urban areas, in this process of urbanization. The lack of such studies was perhaps due to the unavailability of data and lack of proper methodological analyses for a systematic measurement of the internal rural-urban migrations.

It is the purpose of this study to measure the intercensal amount of migration from rural to urban areas of Utah, with reference to demographic variables between 1900 and 1960.

The significance of studying migrations on this level are manifold. First, inherent in the process of migration, there is the redistribution of the population in different localities varies, causing socio-economic changes that affect the public policies. Barclay summarizes this process by stating:

> A changing allocation of people is also a redistribution of their activities, and so it is associated with many sorts of economic and social change. Hence we often wish to compare the statistics of migration with the indices of social, economic, and technical change.[9]

Migration is also an attributing factor to the changes in the compostion of the population. Not all people migrate from one area to another at a given period,thus migration is a selective process. Those who migrate, be it in-migration or out-migration, constitute changes in the composition of the population. In this study, the number of migrants are estimated according to their age and sex at ten year (intercensal)

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[9] G. W. Barclay, Techniques of . . . , op. cit., p. 256.

intervals, thus facilitating the understanding of the effects of migration upon the state's population composition.

Of most importance in this study is measuring the effects of migration upon urbanization. Rural-urban migration is not only significant in the process of urbanization, but also upon the composition of the city population.

The study of urbanization through a historical approach may lead to indications of certain patterns or trends that may be useful in future programmings. If the migratory trends or patterns are understood, population projections may become more accurate and realistic.

Objectives

Thus, the specific objectives of this study are:

1. To measure the amount of net intercensal migration from rural to urban areas (1900 to 1960).

2. To estimate the selected demographic characteristics of the migrants.

3. To estimate the amount of natural population growth and the effects of net-migration on the rate of population growth in urban and rural areas.

4. To describe the growth of Utah's SMSA and to measure the effects of net rural-urban migration on the growth of Utah's standard metropolitan areas.

Hypothesis

The following specific hypotheses are tested in support of the objectives put forth regarding the nature of urbanization in Utah:

1. The urban populations of Utah gained a greater portion of their population through in-migration than from natural population growth.

2. Age and sex selectivity of the migrants in Utah follows that of the over-all United States trends.

3. Net-migration has been a controlling factor in population growth of the rural areas and complementary to the urban population growth.

4. Effects of net-migration on urbanization have been more significant in the early part of the twentieth century than in recent decades.

5. The natural growth of population has been more important in the process of urbanization in recent years.

To estimate the amount of intercensal migration in this study, the survival ratio method is used. The method includes: (1) the Census Survival Ratio method (CSR), and (2) the Life-Table Survival Ratio method (LTSR). The procedures are explained in detail in the methodological section.

Organization of the Thesis

Following this introduction, the second chapter of the thesis includes the literature related to this study and some theoretical background in the realm of urbanization. The methodology is discussed in Chapter 3. Chapter 4 illustrates the measurement of the migration through tables based upon the methodological framework and their results.

Chapter 5 presents the effects of net-migration on the population growth in rural and urban areas, and the detailed analysis of the findings. The final chapter includes the summary and recommendations regarding the thesis.

II. NATURE OF URBANIZATION

Concepts and Definitions

In order to understand the nature of urbanization, some concepts need to be defined and clarified:

Urban: The definition of "urban" varies a great deal depending upon the geographic setting. In the United States, according to the Bureau of the Census definition, any urbanized area or place of 2500 inhabitants or more is considered to be urban. Therefore, urban population is defined as:

> . . . All persons living in (a) places of 2500 inhabitants or more incorporated as cities, borough, villages, and towns . . . .; (b) the densely settled urban fringe, whether incorporated or unincorporated, of urbanized areas . . . (e) unincorporated places of 2500 inhabitants or more.[10]

The Standard Metropolitan Statistical Area (SMSA):

". . . is a county or group of contiguous counties which contains at least one city of 50,000 inhabitants or more, or "twin cities" with a combined population of at least 50,000."[11]

Urbanization: The definition of "urbanization" has been relatively controversial and dependent upon many factors. These factors vary in importance according to the value that is attached to them. High density of population in a geographic unit may be used as the significant factor in one definition, while the relationship and patterns of behavior may be the important aspects in another. In this study, W. S. Thompson's

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[10] U.S., Bureau of the Census, U.S. Census of Population: 1960, General Social and Economic Characteristics, United States summary, PC(1)--1C, p. VII.

[11] U.S., Bureau of the Census, U.S. Census of Population: 1960, Number of Inhabitants, United States summary, PC(1)--1A, p. XXIV.

definition of urbanization is utilized:

> . . .movement of people from communities concerned chiefly with agriculture to other communities, generally larger, whose activities are primarily centered in government, trade, manufacture, or allied interests.[12]

Theoretical Background

An a priori in understanding the concepts of rural and urban, and the process of urbanization, is the community. Community, in this context, goes beyond the current connotations and usage and encompasses a broader meaning. As Robert Nisbet points out:

> Community is founded on man conceived in his wholeness rather than in one or another of the roles, taken separately, that he may hold in a social order. It draws its psychological strength from levels of motivation deeper than those of mere volition or interest, and it achieves its fulfillment in a submergence of individual will . . .[13]

It is the community that gives rise to Tonnies' ideal types of Gemeinschaft-Gesellschaft, Durkheim's mechanical and organic, Ibn Khaldoun's Badavah and Omran, Becker's Sacred-Secular, Weber's Traditional-Rational, and Redfield's Folk-Urban. All the above mentioned concepts attempt to explain the nature of the community, and in this particular aspect they are in unity.

Theories of urbanization, beyond this general level, through empirical testings and deductions, attempt to explain the "real situation," and it is on this level that the different approaches in theory take place. In summary, then, the most fundamenal attempt to differentiate between types of human relationships lies within the broad scope of the human interactions.

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[12]W. S. Thompson, "Urbanization," Encyclopedia of the Social Sciences, XV 1935. p. 189.

[13]Robert A. Nisbet, The Sociological Tradition (New York: Basic Books, Inc., 1966), pp. 47-48.

The concepts of Gemeinschaft and Gesellschaft in Tonnies' typology, demonstrate such an attempt to explain these relationships:

> The relationship itself, and also the resulting association, is conceived of either as real and organic life--this is the essential characteristic of the Gemeinschaft (community): or as imaginary and mechanical structure--this is the concept of Gesellschaft (society).[14]

Within the same realm of thought, Durkheim distinguishes between the "mechanical" and "organic" through the concept of "the division of labor." Durkheim's analysis departs from Tonnies' in the methodological sense. The variables introduced in Durkheim's approach, such as law, religion, and contract, bring in more specific understanding as the new dimensions are introduced.[15] A similar approach is taken by George Simmel, as he uses "secrecy" as a dimension for distinction among communities. Simmel's approach in this respect is similar to Durkheim's, yet more specific and testable. In general Simmel is, in his analysis, more microscopic than macroscopic.[16] Such theoretical analysis on community differentials have followed the process of change from macro to micro with the advent of the scientific method. Randfield's folk-urban continuum demonstrates this direction in developmental processes of the above mentioned approaches, and will be discussed in detail later.

Other theorists have approached the rural-urban differentiations through economic variables, environmental differences, ecological patterns, and other points of reference within the institutional patterns of communities.

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[14]Ferdinand Tonnies, Gemeinschaft and Gesellschaft ("Community and Society"), tran. by Charles Loomis (East Lansing, Michigan: Michigan State University Press, 1957), p. 33.

[15]Emile Durkheim, The Division of Labor in Society, trans. by G. Simpson (Glencoe, Illinois: The Free Press of Glencoe, 1938), pp. 70-132.

[16]George Simmel, The Sociology of George Simmel, trans. and ed. by Kurt H. Wolff (Glencoe, Illinois: The Free Press of Glencoe, 1950), pp. 307-376.

Recently the ecological, socio-psychological, and organizational aspects of urban communities, in contrast to rural patterns, have been studied in detail. Otis Dudly Duncan's study of the ecological system with reference to population, environment, technology, and organization manifests the theoretical scheme used in the ecological school of thought.[17] Studies of urban organization and socio-psychological make-up of the communities were promoted by Louis Wirth in close association with Park and Burgess.[18]

Within the realm of urban theories, certain classifications are possible and necessary for systematic analysis. According to Sjoberg,[19] thoughts on urbanization could be classified into eight categories:

1. The Urbanization School

In this school of thought, the theoretical framework is based upon the hypothesis that a transition takes place as a society changes from rural to urban. The process involved in this transition is from an agrarian, feudal, or preindustrial way of life to an urban, capitalistic, or industrial order. Some theoreists who have used this approach are as follows: Wirth, Redfield, Simmel, Tonnies, Durkheim, and Max Weber.

2. The Subsocial School

The subsocial school or "the Chicago School" is developed by Park and Burgess. This type of theory takes into consideration the temporal

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[17] Otis D. Duncan, "Human Ecology and Population Studies," in The Study of Population, ed. by Phillip Hauser and Otis D. Duncan (Chicago, Illinois: University of Chicago Press, 1959), pp 681-84.

[18] See Louis Wirth, "Urbanization as a way of life," American Journal of Sociology, XLIV (July, 1938), pp. 1-24.

[19] Gideon Sjoberg, "Theory and Research in Urban Sociology," in The Study of Urbanization, edited by Phillip Hauser and Leo F. Schnore (N.Y.: John Wiley, 1965), pp. 157-178.

and spatial dimensions of man. An important factor of subsocial school is the impersonal competition to determine urbanization. The basic approach is similar to the urbanization school, however. This school is further divided into two categories: the Classical Economics and Social Darwinism. The first category stresses the economic factors with special emphasis upon the laissez-faire doctrine. Burgess is the theorist most associated with this school. The Social Darwinists incorporate a larger framework than those in the Classical Economics path. Park is the well known sociologist in this particular field.

3. The Ecological complex

The ecological complex has a broader scope than just the field of urban studies. Duncan, Schnore, Gibbs, and Martin are prominent among this school. Duncan and Schnore, in their ecological complex, include four variables: environment, population, social organization, and technology. Actually, McKenzie and Hawley were the founders of this school, which is developed from the "Chicago School." There is also evidence of Durkeimian influence with regard to his Division of Labor.

4. The Economic School

This school basically originates from theories of Karl Marx. An evolutionary framework is used in analysis and growth of cities with consideration of historical changes. Other than the Marxist approach, there is also another subdivision in this school which Shevky, Colin Clark, Bell, and Lacoste belong to. These writers use Colin Clark's Divisions of City Economics as their reference. Clark classifies economics into primary, secondary, and tertiary types as they are associated to urban structure.

5. The Environmental School

Pattrick Geddes and Lewis Mumford are the advocates of this school. The basic hypothesis involved in this kind of typology is that of the effects of the "Natural Environment" upon man. Man has to adjust to nature in order to survive or in other words, nature controls the actions of man. It should be recognized that this school of thought has not been widely accepted by sociologists.

6. The Technological School

The "Know How" knowledge of utilization is the basic concept of this school. Theoretically, the technological variable is given primary importance in this type of studies. Ogburn and Hawley are two who are associated with this school.

7. The Value-Orientation School

Social or cultural "values" are the emphasized determinants of urban structure in the value-orientation school. The changes in values and cultural norms are stressed in order to explain the variety of behaviors in different settings. Max Weber is the foremost sociologist in this field. Weber, through his writings, has emphasized that the values influence the size, heterogeneity and density of the city to a great extent.

8. The Social Power School

This school's theoretical framework is based upon "special interest." Therefore, the power, especially the political power, is an important criterion. Form is the originator of this theory as he emphasized the urban land-use pattern. With regard to the "power", it is significant to say that the political power is not the only variable, but religious, economic, and others such phenomena are also in the realm of "power" as such.

The "urbanization school," in Sjoberg's classification, corresponds to

the typology used by Reissman in showing the rural-urban comparisons. Reissman refers to this classification as "theories of contrast:"[20]

Author	Rural Category	Urban Category
Becker	Sacred	Secular
Durkheim	Mechanic Solidarity	Organic Solidarity
Maine	Status	Contract
Redfield	Folk	Urban
Spencer	Military	Industrial
Tonnies	Gemeinschaft	Gesellschaft
Weber	Traditional	Rational

The inherent factor in the theoretical scheme above, which corresponds to Sjoberg's typology is the aspect of "transition." Although there are conceptual differences, yet the transition from one category to the other (rural-urban) is the process at hand.

