Utilizing 1970 U.S. census data, North Carolina's (N.C.) age and sex distributions were examined to determine: rural-urban differences; national differences; influential factors; and social significance (health, education, employment, youth, and the aged). Major findings were: (1) the rural-farm fertility level had dropped below that of urban areas, and N.C.'s fertility level had dropped below that of the nation; (2) most rural-urban migrants were young adults; (3) the urban death rate was lower than that in rural areas; (4) the balanced sex ratio in rural areas was due to the predominance of male out-migration; (5) N.C. ranked 39th in the U.S. in an age-adjusted death rate, indicating an increasing need for health services; (6) 26% of N.C.'s total population was of school age as compared to 25.8% nationally, and 27.2% of these youngsters were rural farm; (7) 49.6% of N.C.'s young aged 15-24 were living in urban centers with 44% living in rural nonfarm areas and 6.4% on farms (a distribution comparable to that of the total U.S.); (8) a significantly larger proportion of N.C.'s urban young adults was enrolled in school; (9) compared to the national average, N.C.'s employment rate was slightly higher, but the rural employment rate was lower than the urban; (10) between 1960-70, N.C.'s aged farm population decreased by 29.8% but increased in urban areas by 52.7%.

**********************************************************************
Documents acquired by ERIC include many informal unpublished * material not available from other sources. ERIC makes every effort * to obtain the best copy available. Nevertheless, items of marginal * reproducibility are often encountered and this affects the quality * of the microfiche and hardcopy reproductions ERIC makes available * via the ERIC Document Reproduction Service (EDRS). EDRS is not * responsible for the quality of the original document. Reproductions * supplied by EDRS are the best that can be made from the original. *
The Young
The Old
The Mature

by
Selz C. Mayo and William B. Clifford

DEPARTMENT OF SOCIOLOGY AND ANTHROPOLOGY
PROGRESS REPORT SOC. 63, 1976

AGRICULTURAL EXPERIMENT STATION / NORTH CAROLINA STATE UNIVERSITY at RALEIGH
Kenneth R. Keller, Acting Director of Research
INTRODUCTION

PURPOSE

OUTLINE

SECTION I. POPULATION STRUCTURE AND CHANGE - A GRAPHIC SUMMARY

SECTION II. FACTORS WHICH AFFECT THE AGE AND SEX COMPOSITION OF THE RURAL POPULATION

SECTION III. SIGNIFICANCE OF THE CHANGING POPULATION STRUCTURE

1. Health and Population Composition
2. Education and Population Composition
3. Youth and Population Composition
4. Employment and Population Composition
5. The Aged in the Population

ACKNOWLEDGEMENTS

We would like to express our appreciation to Dr. A. Clarke Davis and Dr. R. David Mustian of the Department of Sociology and Anthropology, for reading and providing helpful suggestions for the final draft of this report. The research assistance of Marge Cawley is gratefully acknowledged. Thanks are also due to Frances Emory and Althea Peterson for typing the report and to Charlene Jordan for preparing the charts.

THE YOUNG, THE OLD AND THE MATURE

By

Selz C. Mayo and William B. Clifford

INTRODUCTION

Sex and age determine to a great extent the functional roles that persons play in our society. Distinctions on the basis of sex are made very early in life. Duties, responsibilities, and privileges are allocated according to age.

Each population differs from every other in the proportional size of various age and sex classes, giving rise to many social and economic as well as political problems. A knowledge of the differences makes possible the answering of a host of questions. But the proportion of the population in a particular age class is not always the same and, in fact, is constantly changing.

PURPOSE

The purposes of this report are: (1) To show the age and sex composition of North Carolina's rural population; to answer these questions: How does the rural population differ from the population in towns and cities of the State? How does the population of North Carolina compare with that of the Nation with respect to age and sex? (2) To point up the factors which affect the age and sex distribution of the population: Why does the rural population differ from the population in cities and towns with respect to age and sex? Why does North Carolina's population composition differ from that of the Nation? (3) To show how the composition of the population influences many parts
of our everyday lives: What is the significance of the differences in
the composition of the population? Why are these data of importance to
all people in North Carolina?

