The economy of southeastern Wisconsin. no. 10 (3rd edition) October 1995

[s.l.]: Southeastern Wisconsin Regional Planning Commission, October 1995

TECHNICAL REPORT NO. 10
(3rd Edition)

THE ECONOMY OF SOUTHEASTERN WISCONSIN

SOUTHEASTERN WISCONSIN REGIONAL PLANNING COMMISSION

Special acknowledgement is due Dr. Steven E. Crane, SEWRPC Economic Studies Consultant, and Mr. Donald G. Dittmar and Ms. Kathryn E. Sobottke, SEWRPC Senior Specialists, for their efforts in the preparation of this report.

TECHNICAL REPORT NUMBER 10
(3rd Edition)

THE ECONOMY OF SOUTHEASTERN WISCONSIN

Prepared by the

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The preparation of this report was financed in part through a joint planning grant from the Wisconsin Department of Transportation and the U. S. Department of Transportation, Federal Highway and Federal Transit Administrations.

October 1995

Inside Region $ 5.00
Outside Region $10.00

SOUTHEASTERN WISCONSIN REGIONAL PLANNING COMMISSION

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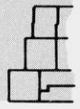

October 12, 1995

STATEMENT OF THE EXECUTIVE DIRECTOR

In any planning effort, projections are required of all future events and conditions which are considered to lie outside the scope of the plans to be prepared, but which affect plan design or plan implementation. The probable future demand for land and transportation and utility services and the demands upon the natural resource base will depend to a considerable extent upon the size of the future resident population of the Region; and, in turn, the size of that population will depend to a considerable extent upon economic activity levels within the Region. Control of changes in economic activity levels, however, lies largely outside the scope of governmental activity at the regional and local levels and certainly outside the scope of the physical planning process. Future population and economic activity levels must therefore be projected and, once projected, become important inputs to the plan preparation process. Accordingly, the Regional Planning Commission must carry out economic studies pertinent to the proper performance of its primary statutory responsibility to make and adopt an advisory plan for the physical development of the Region.

This report is the third edition of SEWRPC Technical Report No. 10, The Economy of Southeastern Wisconsin, the first edition having been published in 1972, and the second edition in 1984. The primary purposes of this report are to present the results of the reexamination and updating of the economic data considered in prior Commission studies of the regional economy and to present new projections of regional employment levels to the year 2020. With respect to future regional employment levels, major uncertainties appear to exist. These uncertainties are related to the continued importance of manufacturing in the economic base and structure of the Region, and the continued ability of this Region to compete with other regions of the United States and with other countries as a desirable location for economic enterprises.

To deal with these uncertainties, the Commission prepared alternative projections of regional employment levels to the year 2020. The alternative projections seek to identify a range of future employment levels, identifying reasonable upper and lower limits of such levels within the Region. The regional employment projections presented in this report were developed using an approach similar to that used successfully by the Commission in its previous employment projection efforts—that is, by preparing a range of projections for each of the dominant and subdominant industry groups within the Region in order to arrive at projections of total regional employment levels to the year 2020 under the most optimistic and most pessimistic futures that could be reasonably envisioned. This range of employment projections is useful in the development of robust system plans at the regional level, as well as facility plans at the local level, plans that may be expected to remain viable under greatly varying future conditions.

Although the economic projections presented herein were prepared specifically to meet regional planning requirements, these projections should also be of use in certain private planning efforts, as well as in public planning efforts at the county and local levels. To this end, potential users are urged to contact the Commission staff both for assistance in exploring the applicability of the regional economic projections to the potential user's needs and for such assistance as the Commission staff can render in the actual adaptation and application of the projections to such needs.