To provide more insight in differentiating between the rural and urban communities in light of urbanization and contrast theories, Redfield's folk-urban continuum could be used as an example. Redfield, in his well-known field study of the folk culture of Yucatan, represents distinct points of development from a rural to an urban society.[21] He studied four communities in order to explain his continuum that embodied evolutionary changes from a rural community at one pole to an urban center at the other. He studied these communities by using the following variables: size, isolation, homogeneity, heterogeneity, specialization, secularism, and others. His findings illustrated that at the folk pole there were homogeneity, isolation, and less specialization. On the other hand, at the urban pole, he recognized heterogeneity, secularization, and specialization. Redfield concluded that ten variables show the theoretical difference between

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[20] Leonard Reissman, The Urban Process (New York: The Free Press, 1964), p. 123.

[21] R. Redfield, The Folk Culture of Yucatan (Chicago: University of Chicago Press, 1941).

urban and rural areas. The following variables represent the urban difference from rural communities:

1. Less isolated
2. More heterogeneous
3. More complex division of labor
4. A developed money economy
5. Professional specialists who are more secular than sacred
6. Kinship institutions are less organized and less effective
7. Greater dependence upon impersonally acting institutions of control
8. Less religious
9. Less tendency of superstition toward sickness
10. Allowance of greater freedom of choice to the individual

Redfield then combined these variables into three categories to define his theory of urban change:

1. Increase in cultural disorganization
2. Increase in secularization
3. Increase in individualization

Redfield's theoretical scheme has been subject to cristicism,[22] but the points of concern have been more on the "cultural change" aspect of the transitional model. Once the theoretical and the ideal type significance of Redfield's continuum is not the subject of criticism, and the significance of the theory in the realm of urbanization in an historical and demographic sense is studied, much of the criticism could seem irrelevant.

Demographic Aspects of Urbanization

When a society is considered urban or rural by definition, there is

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[22]See Oscar Lewis, "Folk-Urban Ideal Types," in The Study of Urbanization, ed. by Phillip Hauser and Leo F. Schnore (New York: John Wiley, 1965) pp. 491-514.

a combination of characteristics that would differentiate between the two. The following part is designed to point out the characteristics based on these variables.

Size: Obviously, the term "urban" in itself generally incorporates a larger number of people living in a defined area. The size is an important and useful tool in determining the areas of urban character.

Age: The age of the people who constitute an area is a significant index as to the area's population composition, which in turn yields facts about much of the socio-economic variables. For example, the age distribution shows the number of people who are involved in economic activities or who are old age dependents and the number of dependent children. Age is also an important factor when considering the fertility and mortality of a population and its natural growth. It has been indicated that there are differences due to age distribution among rural and urban communities. For example, farm areas of the United States had more people in the age group 5-19 years, proportionally, than did the urban areas. Also, there are fewer people in farm communities who are in their reproductive years (20-44 years).[23]

Sex: An important and useful source for factual analysis of a population is its distribution between sexes. The sex ratio is used in studying a population's composition and characteristics and is a fundamental demographic variable. There are observed differences in sex distribution in rural and urban areas also. The rural population, for example, had more males in the age group of 20-24 years in 1960 than the urban areas, proportionally.

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[23]W. S. Thompson and D. T. Lewis, Population Problems, op.cit., pp. 158-59.

These differences become significant when the fertility and mortality rates for the respective areas are studied.

Other Variables: Many factors, other than size, age, and sex, such as economic characteristics of employment and occupation, the social characteristics of education, marital status, and race are valuable in studying a population. It is inevitable to notice differences, of one or more of the above factors, among the urbanized areas and rural places. As transition from rural to urban takes place in communities, migration plays the significant part. Rural-urban migration is the crux of the urbanization process. To understand this phenomenon is to understand the inherent aspects of migration and the migrants. As the urban process is studied in this nature, the results indicate the demographic aspects of urbanization. Chapter 4 includes such material as migration and its effects upon the population growth is discussed.

Urbanization in Utah: An Overview

Historically, Utah has followed the transition from a rural to an urban state. Bradford, Payne, and Lawson report that Utah's population was nearly 80 per cent rural in the late 1800's; however, by 1960 only 25 per cent of the state's population was classified as such.[24] These studies, however, have dealt with urbanization in a strictly general sense. The procedure has been to follow the number of people that have been classified as urban or rural at a given time, according to the census definition. There has been no attempts, in the above mentioned studies, to measure the actual amount of urbanization due to either natural growth of population or the amount of migration.

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[24]R. Bradford, J. Payne and J. Lawson, Utah Population, Bulletin 3 (Provo, Utah: Brigham Young University, 1963).

Undoubtedly, there has been a degree or urbanization taking place throughout the last hundred years, and its pattern has been similar to [illegible] United States. The following figures from the United States Bureau of the Census (1960) indicate the per cent of total Utah Population in rural and urban areas between 1850 and 1960:

Table I-A. Population of Utah, Urban and Rural, 1850-1960

Census Data	Per Cent of Total	
	Urban	Rural
1960	74.9	25.1
1950	65.3	34.1
1940	55.5	44.5
1930	52.4	47.6
1920	48.0	52.0
1910	46.3	53.7
1900	38.1	61.9
1890	35.7	64.3
1888	23.4	76.6
1870	18.4	81.6
1860	20.5	79.5
1850	----	100.0

Source: United States Census of Population, 1960; Utah, pp. 46-48.

Note: The percentages for the years 1950 and 1960 are tabulated by using the new urban definition of the Census Bureau.

Historical Growth of the Urban Communities

As Table I-A indicates, the urban areas of Utah have experienced a consistent and rapid growth. Henry H. Frost indicated this aspect in an early study on migration trends. He concluded for the period of 1920-1930, specifically, that urban areas experienced over all gains through young in-migrants. Whether these migrants came from rural areas of Utah or other states has not been measured accurately, due to the nature of the data. Frost based his calculations on the U.S. Census data and supplemented them by "death estimates from life-tables" in order to demonstrate the urban "gains" in population. Another significant variable which ought not to be overlooked is the fact that Utah lost considerable amounts of its people through net out-migration during the period of 1910-1940. The great amount of out-migration in this period has had effects upon the actual increase of the urban population. According to Frost, the great number of people who out-migrated, over 50,000 in the 1920's, and the ever increasing population of urban areas throughout this period indicates that a definite urbanization process has in effect been continued.[25]

Joseph A. Geddes in his study of migration in Utah points out the youth migration to cities as follows:[26]

> Small communities provide few job opportunities outside of agriculture. Very small communities, also, particulary where they are isolated, often fail to provide utilities and services found in the larger towns and cities. Certainly comforts and luxuries are less numerous. It is not a matter of surprise therefore that the smaller the town the larger the proportion of youth who left,

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[25] Henry H. Frost, To Have and to Hold . . ., Bulletin XXXLX-15 (Salt Lake City, Utah: University of Utah, 1948).

[26] Joseph A. Geddes, Migration: A Problem of Youth in Utah, Bulletin 323, (Logan, Utah; Utah State University, 1946), pp. 17-18.

Historical Growth of the Rural Communities

Frost has indicated that close to one-third of Utah's farm population out-migrated during the 1920's.[27] This is rather large out-flow of people from the rural areas. As the United States Bureau of the Census figures indicate, by 1920 the total population of Utah was distributed among rural and urban areas 52.0 and 48.0 per cent, respectively. By 1930, however, urban areas had the large proportion of the population, 52.4 per cent, as compared to 47.6 per cent living in the rural areas.[28] With reference to the fact that Utah lost a portion of its total population through out-migration during the same time period, the net loss of rural areas through migration becomes even more significant.

In a recent study by Huntsman, it is indicated that large numbers of Utahns left the state through out-migration between 1920 and 1940.[29] As Huntsman indicates, this relative out-migration may be due to the depressed economic conditions of the state. Nevertheless, it is significant to note that the rural areas of Utah witnessed a rather disproportionate loss of population through out-migration in the early part of this century, more specifically, between 1920 and 1940.

The rural areas, when studying migration, can be divided into two categories of "farm" and "non-farm." This division helps in detecting the streams of migration more accurately. In most cases, rate of out-migration from rural areas is higher among the "non-farm" residents. This is indicated by Shryock when he analyzed the figures of 1940 and 1950 censuses for the purpose of showing the size of streams of migration from rural areas.

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[27] Henry H. Frost, To Have . . . . op. cit., p. 17.

[28] U.S., Census Bureau, U.S. Census of Population: Characteristics of the Population (Utah: 1960), pp. 46-48.

[29] Rulon J. Huntsman, "Historical Study of Net Migration for Utah, 1870-1960", Unpublished Master's thesis, Utah State University Library, Logan, Utah (1968), p. 66.

He concluded that most of the rural migrants to urban areas came from the non-farm areas as compared to a small number who came from farm residences.[30] Frost also indicated a similar pattern of migration for Utah.

It could be concluded that, historically, the rural areas of Utah have experienced a net loss of population through migration.

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[30]Henry S. Shryock Jr., Population Mobility Within the U.S. (Chicago, Illinois: Community and Family Study Center, University of Chicago, 1964).

III. METHODOLOGY

Introduction

Estimates of migration vary according to the nature of the migration which is studied. When estimating the rural-urban migration within a state, as is the case in this study, two methods can be used. These methods, in the broad sense of the internal migration, are: (1) direct, and (2) indirect.[31] The direct method of estimating migrations which include the "transit statistics," "special surveys," and "registrations," usually lead to desirable and accurate results. However, such data are not readily available and require actual surveys and registration.

Such data are non-existing for Utah and therefore, the indirect methods of estimating net-migrations must be employed.

The indirect methods of estimating net-migration fall into four categories:

1. The vital statistics method
2. The place of birth method
3. The survival ratio method
4. The place-of-birth census survival ratio method[32]

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[31]For a detailed analysis of the methods see: D. J. Bogue, "Internal Migration, in The Study of Population, ed. by Phillip Hauser and Otis Duncan (Chicago, Illinois: University of Chicago Press, 1959) pp. 491-99. Also, Y. Kim, "The Population of Korea, 1910-1945", Doctoral dissertation, Australian National University, Department of Demography (1966), p. 349. Also, G. W. Barclay, Techniques of . . . , op. cit., pp. 246-58.

[32]For analysis of the four methods see Y. Kim, "Population of Korea. . ," op. cit., pp. 349-355.

For the purposes of this study, the survival ratio method manifests more applicability and precision. The reasons for preferring the method over the others are basically the nature of the data available, and also the higher degree of reliability of the estimations. The survival ratio method is basically developed to determine the amount of net internal migration on the national level. The Census survival ratio method incorporates three basic assumptions that need to be mentioned in this methodological context:

Assumption 1: The national population is considered closed.

Assumption 2: Specific mortality rates are the same for the subdivisions of the country.

Assumption 3: The proportion of the census population in the age-sex groups of the national population is similar at the time of both censuses.[33]

It should be pointed out, also, that the survival ratio is actually a complement of the mortality rate. To obtain a survival ratio, census figures for the two consecutive censuses are needed. This method can be best explained in the following way:

$$\text{Survival ratio} = \frac{\text{Population of Utah males 20-24, 1960}}{\text{Population of Utah males 10-14, 1950}}$$

The survival ratio obtained for the intercensal period of 1950 to 1960 indicates the census survival rate for Utah males aged 10-14 in 1950 through ages 20-24 in 1960. This is a "forward census survival ratio," for the numerator is a population at a given census and the denominator

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[33]E. S. Lee and Ann S. Lee, "Internal Migration Statistics for the United States," Journal of the American Statistical Association, LV (1960), pp. 664-697.

in the number ten years younger at the previous census.[34]

The application of the census survival ratio method on the state basis, as is the case in this study,needs further assumptions which are important from the methodological point of view. Since in this study the state's population is not actually closed, then the assumption follows that: the migration on the interstate level (to or from the state) are proportionately the same for both rural and urban areas. A second assumption, following the previous assumption inherent on a national level, follows that: the specific mortality ratio in the state is the same for rural and urban areas. Thirdly, it is assumed that the proportion in each age-sex group of the enumerated population, whether it is rural or urban, is the same at each census. The above discussion and assumptions explain the procedure involved in estimating the survival ratio based on census figures or the "census survival ratio method." A second method of using survival rates is that of the life-table survival ratio method. Both methods are used widely, but the census survival ratio is usually preferred by demographers.[35]

The life-table survival ratio method or the (PX) values in a life table are basically the same as the census survival ratio, but are calculated differently. The life table values are derived when a life table is constructed to follow a hypothetical cohort from birth to death. The data for the life table survival values are smoothed and adjusted and the cohort in the life table is closed, so the mortality schedule is fixed in advance.[36]

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[34] E. S. Lee, et al. Population Redistribution and Economic Growth, United States, 1870-1950, (Vol. 1; Philadelphia, Pennsylvania: American Philosophical Society, 1957).

