1968

Preliminary Projections of the Growth of the Omaha SMSA to 1990

Lawrence A. Danton
University of Nebraska at Omaha

PRELIMINARY PROJECTIONS OF THE GROWTH OF THE OMAHA SMSA TO 1990

Lawrence A. Danton, Ph.D.

Masoud Hariri

from

Omaha Urban Area Research Project

L. A. Danton

Director

August 1967

(Reprinted July 1970)

Center for Urban Affairs

University of Nebraska System

PREFACE

This publication is a portion of the study of the Omaha Area Urban Research Project. The business leaders of Omaha who comprise the Economic Development Council of the Omaha Chamber of Commerce recognize the contribution socio-economic research can make to the healthy development of a community. The Council has underwritten the establishment of a research unit at the University of Omaha by providing an initial operating grant of $106,000.00 to cover the first two years of operation of the research unit.

The primary aim of the research unit is to undertake a study of the economic base of the Omaha Standard Metropolitan Statistical Area (Omaha SMSA). With the data gathered in this study the research unit proposes to develop a series of long-term growth projections and to consider the economic, geographic, social, and political implications of the projected growth. It is expected that these findings will prove to be of value to many facets of long-term planning in the community and will assist in overcoming problems that can be anticipated if the projected growth is realized. The study is unique in its extensive utilization of this interdisciplinary approach.

This report is the seventh produced by the project to date dealing with the economy of the Omaha SMSA. The initial phase of operation of the project, to be completed in May of 1968, will include an interindustry study which will provide the basis for more sophisticated projections of growth of the Omaha area than are contained in this report. However, these projections, even though they are regarded as being of a preliminary nature, will provide direction for planning in the interim.

Grateful acknowledgement is made to the many people who provided assistance in the preparation of this report.

L. A. Danton

Masoud Hariri

August 1967

TABLE OF CONTENTS

LIST OF TABLES

LIST OF TABLES CONTINUED

LIST OF FIGURES

INTRODUCTION

The volume of employment in a geographic division is a significant criterion in measuring its overall economic activities. This report is designed to forecast the future course of these activities in the Omaha SMSA through the projections of labor force and employment in various industries at ten-year intervals to 1990.

The basic concern of this study is to anticipate the future employment in the area. However, based on projected labor force and employment, it also includes population estimates for 1970, 1980, and 1990.

The study of economic changes and forecasting of the future course of economic activities call for examination of the past variations of employment in major sectors of the economy. Thus, this study relies basically on employment data for the purpose of forecasting. The projected figures have been obtained through the extrapolation of past trends.

The procedure used for extrapolations consists of fitting trend lines to the past data and extending them into the future to obtain values for any given year. Fitting the best line and selection of the most appropriate method of extrapolation depend on the past behavior of the variable and the judgement of the forecaster.

Projected data in this report have been obtained through linear and exponential extrapolations. Where the original data have followed relatively constant increments of growth, a linear extrapolation has been applied, and where the original trends have followed relatively constant rates of growth an exponential projection has been selected. Moreover, two additional series of future employment estimates have been developed from the aggregation of

individually projected subdivisions of each major industry classification.[1]

These series provide a high-low range within which the actual data are expected to fall in the future. Since exact prediction of the future course of events is impossible, such a range presenting optimistic and conservative levels seems to be inevitable. Moreover, the mobility of capital and the constant movement of labor among regions, states, and economic centers tend to reduce the accuracy of predictions.

Constantly improving means of communication and transportation are facilitating and accelerating factors for inducing interregional, interstate, and intereconomic-center dynamism of the work force and population. Although the specific relationship between the migration streams and economic conditions is not definitely clear, there is a general agreement that migratory movements within the country are significantly affected by differential economic opportunities among the various geographic or economic divisions.

Thus, any substantial change in the economic advantages of one center over the others would tend to exert a significant impact upon the future size and direction of net migration. Although the biological determinants of population growth and consequent potential labor force expansion should not be overlooked, the projected growth should also take into consideration the expected population flow to and from an economic center.

The extent of population and manpower inflow or outflow, to a large degree, depends on the economic activity in an area. Increase in job opportunities coupled with favorable wage differentials would tend to direct net inflow of workers. An increasing rate of participation of the population

---

[1]For further explanation and the methodology used in arriving at each series, see Appendix A.

(14 years and over) in the labor force is another promising source of additional work force. It is expected that in the years ahead the rate of participation of female workers will increase significantly.

In the case of the Omaha SMSA, there is a broad reservoir of work force which seemingly will continue to provide the necessary workers in the foreseeable future.[2]

Increase in the rate of labor force participation of the female population 14 years and older is expected to make up a substantial portion of the growth in the labor force of the Omaha area. Moreover, the migration of young people from rural to urban areas and to metropolitan cities is expected to increase in the years ahead. The Omaha SMSA, due to its outstanding geographical location and its great potential for expansion can be expected to be one of the region's focal points in attracting workers who may seek economic advancement and job opportunities. However, as was pointed out previously, the existence of future movement and its direction toward one or another of the economic centers will generally depend on the relative attractiveness of compensation levels prevailing in competing areas.

Thus the future population and work force levels in the Omaha SMSA may be considered as dependent variables determined by the number of jobs its industries create and the wage levels they provide.

On the other hand, the number of jobs and demand for labor are influenced by numerous other variables. Among these are the rate of increase in productivity of workers, degree of application of automated operation and processing, the mechanization of material handling, and other innovations

---

[2]This concept is thoroughly discussed in The Potential Additional Supply of Labor Available to the Omaha SMSA, a report prepared by this research project.

which would tend to exert a significant impact upon the demand for workers.

Forecasts of growth patterns can serve as a valuable aid to the many planning units in any area. The forecasts which are contained in this report are based on secondary data and statistically on rather elementary extrapolation methods. They are, therefore, regarded as being of a preliminary nature In utilizing these projections the user should keep this in mind. The Omaha Urban Area Research Project is in the process of developing an interindustry study which will be based in large part on primary data gathered in current surveys of businesses in the metorpolitan area. When completed the input-output tables developed from these data plus secondary data where necessary will generate a much more sophisticated and more reliable basis for making forecasts of future growth of the Omaha area. Until such time as these become available, however, the forecasts contained in this report are considered to be sufficiently reliable to provide direction for planning.

ASSUMPTIONS

There are a host of unpredictable factors which exert diversive influences and complicate the development of any group of long range forecasts. Without certain assumptions to provide a framework the value of predictions would be substantially reduced. The reliability of the findings of the study can be significantly maintained only if the future course of events follows the pattern of the recent past. Therefore, the accuracy of the forecasts depends to a large extent on the validity of the assumptions. These assumptions may be briefly stated as follows:

1. The national economy will maintain its recent growth without a severe economic depression, major war, or other catastrophe.

2. There will be a continued high level of employment nationally and locally.

3. The future civilian labor force will constitute approximately 40% of the total population.

4. The existing firms in the area will continue to initiate expansionary programs and new firms will continue to be attracted to the area at a rate comparable to the recent past.

5. The Omaha Standard Metropolitan Statistical Area, as one of the major economic centers in the West North Central region, will maintain its traditional relationships to markets and resources.

6. The Omaha SMSA will continue to consist of the present three county area--Douglas and Sarpy in Nebraska and Pottawattamie in Iowa.

POPULATION PROJECTIONS

The basic purpose of this report is the prediction of the future labor force and levels of employment in various industry classifications in the

Omaha SMSA. However, the close relationship of population and labor force levels requires a brief discussion of estimated future population. Population estimates in this report are generally derived from an extrapolated labor force with the assumption that the civilian labor force will constitute approximately 40% of the total population in the area.

Generally an increase in job opportunities means more workers and consequently more population which in turn generates still more demand for products and services which are in turn provided by more workers. Thus, it is in reality an upward spiral which continues as long as there is growth of employment opportunities in the basic industries of the area.

Based on labor force projections it is estimated that the total population in Omaha SMSA will fall within the ranges of 556,900 to 574,100 in 1970, 639,500 to 696,750 in 1980, and 719,000 to 854,250 in 1990. These projections are shown in Table 1 and Figure 1. Series A represents the most optimistic forecast whereas Series D indicates the conservative prediction. Population projections Series A, B, C, and D are obtained from extrapolated labor force data of Series I, II, III, and IV respectively.[3] Table 1 also includes the U.S. Bureau of the Census population projections for the United States. According to these projections, the total population of the United States (illustrated in Figure 2) is expected to fall within the ranges of 204,923,000 to 208,615,000 in 1970, 227,665,000 to 250,489,000 in 1980, and 255,967,000 to 300,131,000 in 1990.[4]

For the purpose of comparison, the projections of population for the

---

[3]See Appendix A for methodology used in arriving at the various Series.

[4]U.S. Department of Commerce, Bureau of the Census, Current Population Reports: Population Estimates, Series P-25, No. 359.

Table 1

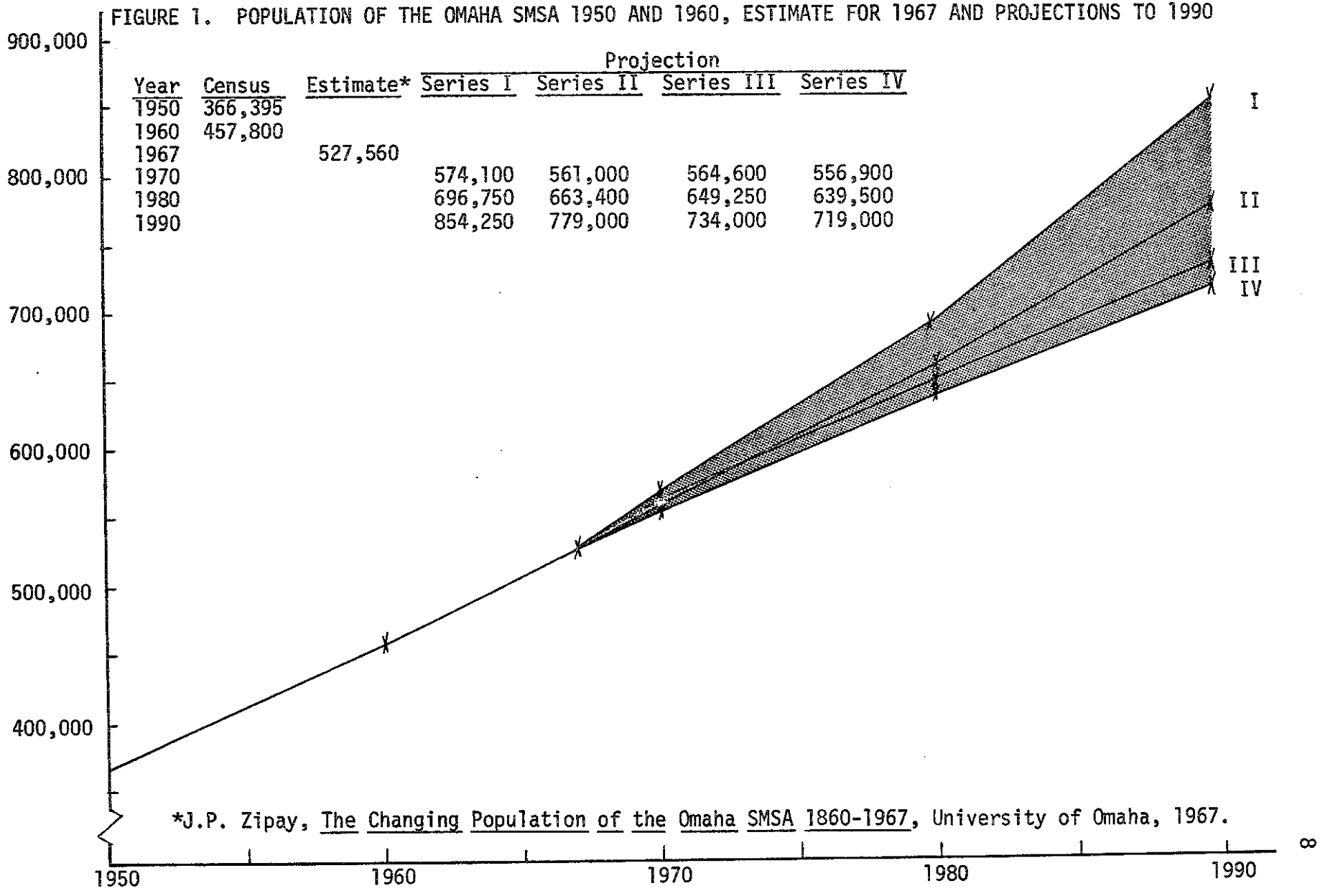
POPULATION PROJECTIONS FOR THE UNITED STATES AND OMAHA SMSA--1970, 1980, AND 1990

	United States* (1,000)	Omaha SMSA	Omaha SMSA as % of U.S.	Per Cent Change U.S.	Per Cent Change Omaha SMSA
1960	180,684	457,800	0.253		
				1960-70	
1970 Projections					
Series A	208,615	574,100	0.275	15.5	25.4
Series B	207,326	561,000	0.271	14.7	22.5
Series C	206,039	564,600	0.274	14.0	23.3
Series D	204,923	556,900	0.272	13.4	21.6
				1970-80	
1980 Projections					
Series A	250,489	696,750	0.278	20.1	21.4
Series B	243,291	663,400	0.273	17.3	18.3
Series C	234,212	649,250	0.277	14.2	15.0
Series D	227,665	639,500	0.281	11.1	14.8
				1980-90	
1990 Projections					
Series A	300,131	854,250	0.285	19.8	22.6
Series B	286,501	779,000	0.272	17.8	17.4
Series C	270,770	734,000	0.271	15.1	13.1
Series D	255,967	719,000	0.281	12.4	12.4

*U.S. Department of Commerce, Bureau of the Census, Current Population Reports: Population Estimates, Series P-25, No. 359.

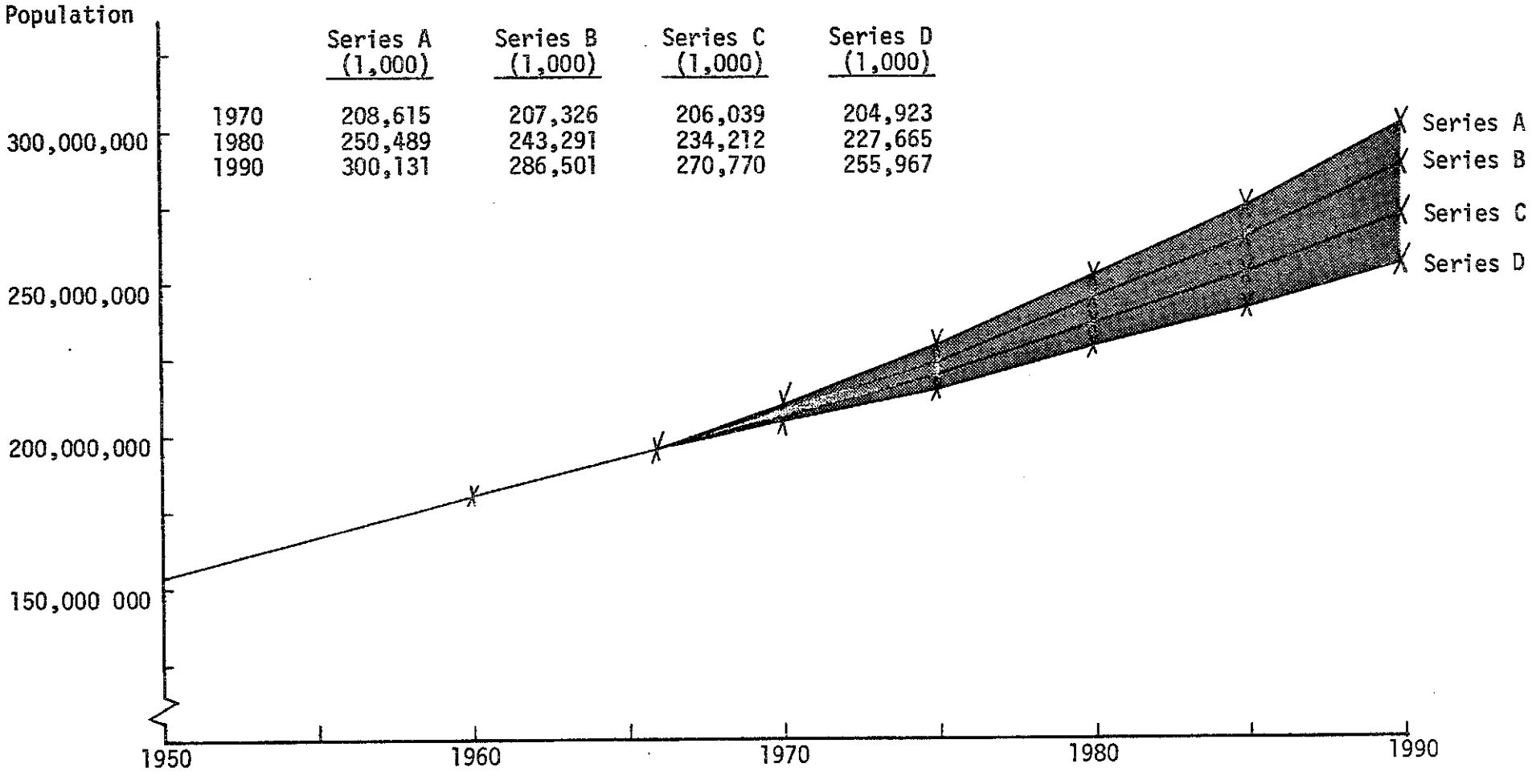
FIGURE 1. POPULATION OF THE OMAHA SMSA 1950 AND 1960, ESTIMATE FOR 1967 AND PROJECTIONS TO 1990

Year	Census	Estimate*	Projection Series I	Series II	Series III	Series IV
1950	366,395					
1960	457,800					
1967		527,560				
1970			574,100	561,000	564,600	556,900
1980			696,750	663,400	649,250	639,500
1990			854,250	779,000	734,000	719,000



*J.P. Zipay, The Changing Population of the Omaha SMSA 1860-1967, University of Omaha, 1967.