OUTLINE

The data that follow are arranged to correspond to the three
purposes as stated above.

(1) The first section is a summary of the structure as
well as the changing aspects of the population. This
section is designed to answer the questions raised in
the statement of the first purpose.

(2) The second section is an analysis of the factors
which affect the age and sex composition of the
population. This section is designed to answer the
questions raised in the statement of the second
purpose.

(3) The third section consists of a series of problems
which were selected to indicate the significance of
the age and sex composition of the rural population.
This section is designed to answer the questions raised
in the statement of the third purpose.

Before proceeding to the first section some additional comments
are necessary. Unless otherwise specified, the data for this analysis
were taken from the regular Decennial Censuses of the United States.
This report is an update of an Agricultural Experiment Station Bulletin
first released in June, 1949.
SECTION I. POPULATION STRUCTURE AND CHANGE

GRAPHIC SUMMARY

The focus of this section is a graphic portrayal of people -- the people of North Carolina. It is a picture of structure, but the keynote is change. It is the story of the young, the old and the mature.

Age and sex pyramid comparing North Carolina's population with that of the United States in 1970.

From the above graph one can see that the age distribution of North Carolina's population nearly approximates the age structure for the United States as a whole. At the base of the pyramid the bars are roughly equal indicating similar proportions of persons in the young age classes. This situation was brought about by a decrease in fertility in North Carolina to a level comparable to that for the United States. In fact, as will be shown later, the level of fertility is now lower in North Carolina than in the United States. Looking at the apex of the pyramid it becomes obvious that the United States has a slightly larger proportion of its population in old age classes than does North Carolina. Also, the proportion in the productive ages in 1970 was nearly the same.
Age and sex pyramid comparing urban and rural-farm population in North Carolina in 1970.

Observe, first, that the bars for the farm population at the base of the pyramid are shorter than those representing the urban. This is the result of lower fertility and migration among rural-farm people.

Notice, also, that the bars for the urban population are much longer than those representing the farm in several groups twenty years of age and above. The most important factor in this situation is migration. Historically, rural people have produced the children and then these youths were exported to urban centers.

In the third place, the bars for females are longer than for males in age groups above thirty years in urban centers. Rural females, traditionally, have migrated to cities and towns earlier and at a higher rate than rural males. However, it appears that between the ages of 20 to 30, males may occupy number one position in regard to migration.

Finally, the bars for the rural-farm population 65 and over are longer than those for the urban population. The most important factors responsible for this are reductions in fertility and the migration of young people from the farms.
Age and sex pyramid comparing North Carolina's population distribution in 1970 with that of 1870.

Observe, first, that the 1870 bars at the base of the pyramid are much longer than those for 1970. This simply means that in 1870 a much greater proportion of the population was in the young age classes. The narrower base in 1970 was brought about by a tremendous decrease in the fertility of the population. For example, in 1870 the fertility ratio (number of children under five years of age per one thousand women 15-44 years of age) was 685, but by 1970, the ratio had decreased to 394.

Note, in the second place, that in 1970 as compared with 1870, there was a greater proportion of the population in the productive years of age. As the birth rate dropped, the ratio of producers and potential producers increased. Also, as the death rate decreased, a higher proportion reached maturity and swelled the ranks of the producers. This is one of the important factors that has made possible the rise in the level of living.
The map above shows that the population of the coastal plain counties have a high proportion of children. The western mountain counties have a low proportion. The map below shows that the mountain region has a high proportion of old people.
Children under five years of age comprise a smaller proportion of North Carolina's total population now than they have in the past. (See above.) North Carolina's population is aging rapidly. (See below.) From 1960 to 1970, persons above 65 years of age increased 32.7 percent, while the total population increased only 11.5 percent.
The age structure of the white population on farms is different from that of the Negro. In 1970, the Negro population was composed of (1) a higher proportion of young people, (2) a lower proportion of adults, and (3) a lower proportion of old people.