[35] C. H. Hamilton and F. M Henderson, "Use of the Survival Rate Method in Measuring Net Migration", Journal of the American Statistical Association, XXXIX (1944), pp. 197-206.

[36] E.S. Lee, et al., Population Redistribution . . , op. cit., pp. 25-27.

For the purposes of this study of internal migration for Utah, an interesting methodological aspect developes when both the census and the life table survival ratios are used. Due to the nature of the life table values, the factor of interstate migration becomes inherent in the (PX) values. However, the census survival ratios are not adjusted for any amount of actual migration. Thus, a comparison of the life table estimates of migrations and that of the census survival ratio estimates lead to an indication of the amount of inter-state migration and their effects upon the process of in-migration to the urban areas.

To estimate the amount of net migration, the survival ratio obtained from the census figures or the life tables is used in the following context:

The survival ratio, multiplied to the enumerated population at the beginning of the intercensal period, yields the expected population for the end of the intercensal period. A comparison of the estimated population for the given period to the actual population enumerated at that period indicates the estimated amount of migration.

The above procedure can be expressed as:

$$tMo = Pt - (S.Po)$$

where

M = the net-migration between time (t) and time (o)

Pt = the population at time (t)

S = survival ratio as it is applied to:

Po = population at time (o).[37]

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[37]See Y. Kim, Population of Korea . . ., op. cit., Appendix A, p. 351.

The process by which the survival ratios from the life table and the census survival ratios is used is precisely the same as it is shown in the above formula.

The inherent factor of estimating inter-state migration, however, could be calculated by comparison of the two findings. The estimates of migration by the CSR method indicates the amount of rural-urban migration within the state only. The L.T.S.R. method, however, estimates the amount of migration to the urban areas from the rural and also from other states. Thus, a comparison of the two estimates indicates the urban out-of-state in or out migrants.

Reliability: When using either the CSR or the LTSR, there are certain factors and errors that effect the reliability of the estimations. For example, the consistency of the census figures based on enumeration is alwys a hindering factor. However, most demographers agree that the migration estimates based on census survival rates and life table survival rates are basically reliable, although the elimination of all error is improbable.

The census survival ratios when applied to a closed population are preferred over the life table survival ratios for a few reasons, however. As Hamilton and Henderson point out, the census survival rates have the advantage of a correction factor when errors due to age reporting occur in the census.[38] Lee also indicates the superiority of census survival ratios, in studying net-migrations, over the life table survival ratios. He points out a few reasons for each preference among which are the following:

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[38]C.H. Hamilton and F. M. Henderson, "Use of Survival Ratio . . ", op. cit., p. 200.

1) Prior to 1900, no official life tables were available for states.

2) Most of the life tables do not cover a decade which they represent, but only a two to three year period. This overlooks the factor of the lowering mortality that is evidenced particularly in the early 1900's.

3) The data used in the life tables are smoothed and corrected figures to census data, which are not corrected, may lead to highly misleading migration estimates.[39]

The assumption is, therefore, that the census survival ratio is a better method of estimating net migration. The estimated Utah survival rates for the period of 1900 to 1960, calculated from the Census figures (C.S.R.) and life tables (L.T.S.R.), are included in the appendix.

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[39] E.S. Lee, et al., Population Redistribution . . , op.cit., p. 256.

IV. MEASUREMENT OF NET RURAL-URBAN MIGRATION

Estimate of the Net Migration by Age and Sex

As mentioned previously, net migration to urban areas is measured by the survival ratio methods. This procedure measures the amount of migration by age and sex. The following tables indicate the amount of migration as measured by the census and life table survival ratio methods. The data, census figures, have imposed some limitations upon the measurement of migration by age categories for the 1900-1910 intercensal period because the Census data are not available for separate age group categories. Since the figures for the rural and urban populations of the state for the year 1900 are not available for specific age categories, the amount of migration is measured for the total respective population by applying the total survival ratio of the state. Using survival ratios for measurement of migration imposes another type of limitation inherent in this method which is the inability of measuring the net-migration for the first two age groups of 0-4 and 5-9. The limitations involved in this respect, and the methods used to overcome this problem are dicussed in detail in the Appendix.

1. The Census Survival Ratio Method:

The following tables (Tables 1-6) show the estimates of net rural-urban migration for each intercensal period by C.S.R. between 1900 and 1960. In-migrations or out-migrations are indicated by a positive (+) or negative (-) sign, respectively.

Table 1. Net migration estimates to urban areas from Census Survival Ratio Method, Utah 1950-1960.

Age	Male	Female	Total (Both Sexes)
0-4	+ 1864	+ 1902	+ 3766
5-9	+ 4666	+ 4760	+ 9426
10-14	+ 3828	+ 4105	+ 7933
15-19	+ 4634	+ 5773	+10407
20-24	+ 5722	+ 7068	+12790
25-29	+ 5280	+ 3645	+ 8925
30-34	+ 1978	+ 1282	+ 3260
35-39	+ 1633	+ 1818	+ 3451
40-44	+ 1869	+ 1817	+ 3686
45-49	+ 1702	+ 1837	+ 3539
50-54	+ 1551	+ 1520	+ 3071
55-59	+ 1193	+ 1150	+ 2343
60-64	+ 875	+ 1000	+ 1875
65-69	+ 752	+ 925	+ 1650
70-74	+ 659	+ 700	+ 1359
75-79	+ 361	+ 408	+ 769
80-84	+ 206	+ 266	+ 472
85 +	+ 98	+ 174	+ 272
TOTAL	+38,871	+40,150	+79,021

Table 2. Net migration estimates to urban areas from census survival ratio method, Utah 1940-1950.

Age	Male	Female	Total (Both Sexes)
0-4	+ 1531	+ 1471	+ 3002
5-9	+ 3457	+ 3322	+ 6779
10-14	+ 2390	+ 2547	+ 4937
15-19	+ 2800	+ 4171	+ 6971
20-24	+ 5412	+ 6331	+11743
25-29	+ 5263	+ 4390	+ 9653
30-34	+ 3255	+ 1953	+ 5208
35-39	+ 1912	+ 1353	+ 3265
40-44	+ 1424	+ 1379	+ 2803
45-49	+ 1338	+ 1338	+ 2676
50-54	+ 1293	+ 1126	+ 2419
55-59	+ 1046	+ 1056	+ 2102
60-64	+ 944	+ 928	+ 1872
65-69	+ 721	+ 796	+ 1517
70-74	+ 480	+ 540	+ 1020
75-84	+ 388	+ 442	+ 830
85 +	+ 57	+ 70	+ 127
TOTAL	+33,684	+33,213	+66,897

Table 3. Net migration estimates to urban areas from census survival ratio method, Utah 1930-1940.

Age	Male	Female	Total (Both Sexes)
0-4	+ 226	+ 217	+ 443
5-9	+ 1210	+ 1163	+ 2373
10-14	+ 922	+ 998	+ 1920
15-19	+ 1351	+ 1974	+ 3325
20-24	+ 1930	+ 3060	+ 4990
25-29	+ 1940	+ 1783	+ 3723
30-34	+ 1141	+ 450	+ 1591
35-39	+ 532	+ 215	+ 747
40-44	+ 319	+ 410	+ 729
45-54	+ 845	+ 804	+ 1649
55-64	+ 621	+ 572	+ 1193
65-74	+ 437	+ 441	+ 878
75-84	+ 228	+ 182	+ 410
85 +	+ 23	+ 22	+ 45
TOTAL	+11,725	+12,291	+24,016

Table 4. Net migration estimates to urban areas from census survival ratio method, Utah 1920-1930.

Age	Male	Female	Total (Both Sexes)
0-4	+ 726	+ 657	+ 1383
5-9	+ 2027	+ 1834	+ 3861
10-14	+ 1841	+ 2092	+ 3933
15-19	+ 1648	+ 2512	+ 4160
20-24	+ 2060	+ 3208	+ 5268
25-29	+ 1786	+ 1962	+ 3748
30-54	+ 4056	+ 2904	+ 6960
55 +	+ 787	+ 858	+ 1645
TOTAL	14,931	+16,207	+31,138

Table 5. Net migration estimates to urban areas from Census Survival Ratio Method, Utah 1910-1920.

Age	Male	Female	Total (Both Sexes)
0-4	+ 450	+ 399	+ 849
5-9	+ 1110	+ 984	+ 2094
10-14	+ 703	+ 951	+ 1654
15-19	+ 979	+ 1664	+ 2643
20-44	+ 3185	+ 3802	+ 6987
45+	+ 952	+ 1451	+ 2403
TOTAL	+ 7379	+ 9251	+16,630

Table 6. Net migration estimates to urban areas from census survival ratio method, Utah 1900-1910*

Age	Male	Female	Total (Both Sexes)
All ages (Total)	+35,330	+33,130	+68,460

* Due to lack of specific data, total survival ratio was used to obtain net migrations.

2. The Life Table Survival Rate Method:

The estimates of net migration, by age and sex, in the following part are only different because of the usage of life table survival rates rather than the census survival rates (Table 7-11). The procedure, as pointed out in the section on methodology, is the same. Limitations have been more pronounced in calculating the net-migration by this method due to two major reasons.

In the first place, life tables constructed for the state were only available for the three decades of 1930 to 1940, 1940 to 1950, and 1950 to 1960.

Secondly, there were no available life table figures for the 1900-1910 period to calculate the net-migration for this particular decade. Also, in order to arrive at the estimates of migration for period of 1910 to 1920 and 1920 to 1930, the United States life table constructed by Lee were used.[40] These figures could be applied with a certain degree of reliability since the Utah life table survival rates and that of the United States were surprisingly close.

The following tables illustrate the estimates of net intercensal internal migration by the life table survival ratio method for Utah 1920 to 1960.

It needs to be mentioned here that the L.T.S.R. method included the amount of out of state migrations. Therefore, differences between the two results, C.S.R. and L.T.S.R., show the estimations of migration to urban areas from other states.

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[40] E.S. Lee, et al., Population Redistribution . . , op.cit.

Table 7. Net migration estimates to urban areas from life table survival ratio method, Utah 1950-1960.

Age	Male	Female	Total (Both Sexes)
0-4	+ 1728	+ 1763	+ 3491
5-9	+ 4350	+ 4438	+ 8788
10-14	+ 4280	+ 4927	+ 9207
15-19	+ 4049	+ 7198	+11247
20-24	+ 4127	+ 8055	+12182
25-29	+ 5906	+ 3378	+ 9284
30-34	+ 2849	+ 888	+ 3737
35-39	+ 1667	+ 2041	+ 3708
40-44	+ 2404	+ 2119	+ 4523
45-49	+ 2150	+ 1929	+ 4079
50-54	+ 1692	+ 1441	+ 3133
55-59	+ 1440	+ 1460	+ 2900
60-64	+ 984	+ 1077	+ 2061
65-69	+ 1088	+ 1156	+ 2244
70-74	+ 973	+ 987	+ 1960
75-79	+ 511	+ 494	+ 1005
80-84	+ 251	+ 400	+ 651
85 +	+ 106	+ 88	+ 194
TOTAL	+40,555	+43,839	+84,394

Table 8. Net migration estimates to urban areas from life table survival ratio method, Utah 1940-1950.