FIGURE 2. POPULATION OF THE UNITED STATES 1950 AND 1960 AND PROJECTIONS TO 1990



	Series A (1,000)	Series B (1,000)	Series C (1,000)	Series D (1,000)
1970	208,615	207,326	206,039	204,923
1980	250,489	243,291	234,212	227,665
1990	300,131	286,501	270,770	255,967

Source: See Table 1.

Omaha SMSA in 1970, 1980, and 1990 are shown as percentages of the total national population (Table 1). The rates of population growth in the Omaha area during the three succeeding decades are expected to be higher than the national average. The relatively rapid rates of growth are expected to occur as a result of faster overall growth of urban population relative to rural population.

Table 2 compares the population projections for the Omaha SMSA with the national total as well as the states of Nebraska and Iowa.[5] Projections for the two states take into account the data on interstate migration from the 1960 Census, as well as the estimated change in these states' population that have occurred since 1960. These projections are based on assumptions concerning the redistribution of population through interstate migration and future fertility of women in each state.

The relatively lower rates of population growth for the two states are due to the net out migration anticipated by the Bureau of the Census to occur from Nebraska and Iowa in the years ahead. The Bureau foresees net out-migration of 119,000 to 159,000 people from Nebraska and 217,000 to 268,000 from Iowa during the twenty years beginning with 1965. The projected net migration for the two states is shown in Table 3-A and population growth ignoring net migration is shown in Table 3-B. Figures 3 and 4 illustrate the anticipated population increases for the states of Nebraska and Iowa along with the estimated net out-migration between 1965 and 1985.

The Bureau of the Census anticipates that from 1965 to 1985 the population in the state of Nebraska will increase naturally by 378,000 to 389,000

---

[5]U.S. Department of Commerce, Bureau of the Census, Current Population Reports: Population Estimates, Series P-25, No. 362.

Table 2

ESTIMATES AND PROJECTED POPULATIONS OF THE UNITED STATES, STATES OF NEBRASKA AND IOWA, AND OMAHA SMSA, 1960, 1970, 1980, AND 1990

	United States* (1,000)	Nebraska** (1,000)	Iowa** (1,000)	Omaha SMSA (1,000)
Population, Total				
1960	180,684	1,411	2,758	458
1970				
Series A	208,615	1,486	2,748	574
Series B	207,326	1,491	2,761	561
Series C	206,039	1,469	2,718	565
Series D	204,923	1,473	2,730	557
1980				
Series A	250,489	1,605	2,921	697
Series B	243,291	1,634	2,975	663
Series C	234,212	1,502	2,741	649
Series D	227,665	1,529	2,791	639
1990				
Series A	300,131	N.A.	N.A.	854
Series B	286,501	N.A.	N.A.	779
Series C	270,770	N.A.	N.A.	734
Series D	255,967	N.A.	N.A.	719
Per Cent Change				
1960-70				
Series A	+15.5	+5.3	-0.4	+25.4
Series B	+14.7	+5.7	+0.1	+22.5
Series C	+14.0	+4.1	-1.5	+23.3
Series D	+14.0	+4.4	-1.0	+21.6
1970-80				
Series A	+20.1	+8.0	+6.3	+21.4
Series B	+17.3	+9.6	+7.8	+18.3
Series C	+14.2	+2.2	+0.8	+14.2
Series D	+11.1	+3.8	+2.2	+14.8
1980-90				
Series A	+19.8	-	-	+22.6
Series B	+17.8	-	-	+17.4
Series C	+15.1	-	-	+13.8
Series D	+12.4	-	-	+12.4

*U.S. Department of Commerce, Bureau of the Census, Current Population Reports: Population Estimates, Series P-25, No. 359.

**U.S. Department of Commerce, Bureau of the Census, Current Population Reports: Population Estimates, "Illustrative Projections of the Population of States 1970 to 1985," Series P-25, No. 362. Series A, B, C, and D shown on this table for states of Nebraska and Iowa correspond with series I-B, II-B, I-D, and II-D of the foregoing report published by the Bureau of the Census. Roman numerals I and II indicate interstate migration assumptions, letters B and D represent national projections series. For further explanation see the source.

Table 3-A

PROJECTED POPULATION CHANGE AND COMPONENTS OF THE CHANGE FOR NEBRASKA AND IOWA
1965 TO 1985

Period	Nebraska			Iowa		
	Total Change	Net Migration	Net Change	Total Change	Net Migration	Net Change
Series I-B						
1965-1985	378,000	-159,000	219,000	588,000	-268,000	320,000
1965-1975	155,000	- 76,000	79,000	238,000	-189,000	49,000
1975-1985	223,000	- 83,000	140,000	350,000	- 79,000	271,000
Series II-B						
1965-1985	389,000	-119,000	270,000	611,000	-217,000	394,000
1965-1975	157,000	- 64,000	93,000	243,000	-163,000	80,000
1975-1985	232,000	- 55,000	177,000	368,000	- 54,000	314,000

Source: U.S. Department of Commerce, Bureau of the Census, Current Population Reports: Population Estimates, Series P-25, No. 362.

Table 3-B

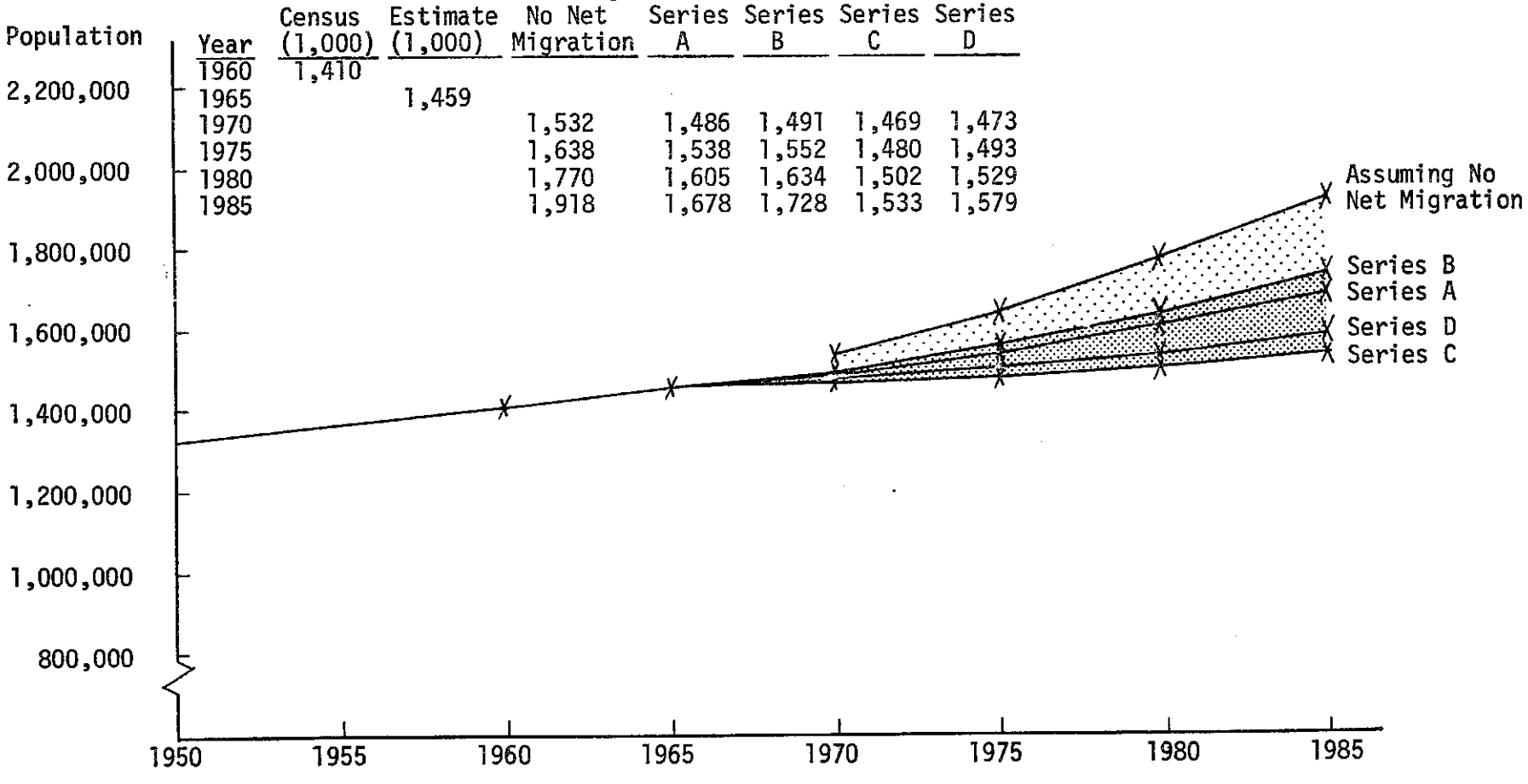
PROJECTIONS OF POPULATION FOR NEBRASKA AND IOWA
ASSUMING NO NET MIGRATION
1970 TO 1985

Nebraska	1970	1975	1980	1985
Nebraska	1,532,000	1,638,000	1,770,000	1,918,000
Iowa	2,870,000	3,046,000	3,271,000	3,522,000

Source: U.S. Department of Commerce, Bureau of the Census, Current Population Reports: Population Estimates, Series P-25, No. 362.

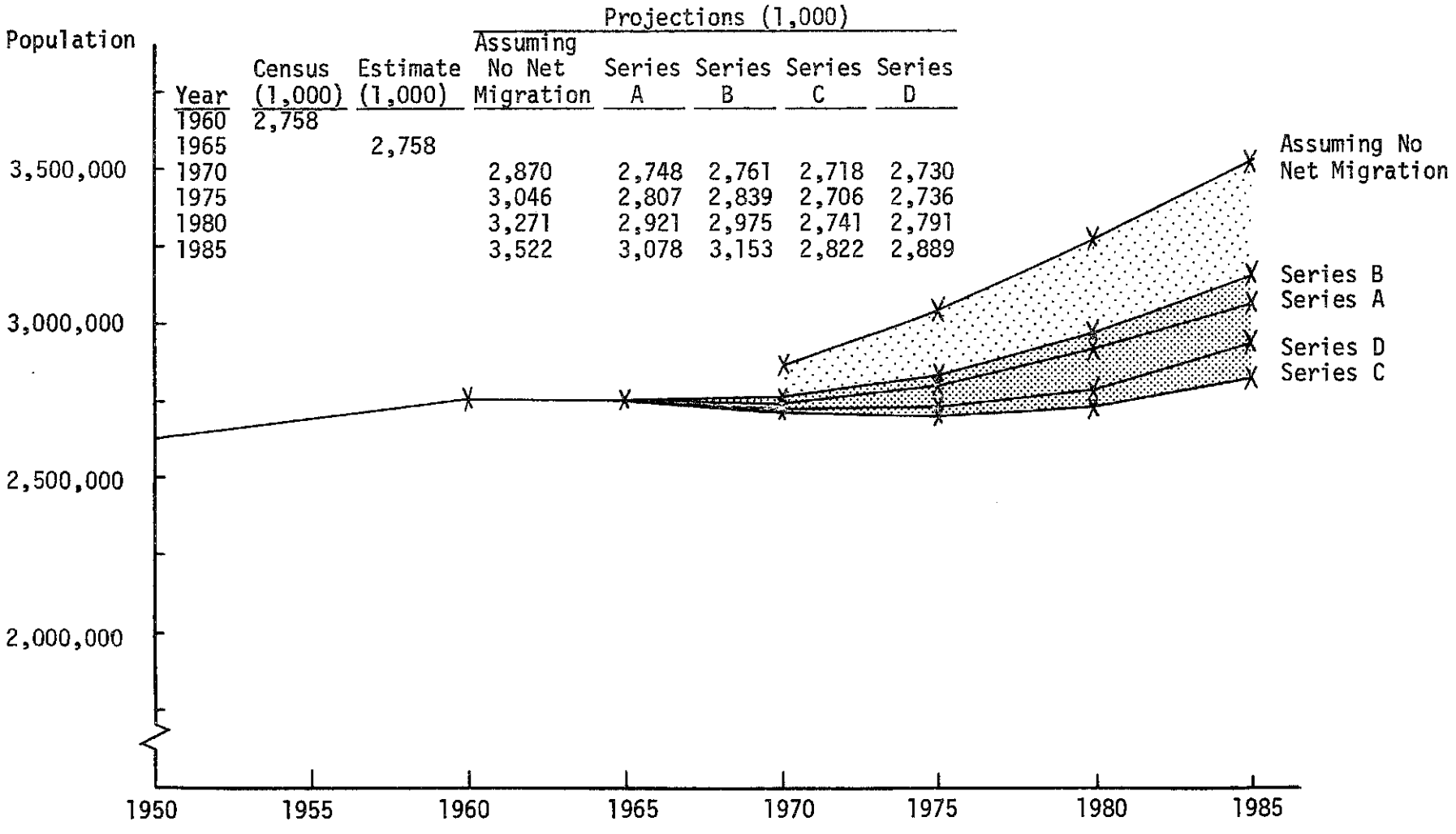
FIGURE 3. POPULATION OF NEBRASKA 1950 AND 1960, ESTIMATE FOR 1965 AND PROJECTIONS TO 1985

Year	Census (1,000)	Estimate (1,000)	Projections (1,000) Assuming No Net Migration	Series A	Series B	Series C	Series D
1960	1,410						
1965		1,459					
1970			1,532	1,486	1,491	1,469	1,473
1975			1,638	1,538	1,552	1,480	1,493
1980			1,770	1,605	1,634	1,502	1,529
1985			1,918	1,678	1,728	1,533	1,579



Source: See Table 2 and 3-B.

FIGURE 4. POPULATION OF IOWA 1950 AND 1960, ESTIMATE FOR 1965 AND PROJECTIONS TO 1985



Year	Census (1,000)	Estimate (1,000)	Projections (1,000) Assuming No Net Migration	Series A	Series B	Series C	Series D
1960	2,758						
1965		2,758					
1970			2,870	2,748	2,761	2,718	2,730
1975			3,046	2,807	2,839	2,706	2,736
1980			3,271	2,921	2,975	2,741	2,791
1985			3,522	3,078	3,153	2,822	2,889

Source: See Table 2 and 3-B.

people. However, as a result of predicted net out-migration the actual growth is expected to range between 219,000 and 270,000. The Bureau also anticipates a net population change of 320,000 to 394,000 for Iowa, far below the expected natural increase of 588,000 to 611,000. Thus it is forecast that a substantial portion of the potential population growth in these two states will be drained off through out-migration.

These projections present rates of growth for Nebraska and Iowa that are substantially below the national averages. However, the populations of the two states have had a relatively high proportion in rural areas in the past. Rural areas are expected to experience declines or negligible increases in population as agricultural employment continues to decline. Urban areas in the two states will show nearly all of the net gain in population and this combined with the anticipated out-migration means less than average population increase in the future.

Based on the comparisons shown in Table 2, the projections for the Omaha SMSA appear to be overly optimistic. However, since the Omaha area is the dominant urban center of a large geographical area, most of the anticipated growth in the area is expected to occur in the Omaha SMSA. Therefore, it appears reasonable to expect that the population of the Omaha Metropolitan Area will fall within the ranges of 561,000 to 574,000 in 1970, 663,400 to 696,750 in 1980, and 779,000 to 854,000 in 1990.

The expected future rates of population increase in the Omaha area are in line with the Census data for 1950 and 1960 and the 1967 estimates of this project. There were 457,873 people residing in the Omaha area in 1960, and this represented a total increase of 91,478 people over 1950 population of 366,395 or a growth of 25.0% in 10 years. It is estimated that the current

population in the SMSA has reached 527,560.[6] Thus, the projected future rates of growth approximate the recent rates of population increase and are consistent with the basic assumptions of this report. However, any events leading to a significant departure from these assumptions would mean the projections would no longer be valid and new projections should be made based on a set of assumptions taking the changes into account.

THE WORK FORCE IN OMAHA SMSA, 1960 TO 1990

The human resources available for employment in an area are significantly important to existing industries and to firms seeking potential operation sites. The employment level and its variation is often used as a major criterion for measuring the scope and characteristics of economic activities in a geographical division.