These differences are the result of three factors. The high proportion of children and youths in the Negro population is due to the high birth rate. In 1970, for example, the fertility ratio was 486 as compared with 367 for the white.

In 1969, the nonmetropolitan Negro death rate (age-adjusted) was 34 percent higher than the white. In some age groups, the Negro rate was more than twice as high.

During the two decades 1950-1970, Negro youths, beginning in middle and late teens, migrated from farms at a higher rate than white young adults.
Percentage change in the rural-farm population of North Carolina by age and sex from 1960 to 1970.

This chart shows that there were fewer people residing on farms at all ages in 1970 than in 1960 and this is especially striking at the younger ages. In 1950, there were 172,244 children under five years of age on farms. In 1960, there were 81,125 and by 1970 the number had decreased to 20,915. The continued reduction in the number of children is a reflection of declining fertility, as well as the migration of persons who normally bear children. This pattern prevails for both males and females.
Dependency ratio, as used here, is defined as the number of people under 15 years of age, plus those 65 years and over per 100 people 15 to 64 years of age.

**DEPENDENCY RATIO**

North Carolina 1970

Dependency ratios show, in a general way, the relationship between producers or potential producers and the natural dependent elements in a population. Such a ratio, therefore, is a direct function of the age composition. A high ratio reflects a heavy burden on the producers because of the necessity of supporting themselves and the dependents. If all other factors were identical, a population with a high ratio would have a lower level of living than another population with a low ratio.

In 1970, the dependency ratio in North Carolina was fifty-eight—that is, there were fifty-eight persons under fifteen years and over sixty-five years per one hundred persons 15-64 years. At the same time, the United States had a ratio of sixty-two. North Carolina's producers have a somewhat lighter burden to carry as compared with the nation as a whole. In fact, there were only five states and the District of Columbia with a lower ratio for the total population.

In 1970, rural-farm people were in a slightly less favorable position than urban people with respect to the relationship of producers and dependents. The dependency ratio for the farm population was fifty-eight as compared with fifty-four in urban centers. In each of the residential groups, the dependency ratio for the Negro population was higher than for the white.
Sex ratios (number of males per 100 females) in the rural-farm, rural-nonfarm, and urban populations by age, North Carolina, 1970.

In 1970, North Carolina had a sex ratio of 95.9 (that is, there were 95.9 males per 100 females). Females predominated in the urban population and in this group the sex ratio was 94.8. The number of males and females was nearly equal in the farm population where the sex ratio was 91.5. The sex ratio in the rural-nonfarm area was 96.4.

The most important single factor that affects the sex ratio is migration. Observe, first, the age group 20-24 on the figure. The high sex ratio in the urban population represents a shift from past patterns. The heavy loss of young females from the farms is now much reduced. It is also apparent that young males from the rural-nonfarm areas of the state are migrating to the urban areas. This situation has the effect of raising the urban sex ratio in this age category. Of course, some of this change is accounted for by the movement of individuals in and out of the state.

The declines in the sex ratio at age 60 and over graphically reflect the higher mortality of males. Nevertheless, migration continues to have an impact on the sex ratio at these ages. This is especially evident in the ages 70 and over in the rural-farm area. However, one must entertain the notion of misreporting of age.
In North Carolina, relatively few people are employed in agriculture. Nearly half of those employed in non-agricultural occupations are female while only one-seventh of those employed in agriculture are female.

This figure shows the relative number of people employed in agricultural and non-agricultural occupations by age. Some interesting variations in the age distributions are evident. For example, a larger proportion of people employed in agriculture (9.5 percent) are 65 years of age and older than those employed in non-agricultural occupations (2.9 percent). However, a relatively larger number of persons in non-agricultural occupations are between the ages of 25 and 44 than is the case for those employed in agriculture.
SECTION II. FACTORS WHICH AFFECT THE AGE AND SEX COMPOSITION
OF THE RURAL POPULATION

The preceding data show that the rural-farm population, as compared with the urban, is composed of (1) a lower proportion of children and young people; (2) a higher proportion of relatively old people; (3) a slightly higher proportion of persons in the most active period of life; and (4) a roughly equal proportion of males and females. This situation is quite different from that which existed several decades ago. Why?