Age	Male	Female	Total (Both Sexes)
0-4	+ 1452	+ 1396	+ 2848
5-9	+ 3375	+ 3243	+ 6618
10-14	+ 3377	+ 3660	+ 7037
15-19	+ 2755	+ 4846	+ 7601
20-24	+ 4574	+ 6607	+11181
25-29	+ 4705	+ 3807	+ 8512
30-34	+ 3417	+ 1673	+ 5090
35-39	+ 2808	+ 1960	+ 4768
40-44	+ 2386	+ 1867	+ 4253
45-49	+ 1995	+ 1458	+ 3453
50-54	+ 1872	+ 1331	+ 3203
55-59	+ 1286	+ 919	+ 2205
60-64	+ 1188	+ 906	+ 2094
65-69	+ 1113	+ 1078	+ 2191
70-74	+ 601	+ 505	+ 1106
75-84	+ 454	+ 950	+ 1404
85 +	- 19	+ 9	- 10
TOTAL	+37,339	+35,715	+73,054

Table 9. Net migration estimates to urban areas from life table survival ratio method, Utah 1930-1940.

Age	Male	Female	Total (Both Sexes)
0-4	+ 279	+ 268	+ 547
5-9	+ 1499	+ 1440	+ 2939
10-14	+ 906	+ 872	+ 1778
15-19	+ 621	+ 1323	+ 1944
20-24	+ 293	+ 1478	+ 1771
25-29	+ 251	- 223	+ 28
30-34	- 211	- 1186	- 1397
35-39	+ 82	- 340	- 258
40-44	- 210	_ 25	- 235
45-54	- 293	- 219	- 512
55-64	- 20	- 6	- 26
65-74	+ 541	+ 667	+ 1208
75+	- 126	- 314	- 440
TOTAL	+ 2612	+ 3735	+ 6347

Table 10. Net migration estimates to urban areas from life table survival ratio method, Utah 1920-1930

Age	Male	Female	Total (Both Sexes)
0-4	+ 1045	+ 927	+ 1972
5-9	+ 3046	+ 2701	+ 5747
10-14	+ 1795	+ 2216	+ 4011
15-19	+ 1069	+ 2099	+ 3168
20-24	+ 1143	+ 2373	+ 3516
25-29	+ 944	+ 764	+ 1708
30-54	+ 1647	+ 1	+ 1648
55 +	+ 449	+ 840	+ 1289
TOTAL	+11,138	+11,921	+23,059

Table 11. Net migration estimates to urban areas from life table survival ratio method, Utah 1910-1920

Age	Male	Female	Total (Both Sexes)
0-4	+ 524	+ 465	+ 989
5-9	+ 1293	+ 1146	+ 2439
10-14	+ 1104	+ 1281	+ 2385
15-19	+ 594	+ 1614	+ 2208
20-44	+ 1760	+ 3095	+ 4855
45 +	+ 623	+ 1586	+ 2209
TOTAL	+ 5898	+ 9187	+15,085

Comparison and Analysis of the Results

The estimates of net migration in the above tables indicates a small net migration for urban Utah from other states. Special emphasis is given to the net-migrants observed through the C.S.R. method for analytical purposes.

To establish a framework, when analyzing the results of the measurement of net migration by C.S.R., reference to the hypotheses put forth (Ch. 1, p. 6) serves as a tool to be systemical in the analogies. It was hypothesized, in the first place, that the "rural areas of the state have lost a portion of their population to other areas due to out-migration." This out-migration has been observed over the years and indicated explicitly by Bradford, Payne, Lawson and others.[41]

The estimated figures of migrations to urban areas, as arrived at in this study, clearly point out such an out-migration from the rural areas. Table IV-A shows the amount of estimated net in-migration to urban areas that occurred between 1900 and 1960.

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[41] R. Bradford, J. Payne, J. Lawson, Utah Population, op. cit., Also, R. J. Huntsman, "Historical Study of . . . ", op. cit.

Table IV-A. Net migration estimates to urban areas of Utah between 1910 and 1960.

Date	Amount of Urban In-migrants (Both Sexes) (By C.S.R.)	(By L.T.S.R.)	Net-migration for urban areas of Utah from or to other states
1910-1920	+16630	+15085	-1545
1920-1930	+31138	+23059	-8079
1930-1940	+24016	+ 6347	-17669
1940-1950	+66897	+73054	+ 6157
1950-1960	+79021	+84394	+ 5373
Total	+217702	+201939	-15763

The above figures clearly indicate an out-flow of people from the rural areas. These figures, therefore, confirm the hypothesis that there actually has been an amount of out-migration from the rural areas of Utah in this century. The last column above indicates urban Utah's interstate migration. As it is evidenced, for the period of 1910-1940 urban areas of Utah lost a portion of their population to other states. However, for the period of 1940-1960, there was a gain in urban population due to in-migration from other states.

Of the 286,162 people who migrated to the urban areas of the state between 1900 and 1960 (by C.S.R. Method), 144,242 were males and 141,920 were females. The sex differentiations among the migrants for each intercensal period is:

Table IV-B. Estimated amount of urban in-migrants by sex from 1900-1960.

Date	Estimated number of in-migrants to urban areas[a]		
	Males	Females	Total (Both sexes)
1900-1910	33,130	35,330	68,460
1910-1920	9,251	7,379	16,630
1920-1930	16,207	14,931	31,138
1930-1940	12,291	11,725	24,016
1940-1950	33,213	33,684	66,897
1950-1960	40,150	38,871	79,021
Total	144,242	141,920	286,162

[a]Estimated by the Census Survival Ratio method

The destination of the migrants, theoretically assumed, has been towards the urban places in the state. It is assumed that the out-migrants have been urban bound, because it was a basic assumption in measuring the amount of migration, that the population of the state was closed, meaning that inter-state migrations were ignored. As pointed out before in the methodological part, this assumption has to be made when measuring the internal migration due to the limitation of such migratory measurements by the methods available. The actual destination of the migrants can be known accurately only if proper "registrations" are kept. Registration is the recording of the events such as births, deaths, migration, marriages, etc.; as they occur. A "register" has a permanent entry for each person

and is an expensive process, as Van den Brink explains.[42]

Another hypothesis was that "migrants are mostly young people aged twenty to thirty-four, for both sexes," On data given in Tables 1-12 in Chapter IV, Part A, confirm the hypothesis. The volume of migrants in the extended age group of twenty to forty-four surpasses any other age group, may it be younger or older. The reasons for larger numbers of migrants in the younger age groups may be attributed, basically; to socio-economical opportunities in urban areas where industrialization is more pronounced may be considered as a strong "pull" factor which attracts the young people to seek employment there.

Table IV-C indicates the age differentials of the migrants in different intercensal periods:

Table IV-C. Age distribution of the migrants to urban areas of Utah, 1920-1960.

Age groups	Number of migrants[a] at the end of intercensal period[b]				
	1920	1930	1940	1950	1960
0-9	2,943	5,244	2,816	9,781	13,192
10-19	4,297	8,093	5,245	11,908	18,340
20-44	6,987	15,976[d]	11,780	32,672	32,112
45-59	2,403[c]	1,736[e]	1,649[f]	7,197	8,953
60+			4,166[g]	5,366	6,397

a: estimated number of migrants by C.S.R.
b: no estimates are obtainable for the 1910 period due to the nature of the data (lack of age group breakdowns)
c: age group 45+
d: age group 20-54
e: age group 55+
f: age group 45-54
g: age group 55+

[42] T. Van den Brink, "Population Registers and Their Significance for Demographic Statistics," Proceedings of the World Population Conference, 1954-1955, (New York: 1955), pp. 907-922.

The psychological impacts of the "city life" in general may be important in attracting the young people. The emphasis upon higher education and location of the major universities could also be regarded as a significant factor for the more pronounced movement of the people in younger age groups to the city. Economical opportunities,however; may overshadow all other factors in explaining the large volume of migration, in younger age groups, to the urban areas.

It was hypothesized, furthermore, that the "effects of net-migration on population growth is larger in rural areas than in urban areas." Ignoring the factor of migraion, only births and deaths in a population affect the population growth. When migration, particularly in the younger age groups, takes place; it alters the structural base of the population and consequently changes the rate of the population growth. Since the proportion of the rural population in Utah has evidenced a downward trend, the effects of out-migration have become more pronounced. Having a drain of young people from the rural areas results in smaller proportion of people in the reproductive ages which affects the rate of growth. When comparing the rural and urban populations of Utah, and the relative small size of the rural communities, it becomes obvious why the effects of net-migration are greater in the rural areas. Furthermore, since this process has continued over a period of years; the impact is more pronounced and has long range effects in the process of population growth. Considering the large agglomeration of population in the urban areas of Utah (74.9 per cent of the total population in 1960), the effects of rural-urban migration are less pronounced there when compared to the rural population.

The fourth hypothesis was that the "effects of net-migration on urbanization have been greater in the early part of the twentieth century."

This, indeed, has been the case as the estimated figures indicate. The actual number of migrants has been greater in recent years, but due to the size of the population, the ratio of migrants to the total population is smaller. While between 1900 and 1910, 68,460 persons migrated as compared to 79,021 in 1950 to 1960, the number of migrants in the earlier decade is by far more significant. (See Tables 1 and 6)

The following figures show the volume of the migration in 1900-1910 and 1950-1960.

Period	Estimated number of the migrants (C.S.R.)	Percent of the states total population
1900-1910	68,460	18%
1950-1960	79,021	8%

The above figures serve as indexes to show the relative importance of rural-urban migration in Utah in the earlier part of the century. This phenomenon leads to the concluding hypothesis, that the "natural growth of population has been more important in the process of urbanization in recent years." The effects of actual net-migration are less pronounced towards the latter half of the twentieth century due to a larger state wide population in the urbanized areas. This factor gives the relative importance to the natural population growth. The reason, as partly mentioned already, for the significant rate of the natural population growth in the urbanization process of the recent years is basically the large base of the population. In the first place, with about 75% of the state population in urbanized areas, most reproduction takes place there, causing the natural growth of the population to be more important. Secondly, the number of the migrants, although relatively

large, fails to overshadow the amount of natural growth in the urban areas. The observed birth rates for the state, as pointed out by Kim and Black help in understanding the process of natural growth of the population.

> In Utah, crude birth rates were about 30 per thousand population before 1922, and declining to about 24 by 1929. Between 1930 and 1942, the crude birth rate of Utah was below 25. However, the rate increased to 27.6 in 1942 and reached a peak of 33.4 in 1947, and remained high throughout the 1950's.[43]

Furthermore, they point out that between 1930 and 1950, the crude birth rate (CBR) for the state increased by 10.1 percent and 6.8 percent increase of net reproduction rate (NBR) was evidenced as well, while holding mortality constant at the level of 1959-61.[44] The previous points added to the effects of post-war higher fertility rates, serve as indexes to point out the relative importance of the natural growth when the process of urbanization in recent decades is studied.

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[43] Y. Kim and T. R. Black, "The Age Pattern of Marriage and the Trends of Birth in Utah," Proceedings of the Utah Academy of Science, Arts and Letters, XLIV-1 (Logan, Utah: 1967), pp. 96-97.

[44] Ibid., p. 97.

V. EFFECTS OF NET MIGRATION ON POPULATION GROWTH

Migrations affect the composition and characteristics of a population. Within the process of migration, there is an inherent factor directly influencing the nature of the population growth. Any changes in the age structure of a population, particularly among the age structures of the female population in their reproductive ages, constitute variations in the rate of the population growth; let alone the changes anticipated otherwise.

The sex distribution of a population is another factor which determines the future growth of the communities. The "selective" aspect of the migrating population, therefore, affects the sex ratio and consequently leads to redistribution of sexes.

The migration data, (previous chapter), are helpful to illustrate the effects of the migration on population growth. The estimated rates of migration and the rate of natural population growth combined, shed some light in understanding the population growth of rural, urban, and metropolitan areas. In the latter case of the metropolitan development, data pertaining to the in-migration is quite significant as migration has played an important part in the population growth of the standard metropolitan areas. The following sections include effects of both the natural population growth and the role of migration in urban, rural, and metropolitan areas of Utah.