This report attempts to forecast future employment in the Omaha SMSA as a measure for predicting its course of economic activity in the years ahead. The projections are based on the most usable data available and assumes the continuation of recent trends; that is to say it assumes no major deviations from the past course of events.

Since the prediction of the future course of events is fraught with hazards, the projections of total civilian labor force and employment in various sectors of the economy make use of a range within which the actual figures are expected to fall. The forecast data for the Omaha SMSA have been obtained throught the extrapolation of past trends under different methodologies.[7]

---

[6]For further information see "The Changing Population of the Omaha SMSA 1860-1967 with Estimates for 1970," a report published by this research project.

[7]See Appendix A for the methods used in obtaining the data under various series.

Series I in Table 4 presents more optimistic forecasts whereas Series IV presents conservative predictions. Series II and III fall within the projected high-low range. To narrow down the projected ranges, the most probable series will be pointed out in the discussions of the projections.

The civilian labor force in the Omaha SMSA passed the 214,500 mark in 1966.[8] This was an increase of about 41.6% over the 1950 total of 151,410.[9] The annual rate of increase of the civilian labor force between 1958 and 1966 has amounted to approximately 2.1%.

The expected labor force levels for the Omaha area in 1970, 1980, and 1990 are shown in Table 4. The projected Series indicate that the labor force in the area will fall within the range of 222,750 to 229,750 people in 1970, 255,600 to 278,700 in 1980, and 287,600 to 341,700 in 1990. The projected rates of increase during the three decades are expected to fall within the range of 15.1% to 18.7% from 1960 to 1970, 14.7% to 21.4% from 1970 to 1980, and 12.5% to 22.6% from 1980 to 1990. Figure 5 illustrates the future range of available manpower in the area.

For the purpose of comparison, the projected labor force levels for the country as a whole and for the states of Nebraska and Iowa are also included in Table 4. The total labor force in the country is expected to be 85,257,000 in 1970, 100,670,000 in 1980 representing a 22.0% and 18.0% increase in the two decades of the 1960's and 1970's respectively.[10]

It is expected that the rates of increase of the civilian labor force

---

[8]Nebraska Department of Labor, Division of Employment. The annual average has been computed from the Department of Labor's monthly publications.

[9]U.S. Department of Commerce, Bureau of the Census, Census of Population, 1960.

[10]U.S. Department of Labor, Bureau of Labor Statistics, Special Labor Force Report, No. 74.

Table 4

LABOR FORCE FOR THE UNITED STATES, STATES OF NEBRASKA AND IOWA, AND OMAHA SMSA
1960 AND PROJECTED 1970, 1980, AND 1990

	United States*	Nebraska*	Iowa*	Omaha SMSA** Series I	Series II	Series III	Series IV
Labor Force (Number)							
1960#	69,877,000	556,000	1,054,000	193,500	193,500	193,500	193,500
1970	85,257,000	652,000	1,189,000	229,750	224,400	225,800	222,750
1980	100,670,000	735,000	1,352,000	278,700	265,350	259,700	255,600
1990	N.A.	N.A.	N.A.	341,700	311,600	293,600	287,600
Per Cent Change							
1960-1970	22.0	17.2	12.7	18.7	16.0	16.7	15.1
1970-1980	18.1	12.6	13.8	21.4	18.2	14.2	14.7
1980-1990	-	-	-	22.6	17.4	13.8	12.5
As Per Cent of U.S. Total							
1960	100.0	0.796	1.508	0.277	0.277	0.277	0.277
1970	100.0	0.765	1.395	0.270	0.263	0.265	0.261
1980	100.0	0.730	1.343	0.277	0.264	0.258	0.254

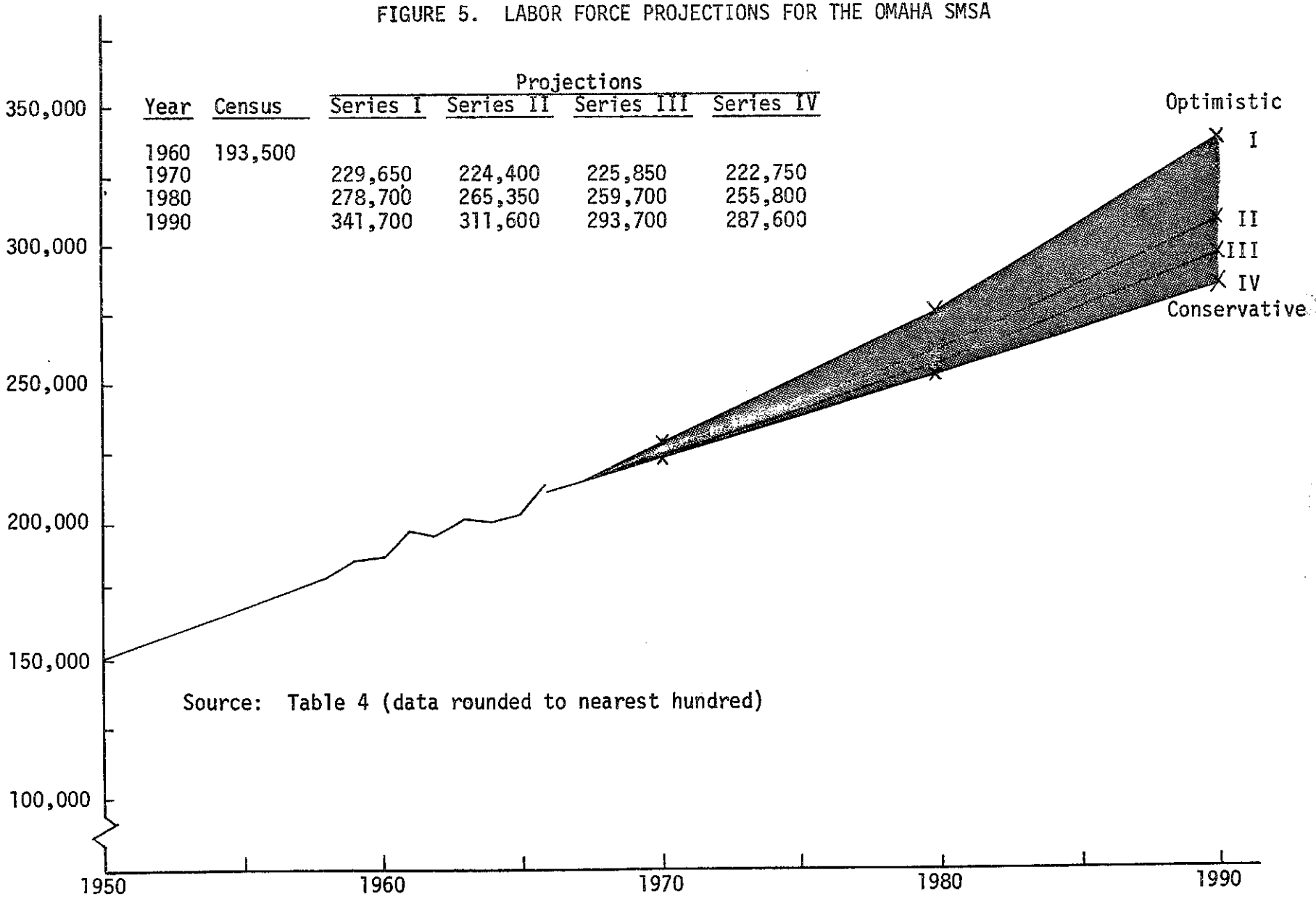
*The statistics for the U.S. and States of Nebraska and Iowa are extracted from the United States Department of Labor, Bureau of Labor Statistics, Special Labor Force Report No. 74, "Labor Force Projections by States, 1970 and 1980." The data exclude armed forces overseas.

**The statistics for the Omaha SMSA are projected by this research unit. For methodology used in arriving at various series, see Appendix A of this report. The data for the Omaha SMSA represent Civilian Labor Force and include Other Nonagricultural Employment.

#For the 1960 data--U.S. and the two states--the source is the decennial census, April 1, 1960. The projected data for 1970 and 1980, on the other hand, are consistent with annual average levels from the monthly labor force survey. For this reason, changes during the 1960-70 decade are not strictly comparable with changes during the 1970-80 decade. Nonetheless, such comparisons indicate the broad outlines of differences among the U.S. and the two states in projected growth during the two decades.

FIGURE 5. LABOR FORCE PROJECTIONS FOR THE OMAHA SMSA

Year	Census	Projections Series I	Series II	Series III	Series IV
1960	193,500				
1970		229,650	224,400	225,850	222,750
1980		278,700	265,350	259,700	255,800
1990		341,700	311,600	293,700	287,600



Source: Table 4 (data rounded to nearest hundred)

in the Omaha SMSA will be above the projected rates of Nebraska and Iowa and the actual levels of the future labor force in the Omaha area are expected to fall between the projected Series I and II. The rates of growth of Series I and II are relatively close to the expected national rates. According to these Series the available human resources in the area will amount to 224,400 to 229,750 persons in 1970, 265,350 to 278,700 persons in 1980 and 311,600 to 341,700 in 1990. These projections, as shown in Table 4, indicate that the future labor force in the Omaha area as a percentage of the national average will be relatively stable ranging from .263 to .277 per cent.

The basic reasons for such optimistic forecasts may be pointed out as follows:

1. Omaha since the early 1950's has exhibited the typical pattern of American urbanization. Substantial expansion has occurred in its economic activities and consequently in employment volume.

2. It is generally agreed that the available labor force as well as employment in the urban areas will increase at a faster rate than the rural labor force. Omaha as one of the important economic centers in the West North Central region of the country is expected to attract a significant portion of the potentially faster growing urban work force.

3. The rate of labor force participation of the population 14 years and older in the states of Nebraska and Iowa which include the Omaha SMSA is expected to be above the national average. Table 5 compares the anticipated rates of participation of the population 14 years and older in the labor force. The increase in participation is expected to arise primarily from a much higher female participation rate during the prime working years.

Table 5

POPULATION 14 YEARS AND OVER AND LABOR FORCE (EXCLUDING ARMED FORCES OVERSEAS), UNITED STATES, WEST NORTH CENTRAL DIVISION, AND STATES OF NEBRASKA AND IOWA 1960 AND PROJECTED 1970 AND 1980

	United States*	West North Central**	Nebraska**	Iowa**
Population 14 Years and Over				
1960 (April 1)	126,277,000	10,827,000	996,000	1,941,000
1970	148,944,000	11,808,000	1,104,000	2,051,000
1980	173,161,000	13,179,000	1,204,000	2,248,000
Per Cent Change				
1960-1970	18.0	9.1	10.8	5.6
1970-1980	16.3	11.6	9.0	9.6
As % of U.S. Total				
1960	100.00	8.57	0.79	1.54
1970	100.00	7.93	0.74	1.38
1980	100.00	7.61	0.70	1.30
Labor Force (Annual Average)#				
1960 (April 1)	69,877,000	5,919,000	556,000	1,054,000
1970	85,257,000	6,772,000	652,000	1,189,000
1980	100,670,000	7,774,000	735,000	1,352,000
Per Cent Change				
1960-1970	22.0	14.4	17.2	12.7
1970-1980	18.1	14.8	12.6	13.8
As % of U.S. Total				
1960	100.00	8.47	0.80	1.51
1970	100.00	7.94	0.76	1.39
1980	100.00	7.72	0.73	1.34
Labor Force Participation Rates##				
1960	55.3	54.7	55.9	54.3
1970	57.2	57.3	59.1	58.0
1980	58.1	59.0	61.1	60.1

*U.S. Department of Commerce, Bureau of the Census, Current Population Reports: Population Estimates, Series P-25, No. 359.

**U.S. Department of Commerce, Bureau of the Census, Current Population Reports: Population Estimates, "Illustrative Projections of the Population of States 1970 to 1985," Series P-25, No. 362.

#U.S. Department of Labor, Bureau of Labor Statistics, Special Labor Force Report No. 74 , "Labor Force Projections by States, 1970 and 1980."

##Labor force participation rates are based on projected population 14 years and over.

Table 6 compares the participation in the labor force on the basis of total population. As previously mentioned, it is assumed that the available work force in Omaha will constitute approximately 40% of the total population of the area. This assumption is relatively consistent with national data, and appears to be reasonably consistent with the computed rates of participation for both Nebraska and Iowa.[11] Minor deviations from this assumed rate of 40% may result from both the changes in participation rates of certain groups and from changes in the proportion of total population in the 14 and over age group. Therefore, these factors impose limitations on the validity of the population projections for the Omaha SMSA.

---

[11]Population forecasts for Nebraska and Iowa are extracted from the U.S. Department of Commerce, Bureau of the Census publication, whereas the projected data for the labor force are taken from the U.S. Department of Labor, Bureau of Labor Statistics publications.

Table 6

POPULATION, LABOR FORCE, AND LABOR FORCE PARTICIPATION RATES FOR THE UNITED STATES, WEST NORTH CENTRAL DIVISION, STATES OF NEBRASKA AND IOWA, AND OMAHA SMSA, 1960 AND PROJECTED 1970, 1980 AND 1990

	United States* (1,000)	West North Central** (1,000)	Nebraska** (1,000)	Iowa** (1,000)	Omaha SMSA Series A & I (1,000)
Population--Total					
1960	180,684	15,394	1,411	2,758	458
1970	208,615	16,248	1,491	2,761	574
1980	250,489	18,077	1,634	2,975	697
1990	300,131	N.A.	N.A.	N.A.	854
Per Cent Change					
1960-1970	15.5	5.5	5.7	0.1	25.4
1970-1980	20.1	11.3	9.6	7.8	21.4
1980-1990	19.8	-	-	-	22.6
As% of U.S. Total					
1960	100.00	8.52	0.78	1.53	0.253
1970	100.00	7.79	0.71	1.32	0.275
1980	100.00	7.22	0.65	1.19	0.278
1990	100.00	-	-		0.285
Labor Force #					
1960	69,877	5,919	556	1,054	194
1970	85,257	6,772	652	1,189	230
1980	100,670	7,774	735	1,352	279
1990	N.A.	N.A.	N.A.	N.A.	342
Per Cent Change					
1960-1970	22.0	14.4	17.3	12.8	18.7
1970-1980	18.1	14.8	12.7	13.8	21.4
1980-1990	-	-	-	-	22.6
As % of U.S. Total					
1960	100.00	8.47	0.80	1.51	0.277
1970	100.00	7.94	0.76	1.39	0.270
1980	100.00	7.72	0.73	1.34	0.277
Labor Force Participation Rates					
1960	38.1	38.4	39.4	38.2	42.0
1970	40.9	41.7	43.7	43.1	40.0
1980	40.2	43.0	45.0	45.4	40.0
1990	-	-	-	-	40.0

*U.S. Department of Commerce, Bureau of the Census, Current Population Reports: Population Estimates, Series P-25, No. 359.

**U.S. Department of Commerce, Bureau of the Census, Current Population Reports: Population Estimates, "Illustrative Projections of the Population of States 1970 to 1985," Series P-25, No. 362.

#U.S. Department of Labor, Bureau of Labor Statistics, Special Labor Force Report No. 74, "Labor Force Projections by States, 1970 and 1980."

EMPLOYMENT FORECAST BY INDUSTRY CLASSIFICATION

Of 214,500 persons available for jobs in 1966 about 6,500 or only 3% were unemployed. Average annual employment in the Omaha SMSA during the same year passed the 207,500 mark.

Table 7-A presents the employment in major components of the labor force for 1960, 1966, and projections for 1970, 1980, and 1990. It is assumed that the rate of unemployment in the Omaha area will decline slightly as a result of a healthier and more active economy. Moreover, better coordination of job opportunities and unemployed workers through appropriate agencies will reduce the level of floating work force to a practical minimum.

The extensive future urbanization within the geographical boundaries of the SMSA will be a major factor in the reduction of agricultural employment. The 6,000 persons employed in agriculture in 1966 constituted about 2.8% of the areas total civilian labor force. This ratio is expected to fall within the range of 2.5% to 2.7% in 1970, 1.6% to 1.7% in 1980, and 1.0% to 1.1% in 1990.

Table 7-B depicts the employment forecasts for the major industry classifications in the area as shown by Series I and III. In terms of employment, all major sectors of the economy of the Omaha SMSA have enjoyed continuous expansion since 1950. However, some subdivisions of major classifications such as food processing and transportation-utility industries are exceptions to this generalization. The declining employment in these subdivisions has been offset by the faster growth in other components resulting in aggregate expansion. The machinery and equipment division of the manufacturing industry is a typical example.