Age

The reproductive behavior of a population is of prime importance in determining its age distribution. A high reproductive rate will mean a high proportion of children and young people as compared with another population with low reproduction.

In 1970, the fertility ratio for the rural-farm population in North Carolina was 320 as compared with 371 for the urban. Thus, the fertility ratios of the rural-farm population was less than that for the urban.

Fertility ratios in North Carolina are lower than for the Nation. In 1970, the fertility ratio was 397 for the Nation's rural-farm population as compared with 320 in North Carolina. The Nation's urban population had a ratio of 391, even higher than in the State. Therefore, North Carolina has a much smaller proportion of children and young people than the Nation.

If the fertility of a population decreases, there will be a smaller proportion of children, but there also will be an increasing proportion of old people. This has been the direction of change for both the State and the Nation. In 1950, the rural-farm population had a fertility
ratio of 614 as compared with 320 in 1970. The urban ratio decreased from 410 in 1950 to 371 in 1970. The rural-farm population of the Nation had a ratio of 594 in 1950 but decreased to 397 in 1970. The urban rate dropped from 425 in 1950 to 391 in 1970.

Higher fertility ratios for the Negro as compared with the white accounts for the high proportion of young people in the Negro population. In 1970, the white rural-farm population had a fertility ratio of 265. The corresponding ratio for the Negro population was 443.

Farm to urban migration is another important factor determining the age composition of urban and rural populations. Due to the past high fertility of the rural-farm population, many people left farm areas to seek greater social and economic opportunity in urban centers. This farm to urban migration has been highly selective with respect to age -- the bulk of such migrants have been young people. This pattern of migration has continued up to the present time.

During the decade 1950-60, the farms of North Carolina exported about 629,000 people to the rural-nonfarm areas and urban centers of the State and Nation. Most of these migrants were on the threshold of their productive lives. Over half of these migrants were between fifteen and thirty-five years of age. About four out of every ten were between twenty and thirty years of age.

During the most recent decade, 1960-70, rural-farm areas exported about 400,000 people to other areas of the State and Nation. In this period, over half of the migrants were from fifteen to thirty-five years of age. Nearly four of every ten were between twenty and thirty years of age.

The rate of migration has been greater for Negroes than whites. But, the peak of migration occurs at about the same age for both groups.
This means an even higher ratio of nonproductives to productives in the Negro than in the white population.

In the short span of two decades, the farms of North Carolina have lost 585,000 young adults. Although migration continues to be selective of young adults, its effects in terms of producing high proportions of children and low proportions in the productive ages have been lessened. This is partly due to the reduced levels of fertility on the farms in the State and the fact there has been a significant loss of persons due to net out-migration at older ages. It is now evident that the urban and rural-farm populations have similar age structures. It should be noted that for some age groups there is a net movement to farms, but most of these migrants are under 10 years of age.

A longer life expectancy and reduced fertility has increased the proportion of elders in the population. Although specific data are no longer available on mortality by urban-rural residence, an approximation can be made by using metropolitan and non-metropolitan areas. The death rate in the non-metropolitan population is higher than in the metropolitan population of North Carolina. In 1970 the death rate for non-metropolitan areas was 9.4 (age-adjusted) per 1,000 population as compared with 5.6 in metropolitan centers. This difference is probably accounted for by inadequate medical facilities and personnel in non-metropolitan areas.

The metropolitan death rate is lower than the non-metropolitan for both the white and Negro populations in the State. In both cases the Negro rate is higher than the white rate. This fact is important in understanding the age differences in the white and Negro populations.
Sex,

Why is the rural population different from the urban population with respect to sex composition?

Males outnumber females at birth. The sex ratio (number of males per one hundred females) of live births, about 106, has existed for the entire period of available data.