Respectfully submitted,

Kurt W. Bauer
Executive Director

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Chapter I

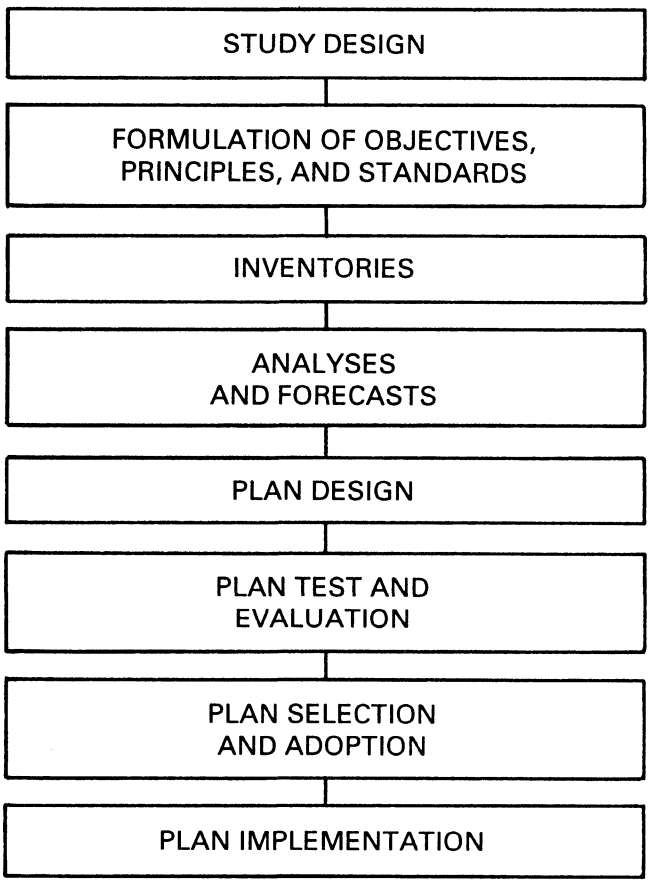
INTRODUCTION

An important and necessary step in the regional planning process is the attempt to forecast the probable nature and magnitude of the changes which, while beyond the scope of a comprehensive plan for the physical development of a region, must be considered in the preparation of such a plan. Among the more important of such changes are those relating to the regional economy, particularly its composition, or structure, and the number of employment opportunities, or jobs, and their spatial distribution. Accordingly, the Southeastern Wisconsin Regional Planning Commission (SEWRPC) must carry out economic studies, including forecasts of the probable number, types, and spatial distribution of jobs, pertinent to the proper performance of its primary responsibility to make and adopt an advisory plan for the physical development of the Region.

It should be noted that there are measures other than jobs that can be used to assess the magnitude and character of an economy, including, among others, value added by economic activity, personal and corporate income, and purchasing power. The Commission focus in this report on jobs is a practical one, however. Both the present and future availability of jobs affects land use and travel demand and the need for various public facilities and services, and therefore becomes an important consideration in land use and transportation planning and other public works planning. For these reasons, the Commission has chosen to focus this report on jobs, including their number, industry types, and spatial distribution, as the primary measure of the regional economy for planning purposes.

Figure 1

THE TRADITIONAL APPROACH TO LONG-RANGE SYSTEMS PLANNING



Source: SEWRPC.

REVIEW OF PREVIOUS WORK

In three decades of long-range land use and physical facilities planning activity, the Commission has prepared a number of economic studies, the findings of which are summarized in this chapter. The majority of these studies were carried out within the context of the traditional approach to long-range systems planning (see Figure 1). Beginning early in the 1980s, however, an alternative conceptual framework for such studies, termed "alternative futures," has been used by the Commission.

The historic practice in long-range planning has been to prepare a number of projections of possible future population and economic activity levels, selecting from this range a single forecast population level and a single forecast economic activity level, levels believed to be most likely to represent future conditions. The selected forecasts were then utilized in the development, test, and evaluation of alternative land use and supporting facilities systems plans. The selection and use of such single forecast values has generally been

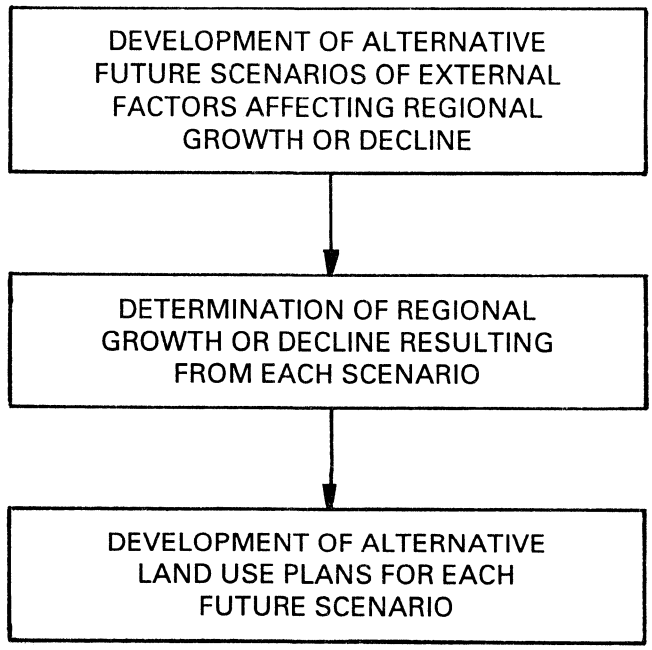
dictated by budgetary and staff limitations that precluded the preparation of alternative system plans for a number of alternative population and economic activity levels spanning the range of possible future conditions.