The shifts in employment among various segments are evidence of greater

Table 7-A

LABOR FORCE AND EMPLOYMENT FOR THE OMAHA SMSA
PROJECTIONS--1970, 1980, AND 1990

	Civilian Labor Force Total	Unemployment Total	Unemployment Rate	Employment Total	Agricultural Emplmt.	Nonagricultural Emplmt.	Nonagricultural Wage and Salary	All Other Nonagricultural Emplt.
1970								
Series I	229,750	6,650	2.9	223,100	5,500	217,600	197,600	20,000
Series II	224,400	6,500	2.9	217,900	5,500	212,400	192,400	20,000
Series III	225,800	6,500	2.9	219,300	5,700	213,600	193,600	20,000
Series IV	222,750	6,450	2.9	216,300	5,700	210,600	190,600	20,000
1980								
Series I	278,700	7,500	2.7	271,200	4,500	266,700	245,900	20,800
Series II	265,350	7,150	2.7	258,200	4,300	254,900	233,900	21,000
Series III	259,700	7,000	2.7	252,700	4,500	248,200	227,400	20,800
Series IV	255,600	6,900	2.7	248,700	4,500	244,200	223,400	20,800
1990								
Series I	341,700	8,500	2.5	333,200	3,300	329,900	308,200	21,700
Series II	311,600	7,800	2.5	303,800	4,000	299,800	277,800	22,000
Series III	293,600	7,300	2.5	286,300	3,300	283,000	261,300	21,700
Series IV	287,600	7,200	2.5	280,400	3,300	277,100	255,400	21,700

Table 7-B

LABOR FORCE AND EMPLOYMENT IN MAJOR INDUSTRIES FOR THE OMAHA SMSA, SELECTED SERIES
1960, 1966, AND PROJECTIONS FOR 1970, 1980, AND 1990

			1970		1980		1990	
	1960*	1966*	Series I	Series III	Series I	Series III	Series I	Series III
Civilian Labor Force Total	193,500**	214,053**	229,750	225,800	278,700	259,700	341,700	293,600
Unemployment	6,350	6,512	6,650	6,500	7,500	7,000	8,500	7,300
Unemployment Rate	3.3	3.0	2.9	2.9	2.7	2.7	2.5	2.5
Employment Total	187,150	207,541	223,100	219,300	271,200	252,700	333,200	286,300
Agricultural Employment	7,050	6,008	5,500	5,700	4,500	4,500	3,300	3,300
Nonagricultural Employment	180,100	201,533	217,600	213,600	266,700	248,200	329,900	283,000
Nonagricultural Wage and Salary	163,000	182,850	197,600	193,600	245,900	227,400	308,200	261,300
Construction & Mining	10,600	11,550	12,600	12,200	16,600	14,700	21,800	17,200
Manufacturing	37,400	37,554	39,600	39,000	45,100	43,000	51,500	46,900
Transportation, Communication & Utilities	20,100	20,216	20,100	20,000	20,500	19,800	21,300	19,600
Trade, Wholesale, Retail	37,900	43,967	46,900	46,300	58,800	54,700	74,800	63,100
Finance, Insurance & Real Estate	13,300	14,479	15,600	15,500	18,100	17,800	20,800	20,000
Services	23,500	29,817	33,100	33,100	42,700	42,700	52,300	52,300
Government	20,200	25,267	29,500	27,500	44,100	34,800	65,700	42,200
All Other Nonagricultural	17,100	18,683	20,000	20,000	20,800	20,800	21,700	21,700

*Nebraska Department of Labor, Division of Employment, Labor Area News.

**Includes the workers classified as "All Other Nonagricultural Employment"--proprietors, self-employed, and unpaid family workers in nonagricultural industries and domestic workers in private households. Thus, it does not necessarily agree with the U.S. Department of Labor publications which include only the full- and part-time workers who have worked or received wages or salary during the pay period.

diversification in the area. Such a trend is expected to continue in the years ahead resulting in more employment stability and growth without substantial reliance on one industry classification as the major source of employment in the metropolitan area. Table 8 illustrates the expected future proportional variations of employment among major sectors of economic activities.

Figure 6 is designed to illustrate the range within which the future total employment is expected to fall. The data included under Series I and II are the most probably forecasts. Figure 7 shows the anticipated employment growth in major classifications listed under nonagricultural wage and salary workers. In the sections following, the levels of employment are forecast for each industry classification and are discussed in detail.

Future Employment in Construction and Mining[12]

The future employment in the construction industry depends upon the overall population and economic growth in the metropolitan area. The scope of economic expansion and population growth will be the primary determinants of demand for additional commercial and residential construction. In spite of the traditional cyclical nature of construction activity and consequent employment variation in this industry, it is anticipated that the number of workers in the construction and mining category will increase along with the projected population growth and overall employment expansion.

The future employment in this sector of the economy is expected to fall within the ranges of 12,200 to 12,600 in 1970, 14,600 to 16,500 in 1980, and 17,200 to 21,800 in 1990. (Table 9).

---

[12]See Appendix B for definition.

Table 8

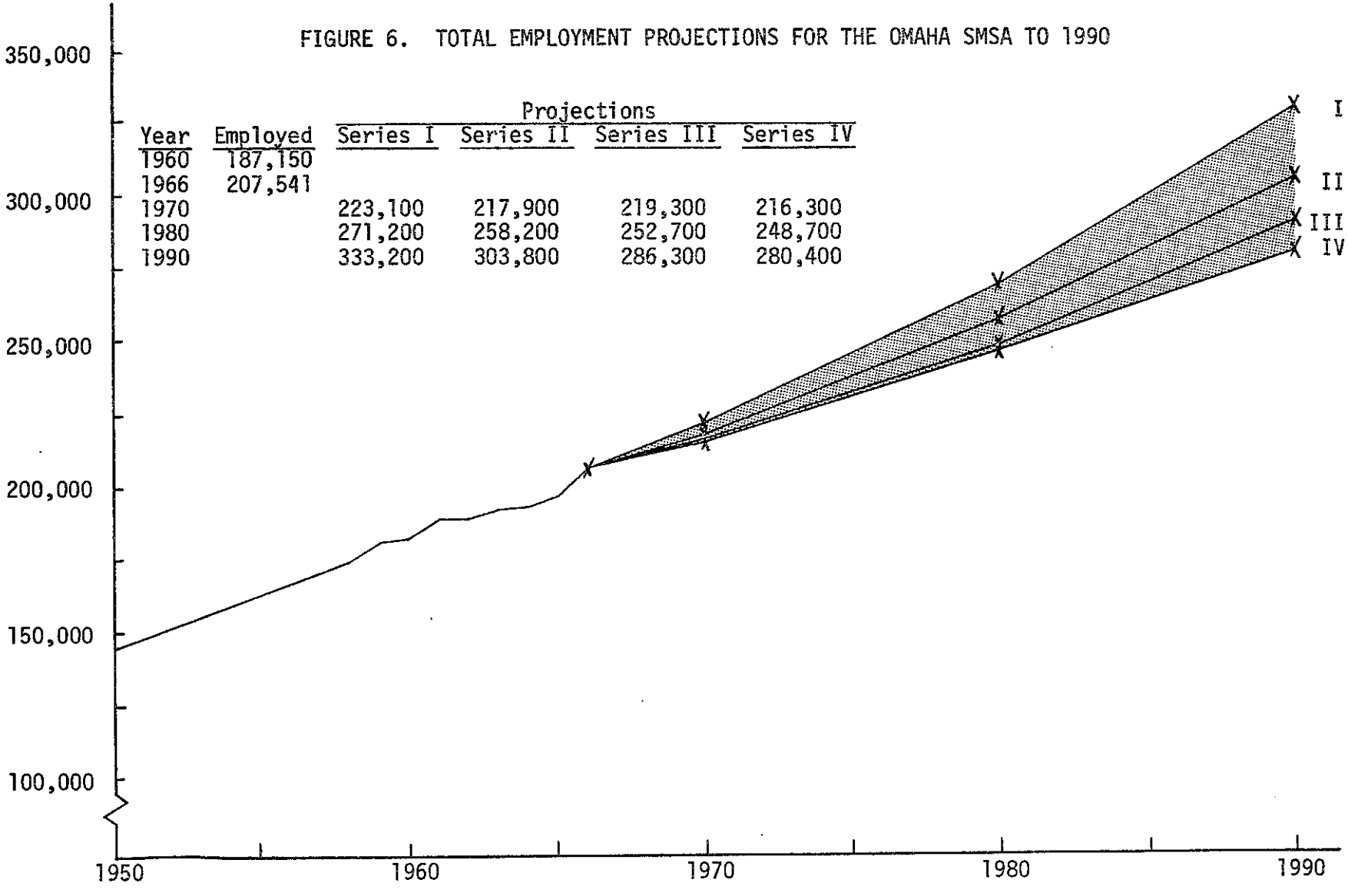
PROPORTIONATE CHANGES IN THE EMPLOYMENT STRUCTURE OF THE OMAHA SMSA
1960, 1966 AND PROJECTED 1970, 1980, AND 1990*

			Series I			Series III		
	1960	1966	1970	1980	1990	1970	1980	1990
Civilian Labor Force Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Unemployment	3.3	3.0	2.9	2.7	2.5	2.9	2.7	2.5
Agricultural Employment	3.6	2.8	2.4	1.6	1.0	2.5	1.7	1.1
Construction and Mining	5.5	5.4	5.5	5.9	6.4	5.4	5.7	5.9
Manufacturing	19.3	17.5	17.2	16.2	15.1	17.3	16.7	15.9
Transportation, Communications, Utilities	10.4	9.4	8.7	7.4	6.2	8.9	7.6	6.7
Trade, Wholesale and Retail	19.6	20.5	20.4	21.1	21.9	20.5	21.1	21.5
Finance, Insurance and Real Estate	6.9	6.8	6.8	6.5	6.1	6.9	6.9	6.8
Services	12.2	13.9	14.4	15.3	15.3	14.7	16.4	17.8
Government	10.4	11.8	12.8	15.8	19.2	12.2	13.4	14.4
All Other Nonagricultural Employment	8.8	8.7	8.7	7.5	6.3	8.8	8.1	7.5

*Computed from Table 7-B.

FIGURE 6. TOTAL EMPLOYMENT PROJECTIONS FOR THE OMAHA SMSA TO 1990

Year	Employed	Projections Series I	Series II	Series III	Series IV
1960	187,150				
1966	207,541				
1970		223,100	217,900	219,300	216,300
1980		271,200	258,200	252,700	248,700
1990		333,200	303,800	286,300	280,400



Source: Table 7-A and 7-B.

FIGURE 7. THE DISTRIBUTION OF TOTAL NONAGRICULTURAL WAGE AND SALARY WORKERS 1950, 1960 AND PROJECTIONS TO 1990

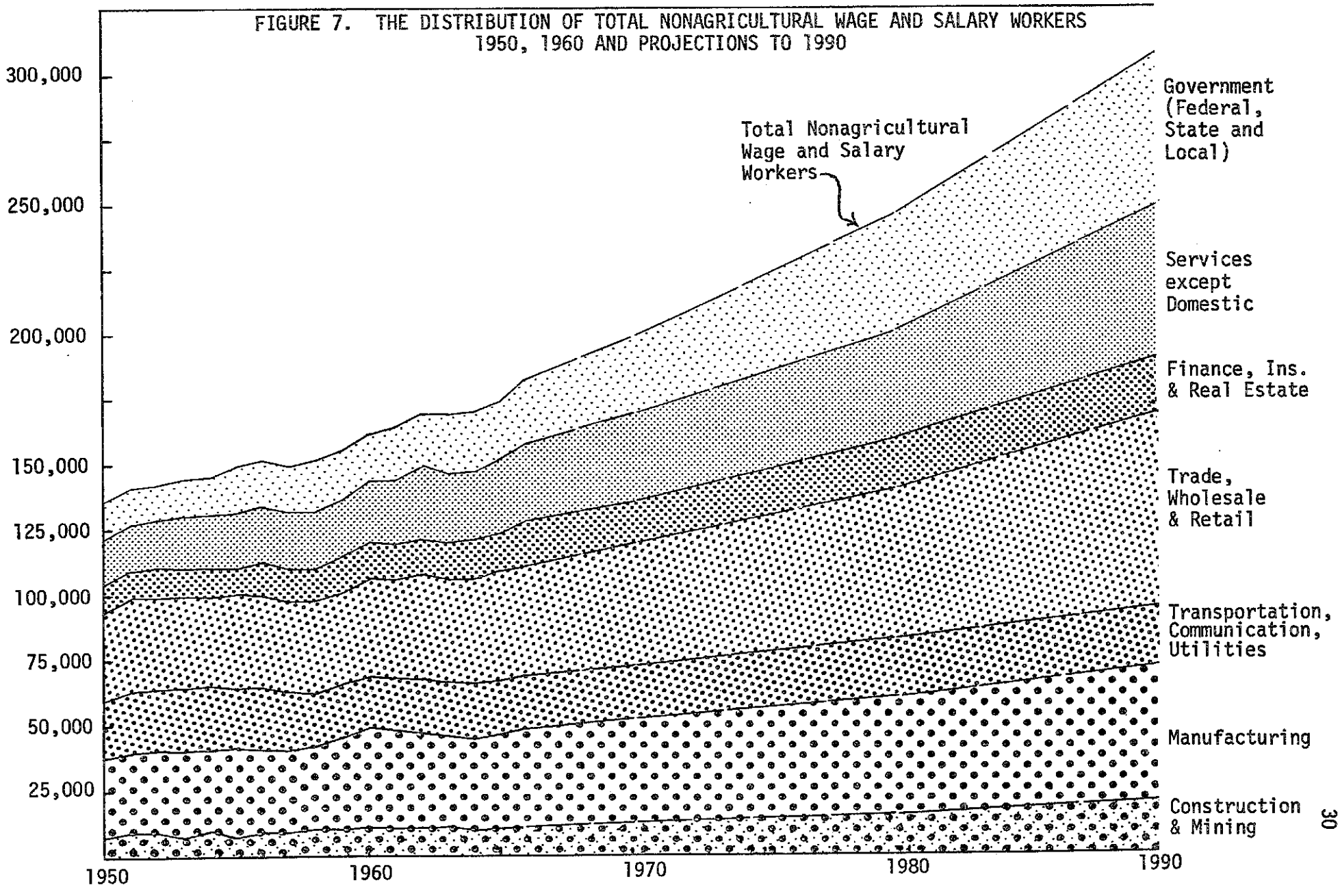


Table 9

CONSTRUCTION AND MINING EMPLOYMENT IN OMAHA SMSA, 1950, 1960, AND 1966* AND PROJECTIONS FOR 1970, 1980, AND 1990

Year**	Employment	As Per Cent of Civilian Labor Force#
1950	7,200	4.8
1960	10,600	5.5
1966	11,550	5.4
1970		
Series I	12,600	5.5
Series III	12,200	5.4
1980		
Series I	16,600	5.9
Series III	14,700	5.7
1990		
Series I	21,800	6.4
Series III	17,200	5.9

*Source of data for 1950, 1960, and 1966 is the Nebraska Department of Labor, Division of Employment.

**Series I and III correspond with the projected civilian labor force Series I and III.

#Percentages represent the estimated construction and mining employment of Series I and III as percentages of the total civilian labor force of the corresponding series.

Table 9 presents the forecast data with a ratio analysis of the anticipated employment in this industry. According to these projections, employment in construction and mining will increase in relative importance in the years ahead. Series I represents an optimistic projection whereas Series III provides a relatively conservative projection. Series III indicates that employment in construction and mining activities will remain at about the same or a slightly higher proportion than in the 1960-1966 total civilian labor force.

Future Employment in Manufacturing Activities

Manufacturing employment in the Omaha area passed the 37,550 mark in 1966. This was an increase of about 7,350 workers over the 1950 level. Although manufacturing is one of the major sources of employment in the metropolitan area, its recent rate of growth has been relatively slow. This phenomenon has been caused by the continuous decline in the number of workers employed in some portions of the food processing industry.

The Omaha area has long been one of the major food processing centers of the nation. Its meat packing industry has been the largest in the entire nation. Although food processing still remains the largest single source of manufacturing employment, its relative importance has declined significantly in recent years.

On the other hand, some divisions of the manufacturing industry, especially machinery and equipment, have experienced dramatic rates of growth. In 1950 there were only 2,150 workers engaged in machinery and equipment manufacturing whereas in 1966 the industry had an average employment of 9,850 workers which was a 359% increase over the 1950 level.

Recent changes of industry mix within the manufacturing industry of the metropolitan area provides promising evidence for future expansion of overall manufacturing activities and the consequent growth of its employment.

Projected employment in manufacturing is presented in Figure 8. Series I and III are included in Table 10. As shown in these series, the number of workers engaged in the manufacturing industry is expected to fall within the range of 39,000 to 39,600 in 1970, 43,000 to 45,100 in 1980, and 46,900 and 51,500 in 1990.