From the time of birth, however, death takes a heavier toll of males than females. In North Carolina as of 1970 the age-adjusted death rate for males was 11.9 as compared with 8.0 for females. The death rate is higher for males than females in every age group. This differential death rate has the effect of lowering the sex ratio.

These two factors are important in explaining the sex ratio itself, but they do not tell us why the sex ratio is different in rural and urban areas. For an explanation of this, other factors must be considered.

Migration is the most important reason for the rural-urban difference in the sex ratio. Farm to urban migration historically has been selective with respect to sex and this resulted in greatly different sex ratios in urban and rural areas. However, in more recent decades sex selectivity in migration from rural areas in the State has not been as great as in past decades and in a few instances the pattern has reversed. During the decade 1950-60 there were 105 white males for every 100 females in the stream of farm to urban migrants. There were 101 nonwhite males for each 100 nonwhite female migrants. In the following decade, 1960-70, there were 93 white males for every 100 white females leaving North Carolina farms for rural-nonfarm areas and urban centers. At the same time, there were 103 nonwhite male migrants for each 100 nonwhite females leaving farms.
This reversal of the historical trend of more females leaving the farms than males has resulted in nearly equal proportion of both sexes in the farm population of the state. The urban areas continue to have an excess of females -- due largely to past migration patterns.

Summary

This study shows that there are three important factors affecting the age distribution of the rural population. The level of fertility in rural-farm areas has dropped below the level in urban areas and the level of fertility in North Carolina has dropped below that in the nation. Most of the farm to urban migrants continue to be young adults. The metropolitan death rate is lower than the non-metropolitan rate.

This study shows that the balanced sex ratio (equal males and females) of the rural population is due, in the main, to the one factor of migration. Farm to urban migrants have recently been predominantly males, although the differences have not been large.
SECTION III. SIGNIFICANCE OF THE CHANGING POPULATION COMPOSITION

What is the meaning of these data? Every phase of public policy is affected by the structure and distribution of the population as by the changing composition. The ability of a people to maintain organizations and institutions is, in large measure, determined by the proportion of the population in specific age groups.

The following five problems or activities have been selected to illustrate the significance of these data to North Carolina.

1. Health and Population Composition

Death rates are valuable indexes of the health status of a population. They may serve also as an index of the general cultural level of a people. They are often used as a measure of the need for medical care services, geographically and economically.

In 1970, the crude death rate in the State was 8.8 deaths per 1,000 population. In this respect, North Carolina ranked seventeenth among the fifty states and the District of Columbia. This relatively low rate was possible because of a relatively high proportion of the people in the younger years of life. Therefore, this did not represent a true picture of mortality conditions in the State.

In 1970, the age-adjusted death rate (a more accurate measure of mortality conditions) for North Carolina was 9.6. This means that the State ranked thirty-ninth rather than seventeenth among the fifty states and the District of Columbia -- a very different picture.
As a population ages, the pattern of medical services must be altered. The need and demand for hospital service increases as old people make up a larger proportion of the total population. The need for institutional care, other than in hospitals, will also increase. There will be an increasing demand for nursing personnel, both in institutions and in out-patient service.

2. Education and Population Composition

Opportunity for formal education is an American goal, but this ideal has not been translated into minimum standards throughout the Nation. The values of education have not been entirely extended to rural people as to those in towns and cities, although progress has been made.

The real school load is determined by the number of boys and girls of school age. In this study, five through eighteen years is used to measure the load. If this age group makes up a high proportion of the population the educational load will be heavy.

In 1970, twenty-six percent of the total population was in this age group in North Carolina as compared with 25.8 percent in the Nation. This means that North Carolina compares favorably with the country as a whole with respect to school load.

Over one out of every four persons (27.2 percent) in the farm population in the State was in this school age. The corresponding percentage was 24.4 for the population in cities and towns.
As a result of the decrease in the birth rate during the last decade, North Carolina will have relatively fewer first graders than in the past. Of course, net in-migration of youngsters might offset the declines in fertility.

There is an inverse relationship between educational load and tax resources to support public education. States with a high proportion of people of school age are the same states with low tax resources with which to support the schools.