Growth of the Urban Communities

1. Trends

Historically, the urban communities of Utah have been growing. The

significance of this phenomenon lies in the rapid rate of growth observed throughout the past century. The general rural-urban composition of the population in Utah has changed from a 100% rural population in 1850 to 74.9% urban in 1960. The trends toward urbanization in Utah have followed the overall such trends for the United States in general. As Fava and Gist indicate:

> In 1790, the year of the first census, only one in 20 inhabitants was classified as urban; in 1960, seven out of ten persons were so classified. Nineteen hundred and twenty is an important date in the onward march of urbanism, for it marks the first time in the history of the United States that half its population was classified as urban.[45]

It is significant to note that Utah also, for the first time, passed the 50% mark in her urban population between 1920 and 1930. It is also important to point out that since the 1920's, the process of urbanization in Utah has witnessed a more rapid growth than that of overall U.S. figures. The following table illustrates this process through comparing the percentage of Utah's urban population and that of the United States since 1900.

Table V. Per cent of Population Urban, United States and Utah, 1900-1960

Date	U.S.*	Utah**
1900	39.7	38.1
1910	45.7	46.3
1920	51.2	48.0
1930	56.2	52.4
1940	56.5	55.5
1950[a]	64.0	65.3
1960[a]	69.9	74.9

*Source: Gist and Fava, Urban Society . . . , p. 50.

**Source: U.S. Census of Population 1960: Utah, pp. 46-48
a: New urban definition of the Census Bureau

[45] N.P. Gist and S. F. Fava, Urban Society, (New York: Thomas Y. Crowell Co., 1967), p. 48.

The above figures clearly point out the rapid rate of urbanization that occurred in Utah in this century. The 9.8% increase of urban population between 1940-1950 period and the 9.6% increase of 1950-1960 decade points out the continuation of the rapid trends of urbanization in the state.

2. Effects of Natural Growth:

The effects of natural growth of the population, as urbanization in the State of Utah is studied, have not been the same. Looking at the enumerated population of urban Utah between 1910 and 1960, and comparing it to the estimated figures of in-migration to the urban areas for the same period, help in understanding the natural growth of the urban areas. In essence, therefore, the factor of in-migration is introduced to show the process of natural growth:

Table V-A. Effects of migration and natural growth of population on the urban population of Utah 1920-1960.

Date	En. Pop.*	Total Growth	Amount of** Migration	Amount of Natural Growth	% of growth due to migration	% of growth (natural)
1960	667158	217303	79021	138282	36.4%	63.6%
1950	449855	144352	66897	77465	46.4%	53.6%
1940	305493	39229	24016	15213	61.3%	38.7%
1930	266264	50680	31138	19542	61.5%	38.5%
1920	215584	42650	16630	26020	39.0%	61.0%

*U.S. Bureau of Census figures of enumerated population

**Estimated intercensal migration by C.S.R.

The figures in column four indicate the estimated amount of migration to the urban areas. Column two shows the actual enumerated population as taken from the census figures. By comparing the amount of in-migration to the enumerated population, the effects of natural growth are more readily observed. The following serves as an illustration to point out the amount of natural growth:

The volume of migration, as estimated, was 31138 for the 1920-1930 period and 79,021 for the 1950-1960 decade (refer to table above); however, the urban population of 1930 for the state was enumerated to be 266264 as compared to the 667,158 for 1960. The amount of migration for 1920-1930 period is 61.5% fo the urban growht as compared to 36.4% for the 1950-60 period. These figures serve as an example to point out the more pronounced role of the natural growth of the urban population in the later decades as compared to the more important effect of migration in the earlier periods. Therefore, in accordance with the hypothesis, the effects of natural growth in the urban areas is the significant factor for the population growth in recent decades. In the earlier periods of this century, however, the growth of the urban population is less indebted to the natural growth as opposed to the significant factor of in-migration from the rural places.

3. Effects of Net Migration

Other than the natural growth of population, which is through reproduction, in-migrations cause increases in a population.

The historical growth of the urban communities in Utah, other than the natural growth phenomenon, is responsible to the process of in-migration. As pointed out earlier, the estimates of net-migration show an in-flow

of migrants to the urban areas. This flow of the migrants has been a continuous process. The relative importance of in-migration is evidenced to have been in the earlier part of this century.

In estimating the amount of migration between rural and urban areas of the state, in this study, the observed figures point out to a relative large number of migrants pouring into the urban areas of the state at each decade of this century.

As pointed out previously, most of the in-migrants are estimated to have been in the younger age groups (refer to Table IV-C). The large number of young migrants obviously, affects the socio-economic structure of the urban communities. This factor is significant since the composition of the labor force is directly affected by the in-coming migrants.

Other than the economic factors, migrants tend to influence the urban population in other ways. This factor is illustrated by Barclay as follows:

> Urban migration tends to be the most selective. People usually go to cities for rather specific purposes. Especially in an industrializing agricultural region, the city offers a set of inducements that is perculiar to urban environment. This is revealed in the distinctive occupational composition of city populations, and perhaps in the age and sex composition of the migration.[46]

There are, also, socio-psychological factors related to rural-urban migration that may lead to disorganization as Gist and Fava point out.[47] From a theoretical point of view, changes from rural to urban may result in increase of cultural disorganization, increase secularization, and increase in individualization (refer to Chapter II).

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[46] G. W. Barclay, Techniques of . . . , op. cit., pp. 260-261.

[47] N.P. Gist and S. F. Fava, Urban Society, op.cit., p. 467.

These factors, apart from the demographic variables which have been the focal point of interest in this study, are related to the behavior and background of the rural migrants moving to urban areas.

The role of in-migration to the urban areas of the state becomes more clear as the net gain in urban areas is contrasted to the out-migration for the state as a whole.

In his thesis, Huntsman indicates that the net-migration for the state has been as follows:[48]

Table V-B. Net intercensal migration for the state 1910-1960.

Year	Net Migration[a] (State)
1910-1920	- 1,014
1920-1930	- 38,765
1930-1940	- 37,800
1940-1950	+ 7,760
1950-1960	+ 2,535

[a]Estimated by the census survival ratio method

In the study here, the estimates show that the urban population growth due to the migration has been as follows:

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[48]R. J. Huntsman, "Historical Study of . . ," op. cit., p. 82.

Table V-C. Net intercensal migration to urban areas of Utah 1910-1960

Year	Net Migration[a] (to urban areas)
1910-1920	+ 16,620
1920-1930	+ 31,138
1930-1940	+ 24,016
1940-1950	+ 66,897
1950-1960	+ 78,921

[a] Estimated by the census survival ratio method

Huntsman's estimates indicate a flow of out-migrants between 1910 and 1940 from the state and small gains for 1940-1960 decades. However, the urban population of the state has gained consistenly between 1910 and 1960. The above figures clearly point out the significant effects of the net migration on the urban population of the state. Although there has been a drain of state population through out-migration, particularly in such large numbers in 1920-1930 and 1930-1940 decades, yet the urban population of the state gained, significantly, throughout the same time period.

Effects of net migration, therefore, have been quite pronounced and suggestive in the urbanization processes of the state.

The Rural Communities

1. Trends

It has already been indicated that the state's rural communities have lost a portion of their population consistently through out-migration.

Frost also observed such out-migration:

> Specifically, one-third of the total farm population out-migrated during the 1920's, and a fourth of the remainder had followed by 1940. For both decades this included roughly half of the farm youth of both sexes, with a preponderance of females.[49]

Frost further points out to an important factor inherent in the process of migration:

> . . . The most fertile segments of population (rural) have been most affected by migration, and this has been so much, if not more, a matter of individual than of family migration.[50]

The factor of fertility and its rural-urban differentiation will be discussed in more detail in the following part 2. However, as the trends indicate, the rural communities have witnessed a large number of out-migrants, and the rural population has decreased steadily.

If, hypothetically, the rural communities had not experienced out-migration, the number of such locals and the number of rural population would by far be geater today and the composition of the state would be highly rural, rather than urban.

The proportion of Utah's rural areas, as compared to the total population of the state,has been decreasing. This phenomenon is illustrated as follows:

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[49]Henry H. Frost, To Have . . . , op. cit., p. 17.

[50]Ibid., p. 18.

Table V-D. Percent of Population Rural, Utah, 1910-1960

Year	Enumerated rural population	Percent of rural population
1960	223,469	25.1
1950	238,917	34.1
1940	244,817	44.5
1930	264,821	47.6
1920	233,812	52.0
1910	20,047	53.7

Source: United States Census of Population; Utah, pp. 46-48.

These trends, in summary, indicate:

a) a decrease in the proportion of the rural population in relation to the total population of the state,

b) a decrease in the actual size of the rural population since 1940's.

2. Effects of Natural Growth:

Earlier in this part, the importance of fertility was mentioned. Demographers, time and time over, have pointed out to the higher fertility rates observed among the rural peoples as compared to the urban population.

Similar rural-urban fertility differentials have been observed for Utah, also. The following figures adopted from Frost reveal their differential:[51]

[51]Henry H. Frost, To Have . . . , op.cit., p. 25.

Table V-E. Number of children 0-4 years per 1000 women, 15-44 years for rural-urban areas.

Year	Urban	Rural Non-Farm	Rural Farm
1960*	680	819	---
1950*	577	711	644
1940	391	559	554
1930	426	652	649
1920	486	765	775

*Calculated by the author

Considering the higher fertility rates for the rural areas, some understanding of the rural natural growth of the population is gained.

Utah was, predominantly, a rural state well into the 1920's. This high fertility rate, combined with the large population of the rural areas in relation to the state constituted the major portion of the population growth. The growth of the urban communities, prior to the early part of this century has, therefore, a rural cause. Classification, the process by which a community experiences transition from rural to urban due to the growth in its size, should be considered the basic factor of urban development prior to the 1900's.

The natural growth of the rural communities has, therefore, contributed the bulk of the Utah population growth; except for the last few decades when urban population has been larger.

Since the rural-urban migration is indicated to have been from rural to urban; then, the perpetuation of the urban communities has been, by

in large, through the natural growth of the population.

Thus, natural growth has been responsible for the growth of the rural areas of the state throughout the state's history.

3. Effects of Net Migration

In studying the internal migrations of Utah, it becomes quite evident that the effects of net-migration on the rural population have been quite negative. As the estimates of rural-urban migration indicate, the rural areas of the state have lost a portion of their population consistently.

Both, the census survival and life table survival ratio methods used in measuring the intercensal amount of migration, confirm this phenomenon.

The degree of migration throughout this century has varied; nevertheless, the effects of it have been negative towards the rural communities.

The following figures show the amount of out-migration that the rural areas have witnessed between 1900 and 1960.

Table V-F. Net migration estimates from rural areas of Utah 1900-1960 and the intercensal interstate migration.

Intercensal Period	Number of Rural Out-Migrants		Utah's In or Out Migration
	By C.S.R. Method	By L.T.S.R. Method	
1950-1960	- 78,921	- 74,710	+ 4211
1940-1950	- 66,897	- 61,602	+ 5295
1930-1940	- 24,016	- 36,786	- 12776
1920-1930	- 31,138	- 44,539	- 13401
1910-1920	- 16,620	- 19,098	- 4478
1900-1910	- 68,460	------	----

The above factors, pointing out to the out-migration from rural areas, become more meaningful when studied in reference to the social, psychological, and economical structures of these communities.

The process of de-ruralization has been in effect in the past and the trends indicate that it will continue in the future, also. Further out-migration, particularly amongst young people, will have further effect upon the economy of rural areas; most importantly, the agricultural economy. At any rate, the effects of migration have been significant upon the rural population of the state.

Thus, it could be summarized that:

a) Natural growth has been responsible for the growth of population in the rural areas and

b) Migration has been the factor for the decrease in the population of rural Utah.

Growth of Utah's Metropolitan Areas

Utah, at present, has three standard metropolitan statistical areas (SMSA's). These three SMSA's (for definition, see chapter II, p.7) are that of Salt Lake City SMSA, Provo-Orem SMSA, and Ogden SMSA.

Prior to 1950, the Salt Lake City area was the only SMSA in the state with a population sufficient enough to be classified as such. However, since 1950, the growth of metropolitan areas in Utah has been phenomenal.

1. Trends

The growth of Utah's metropolitan areas has been recent. With the exception of Salt Lake City, that had a population of 92,777 as early as 1910, the other Utah communities were nowhere near that size. Three decades later, in 1940, Ogden was approaching a relative large

size with a population of 43,688. The population of Provo in 1940 was only 18,071. The growth of 1940-1950 decade, in the metropolitan population of Utah, was extremely high as the following figures illustrate:

Table V-G. Metropolitan Utah Population Growth, 1940 to 1960.