FIGURE 8. MANUFACTURING EMPLOYMENT PROJECTIONS FOR THE OMAHA SMSA TO 1990

Year	Employed	Projections Series I	Series II	Series III	Series IV
1960	37,400				
1966	37,600				
1970		39,600	39,300	39,000	39,000
1980		45,100	44,150	43,000	42,950
1990		51,500	49,600	46,900	46,700

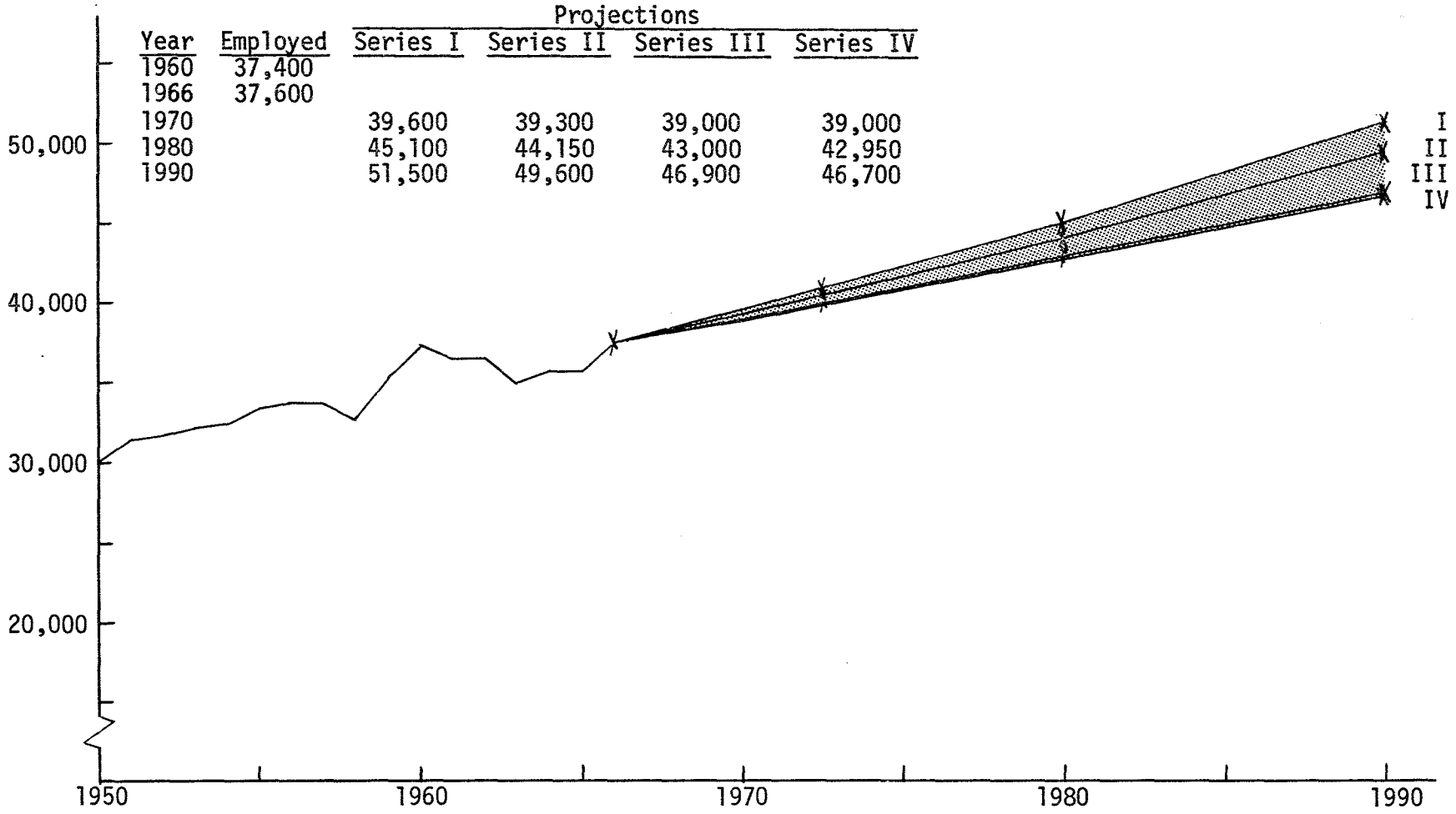


Table 10

MANUFACTURING EMPLOYMENT IN OMAHA SMSA, 1950, 1960, AND 1966*
AND PROJECTIONS FOR 1970, 1980, AND 1990

Year**	Employment	As Per Cent of Civilian Labor Force#
1950	30,200	19.9
1960	37,400	19.3
1966	37,550	17.5
1970		
Series I	39,600	17.2
Series III	39,000	17.3
1980		
Series I	45,100	16.2
Series III	43,000	16.7
1990		
Series I	51,500	15.1
Series III	46,900	15.9

*Data for 1950, 1960, and 1966 are extracted from the Nebraska Department of Labor, Division of Employment publications.

**Series I and III correspond with the civilian labor force projections of Series I and III.

#Percentages represent the estimated manufacturing employment of Series I and III as percentages of the total civilian labor force of the corresponding series.

According to the proportional growth analysis presented in Table 10, Omaha's manufacturing employment is expected to increase as a relatively slow rate compared to its overall employment growth. In 1950 manufacturing employment in the area constituted approximately 19.9% of the civilian labor force. However, the proportion declined to 19.3% in 1960 and to 17.5% in 1966.

The proportion of total employment engaged in manufacturing activities in Omaha is below the national average. This is also true when Omaha is compared to some of its primary competing communities in the northern plains states.[13]

---

[13]For more detailed information on this subject, see L.A. Danton, The Economic Structure of the Omaha SMSA, University of Omaha, 1967.

It is reasonable to assume that these communities will continue to exploit any competitive advantages they may have for the purpose of attracting new industries. Similarly, the future industrial expansion and consequent employment growth in Omaha will depend largely upon the scale of similar promotional programs administered by interested institutions and individuals in the Omaha SMSA.

On the basis of past employment trends in the various components of the manufacturing industry a series of projections has been prepared and is presented in Table 11. According to these projections employment in all major components of manufacturing activities except food processing is expected to increase. Basically the meat packing and bakery industries account for the past as well as expected future decline in employment in the food industry. Figure 9 depicts the anticipated proportional employment levels in the major subdivisions of the manufacturing activities in the years ahead. Figure 10 illustrates optimistic and conservative estimates of future employment in the food products industry.

Future Employment in Transportation, Communications, and Utilities

Since 1950 the employment in this classification has experienced a slightly declining trend. In 1950 a total of 21,500 workers were engaged in transportation, communications, and utilities industries in the metropolitan area, whereas the 1966 total was 20,250.

Among the major subdivisions of this classification, the decline in employment occurring in the railroad segment during the 1950-1966 period--from 10,000 in 1950 to 8,300 in 1966--accounted for the largest portion of the decline. The communications segment increased its employment during the same period--from 2,900 in 1950 to 4,050 in 1966--and this offset most of

Table 11

EMPLOYMENT IN MAJOR DIVISIONS OF MANUFACTURING FOR THE OMAHA SMSA
1950, 1960, 1966 AND PROJECTIONS FOR 1970, 1980, AND 1990

				1970		1980		1990	
	1950*	1960*	1966*	Series I	Series III	Series I	Series III	Series I	Series III
Manufacturing Total	30,200	37,400	37,550	39,600	39,000	45,100	43,000	51,500	46,900
Food Products**	18,450	17,200	13,860	13,850	13,350	12,050	10,200	10,850	6,900
Printing and Publishing	2,050	2,450	2,835	3,000	2,950	3,650	3,450	4,500	3,900
Metals**	2,550	3,100	3,535	3,400	3,350	3,700	3,650	4,100	4,000
Machinery and Equipment	2,150	7,750	9,865	11,300	11,300	16,250	16,250	21,150	21,150
Other Manufacturing	5,000	6,950	7,455	8,050	8,050	9,450	9,450	10,900	10,900

*Nebraska Department of Labor, Division of Employment.
**See Appendix B for category definitions.

FIGURE 9. THE DISTRIBUTION OF EMPLOYMENT IN THE MANUFACTURING INDUSTRY
1950, 1960 AND PROJECTIONS TO 1990

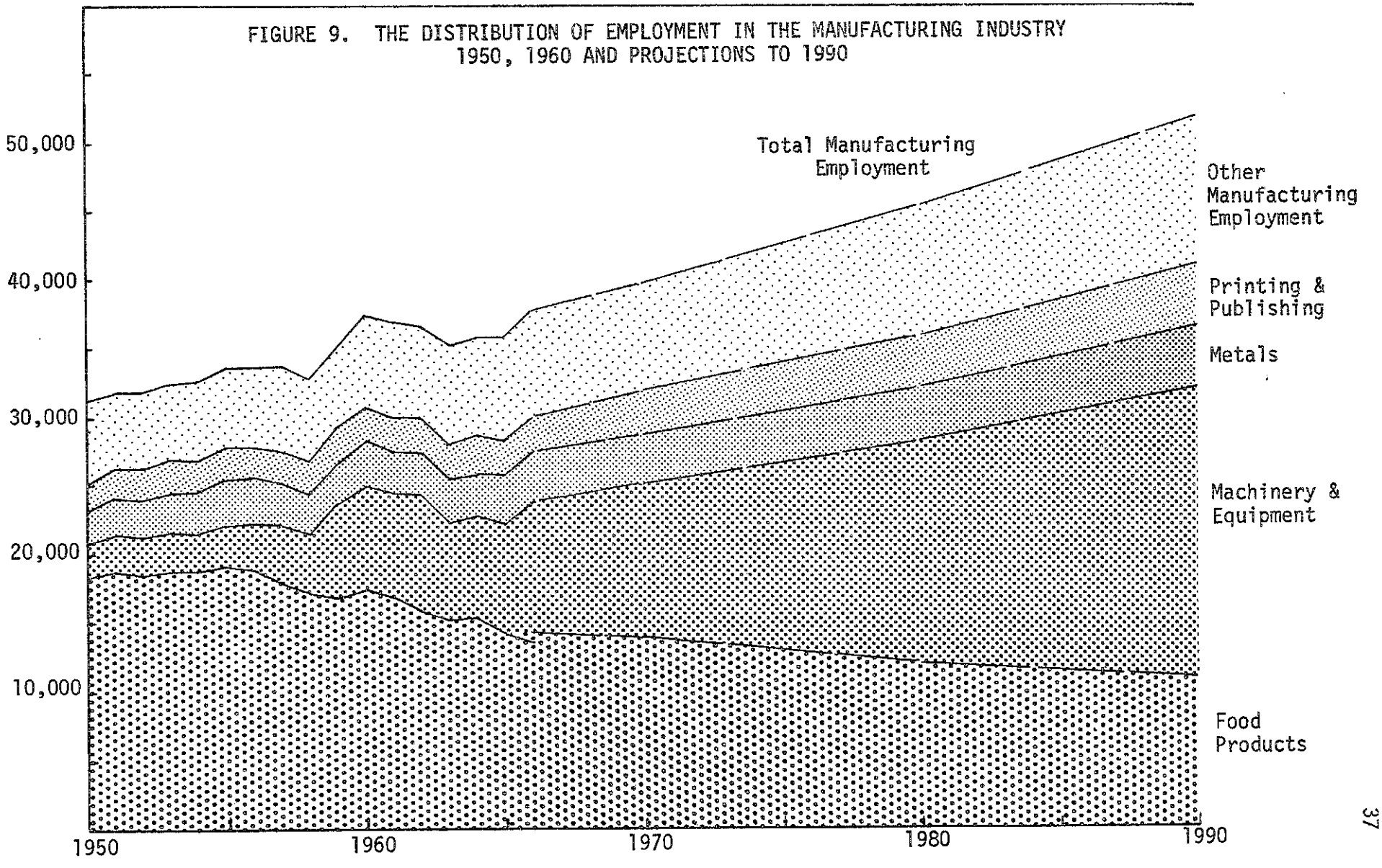
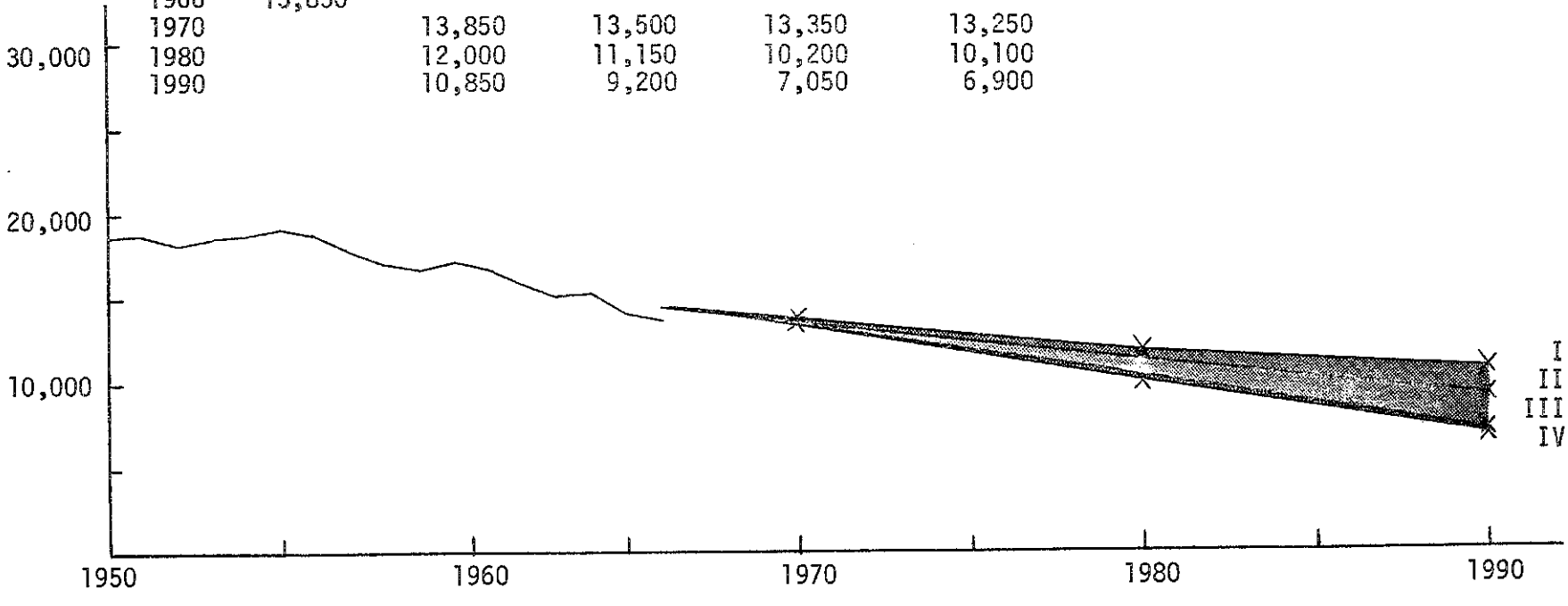


FIGURE 10. FOOD PRODUCTS EMPLOYMENT PROJECTIONS FOR THE OMAHA SMSA TO 1990

Year	Employed	Projections			
		Series I	Series II	Series III	Series IV
1950	18,450				
1960	17,200				
1966	13,850				
1970		13,850	13,500	13,350	13,250
1980		12,000	11,150	10,200	10,100
1990		10,850	9,200	7,050	6,900



the decline of railroad employment. Recent employment variations in other subdivisions of the transportation, communications and utilities sector of economic activities have been minor, and for the most part, offsetting in nature.[14]

Based on the past trend of the total employment in this industry classification, further decline in the future should be expected. However, considering the anticipated population growth and economic expansion, it is reasonable to assume that additional services of these industries will be demanded in the years ahead. Series I and III, in Table 12, provide a range within which the future levels of employment in this industry classification are expected to fall.

According to the Series I and III projections, the transportation, communication, and utilities industries will employ from 20,000 to 20,100 workers in 1970, 19,800 to 20,500 workers in 1980 and 19,600 to 21,300 workers in 1990.

These estimates for the transportation, communication, and utilities category indicate little in the way of change in employment in the future. In large part, this is due to several offsetting factors that have prevailed in the recent past and which are expected to continue in the future. The Omaha area, because of its strategic geographical location, has long been a major transportation and communication center. However, technological change in the rail industry plus the rise in air and truck transportation have led to a significant decline in rail employment. This has been offset in part by rising employment in motor vehicle and air transportation. Population increases plus increased per capita consumption of communication and utilities

---

[14]See Appendix B for category definitions.

services have led to increase in employment by these industries. This, in turn, has contributed toward offsetting the decline in employment by the railroads of the area.

It is expected that the anticipated increases in population of the area plus higher levels of consumption will lead to significant increases in total demand for the services of the transportation, communication, and utilities category. By the same token, there is no reason to believe that future technological change will not continue to raise the level of output per worker in an offsetting manner as it has in the past. Therefore, no significant increases or decreases in employment are forecast in this category.

Table 12

EMPLOYMENT IN TRANSPORTATION, COMMUNICATIONS, AND UTILITIES, 1960, 1966, AND PROJECTIONS FOR 1970, 1980, AND 1990*

Year**	Employment	As Per Cent of Civilian Labor Force#
1960	20,100	10.4
1966	20,250	9.4
1970		
Series I	20,100	8.7
Series III	20,000	8.9
1980		
Series I	20,500	7.4
Series III	19,800	7.6
1990		
Series I	21,300	6.2
Series III	19,600	6.7

*Data for 1960 and 1966 are extracted from the Nebraska Department of Labor, Division of Employment publications.

**Series I and III correspond with the civilian labor force projections of Series I and III.

#Percentages represent the estimated transportation, communications, and utilities employment of Series I and III as percentages of the total civilian labor force of the corresponding series.