This traditional approach to planning worked well in periods of socio-economic stability, when historic trends can be anticipated to continue relatively unchanged over the plan design period. During periods of major change in social and economic conditions, however, when there is uncertainty as to whether historic trends will continue, an alternative to this traditional approach may be required. One such alternative is known as the "alternative futures" approach. Under this approach, the development, test, and evaluation of alternative system plans is based not upon a single most probable forecast of future conditions, but rather upon a number of futures chosen to represent a range of future conditions which may reasonably be expected to occur over the design period. The purpose of this approach is to permit the evaluation of the performance of alternative plans under a variety of possible future conditions in order to identify those alternatives that perform well under a wide range of such conditions. The alternative futures used under such an approach are selected to represent the reasonable extremes of a range of future conditions on the assumption that alternative plans that perform well under the extremes of a range will also perform well at intermediate points in the range. In this way, "robust" plans that can be expected to remain viable under greatly varying future conditions can be identified.

Under the alternative futures approach, the "analyses and forecasts" step of the traditional planning process is replaced by an "alternative futures analysis." The alternative futures analysis has three phases (see Figure 2). The first phase of the alternative futures analysis consists of the development of alternative future scenarios which, while external to the Region, affect the growth or decline of the Region and, therefore, the physical facility and related service needs of the Region. The factors are termed external to the Region because they are variables over which public and private decision makers within the Region have little or no influence, and to which the Region must therefore in the future respond. Examples of such external factors are economic conditions, such as employment and income levels; and future population lifestyle elements, such as fertility rates and household size. The second phase of the alternative futures analysis

Figure 2

ALTERNATIVE FUTURES ANALYSIS



Source: SEWRPC.

consists of the determination of the amount of regional growth or decline likely under the alternative scenarios of external factors developed under the first phase. The third phase of the alternative futures analysis consists of the development of alternative land use plans to accommodate the regional change expected under each scenario of future change in external factors. These alternative land use plans are used, in turn, in the development of alternative transportation, utility, and community facility system plans.

Traditional Studies

In September 1962, as part of its initial work program, the Commission engaged the services of the State Planning Division of the Wisconsin Department of Resource Development to prepare an economic base and structure[1] study of the South-

[1] *The economic base of an area may be defined as those activities which provide the basic employment and income on which the rest of the area's economy depends. Economic base activities are those which bring a flow of purchasing power into an area. The economic structure of an area may be defined as the manner in which this employment is distributed among the major industrial sectors of the economy of the area.*

eastern Wisconsin Region. In June 1963, the results of that study were published in SEWRPC Planning Report No. 3, The Economy of Southeastern Wisconsin. The basic concept of the system of economic analysis used in that study was that an understanding of an area's economy can best be gained by an in-depth analysis over time of that area's largest industries.[2] These large and therefore economically important industries were defined as dominant or subdominant depending on their respective individual shares of total regional employment. Industrial "dominants" were those industries which in 1960 accounted for 4 percent or more of total regional employment. Industrial "subdominants" were those industries which in 1960 accounted for 2 percent to 3.9 percent of total regional employment. These industrial dominants and subdominants were identified according to the Standard Industrial Classification (SIC) system established by the U. S. Bureau of the Budget, now known as the Office of Management and Budget (OMB). This system breaks down the major employment divisions into many specialized groups and assigns a two-digit identification number to each group. For example, the manufacturing division is divided into 20 groups. One of these groups has been labeled by the OMB as "Food and Kindred Products," whose two-digit identifier is 20. The food and kindred products industry group is then subclassified by expanding the number of digits. The meat products subclassification, for example, is identified by the three digits 201. This subclassification is further broken down to a four-digit level—e.g., meat-packing plants, 2011—and so on to a highly specialized level of seven digits representing individual firms or establishments.

Utilizing this classification system, the initial regional economic study identified 15 dominant and subdominant industry groups in 1962. Regional trends in each of these groups were analyzed in depth, principally at the two-digit SIC level, and compared to national and statewide industry trends. In addition, four significant manufacturing industries of less-than-subdominant status were analyzed to provide further understanding of the regional economy. These were selected on the basis of potential growth or decline and included the paper products, chemical products, and instrument products industries. The in-depth analyses included structured interviews with the chief executives of major firms in the Region representing each group to determine local problems, opportunities, and outlooks for the future. Based on these analyses and personal interviews, employment projections were made for each industry to the year 1985. A total regional employment projection was then made by converting the aggregate dominant, subdominant, and other selected industry projections to a regional employment projection to the year 1985. By relating the employment projections to the number of people which the employment level was, at that time, actually supporting, the probable future size of the resident population of the Region was also estimated and was used as a check on population projections derived from purely demographic analyses. These two conversions were made by observing trends in the relationship between population and employment and subsequently estimating their future magnitude. This work effort indicated a 1985 employment level in the Region of between 762,000 and 819,000 jobs.