Place	Enumerated Population 1940	1950	1960
Salt Lake City	149,934	274,895	348,661
Ogden	43,688	83,319	121,927
Provo	18,071	28,937	60,795*

*includes Orem

Source: U.S. Census of Population; volumes 1940 to 1960

The growth of the metropolitan areas, particularly the SMSA's has been a recent phenomenon in the United States. This trend is pointed out by Gist and Fava as follows:

> . . . 212 Standard Metropolitan Statistical Areas were designated in 1960, each consisting of one or more contiguous counties. The total metropolitan population was 112 million in 1960, as compared with 168 SMSA's and a metropolitan population of 89 million in 1950.[52]

A similar trend is evidenced for Utah as the classification of three SMSA's for 1960 in the state bear witness.

It is interesting to note that standard metropolitan statistical areas of the state included 531,383 or 59.6% of 890,627 Utahns in 1960.

[52] N.P. Gist and S.F. Fava, Urban Society, op. cit., p. 47.

2. Effects of Natural Growth:

In considering the growth of metropolitan areas in Utah, as can be seen in the following tables, natural growth of the population has played a significant part. A considerable factor of the SMSA growth in Utah is due to the effect of the natural growth, with the exception of 1940-1950 decrease when the in-migration to the large cities played an important part.

It should be stressed at this point that the classification of SMSA's has been drastically, a definitional procedure. The terms SMA and SMSA, used by the Census Bureau in 1950 and 1960, respectively, are new definitions which explain the metropolitan communities.[53] This should not be confused with a "natural growth" of these communities in size only. The effects of natural population growth, however, have been important, especially recently in the growth of Utah's metropolitan areas.

3. Effects of Net Migration:

Migration to the metropolitan areas of Utah has been a steady factor in the process of urbanization. The impacts of in-migration, through the 1940-1950 decade, upon the SMSA's of Utah are significant.

The following tables show the estimated amount of migration to the three Utah SMSA's by the census and life table survival ratio methods.

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[53] For definition see Chapter II, p. 8. Also, for definitional changes see: U.S.,Bureau of the Census,. . . , op. cit., p. XXIV.

Table 12. Net migration estimates to Ogden SMSA, from census survival ratio method, 1950-1960.

Age	Male	Female	Total (Both Sexes)
0-4	+ 274	+ 279	+ 553
5-9	+ 783	+ 798	+ 1581
10-14	+ 933	+ 974	+ 1907
15-19	+ 252	+ 398	+ 641
20-24	- 21	+ 203	+ 182
25-29	+ 675	+ 609	+ 1284
30-34	+ 1079	+ 859	+ 1938
35-39	+ 906	+ 676	+ 1582
40-44	+ 554	+ 340	+ 894
45-49	+ 272	+ 273	+ 545
50-54	+ 178	+ 67	+ 245
55-59	+ 48	+ 34	+ 82
60-64	+ 49	+ 36	+ 85
65-69	+ 9	+ 5	+ 14
70-74	- 15	+ 55	+ 40
75-79	- 29	+ 18	- 11
80-84	+ 11	+ 2	+ 13
85 +	+ 26	+ 37	+ 63
TOTAL	+ 5987	+ 5654	+11,641

Table 13. Net migration estimates to Salt Lake SMSA, from census survival ratio method, 1950-1960.

Age	Male	Female	Total (Both Sexes)
0-4	+ 126	+ 129	+ 255
5-9	+ 300	+ 307	+ 607
10-14	- 726	- 727	- 1453
15-19	- 217	+ 248	+ 31
20-24	+ 1107	+ 1735	+ 2842
25-29	+ 1102	+ 923	+ 2025
30-34	+ 39	- 563	- 524
35-39	- 650	- 513	- 1163
40-44	- 407	- 277	- 684
45-49	- 353	- 27	- 380
50-54	+ 54	+ 98	+ 152
55-59	- 69	- 1	- 70
60-64	- 103	- 13	- 116
65-69	- 65	+ 102	+ 37
70-74	+ 6	+ 9	+ 15
75-79	+ 18	+ 17	+ 35
80-84	- 345	+ 62	- 283
85 +	+ 78	+ 197	+ 275
TOTAL	- 105	+ 1706	+ 1601

Table 14. Net migration estimates to Provo-Orem SMSA, from census survival ratio method, 1950-1960.

Age	Male	Female	Total (Both Sexes)
0-4	+ 285	+ 291	+ 576
5-9	+ 469	+ 478	+ 947
10-14	+ 355	+ 380	+ 735
15-19	+ 1434	+ 1034	+ 2468
20-24	+ 1931	+ 2340	+ 4271
25-29	+ 800	- 9	+ 791
30-34	- 441	- 530	- 971
35-39	- 133	+ 62	- 71
40-44	+ 98	+ 133	+ 231
45-49	+ 152	+ 164	+ 316
50-54	+ 153	+ 151	+ 304
55-59	+ 90	+ 82	+ 172
60-64	+ 64	+ 75	+ 139
65-69	+ 82	+ 81	+ 163
70-74	+ 47	+ 112	+ 159
75-79	+ 34	+ 27	+ 61
80-84	+ 57	+ 50	+ 107
85 +	+ 19	+ 36	+ 55
TOTAL	+ 5496	+ 5857	+11,353

Table 15. Net migration estimates to Ogden SMSA, from census survival ratio method, 1940-1950.

Age	Male	Female	Total (Both Sexes)
0-4	+ 529	+ 539	+ 1068
5-9	+ 1126	+ 1149	+ 2275
10-14	+ 1475	+ 1383	+ 2858
15-19	+ 1159	+ 1624	+ 2783
20-24	+ 893	+ 1234	+ 2127
25-29	+ 1318	+ 1350	+ 2668
30-34	+ 1277	+ 1014	+ 2291
35-39	+ 1092	+ 887	+ 1979
40-44	+ 852	+ 863	+ 1715
45-49	+ 732	+ 611	+ 1343
50-54	+ 638	+ 504	+ 1142
55-59	+ 531	+ 544	+ 1075
60-64	+ 500	+ 386	+ 886
65-69	+ 343	+ 258	+ 601
70-74	+ 219	+ 174	+ 393
75-84	+ 185	+ 114	+ 299
85 +	+ 33	+ 27	+ 60
TOTAL	+12,902	+12,661	+25,563

Table 16. Net migration estimates to Salt Lake SMSA, from census survival ratio method, 1940-1950.

Age	Male	Female	Total (Both Sexes)
0-4	+ 1571	+ 1602	+ 3173
5-9	+ 3511	+ 3581	+ 7092
10-14	+ 3898	+ 3881	+ 7779
15-19	+ 3613	+ 4110	+ 7723
20-24	+ 4735	+ 5513	+10248
25-29	+ 5273	+ 4939	+10212
30-34	+ 2723	+ 3030	+ 5753
35-39	+ 2790	+ 2426	+ 5216
40-44	+ 2454	+ 2265	+ 4719
45-49	+ 2104	+ 1962	+ 4066
50-54	+ 1958	+ 1806	+ 3764
55-59	+ 1594	+ 1419	+ 3013
60-64	+ 1342	+ 1264	+ 2606
65-69	+ 1015	+ 1137	+ 2152
70-74	+ 682	+ 727	+ 1409
75-84	+ 548	+ 634	+ 1182
85 +	+ 91	+ 101	+ 192
TOTAL	+40,902	+40,397	+81,299

Table 17. Net migration estimates to Provo, from census survival ratio method, 1940-1950.

Age	Male	Female	Total (Both Sexes)
0-4	+ 144	+ 147	+ 291
5-9	+ 252	+ 256	+ 508
10-14	+ 115	+ 117	+ 232
15-19	+ 573	+ 930	+ 1503
20-24	+ 1058	+ 1061	+ 2119
25-29	- 472	+ 215	- 257
30-34	+ 121	+ 75	+ 196
35-39	+ 41	+ 73	+ 114
40-44	+ 67	+ 105	+ 172
45-49	+ 96	+ 90	+ 186
50-54	+ 99	+ 76	+ 175
55-59	+ 60	+ 75	+ 135
60-64	+ 62	+ 52	+ 114
65-69	+ 44	00	+ 44
70-74	- 13	+ 18	+ 5
75-84	+ 26	+ 53	+ 79
85 +	- 1	+ 13	+ 12
TOTAL	+ 2312	+ 3356	+ 5668

Table 18. Net migration estimates to Orem, from census survival ratio method, 1940-1950.

Age	Male	Female	Total (Both Sexes)
0-4	+ 95	+ 96	+ 191
5-9	+ 247	+ 252	+ 499
10-14	+ 203	+ 241	+ 444
15-19	+ 149	+ 138	+ 287
20-24	+ 112	+ 186	+ 298
25-29	+ 184	+ 212	+ 396
30-34	+ 240	+ 182	+ 422
35-39	+ 192	+ 165	+ 357
40-44	+ 130	+ 116	+ 246
45-49	+ 96	+ 93	+ 189
50-54	+ 63	+ 52	+ 115
55-59	+ 58	+ 31	+ 89
60-64	+ 25	+ 20	+ 45
65-69	+ 27	+ 22	+ 49
70-74	+ 11	+ 10	+ 21
75 +	+ 12	+ 6	+ 18
TOTAL	+ 1844	+ 1876	+ 3720

Table 19. Net migration estimates to Ogden, from census survival ratio method, 1930-1940.

Age	Male	Female	Total (Both Sexes)
0-4	+ 30	+ 31	+ 61
5-9	+ 68	+ 69	+ 137
10-14	+ 16	+ 63	+ 79
15-19	+ 102	+ 165	+ 267
20-24	- 32	+ 322	+ 290
25-29	+ 161	+ 166	+ 327
30-34	+ 158	+ 45	+ 203
35-39	+ 37	- 19	+ 18
40-44	- 2	- 18	- 20
45-54	+ 83	- 79	+ 4
55-64	- 3	+ 64	+ 61
65-74	+ 44	+ 22	+ 66
75 +	+ 23	+ 20	+ 43
TOTAL	+ 685	+ 851	+ 1536

Table 20. Net migration estimates to Salt Lake City, from census survival ratio method, 1930-1940.

Age	Male	Female	Total (Both Sexes)
0-4	+ 117	+ 119	+ 236
5-9	+ 273	+ 278	+ 551
10-14	- 55	- 24	- 79
15-19	+ 161	+ 668	+ 829
20-24	+ 1067	+ 1719	+ 2786
25-29	+ 998	+ 835	+ 1833
30-34	+ 116	- 239	- 123
35-39	- 53	- 240	- 293
40-44	- 60	- 12	- 72
45-54	+ 21	+ 39	+ 60
55-64	+ 43	- 75	- 32
65-74	+ 37	+ 124	+ 161
75 +	+ 53	+ 60	+ 113
TOTAL	+ 2718	+ 3262	+ 5980

Table 21. Net migration estimates to Provo, from Census Survival Ratio Method, 1930-1940.

Age	Male	Female	Total (Both Sexes)
0-4	+ 33	+ 35	+ 68
5-9	+ 89	+ 91	+ 180
10-14	+ 86	+ 96	+ 182
15-19	+ 116	+ 152	+ 268
20-24	+ 179	+ 172	+ 351
25-29	+ 165	+ 95	+ 260
30-34	+ 143	+ 76	+ 219
35-39	+ 97	+ 76	+ 173
40-44	+ 53	+ 72	+ 125
45-54	+ 145	+ 138	+ 283
55-64	+ 78	+ 81	+ 159
65-74	+ 14	+ 8	+ 22
75 +	+ 21	+ 16	+ 37
TOTAL	+ 1219	+ 1108	+ 2327

Table 22. Net migration estimates to Ogden, from census survival ratio method, 1920-1930.

Age	Male	Female	Total (Both Sexes)
0-4	+ 75	+ 77	+ 152
5-9	+ 214	+ 218	+ 432
10-14	+ 289	+ 292	+ 581
15-19	+ 193	+ 381	+ 574
20-24	+ 106	+ 381	+ 487
25-29	+ 198	+ 304	+ 502
30-54	+ 691	+ 408	+ 1099
55 +	+ 86	+ 110	+ 196
TOTAL	+ 1852	+ 2171	+ 4023

Table 23. Net migration estimates to Salt Lake City, from census survival ratio method, 1920-1930.