Future Employment in Wholesale and Retail Trade

Omaha, consistent with other metropolitan cities of the Midwest, has a significant portion of its total employment engaged in the wholesale and retail trade function.

In 1950 the industry's total employment in the SMSA was approximately 34,850. The number of people engaged in trade activities reached 37,900 in 1960 and 43,950 in 1966, the largest gain occurring since 1960. The relatively high proportion of employment in this sector of the economy and its rapid growth are basically due to the fact that Omaha is the main trading center for a large surrounding area.

For the purpose of forecasting the employment of Omaha's trade industry in the years ahead, the employment trends in each subdivision of the trade activities have been extrapolated and from summation of the extrapolated values the future employment for the entire industry has been obtained. Series I and III in Table 13 present these projections. The range between these series appears to be the most probable range within which the future levels of employment in the trade industry are expected to fall. Series II and IV in Figure 11 represent conservative projections and are obtained from extrapolation of the total employment trend in the trade industry under linear and exponential methods of projection.[15]

On the optimistic side, the employment in the trade industry is expected to fall within the range of 46,300 to 46,900 in 1970, 54,700 to 58,800 in 1980, and 63,100 to 74,800 in 1990. The widening nature of the presented range appears to be inevitable if long range forecasting is to be meaningful.

---

[15]See Appendix A for detailed methodological information.

FIGURE 11. WHOLESALE AND RETAIL TRADE EMPLOYMENT PROJECTIONS FOR THE OMAHA SMSA TO 1990

Year	Employed	Projections Series I	Series II	Series III	Series IV
1950	34,850				
1960	37,900				
1966	43,950				
1970		46,900	44,000	46,250	43,750
1980		58,800	50,350	54,700	48,950
1990		74,800	57,700	63,100	54,200

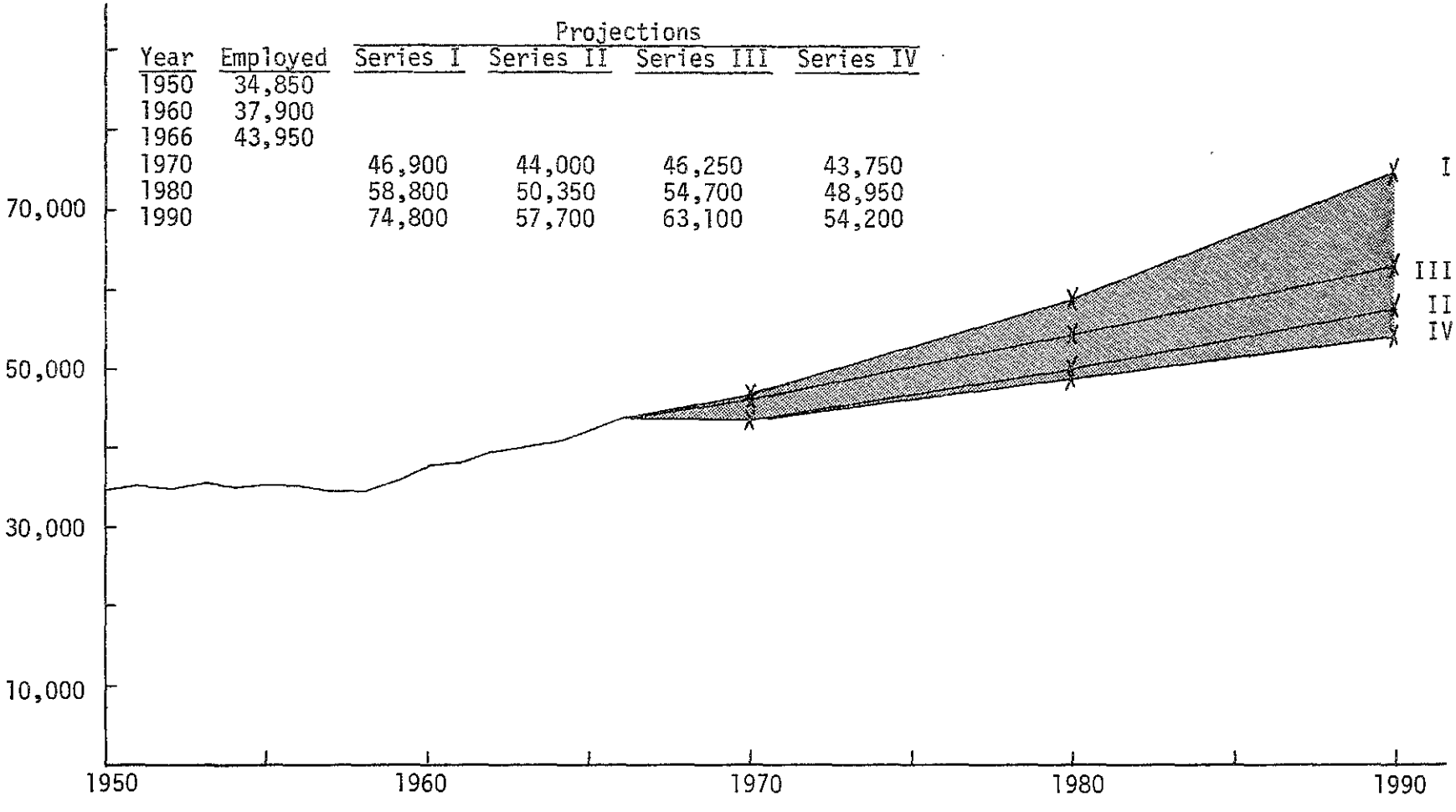


Table 13

EMPLOYMENT IN WHOLESALE AND RETAIL TRADE, 1960 AND 1966*
AND PROJECTIONS FOR 1970, 1980, AND 1990

Year**	Employment	As Per Cent of Civilian Labor Force#
1960	37,900	19.6
1966	43,950	20.5
1970		
Series I	46,900	20.4
Series III	46,300	20.5
1980		
Series I	58,800	21.1
Series III	54,700	21.1
1990		
Series I	74,800	21.9
Series III	63,100	21.5

*Source of data for 1960 and 1966 is the Nebraska Department of Labor, Division of Employment.

**Series I and III correspond with the projected civilian labor force Series I and III.

#Percentages represent the estimated wholesale and retail trade employment of Series I and III as percentages of the total civilian labor force of the corresponding series.

The forecast range may seem to be optimistic; however, according to ratio analysis (Table 13), the proportional rate of growth of employment in wholesale and retail trade is consistent with the anticipated growth rates of total employment and of the civilian labor force. In other words, in 1960 and in 1966 the employment in the trade sector of the economy constituted about 19.6% and 20.5% of the total civilian labor force for these years. The future ratio is expected to fall within the 20.4% and 21.9% range from 1970 to 1990. The faster rate of employment gain in retailing activities is expected to provide the largest contribution for overall growth of trade employment.

Improved economic conditions in the area as well as continuous population growth in Omaha and surrounding communities led to expansion of commercial

facilities in the SMSA during the 1950's. Currently wholesale and retail trade make up the largest source of employment in the area. This proportional importance is expected to be maintained in the years ahead. Past expansionary trends in establishing modern commercial facilities and suburban shopping centers are anticipated to continue in the future. The forecast population growth in the area and the assumed favorable economic conditions should accelerate the industry's growth and consequently its employment.

Future Employment in Finance, Insurance, and Real Estate

The finance, insurance and real estate industry in 1966 provided employment for a total of 14,480 workers in the Omaha area. This was an increase of 3,980 employees over the 1950 level. Total 1966 employment in this group accounted for 6.8% of the civilian labor force. In 1970 the finance, insurance and real estate industry is expected to employ about 6.8% to 6.9% of the available civilian labor force. Proportions in 1980 and 1990 are anticipated to range from 6.5 to 6.9% and from 6.1 to 6.8% respectively.

The estimated employment levels of the industry through 1990 are shown in Table 14-A in ten year intervals. Finance, insurance, and real estate industries in aggregate are expected to employ from 15,500 to 15,600 workers in 1970, from 17,800 to 18,100 workers in 1980, and from 20,000 to 20,800 workers in 1990. Table 14-B presents the estimated employment levels for the major divisions of this group.

The forecast totals represent the projected Series I and III which are illustrated in Figure 12 along with Series II and IV. Series II, depicting the most optimistic projection, is obtained from the exponential extrapolation of the past employment trend.

The importance of this industry classification in the area lies in its

Table 14-A

EMPLOYMENT IN THE FINANCE, INSURANCE AND REAL ESTATE INDUSTRY
1960, 1966 AND PROJECTIONS FOR 1970, 1980 AND 1990*

Year**	Employment	As Per Cent of Civilian Labor Force#
1960	13,300	6.9
1966	14,480	6.8
1970		
Series I	15,600	6.8
Series III	15,500	6.9
1980		
Series I	18,100	6.5
Series III	17,800	6.9
1990		
Series I	20,800	6.1
Series III	20,000	6.8

*Source of data for 1960 and 1966 is the Nebraska Department of Labor Division of Employment.

**Series I and III correspond with the projected civilian labor force Series I and III.

#Percentages represent the estimated finance, insurance and real estate employment of Series I and III as percentages of the total civilian labor force of the corresponding series.

Table 14-B

EMPLOYMENT IN MAJOR DIVISIONS OF FINANCE, INSURANCE, AND REAL ESTATE INDUSTRY, 1960, 1966, AND PROJECTIONS FOR 1970, 1980, AND 1990*

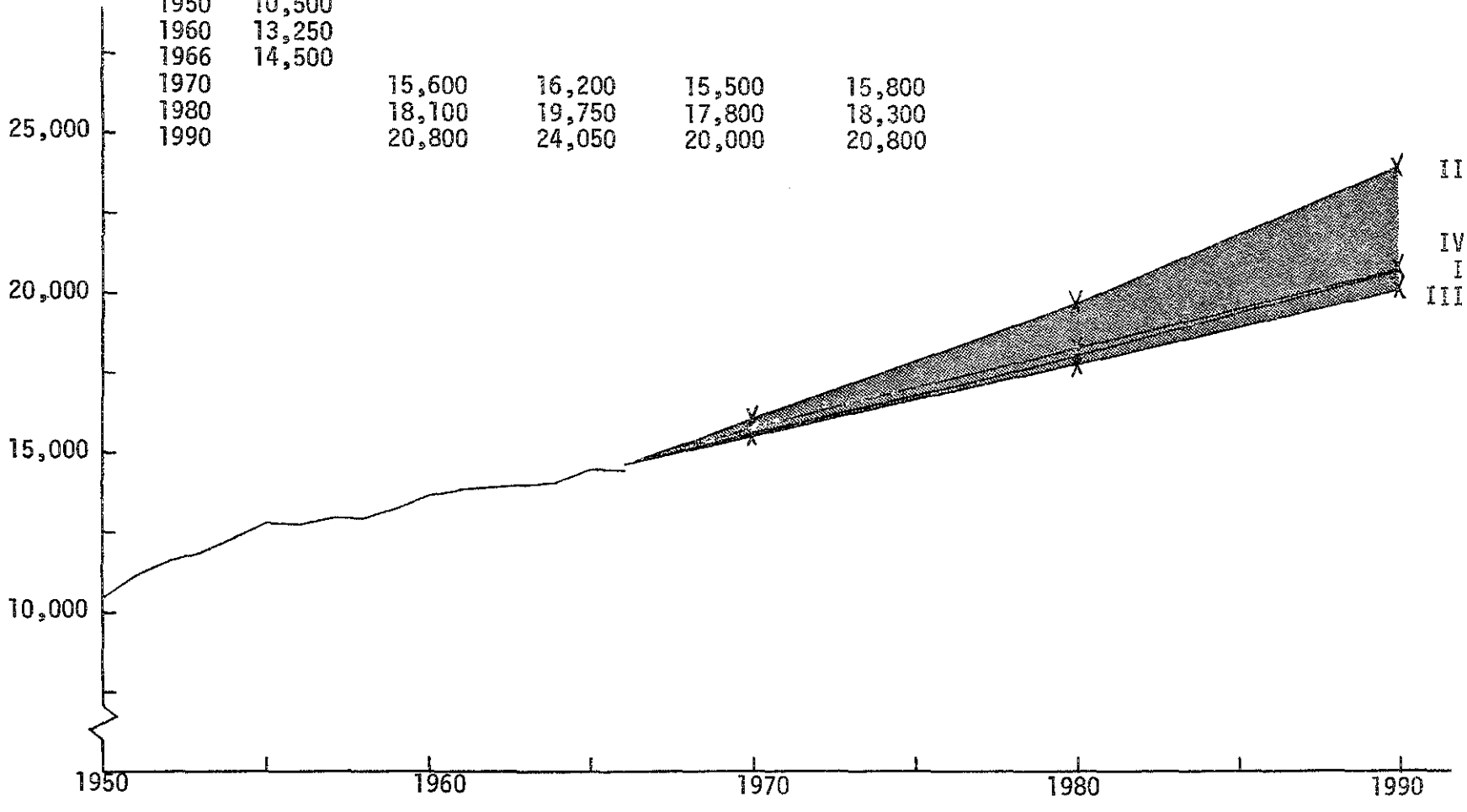
Year**	Finance	Insurance	Real Estate
1960	3,700	7,900	1,700
1966	4,150	8,380	1,950
1970			
Series I	4,720	8,690	2,190
Series III	4,720	8,670	2,160
1980			
Series I	5,760	9,570	2,770
Series III	5,760	9,450	2,580
1990			
Series I	6,790	10,320	3,490
Series III	6,790	10,210	3,000

*Source of data for 1960 and 1966 is the Nebraska Department of Labor, Division of Employment.

**Series I and III correspond with the projected civilian labor force Series I and III.

FIGURE 12. FINANCE, INSURANCE, AND REAL ESTATE EMPLOYMENT PROJECTIONS FOR THE OMAHA SMSA TO 1990

Year	Employed	Projections Series I	Series II	Series III	Series IV
1950	10,500				
1960	13,250				
1966	14,500				
1970		15,600	16,200	15,500	15,800
1980		18,100	19,750	17,800	18,300
1990		20,800	24,050	20,000	20,800



contribution to overall expansion of the economy in Omaha. More than 30 insurance companies have home offices in the Omaha SMSA and conduct the bulk of their business outside of the metropolitan geographic boundaries. A large portion of the people employed by these companies provide services to businesses and individuals residing outside of the area, and thus, employment in these companies generates a strong multiplying effect upon the economic growth of the community. The same analysis applies to the operation of the financial institutions in Omaha which conduct direct business with or provide corresponding services to firms outside of the SMSA.

In view of continuous past growth of the finance, insurance, and real estate industries in Omaha and of the anticipated future population growth and economic expansion, the demand for the services of this group is expected to increase steadily in the years ahead.

Future Employment in the Service Industry

The service industry is the third largest source of employment in the Omaha area. The number of people engaged in various service functions increased from 18,100 in 1950 to 23,500 in 1960 and finally to 30,150 in 1966. In 1966 approximately 13.9% of the total employment in the Omaha SMSA was employed in service activities.

The major services provided by this industry include hotels and lodging services; personal and business services; medical, educational, and legal services; and other miscellaneous services. In recent years the employment in professional services--medical, educational, and others--has increased continuously. Other divisions of the service industry have experienced relatively slower rates of growth. Of the 30,150 people active in service functions in 1966, about 2,350 were employed in hotels and lodging places, 18,000 in

professional services and 9,800 in other classifications.

Expansion of service activities and consequent growth of employment in this industry basically depend upon the overall population increase in the area and the economic welfare of the community. In view of the anticipated future population growth and economic expansion, it is reasonable to assume that the demand for the functions of this industry and the people to carry out these activities will increase proportionally.

On the conservative side the employment in the various divisions of the service industry is expected to reach approximately 33,100 in 1970, 42,700 in 1980, and 52,300 in 1990. These estimates are obtained from the aggregation of linear extrapolation of the past employment trends in the major divisions of the service industry.

To a large extent, the past growth in service employment has occurred in the local portion of the service industry which has a direct correlation to the population and income changes in the area. The local portion does not include the services provided by the employees of nonprofit organizations, tourist agencies, research and development institutions, or the colleges and universities which are partly financed from outside of the Omaha metropolitan geographic boundaries and extend some portion of their services to non-local individuals and institutions.

The employment gain in this portion is less dependent on local population increase or income growth. Currently the employment in this category constitutes only a small portion of the total workers active in various service functions. However, a greater proportional employment gain in these types of service activities may be expected which would contribute to a faster rate of growth of service employment in the SMSA. Thus, the employment in

the service industry may be expected to surpass the projections presented in this section.

Future Employment in Government Institutions

Since 1950 government--federal, state, and local--has been one of the fastest growing sources of employment in the metropolitan area. In 1950 all levels of government had provided jobs for 13,150 people. In 1966 the total exceeded 25,250, representing nearly 100% growth in 16 years.

Of 26,000 government employees in 1966 about 8,900 were engaged in federal institutions and the remaining 17,100 were employed at the state and local level. The unavailability of relevant data pertaining to the employment levels in various governmental divisions prior to 1964 imposes limitations on the evaluation of proportional employment change in federal and state-local levels separately. Thus, the estimates of future employment levels in the government sector of the Omaha economy are based on the projection of the combined government employment trend since 1950.