In 1966, during the course of the Commission's initial land use-transportation study, the projections prepared in the initial Commission work programs were updated and projected to the year 1990. Additional projections were also made which utilized regression techniques and, in a major work effort, a dynamic input-output economic simulation model was developed by the Commission.[3] As a result of this work, a 1990 employment forecast for the Region of approximately 984,000 jobs was established. The results of these additional economic analyses were published in SEWRPC Planning Report No. 7, Land Use-Transportation Study, Volume Two, Forecasts and Alternative Plans: 1990, June 1966, and Volume Three, Recommended Regional Land Use and Transportation Plans: 1990, November 1966 (see Figure 3).

Under the Commission's continuing regional land use-transportation study begun in August 1967, employment estimates were made annually and

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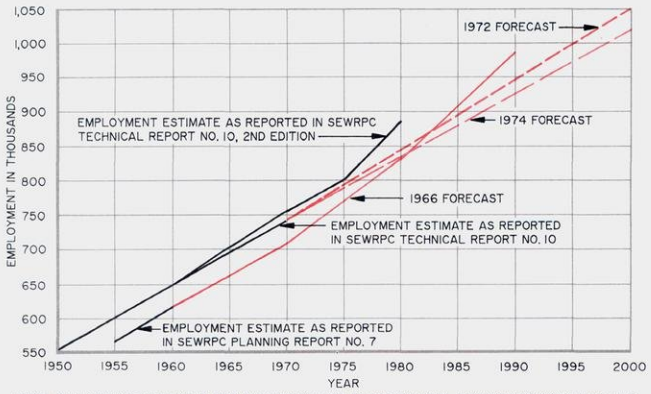
[2] *The system of economic analysis discussed in this chapter was developed in 1962 by Professor Richard B. Andrews of the University of Wisconsin for the Wisconsin State Planning Program. A detailed description of this system is contained in the August 1961 and May 1963 issues of the Journal of Land Economics.*

[3] *The details of this model are presented in SEWRPC Technical Report No. 5, A Regional Economic Simulation Model, October 1966.*

Figure 3

COMPARISON OF SEWRPC 1966, 1972, AND 1974 EMPLOYMENT FORECASTS AND ESTIMATED EMPLOYMENT LEVELS FOR THE REGION: 1950-2000

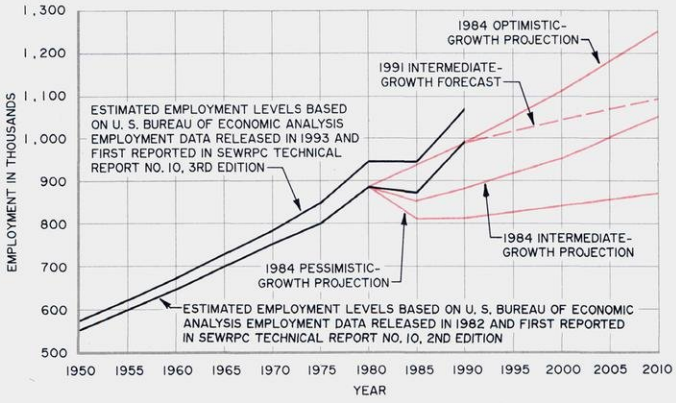


NOTE: EMPLOYMENT ESTIMATES FOR THE REGION ARE BASED ON DATA PROVIDED BY BOTH THE U. S. BUREAU OF ECONOMIC ANALYSIS AND THE WISCONSIN DEPARTMENT OF INDUSTRY, LABOR AND HUMAN RELATIONS. THESE AGENCIES PERIODICALLY REVIEW THE EMPLOYMENT INDICATORS USED TO DEVELOP THEIR DATA SERIES AND CREATE REVISED "REBENCHMARKED" DATA POINTS UPON WHICH THEIR EMPLOYMENT ESTIMATES ARE BASED. THIS REVIEW AND REBENCHMARKING HAS RESULTED IN REVISED EMPLOYMENT ESTIMATES TO BE PREPARED FROM TIME TO TIME FOR THE REGION WHICH ARE REFLECTED IN THIS FIGURE.

Source: U. S. Bureau of Economic Analysis; Wisconsin Department of Industry, Labor and Human Relations; and SEWRPC.