Age	Male	Female	Total (Both Sexes)
0-4	+ 214	+ 218	+ 432
5-9	+ 737	+ 752	+ 1489
10-14	+ 634	+ 787	+ 1421
14-19	+ 664	+ 1403	+ 2067
20-24	+ 1570	+ 2381	+ 3951
25-29	+ 1299	+ 1401	+ 2700
30-54	+ 1211	+ 645	+ 1856
55 +	+ 58	+ 177	+ 235
TOTAL	+ 6387	+ 7764	+14151

Table 24. Net migration estimates to Provo, from census survival ratio method, 1920-1930.

Age	Male	Female	Total (Both Sexes)
0-4	+ 39	+ 41	+ 80
5-9	+ 146	+ 149	+ 295
10-14	+ 228	+ 292	+ 520
15-19	+ 171	+ 226	+ 397
20-24	+ 67	+ 115	+ 182
25-29	+ 79	+ 57	+ 136
30-54	+ 653	+ 577	+ 1230
55 +	+ 106	+ 135	+ 241
TOTAL	+ 1489	+ 1592	+ 3081

Table 25. Net migration estimates to Ogden, from census survival ratio method, 1910-1920.

Age	Male	Female	Total (Both Sexes)
0-4	+ 76	+ 78	+ 154
5-9	+ 177	+ 180	+ 357
10-14	+ 254	+ 195	+ 349
15-19	+ 245	+ 356	+ 601
20-44	+ 569	+ 923	+ 1492
45 +	+ 42	+ 190	+ 232
TOTAL	+ 1363	+ 1922	+ 3285

Table 26. Net migration estimates to Salt Lake City, from census survival ratio method, 1910-1920.

Age	Male	Female	Total (Both Sexes)
0-4	+ 267	+ 272	+ 539
5-9	+ 675	+ 689	+ 1364
10-14	+ 458	+ 627	+ 1085
15-19	+ 825	+ 1302	+ 2127
20-44	+ 2874	+ 3713	+ 6587
45 +	+ 453	+ 894	+ 1347
TOTAL	+ 5552	+ 7497	+13,049

Table 27. Net migration estimates to Ogden SMSA, from life table survival ratio method, 1950-1960.

Age	Male	Female	Total (Both Sexes)
0-4	+ 317	+ 323	+ 640
5-9	+ 843	+ 860	+ 1703
10-14	+ 1030	+ 1138	+ 2168
15-19	+ 144	+ 669	+ 813
20-24	- 332	+ 399	+ 67
25-29	+ 793	+ 565	+ 1358
30-34	+ 1217	+ 800	+ 2017
35-39	+ 925	+ 721	+ 1646
40-44	+ 664	+ 400	+ 1064
45-49	+ 371	+ 302	+ 673
50-54	+ 212	+ 63	+ 275
55-59	+ 102	+ 100	+ 202
60-64	+ 83	+ 60	+ 143
65-69	+ 85	+ 58	+ 143
70-74	+ 58	+ 116	+ 174
75-79	+ 18	+ 51	+ 69
80-84	+ 36	+ 42	+ 78
85 +	+ 11	- 14	- 3
TOTAL	+ 6577	+ 6653	+13230

Table 28. Net migration estimates to Salt Lake City, from life table survival ratio method, 1950-1960.

Age	Male	Female	Total (Both Sexes)
0-4	+ 252	+ 257	+ 509
5-9	+ 478	+ 487	+ 965
10-14	- 426	- 216	- 642
15-19	- 553	+ 1133	+ 580
20-24	+ 154	+ 2334	+ 2488
25-29	+ 1478	+ 842	+ 2320
30-34	+ 559	- 776	- 217
35-39	- 594	- 366	- 960
40-44	- 40	- 74	- 114
45-49	- 35	- 68	+ 33
50-54	+ 168	+ 83	+ 251
55-59	+ 109	+ 222	+ 331
60-64	+ 10	+ 69	+ 79
65-69	+ 178	+ 275	+ 453
70-74	+ 236	+ 232	+ 468
75-79	+ 175	+ 147	+ 322
80-84	+ 44	+ 215	+ 259
85 +	+ 28	- 7	+ 21
TOTAL	+ 2221	+ 4925	+ 7146

Table 29. Net migration estimates to Provo-Orem SMSA, from life table survival ratio method, 1950-1960.

Age	Male	Female	Total (both sexes)
0-4	+ 285	+ 291	+ 576
5-9	+ 469	+ 478	+ 947
10-14	+ 399	+ 380	+ 735
15-19	+ 1434	+ 1934	+ 3368
20-24	+ 1931	+ 2340	+ 4271
25-29	+ 800	- 9	+ 791
30-34	- 441	- 530	- 971
35-39	- 133	+ 62	- 71
40-44	+ 98	+ 133	+ 231
45-49	+ 152	+ 164	+ 316
50-54	+ 153	+ 151	+ 304
55-59	+ 90	+ 82	+ 172
60-64	+ 64	+ 75	+ 139
65-69	+ 82	+ 81	+ 163
70-74	+ 47	+ 112	+ 159
75-79	+ 34	+ 27	+ 61
80-84	+ 57	+ 50	+ 107
85 +	+ 19	+ 36	+ 55
TOTAL	+ 5496	+ 5852	+11,348

Table 30. Net migration estimates to Ogden, from life table survival ratio method, 1940-1950.

Age	Male	Female	Total (Both Sexes)
0-4	+ 533	+ 512	+ 1045
5-9	+ 1187	+ 1141	+ 2328
10-14	+ 1577	+ 1542	+ 3119
15=19	+ 1159	+ 1366	+ 2525
20-24	+ 778	+ 1279	+ 2057
25-29	+ 1244	+ 1271	+ 2515
30-34	+ 1405	+ 984	+ 2389
35-39	+ 1226	+ 982	+ 2208
40-44	+ 997	+ 942	+ 1939
45-49	+ 832	+ 640	+ 1472
50-54	+ 737	+ 546	+ 1283
55-59	+ 584	+ 536	+ 1120
60-64	+ 553	+ 397	+ 950
65-69	+ 413	+ 318	+ 731
70-74	+ 245	+ 192	+ 437
75-84	+ 200	+ 159	+ 359
85 +	+ 35	+ 38	+ 73
TOTAL	+13,705	+12,845	+26,550

Table 31. Net migration estimates to Salt Lake City, from life table survival ratio method, 1940-1950.

Age	Male	Female	Total (Both sexes)
0-4	+ 1672	+ 1606	+ 3278
5-9	+ 3711	+ 3565	+ 7276
10-14	+ 4357	+ 4395	+ 8752
15-19	+ 3610	+ 4421	+ 8031
20-24	+ 4385	+ 5652	+10037
25-29	+ 5043	+ 4691	+ 9734
30-34	+ 3833	+ 2921	+ 6754
35-39	+ 3277	+ 2774	+ 6051
40-44	+ 2972	+ 2560	+ 5532
45-49	+ 2466	+ 2063	+ 4529
50-54	+ 2298	+ 1953	+ 4251
55-59	+ 1768	+ 1387	+ 3155
60-64	+ 1519	+ 1303	+ 2822
65-69	+ 1266	+ 1359	+ 2625
70-74	+ 777	+ 794	+ 1571
75-84	+ 607	+ 777	+ 1384
85 +	+ 97	+ 144	+ 241
TOTAL	+43,658	+41,365	+85,023

Table 32. Net migration estimates to Provo, from life table survival ratio method, 1940-1950.

Age	Male	Female	Total (Both Sexes)
0-4	+ 154	+ 147	+ 301
4-9	+ 268	+ 257	+ 525
10-14	+ 180	+ 189	+ 369
15-19	+ 573	+ 969	+ 1542
20-24	+ 1011	+ 1080	+ 2091
25-29	+ 439	+ 182	+ 621
30-34	+ 136	+ 62	+ 198
35-39	+ 102	+ 113	+ 215
40-44	+ 130	+ 136	+ 266
45-49	+ 139	+ 101	+ 240
50-54	+ 136	+ 93	+ 229
55-59	+ 79	+ 62	+ 151
60-64	+ 81	+ 47	+ 138
65-69	+ 62	+ 28	+ 100
70-74	- 2	+ 26	+ 24
75-84	+ 87	+ 126	+ 213
85 +	- 54	- 41	- 95
TOTAL	+3531	+ 3597	+ 7128

Table 33. Net migration estimates to Orem, from life table survival ratio method, 1940-1950.

Age	Male	Female	Total (Both sexes)
0-4	+ 99	+ 95	+ 194
5-9	+ 255	+ 245	+ 500
10-14	+ 216	+ 256	+ 472
15-19	+ 149	+ 247	+ 296
20-24	+ 101	+ 289	+ 290
25-29	+ 177	+ 205	+ 382
30-34	+ 242	+ 180	+ 422
35-39	+ 200	+ 169	+ 369
40-44	+ 139	+ 120	+ 259
45-49	+ 101	+ 94	+ 195
50-54	+ 68	+ 55	+ 123
55-59	+ 61	+ 30	+ 91
60-64	+ 27	+ 21	+ 48
65-69	+ 30	+ 25	+ 55
70-74	+ 12	+ 10	+ 22
75 +	+ 13	+ 11	+ 24
TOTAL	+ 1890	+ 1852	+ 3742

Table 34. Net migration estimates to Ogden, from life table survival ratio method, 1930-1940.

Age	Male	Female	Total (Both Sexes)
0-4	- 13	- 14	- 27
5-9	- 68	- 71	- 139
10-14	+ 26	+ 56	+ 82
15-19	- 1	+ 70	+ 69
20-24	- 267	+ 93	- 174
25-29	- 71	- 116	- 187
30-34	- 17	- 173	- 190
35-29	- 19	- 92	- 111
40-44	- 74	- 76	- 150
45-54	- 28	- 198	- 226
55-64	- 41	+ 34	- 7
65-74	+ 131	+ 126	+ 257
75 +	- 103	- 155	- 258
TOTAL	- 545	- 516	- 1061

Table 35. Net migration estimates to Salt Lake City, from life table survival ratio method, 1930-1940.

Age	Male	Female	Total (Both Sexes)
0-4	- 26	- 26	- 53
5-9	- 154	- 160	- 314
10-14	- 24	- 48	- 72
15-19	- 165	+ 379	+ 214
20-24	+ 322	+ 983	+ 1305
25-29	+ 210	- 164	+ 46
30-34	- 567	- 1105	- 1672
35-39	- 265	- 505	- 770
40-44	- 313	- 199	- 512
45-54	- 364	- 378	- 742
55-64	- 94	- 190	- 284
65-74	+ 358	+ 514	+ 872
75 +	- 422	- 626	- 1048
TOTAL	- 1594	- 1021	- 2615

Table 36. Net migration estimates to Provo, from life table survival ratio method, 1930-1940.

Age	Male	Female	Total (Both Sexes)
0-4	+ 14	+ 15	+ 29
5-9	+ 35	+ 36	+ 61
10-14	+ 90	+ 93	+ 183
15-19	+ 77	+ 116	+ 193
20-24	+ 88	+ 79	+ 167
25-29	+ 63	- 19	+ 54
30-34	+ 77	- 2	_ 75
35-39	+ 76	+ 52	+ 128
40-44	+ 30	+ 53	+ 83
45-54	+ 111	+ 100	+ 211
55-64	+ 65	+ 69	_ 134
65-74	+ 47	+ 48	+ 95
75 +	- 33	- 62	- 95
TOTAL	+ 750	+ 578	+ 1328

Effects of Migration on the Total Population Composition

Thus far it was illustrated, through the estimated number of migrants, that the state of Utah has become predominantly urban. The natural growth of population, undoubtedly, has been significant as the communities have grown from rural to urban, and urban communities have grown larger. The effects of migration to urban areas have been important, nevertheless.

It has been pointed out that earlier in this twentieth century, migration played an important role as urbanization has taken place. The estimated figures of in-migration to urban areas, in this study, confirm the hypothesis.