On the conservative side, as presented in Table 15-A, the total government employment is anticipated to reach 27,500 in 1970, 34,800 in 1980, and 42,200 in 1990. Table 15-A as well as Figure 13 also includes an optimistic forecast. According to this projection which is obtained from exponential extrapolation of the past employment trend the number of people active in the various government functions may approach 29,500 in 1970, 44,100 in 1980, and 65,700 in 1990. The presented range widens substantially as it extends further into the future because of the uncertainity about the scale of future operations of various governmental units. The higher projection may prove to be the more realistic if past rates of increase in government employment continue in the years ahead.

FIGURE 13. GOVERNMENT EMPLOYMENT PROJECTIONS FOR THE OMAHA SMSA TO 1990

Year	Employed	Projections Series I	Projections Series III
1950	13,150		
1960	20,200		
1966	25,250		
1970		29,500	27,500
1980		44,100	34,800
1990		65,700	42,200

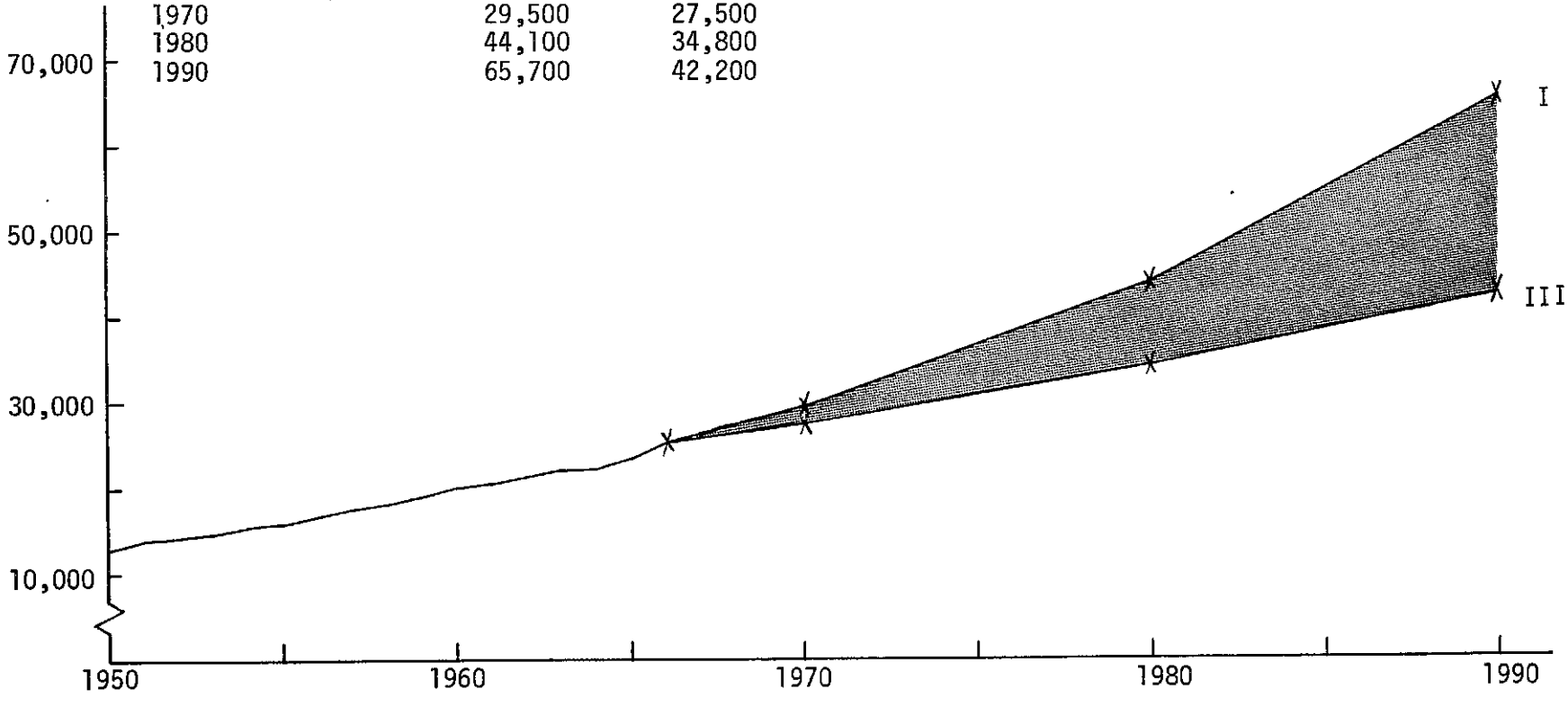


Table 15-A

GOVERNMENT EMPLOYMENT IN OMAHA SMSA, 1960 AND 1966*
AND PROJECTIONS TO 1990

Year**	Employment	As Per Cent of Civilian Labor Force#
1960	20,200	10.4
1966	25,250	11.8
1970		
Series I	29,500	12.8
Series III	27,500	12.2
1980		
Series I	44,100	15.8
Series III	34,800	13.4
1990		
Series I	65,700	19.2
Series III	42,200	14.4

*Source of data for 1960 and 1966 is the Nebraska Department of Labor, Division of Employment.

**Series I and III correspond with the projected civilian labor force Series II and IV and are obtained from the exponential and linear projections respectively. The data for subdivisions of this category--federal, state and local governments--are not available prior to 1962. Therefore, only the total employment in the government sector has been extrapolated under the two methods. For further information on this subject, see Appendix A.

#Percentages represent the estimated government employment of Series I and III as percentages of the total civilian labor force of the corresponding series.

Table 15-B

DISTRIBUTION OF GOVERNMENT EMPLOYMENT IN OMAHA SMSA, 1960, 1964 AND 1966

	1966	1964	1960
Government Total	25,250	22,350	20,200
Federal	8,375	7,665	N.A.
State and Local	16,875	14,684	N.A.
Industry Detail (Federal, State and Local)*			
Public Utilities	2,360	2,305	2,200
Educational Services	8,500	6,910	5,400
Medical Services	2,500	2,120	2,000
Other Federal	N.A.	N.A.	6,950
Other State and Local	N.A.	N.A.	3,650

Source: Nebraska Department of Labor, Division of Employment.

*Categories listed under "Industry Detail" do not add up to the total government employment because they do not include the employees classified under Other Federal and Other Local and State groups.

Table 15-B is included to demonstrate the distribution of government employment in the SMSA. In 1964 the federal employment in the area constituted about 33.4% of the total government workers. This proportion had declined slightly in 1966, amounting to 33.2%. It seems reasonable to expect that the future will evidence greater proportional growth in the employment of educational and medical services.

All Other Nonagricultural Employment

In addition to employment in the various industry classifications discussed in the foregoing sections, in 1966 there were 18,700 additional nonagricultural workers in the metropolitan area. This group of workers is classified by the Nebraska Department of Labor as All Other Nonagricultural Employment and includes proprietors and self employed workers.

Based on the past trend, the employment in this classification is expected to range from 19,980 to 20,010 in 1970, from 20,800 to 21,000 in 1980, and from 21,600 to 21,990 in 1990. These estimates are obtained from linear and exponential extrapolation of the employment trends classified under this group.

APPENDIXES

APPENDIX A

METHODOLOGY

The basic task of this study is largely to assay the size and composition of the future work force in the Omaha Standard Metropolitan Statistical Area. This appendix outlines the methodologies used in obtaining the future employment in the area by industrial classification.

The projected forecasts are primarily based upon the past employment variations. The procedures used for the projections consist of finding a mathematical equation representing each set of the original data or obtaining the best-fit trend line. Generally fitting the best trend line to a set of data and selection of the most appropriate method of projection depend upon the past behavior of the variable.

Thus, the first step is to determine what type of trend line most closely approximates the original data--linear, exponential, second or higher order polynomial. To determine this, it is necessary to calculate the measure of accuracy of the fitted trend lines and select the one with the least error value.

The measure of accuracy for each projection presented in this report is calculated according to the following formula:

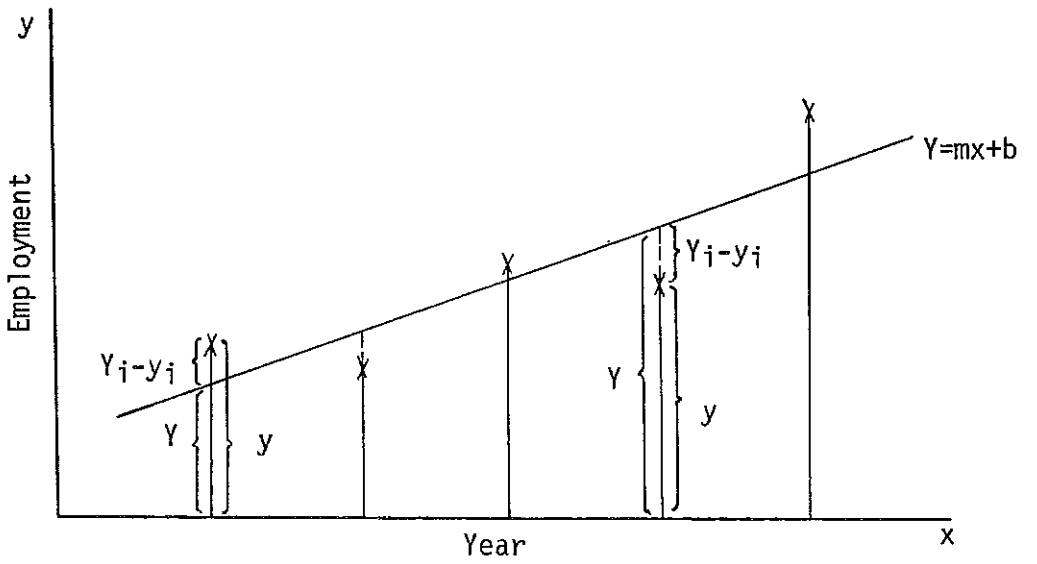
$$S = \sum (Y_i - y_i)^2$$

where S represents the measure of accuracy, $\sum$ indicates the summation symbol, and $Y_i - y_i$ identifies the residual value. The objective is to make the sum of the squares of the residuals as small as possible. The fit with the smallest S value is selected as the line best representing the historical data. This method of projection is commonly called the "least-squares method."

In the preceding equation y_i is the y value of the i-th data point--

such as employment in 1958 or 1963, etc.--and Y_i is the y value of the fitted line at the same data point on the X axis. Figure A-1 illustrates the model used for projections.

Figure A-1



Linear Projection

The equation by which the straight trend lines are fitted to the group of data points is expressed as:

$$Y = mx + b$$

where m and b are constants. Values of m and b are calculated from the following equations:

$$m = \frac{N \cdot \Sigma xy - \Sigma x \cdot \Sigma y}{N \cdot \Sigma x^2 - (\Sigma x)^2}$$

$$b = \frac{\Sigma y \cdot \Sigma x^2 - \Sigma x \cdot \Sigma xy}{N \cdot \Sigma x^2 - (\Sigma x)^2}$$

where N represents the number of data points. The value of N is equal to 17 for the industrial classifications with available employment statistics from 1950 to 1966 while N is equal to 9 for the classifications with data not

available prior to 1958. The original data on which the projections are based are presented in Table A-1.

In the above equations, x represents the year and $\sum x$ the aggregate of all x values. The employment level is indicated by y and the sum of all y values is represented by $\sum y$. $\sum xy$ is the sum of all products of corresponding x's and y's while $\sum x^2$ is the sum of squares of the x values.

The linear method of extrapolation, as the most appropriate method, has been adopted where the original data have followed relatively constant increments of growth or decline (e.g., 1,000, 1,100, 1,200, 1,300, etc.). However, where the pattern of variation of the original data has approximated constant rates of growth or decline (e.g., 10% per year or 1,000, 1,100, 1,210, 1,331, etc.), the exponential method of extrapolation is used.

The measure of accuracy or the best fit is calculated according to the $S = \sum (Y_i - y_i)^2$ equation and the projection with the least S or error value has been selected as the best representation of the original data.

Exponential Projection

To fit an exponential curve to each group of data points, the same procedures as the linear method is followed with slight modifications.

Primarily the y values of the data points are changed to their natural logarithms. The new set of values--the old x values and the natural logarithms of the y values--are used to find the corresponding values of m and b. Thus, as a result of the necessary modifications the linear equation of $Y = mx + b$ appears in the form of $Y' = e^{(mx + b)}$, where the previous y values are changed to their natural (base e) logarithms and the value of Y in equation $Y = mx + b$ is substituted into the equation $Y' = e^{Y}$. The equation for measure of error also has to be changed to $S = \sum (Y'_i - y_i)^2$. Figure A-2 illustrates the exponential model.

Table A-1

LABOR FORCE AND EMPLOYMENT OMAHA SMSA 1950 TO 1966

Industry	1950	1951	1952	1953	1954	1955	1956	1957	1958
Civilian Labor Force Total	*	*	*	*	*	*	*	*	182,200
Unemployment	*	*	*	*	*	*	*	*	7,250
Unemployment Rate	*	*	*	*	*	*	*	*	4.0
Employment Total	*	*	*	*	*	*	*	*	174,950
Agricultural Employment	*	*	*	*	*	*	*	*	6,800
Nonagricultural Employment	*	*	*	*	*	*	*	*	168,150
Nonag. Wage & Salary	135,500	141,100	142,950	144,900	145,900	148,600	150,300	149,850	150,350
Construction & Mining	7,200	7,900	8,450	7,550	8,200	7,750	8,000	7,950	9,150
Manufacturing	30,200	31,550	31,750	32,250	32,500	33,550	33,800	33,650	32,850
Food Products	18,450	18,750	18,300	18,600	18,850	19,150	18,850	17,900	17,000
Meat Products	11,950	12,300	11,850	12,050	12,000	12,100	11,850	10,800	10,100
Dairy Products	1,400	1,500	1,450	1,400	1,400	1,350	1,350	1,400	1,450
Grain Mill Products	1,250	1,350	1,450	1,450	1,700	1,700	1,500	1,450	1,350
Bakery Products	2,050	1,850	1,800	1,950	1,950	2,000	2,000	1,900	1,850
Other Food Products	1,800	1,750	1,750	1,800	1,800	1,950	2,100	2,400	2,300
Printing & Publishing	2,050	2,100	2,150	2,150	2,250	2,300	2,300	2,350	2,350
Metals	2,550	2,900	2,900	2,950	3,050	3,250	3,200	2,950	2,800
Machinery & Equipment	2,150	2,500	2,750	2,950	2,600	2,900	3,450	4,300	4,500
Other Manufacturing	5,000	5,300	5,650	5,600	5,750	6,000	6,000	6,150	6,150
Transportation, Communication, Utilities	21,500	22,950	23,100	23,550	23,400	23,350	22,400	21,700	20,500
Railroads	*	*	*	*	*	*	*	*	9,950
Motor Freight, Warehousing	*	*	*	*	*	*	*	*	3,750
Other Transportation	*	*	*	*	*	*	*	*	2,700
Communications	*	*	*	*	*	*	*	*	2,900
Other Public Utilities	*	*	*	*	*	*	*	*	1,200
Trade	34,850	35,500	35,550	35,750	35,050	35,350	35,500	34,700	34,850
Wholesale	12,600	12,950	13,050	12,950	12,500	12,500	12,250	11,750	11,450
Retail	22,250	22,600	22,500	22,750	22,550	22,850	23,250	22,950	23,400
General Merchandise	*	*	*	*	*	*	*	*	4,100
Food Stores	*	*	*	*	*	*	*	*	3,550
Automotive & Service Sta.	*	*	*	*	*	*	*	*	3,250
Apparel & Accessory Stores	*	*	*	*	*	*	*	*	1,800
Other Retail Trade Stores	*	*	*	*	*	*	*	*	10,700

Table A-1 Continued

	1950	1951	1952	1953	1954	1955	1956	1957	1958
Finance, Insurance & Real Estate	10,500	10,750	11,200	11,600	11,850	12,300	12,800	12,850	12,950
Finance	*	*	*	*	*	*	*	*	3,400
Insurance	*	*	*	*	*	*	*	*	7,850
Real Estate	*	*	*	*	*	*	*	*	1,700
Services, Except Domestic	18,100	18,450	18,550	19,050	19,400	20,150	20,750	21,250	21,650
Hotels & Lodging	*	*	*	*	*	*	*	*	2,100
Professional Services, Schools, Organizations	*	*	*	*	*	*	*	*	12,150
Other Services	*	*	*	*	*	*	*	*	7,350
Government	13,150	14,000	14,350	14,750	15,500	16,100	17,000	17,700	18,400
Federal	*	*	*	*	*	*	*	*	*
State & Local	*	*	*	*	*	*	*	*	*
Industry Detail:									
Public Utilities	*	*	*	*	*	*	*	*	2,150
Educational Services	*	*	*	*	*	*	*	*	4,950
Medical Services	*	*	*	*	*	*	*	*	1,850
Other Federal	*	*	*	*	*	*	*	*	6,050
Other State & Local	*	*	*	*	*	*	*	*	3,400
All Other Nonagricultural Employment	*	*	*	*	*	*	*	*	17,800