Inequalities in educational opportunity still exist between states and regions in the United States. Those states and regions with a low educational load are the states with high financial ability to support education. Those states and regions with high financial ability are the same ones that are importing young people on the threshold of their productive lives from other states and regions.

3. Youth and Population Composition

In 1970, roughly half (49.6 percent) of North Carolina's 978,821 young people fifteen through twenty-four years of age were living in urban centers. An additional 44 percent were residing in rural-nonfarm areas; and the remaining 6.4 percent were on farms. These persons were distributed by residence in about the same proportion as the total population. This relatively normal distribution of young people was made possible through migration.
During the decade 1960-70, 128,251 farm males and females between the ages of fifteen and twenty-four migrated to other residential areas of the State and Nation.

These young people are often faced with a series of situations and all of these call for adjustment. The situations are of a social and economic character, centering around education, employment, and marriage.

A slightly larger proportion of rural young people fifteen to eighteen years old were enrolled in school than urban youths. However, significantly larger proportions of urban young adults 19-24 years of age were enrolled in school. It is apparent that relatively more urban young people are remaining in school and are obtaining additional training beyond high school than are rural-farm young people.

In 1970, 65.4 percent of the urban males 15-24 years of age in North Carolina were employed or seeking work. This is higher than the corresponding proportion among either rural-nonfarm (58.7) or farm (47.5 percent) males. Among females the pattern is similar, but at lower levels -- urban, 42.9 percent; rural-nonfarm, 40.1 percent; and rural-farm, 29.9 percent. Only 15.2 percent of the young men (aged 14-24) who found jobs in agriculture were unpaid family workers -- they received no cash reward for their labor.

In 1970, a larger proportion of the urban male and female young people were married than comparable rural-farm persons.
4. **Employment and Population Composition**

The quality of society is determined to a large extent by the number of persons employed and by the type of employment. Employed persons have to support themselves as well as other members of their families. On the shoulders of the employed population falls the responsibility of supporting and maintaining public institutions and organizations.

In 1970, a slightly larger proportion of the total population of North Carolina (39.3 percent) was employed than in the United States (38.0 percent). At the same time the proportion of farm population employed was lower than the proportion in urban centers. What are the reasons for this situation?

This lower employment is the result of the age structure of the population and the difference in the roles played by women in urban centers and on farms. This picture becomes very different if we consider those persons who were employed and those who were seeking work and also exclude persons under fourteen years of age. (This group is called the Labor Force.)

On this basis, 91.9 percent of the rural-farm persons in the labor force were employed as compared with 88 percent of the urban labor force. A smaller proportion of the rural-farm females were in the labor force (32.5 percent as compared with 40.1 percent of urban females). The above analysis shows that the slightly lower employment for the total farm population was accounted for by the age structure of the population and by the lower proportion of females employed.
5. The Aged in the Population

One of the significant, if not the most significant, trends during this century has been the increasing number and proportion of old people in the population. Cognizance of this fact has been taken at all levels of government. Federal, state, and local governments are cooperating in the attempt to meet this problem.

Between 1870 and 1970, the population of North Carolina increased about five times. During the same period, the population sixty-five years of age and over increased a little more than twelve times. The aged have increased from 34,279 in 1870 to 414,120 in 1970. The aged have, therefore, become an increasing proportion of the total population of the state.

The problem of the aged has been to a large extent a rural problem in North Carolina. While the farm population continues to be more heavily weighted with old people than other residential groups, this pattern appears to be changing. For example, during the decade 1960-70, the aged population on farms decreased by 29.8 percent while the aged population in urban areas increased by 52.7 percent. It should also be noted that the decrease in the aged population on farms is not as great as the decrease of the total population on farms.

The problem of the aged will be an ever-increasing one. A larger proportion of the population can expect to reach the age of sixty-five, and those who reach this age can expect to
live more years than those in the past. The financial aspects of old age will increase in the future. The sheer weight in numbers in this age group will make necessary more substantial care in the future.