The effects of migration, however, are not only changes in size, but a multitide of other complex changes. These effects of urbanization are best summarized by Black, Fredrickson, DeHart, Skidmore, and Carter in their study of Impacts of Urbanization in Davis County, as follows:

> Urbanization brings many changes in ways of living, for the old residents as well as the new. Close personal ties with a few people tend to become enmeshed in more compled, specialized, and impersonal relations with more people. Special interest groups increase in the community. Newcomers with new ideas have to be admitted and the pressures towards change they bring need to be recognized.[54]

Regarding the theoretical framework of reference (Ch. 2). it should be noted that the assumption here is that other changes, as fall within the realm of "subsocial school of urbanization," accompany the changes in size or purely demographic changes. Such study, in economic and socio-psychological changes through urbanization, will constitute a broader scope of approach and analysis, not in the realm of this discussion.

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54 T.R. Black, et.al. The Impacts of Urbanization in Davis County, Utah, Bulletin 369 (Logan, Utah: Utah State University, 1954), pp. 6-7.

Nevertheless, the change in the composition of the state's population from rural to urban is an essential factor before urbanism as a way of life emerges.

Migration has not only caused changes in the rural and urban populations, but also, it has affected the age and sex compostion with reference to rural-urban differentials. It was evidenced in the estimates of migrants that the young people in age groups of 20-34 constituted a substantial proportion of the migrants. This phenomenon leads to the observation that, proportionately, more young people reside in urban areas. These changes in the distribution of the population become significant when the future populations are considered. Such changes in the age-sex group distributions affect the future generations through reproduction of the present members and their place of residence.

SUMMARY AND CONCLUSIONS

The purpose of this study has been to study the process of urbanization in the state of Utah through measuring the net rural-urban migration.

The theoretical frame of reference was based upon the hypothesis that transitions take place as a society changes from rural to urban. The process involved in this transition is from an agrarian, feudal, or preindustrial way of life to an urban, capitalistic, or industrial order. The aspect of "transition" from rural to urban has been the focal point of interest in such theoretical approach.

The specific objectives of this study were:

1. To measure the amount of net intercensal migration from rural to urban areas (1900-1960).

2. To estimate the selected demographic characteristics of the migrants.

3. To estimate the amount of natural population growth and the effects of net-migration on the rate of population growth in urban and rural areas.

4. To describe the growth of Utah's standard metropolitan areas (SMSA) and to measure the effects of net rural urban migration on the SMSA's growth.

To measure the amount of intercensal migration, the "indirect" method of estimating migrations through the "survival rates" were employed. The survival rate methods manifest accuracy and precision when used in estimating the amount of internal migration. Both the

"Census survival ratio" and the "life-table survival ratio" (LTSR) methods were employed in this study. The survival rate which is a complement of the mortality rate is derived from census figures in case of the C.S.R. and from the life table (Px) values in the case of L.T.S.R. method. The C.S.R. and the L.T.S.R. methods assist in determining the estimates of net-migration internally, and also the inherent process of determining net migration on the state level.

In accordance with the objectives put forth, and through the methodological procedures, the following hypothesis were tested:

Hypothesis 1. The urban populations of Utah gained a greater portion of their population through in-migration than from natural population growth. This hypothesis was supported through the findings as the figures indicated a constant stream of migrants moving to urban areas, particularly in larger volumes, in the earlier decades of this century.

Hypothesis 2. Age and sex selectivity of the migrants in Utah follows that of the overall United States trends. The estimates support this hypothesis as the migrants were mostly young people and the females out-numbered the migrating males in younger age groups.

Hypothesis 3. Net migration has been a control in reference to rural areas and complementary to the urban areas. This hypothesis is strongly supported by the findings which indicate the historical rural-urban movement of people in Utah. The decline of the rural population in recent years and the overall proportionate decline of rural areas strongly affirms this aspect. In contrast to rural decline, the urban population of the state has witnessed phenomenal growth throughout this century and migration has been a key factor in this process of growth.

Hypothesis 4. Effects of net-migration on urbanization have been more significant in the early part of the twentieth century than in recent decades. The estimated volume of migration to urban areas confirms this hypothesis. With a relatively small percentage of Utahns living in urban areas at the beginning of this century, the number of urban bound migrants played a significant part as urbanization was taking place in the state. Recently, however, with a high proportion of the population in urbanized areas the effects of migration are not so pronounced.

Hypothesis 5. The natural growth of population has been more important in the process of urbanization in recent years. In accordance with the large number of Utahns in urban areas in recent years, this hypothesis is confirmed. The actual urban growth is more by "natural growth" than through migration, particularly in recent years, in relation to earlier decades of this century.

The basic objectives of this study, measuring the amount of rural-urban migration, have been achieved and found compatible with the hypothesized trends.

The scope of this study was limited to the measurement of the migrations within the state and, therefore, it is basically demographic in discussion. The more "individual" factors of interest, which could constitute a separate study in their analysis, were not in the context of this study; considering the factors of time and space limitations.

The analysis of the findings and their relation to the hypotheses put forth in this study show a positive correlation. All the five hypotheses above were confirmed by the results of the study in measuring the amount of migration. In summary, then, it was illustrated that:

The rural areas of Utah have lost a portion of their population to other areas due to out-migration. Most of the migrants were in the younger age groups of 20 to 34. Migration affected the compostion of the state's population more in the early part of the twentieth century as natural growth of the population has been more important in recent years.

The measured effects of migration on the state level, as summarized above, may serve as a guide to more elaborate studies of migration on the socio-economic level of Utah's population.

It is hoped that this study may be helpful in future state planning and may serve as a tool in indicating certain patterns of migrations among different age groups of the population.

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APPENDIX

The following tables indicate the survival rates used in tabulation when estimating net-migrations. The census survival rates are calculated by using the U.S. Census Bureau's figures of Utah population between 1900 and 1960. The life table survival ratios are calculated by using the constructed life tables for the state by U.S. Department of Health, Education, and Welfare, Public Health Service. Lee's United States life table figures for the 1900 to 1930 period are used in addition as follows.

Table A1.1. The census survival ratios for Utah males and females in 1950-60.

Age	Males	Females
0-4	1.00578	1.02214
5-9	.96569	1.05840
10-14	.89832	1.04759
15-19	1.02028	.97750
20-24	1.02766	.97153
25-29	.98135	1.00018
30-34	1.00289	1.00204
35-39	.98456	.98224
40-44	.94286	.95819
45-49	.92035	.97315
50-54	.85862	.92594
55-59	.82001	.90544
60-64	.73596	.85116
65-69	.59516	.71054
70-74	.42812	.55690
75 +	.22608	.26981

Source: Calculated from census figures of population.

Table A1.2. The census survival ratios for Utah males and females 1940-50.

Age	Males	Females
0-4	1.05220	1.06696
5-9	.98340	1.04081
10-14	.92424	1.00927
15-19	.94106	.95003
20-24	.98640	.96731
25-29	1.04125	1.02827
30-34	1.04507	1.01748
35-39	1.01159	.97673
40-44	.98482	.97416
45-49	.90757	.91652
50-54	.86073	.89718
55-59	.82462	.89780
60-64	.69869	.76588
65-74	.49137	.56551
75 +	.19233	.22877

Source: Calculated from census figures of population.

Table A1.3. The census survival ratios for Utah males and females in 1930-40.

Age	Males	Females
0-4	.97668	.97264
5-9	.93006	.94098
10-14	.85507	.87147
15-19	.83395	.83174
20-24	.85141	.85183
25-29	.91377	.91778
30-34	.89289	.91607
35-44	.85040	.88188
45-54	.78601	.84731
55-64	.70700	.80025
65-74	.46899	.53483
75 +	.16899	.19368

Source: Calculated from census figures of population.

Table A1.4. The census survival ratios for Utah males and females in 1920-30.

Age	Males	Females
0-4	.95808	.97732
5-9	.92610	.94207
10-14	.88775	.89715
15-19	.87472	.84688
20-44	.87246	.86672
45 +	.65058	.69896

Source: Calculated from census figures of population.

Table A1.5. The census survival ratios for Utah males and females in 1910-20.

Age	Males	Females
0-4	.97953	.97978
5-9	.92731	.96415
10-34	.90694	.92761
35 +	.75498	.78145

Source: Calculated from census figures of population.

Table A2. 1. The life table survival ratios for Utah males and females 1950-60.

Age	Males	Females
0-4	.99119	.99378
5-9	.99062	.99428
19-14	.98591	.99286
15-19	.98260	.99197
20-24	.98153	.99079
25-29	.97963	.98858
30-34	.97151	.98427
35-39	.95481	.97615
40-44	.93232	.96412
45-49	.89868	.94569
50-54	.84781	.91833
55-59	.78114	.87802
60-64	.69263	.81288
65-69	.56954	.69683
70-74	.41654	.52665
75 +	.22419	.28707

Source: Public Health Service, Utah State Life Tables: 1959-61, Vol. 2, No. 45 (Washington, D.C.: U.S. Dept. Health, Education and Welfare, 1966), pp. 627-635.

Table A2.2. The life table survival ratios for Utah males and females 1940-50.

Age	Males	Females
0-4	.98662	.99024
5-9	.98661	.99184
10-14	.98187	.98976
15-19	.97795	.98746
20-24	.97486	.98538
25-29	.97019	.98232
30-34	.96116	.97629
35-39	.94534	.96504
40-44	.92020	.95184
45-49	.88100	.93298
50-54	.82749	.90028
55-59	.76157	.85122
60-64	.67376	.77291
65-69	.54596	.64082
70-74	.39120	.45955
75 +	.20079	.24800

Source: Public Health Service, Utah State Life Tables: 1949-51, Vol. 41, No. 43 (Washington,D.C.: U.S. Dept. Health, Education, and Welfare, 1956), pp. 399-404.

Table A2.3. The life table survival ratios for Utah males and females 1930-40.

Age	Males	Females
0-4	.97789	.98205
5-9	.97936	.98603
10-14	.97124	.98214
15-19	.96612	.97793
20-24	.96296	.97428
25-29	.95770	.96905
30-34	.94770	.96169
35-39	.93028	.95053
40-44	.90126	.93500
45-49	.85971	.91256
50-54	.80927	.87542
55-59	.74038	.81671
60-64	.64747	.72620
65 +	.44978	.51337

Source: Public Health Service, Utah State Life Tables: 1939-41, (Washington, D.C.: U.S. Dept. Health, Education and Welfare, 1946), pp. 238-241.

Table A3.1 The life table survival ratio for United States males and females, 1900-1910.

Age	Male	Female
0-4	.9279	.9336
5-9	.9629	.9638
10-14	.9530	.9547
15-19	.9426	.9462
20-24	.9324	.9362
25-29	.9211	.9290
30-34	.9065	.9208
35-39	.8968	.9119
40-44	.8745	.8929
45-49	.8503	.8726
50-54	.7920	.8196
55-59	.7249	.7665
60-64	.6224	.6629
65 +	.3309	.3601

Source: Adopted from E.S. Lee, et.al., Population Redistribution and Economic Growth, United States, 1870-1950, op.cit., p. 31.

Table A3.2. The life table survival ratio for United States males and females, 1910-1920.

Age	Males	Females
0-4	.9426	.9486
5-9	.9683	.9697
10-14	.9596	.9621
15-19	.9517	.9528
20-24	.9423	.9434
25-29	.9328	.9366
30-34	.9162	.9271
35-39	.9058	.9183
40-44	.8818	.8980
45-49	.8535	.8739
50-54	.7925	.8188
55-59	.7245	.7615
60-64	.6180	.6540
65 +	.3311	.3572

Source: Adopted from E.S. Lee, et.al., Population Redistribution and Economic Growth, United States, 1870-1950., op.cit., p. 31.

Table A3.3. The life table survival ratio for United States males and females, 1920-1930.

Age	Males	Females
0-4	.9617	.9675
5-9	.9743	.9768
10-14	.9687	.9710
15-19	.9617	.9612
20-24	.9572	.9565
25-29	.9484	.9488
30-34	.9344	.9406
35-39	.9217	.9309
40-44	.8906	.9078
45-49	.8588	.8807
50-54	.7968	.8285
55-59	.7261	.7657
60-64	.6190	.6624
65 +	.3345	.3625

Source: Adopted from E.S. Lee, et.al., Population Redistribution and Economic Growth, United States, 1870-1950., op.cit., p. 31.

VITA

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Master of Science

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Major Field: Sociology

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