Continued next page

Table A-1 Continued

Industry	1959	1960	1961	1962	1963	1964	1965	1966
Civilian Labor Force Total	187,600	193,450	200,500	203,300	202,900	203,150	207,150	214,050
Unemployment	5,150	6,350	7,800	7,250	7,200	6,400	6,250	6,500
Unemployment Rate	2.7	3.3	3.9	3.6	3.5	3.2	3.0	3.0
Employment Total	182,450	187,100	192,700	196,050	195,700	196,750	200,900	207,550
Agricultural Employment	6,900	7,050	6,800	6,750	6,650	6,350	6,150	6,000
Nonagricultural Employment	175,500	180,050	185,900	189,300	189,050	190,400	194,750	201,550
Nonag. Wage & Salary	156,150	162,950	164,700	168,100	168,300	171,400	176,000	182,850
Construction & Mining	9,550	10,600	10,500	10,800	10,250	9,900	10,700	11,550
Manufacturing	35,500	37,450	36,900	36,450	35,050	35,650	35,700	37,550
Food Products	16,800	17,200	16,750	15,950	15,050	15,350	14,000	13,850
Meat Products	10,000	10,400	9,850	9,150	8,600	8,800	7,500	7,200
Dairy Products	1,350	1,400	1,400	1,400	1,350	1,350	1,400	1,450
Grain Mill Products	1,350	1,300	1,350	1,400	1,300	1,300	1,400	1,450
Bakery Products	1,800	1,850	1,750	1,550	1,400	1,450	1,200	1,250
Other Food Products	2,300	2,300	2,350	2,500	2,450	2,450	2,500	2,500
Printing & Publishing	2,400	2,450	2,500	2,550	2,550	2,600	2,800	2,850
Metals	3,000	3,100	3,000	3,150	3,000	3,100	3,200	3,550
Machinery & Equipment	6,850	7,750	7,650	7,650	7,400	7,500	8,500	9,850
Other Manufacturing	6,500	6,950	7,000	7,200	7,000	7,100	7,200	7,450
Transportation, Communication, Utilities	20,350	20,100	19,750	20,550	20,300	20,150	20,000	20,250
Railroads	9,800	9,300	8,800	8,850	8,750	8,700	8,400	8,300
Motor Freight, Warehousing	3,900	3,650	3,700	3,650	3,500	3,400	3,500	3,600
Other Transportation	2,650	2,850	2,900	2,800	2,800	2,650	2,600	2,550
Communication	2,750	3,000	2,850	3,700	3,750	3,800	3,800	4,050
Other Public Utilities	1,200	1,350	1,450	1,500	1,550	1,600	1,700	1,750
Trade	36,000	37,900	38,650	39,750	40,300	41,200	42,400	43,950
Wholesale	11,750	12,350	12,400	12,550	12,950	13,100	13,200	13,450
Retail	24,250	25,600	26,250	27,200	27,350	28,100	29,200	30,500
General Merchandise	4,250	4,700	5,200	5,300	5,250	5,400	5,300	5,450
Food Stores	3,750	3,950	3,900	4,150	4,250	4,500	4,900	5,200
Automotive & Service Sta.	3,300	3,600	3,650	3,800	3,850	4,000	4,300	4,400
Apparel & Accessory Stores	1,850	1,900	1,950	1,950	1,900	1,900	2,100	2,250
Other Retail Trade Stores	11,150	11,500	11,550	12,000	12,100	12,300	12,600	13,200

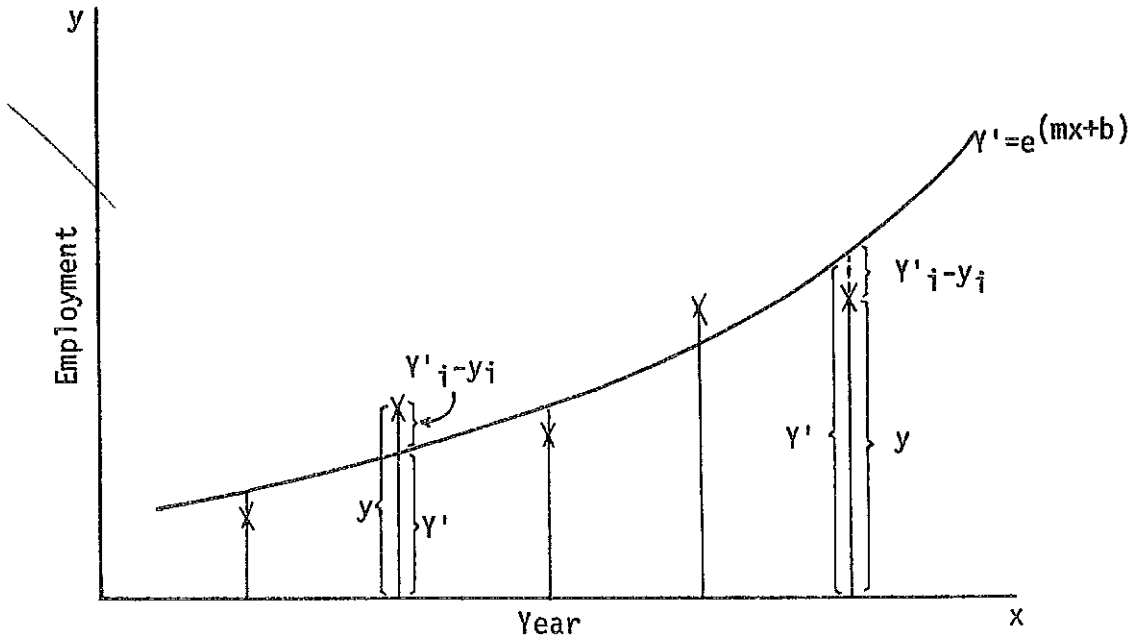
Table A-1 Continued

	1959	1960	1961	1962	1963	1964	1965	1966
Finance, Insurance & Real Estate	12,900	13,250	13,700	13,850	13,950	14,200	14,600	14,500
Finance	3,450	3,700	3,950	4,050	4,050	4,100	4,200	4,150
Insurance	7,750	7,900	8,000	7,950	8,000	8,200	8,400	8,400
Real Estate	1,700	1,650	1,750	1,850	1,900	1,900	2,000	1,950
Services, Except Domestic	22,600	23,500	24,500	25,300	26,300	27,700	28,700	29,800
Hotels & Lodging	2,100	2,050	1,950	2,150	2,300	2,300	2,300	2,300
Professional Services, Schools, Organizations	12,650	13,300	14,200	14,600	15,250	16,300	16,800	17,500
Other Services	7,800	8,100	8,350	8,550	8,750	9,100	9,600	10,000
Government	19,250	20,150	20,700	21,400	22,150	22,600	23,900	25,250
Federal	*	*	*	7,800	7,250	7,650	7,950	8,350
State & Local	*	*	*	13,600	14,900	14,950	15,950	16,900
Industry Detail:								
Public Utilities	2,150	2,200	2,250	2,300	2,300	2,300	2,300	2,350
Educational Services	5,200	5,400	5,700	6,000	6,500	6,900	7,250	8,500
Medical Services	1,950	2,000	2,100	2,200	2,200	2,150	2,300	2,500
Other Federal	6,550	6,950	7,050	7,050	7,200	*	*	*
Other State & Local	3,450	3,600	3,650	3,850	4,000	*	*	*
All Other Nonagricultural Employment	19,400	17,100	21,200	21,200	20,750	19,000	18,750	18,700

Source: U.S. Department of Labor, Bureau of Labor Statistics and Nebraska Department of Labor.

*Comparable data not available.

Figure A-2



The employment forecasts presented in this report under four different series are obtained from linear and exponential extrapolation of the past employment data in each individual industrial classification and from the aggregation of the projected values of the components of each major group.

The procedures used for projecting the future employment in the manufacturing sector of the Omaha economy is briefly discussed here to serve as an illustrative example. The same pattern has been followed in projecting the employment in other sectors of the economy.

The manufacturing industry as well as manufacturing employment in the area is divided into five major groups--Food Processing; Printing and Publishing; Primary and Fabricated Metals; Machinery and Equipment, and Other Manufacturing Activities. Food Processing, in turn, includes the activities in Meat Processing, Dairy Products, Grain Mill Products, Bakery Products, and Other Food Products industries.

To forecast the future employment in manufacturing, the employment in each manufacturing subdivision is extrapolated independently under linear and exponential methods. Then the accuracy of each method is tested according to $S = \sum(Y_i - y_i)^2$. The projections with the least S or error values are selected for inclusion in the total.

The employment forecasts under Series I represent values obtained from the best fitted extrapolation--linear or exponential. To estimate the employment in major groups the best fitted values of their corresponding subdivisions are aggregated. Future levels of manufacturing employment, for example, are obtained through the following steps:

1. The past employment data of each individual division of the Food Industry has been extrapolated under linear and exponential methods.

2. The accuracy of each method is tested to find the best fit.

3. The values of the best fitted projections, corresponding to the various components of the Food Industry, are aggregated to obtain the estimated employment in the Food Industry.

4. This total is summed with the values obtained from the best fit extrapolation of the employment in other major divisions of the Manufacturing Industry--Printing and Publishing; Metals; Machinery and Equipment; and Other Manufacturing industries.

Through similar procedures the estimated future employment levels in other sectors of the Omaha economy have been obtained. And from the aggregation of these forecasted employment levels the total employment in the area has been estimated.

Series II deals with the employment in the individual industrial classifications. The past employment variation of each individual classification

has been independently extrapolated under the exponential method. Slight modifications have been made to obtain the total values--total employment or total civilian labor force. Thus, the sum of the values obtained from the extrapolations of the employment in component classifications may not necessarily agree with the extrapolated values of their major classifications.

The forecasts listed under Series III represent values obtained from linear extrapolation of the past employment statistics for the individual industrial classifications. From the aggregation of the obtained values for subdivisions of each major sector the estimated future employment levels for major classifications are calculated.

The steps followed in Series III are similar to those of Series I except in the fact that all projected values of the subdivisions included in the major classifications do not represent the best fits. Therefore, the accuracy of forecasts listed under Series I appears to be relatively greater than those listed under Series III. However, the long range of the forecasts and the impossibility of anticipating the future course of events as well as the uncertainty about the future variations of the influential factors have made the presentation of a high-low range desirable.

The methodology used in obtaining the forecasts under Series IV is similar to that of Series II. The future employment levels listed under this series are obtained from the linear extrapolation of past employment data in each individual classification independently. The employment trends in major sectors are treated independently without considering the variation of their subdivisions.

The variations of the forecast employment levels presented under the different series have resulted from the selection of different methods of

projection and adoption of different procedures for aggregation of obtained values of the components of each industrial classification.

APPENDIX B

TERMINOLOGY

This appendix is included for the purpose of defining the terminology used in this report. The historical data on which the projected forecasts are based are extracted from Nebraska Department of Labor, Division of Employment publications. The corresponding statistics through 1965 are also available in Bulletin No. 1370-3 of the United States Department of Labor, Bureau of Labor Statistics, "Employment and Earnings Statistics for States and Areas, 1939-65."

The industrial classification system used for the data is described in the 1957 "Standard Industrial Classification Manual" which was amended by a 1963 Supplement.

The specific industries selected for publication are generally those which reflect the significant economic activities in the Omaha Standard Metropolitan Statistical Area. The Omaha SMSA includes Douglas and Sarpy counties in Nebraska and Pottawattamie County in Iowa.

BLS Bulletin 1370-3, as well as its predecessors, provides statistics for various industrial classifications grouped under Total Nonagricultural Employment. This total excludes proprietors, the self-employed, unpaid family workers, farm workers, and domestic workers in households. These types of workers are included in the Nebraska Department of Labor publications as All Other Nonagricultural Employment for the purpose of obtaining the aggregated total Nonagricultural Employment. Thus, the statistics for the classifications noted above may not be comparable in the two sources.

Industrial Classification

The succeeding pages define each industrial classification and identify the subdivisions of the major classifications by their appropriate SIC codes.

Construction and Mining

Construction activities in the Omaha SMSA include:

1. General Building Construction (SIC 15)
2. Heavy Construction (SIC 16)
3. Special Trade Construction (SIC 17)

It should be pointed out that each of these subdivisions includes various construction activities. As an example, Special Trade Construction (SIC 17) is composed of:

   a. Plumbing, Heating, and Air Conditioning (SIC 171)
   b. Painting, Paperhanging, and Decorating (SIC 172)
   c. Electrical Work (SIC 173)
   d. Masonry, Plastering, Stone and Tile Work (SIC 174)
   e. Carpentering and Wood Flooring (SIC 175)
   f. Roofing and Sheet Metal Work (SIC 176)
   g. Concrete Work (SIC 177)
   h. Other Special Trade Construction (SIC 178,9)

Mining in the area includes Quarrying and Nonmetallic Mining (SIC 14).

Manufacturing

The major manufacturing activities in the Omaha SMSA are:

1. Food and Kindred Processing (SIC 20) which involves the following:

   a. Meat Products (SIC 201)
   b. Dairy Products (SIC 202)
   c. Grain Mill Products (SIC 204)
   d. Bakery Products (SIC 205)
   e. Other Food Products (SIC 203,7,8,9)

2. Printing, Publishing, and Allied Industries (SIC 27)
3. Metals (SIC 33,34) includes Primary Metal Industries and Fabricated Metal Products
4. Machinery and Equipment Manufacturing (SIC 35,6,7) in the area is composed of:

a. Machinery (SIC 35)
b. Electrical Equipment and Supplies (SIC 36)
c. Transportation Equipment (SIC 37)

5. Other Manufacturing (SIC 19,24,25,26,28,29,30,38,39) includes Ordnance and Accessories; Apparel and Related Products; Lumber and Wood Products; Furniture and Fixtures; Paper and Allied Products; Chemicals; Petroleum Products; Rubber and Miscellaneous Plastic Products; Controlling Instruments; Photographic and Optical Goods, Watches and Clocks; and Miscellaneous Manufacturing Industries.

Transportation, Communication, and Other Utilities

This group of industries includes the succeeding economic activities.

1. Railroad Transportation (SIC 40)
2. Motor Freight Transportation and Warehousing (SIC 42)
3. Other Transportation (SIC 41,44-47) which includes:
   a. Local and Intercity Passenger Service (SIC 41)
   b. Air Transportation (SIC 45)
   c. Pipeline Transportation (SIC 46)
   d. Other Services Allied to Transportation (SIC 44,47)
4. Communication (SIC 48) is composed of:
   a. Telephone Communication (SIC 481)
   b. Telegraph Communication (SIC 482)
   c. Radio and Television Broadcasting (SIC 483)
   d. Other Communication Services (SIC 489)
5. Other Utilities (SIC 49) includes:
   a. Electric Companies and Systems (SIC 491)
   b. Gas Companies and Systems (SIC 492)
   c. Water, Steam, and Sanitary Systems (SIC 494-7)

Trade

The trade industry is composed of the two major classifications--Wholesale Trade (SIC 50) and Retail Trade (SIC 52-9). The following are the most important retailing activities in the Omaha SMSA.

1. General Merchandise Stores (SIC 53)
2. Food Stores (SIC 54)
3. Auto Dealers and Service Stations (SIC 55)
4. Apparel and Accessory Stores (SIC 56)

5. Other Retail Trade (SIC 52,57-9) includes:

    a. Building Material and Hardware Stores (SIC 52)
    b. Furniture and Appliance Stores (SIC 57)
    c. Eating and Drinking Places (SIC 58)
    d. Miscellaneous Trade Stores (SIC 59)

Finance, Insurance, and Real Estate

The activities of this industrial classifications are divided as:

1. Banking (SIC 60)
2. Credit Agencies Other than Banks (SIC 61)
3. Security Dealers and Exchange Agencies (SIC 62)
4. Insurance Carriers (SIC 63)
5. Insurance Agents, Brokers, and Services (SIC 64)
6. Real Estate (SIC 65)
7 Other Finance, Insurance, and Real Estate (SIC 66,67)

Services Except Domestic

The major subdivisions of the service industry in the SMSA are:

1. Hotels and Lodging (SIC 70)
2. Professional Services, Schools, and Organizations (SIC 80,81,82, 86,89,99) include:
    a. Medical and Other Health Services (SIC 80)
    b. Legal Services (SIC 81)
    c. Educational Services (SIC 82)
    d. Nonprofit Membership Organizations (SIC 86)
    e. Miscellaneous Services (SIC 89) including Engineering and Architectural Services; Nonprofit Research Organizations; and Other Miscellaneous Services
3. Other Services (SIC 72,73,75,76,78,79,07-09) refers to:
    a. Personal Services (SIC 72)
    b. Miscellaneous Business Services (SIC 73)
    c. Automobile Repair and Service (SIC 75)
    d. Miscellaneous Repair Services (SIC 76)
    e. Motion Pictures (SIC 78)
    f. Other Amusement and Recreation Services (SIC 79)
    g. Agricultural Services (SIC 07-09)

Government

This industrial classification includes federal, state, and local governments. The corresponding SIC codes are Federal Government (SIC 91); State Government (SIC 92); and Local Government (SIC 93).