Figure 4

COMPARISON OF SEWRPC 1984 EMPLOYMENT PROJECTIONS AND 1991 EMPLOYMENT FORECAST AND ESTIMATED EMPLOYMENT LEVELS FOR THE REGION: 1950-2010



Source: U. S. Bureau of Economic Analysis; Wisconsin Department of Industry, Labor and Human Relations; and SEWRPC.

compared with the employment forecasts prepared under the initial land use-transportation system study. These estimates were used to monitor the continued validity of the regional employment forecasts and were published in the Annual Reports of the Commission. In 1970, the estimated employment level of 741,600 jobs was about 35,600 jobs, or about 5 percent, greater than the 706,000 jobs forecast for that year, due in part to an increase in the number of females in the labor force. The estimated number of jobs in 1970 is based on data prepared by the U. S. Bureau of Economic Analysis and the Wisconsin Department of Industry, Labor and Human Relations. These agencies periodically review and revise the employment data which they prepare to account for changes in the economic structure of an area which may not have been observed when the original data were prepared. These revised data have been used by the Commission to review and revise the employment estimates which have appeared in reports prepared subsequent to 1970 and are reflected in the employment levels displayed in Figures 3 and 4.

Beginning in 1971, under the continuing regional land use-transportation study, changes in the regional economic base and structure were reevaluated to permit an assessment of the impact of change in the regional economy on the physical development of the Region. General satisfaction with the dominant/subdominant industry methodology used in the initial economic studies program conducted in 1962 led to the repetition of that methodology in the reevaluation. In addition, new forecasts of employment within the Region were prepared to the year 2000.

The first edition of SEWRPC Technical Report No. 10, The Economy of Southeastern Wisconsin, published in December 1972, contains the results of the reexamination and updating of the economic data contained in SEWRPC Planning Reports Nos. 3 and 7, and the preparation of new forecasts of regional employment levels to the year 2000 prepared with the assistance of the Socioeconomic Subcommittee of the Technical Coordinating and Advisory Committee on Regional Land Use-Transportation Planning. As reported in that document, selection of a year 2000 regional employment forecast of approximately 1,048,000 jobs was recommended.

In 1974, the year 2000 population forecasts selected by Commission staff and advisory committees were reexamined because of the unprecedented declines in fertility rates after 1970 and the apparent continuation of population out-migration from the

Region. Revised population forecasts calling for a reduction of about 370,000 persons in the design year 2000 regional population level were proposed as a result of this reexamination. Because of the relationship that exists between population and employment levels, the employment forecasts were also reexamined at this time. Yearly monitoring of employment levels from 1971 to 1974, as summarized in the Annual Reports of the Commission, indicated that regional employment levels compared very favorably with the forecasts, although some county employment levels were beginning to diverge from the forecast levels.

In light of the revision to the regional population forecast, which pointed to a reduction from previously forecast levels in the number of school-age children, it was determined that forecast employment in educational services was probably high. Accordingly, forecast employment in this category was reduced by 32,000 jobs. Employment forecasts for all other categories were deemed to be still reasonable and were not changed. This revision resulted in a regional employment forecast of 1,016,000 jobs for the year 2000, 32,000 fewer jobs than originally forecast for that year. These 1,016,000 jobs were then reallocated to each of the seven counties comprising the Region on the basis of employment trends over the period from 1955 through 1974. These revisions are reported in SEWRPC Planning Report No. 25, A Regional Land Use Plan and a Regional Transportation Plan for Southeastern Wisconsin—2000, Volume Two, Alternative and Recommended Plans, May 1978.

Following the revisions made in 1974 to the regional employment forecasts, estimates of employment were made annually by Commission staff utilizing data collected and reported by the Wisconsin Department of Industry, Labor and Human Relations and compared with employment forecasts. The results of these comparisons were published in the Annual Reports of the Commission. In 1980, the estimated employment level of 874,700 jobs was about 41,600 jobs, or about 5 percent, greater than the 833,100 jobs forecast for that year.

Alternative Futures

During the closing years of the 1970s, the Commission staff focused its attention on alternative long-range planning processes that might provide improved guidance in a period of major national social and economic change. This attention to alternative long-range forecasting processes was motivated by increasing evidence of a shortfall in the Commission's long-range population forecasts for the Region rather than by a concern over the performance of the Commission's long-range employment forecasts. The general relationships that exist between changes in population levels and changes in employment levels, however, dictated that consideration be given to both of these factors in any study involving a different process for the determination of future needs.

One such alternative process, "alternative futures," described above, was selected by the Commission staff for use in the conduct of the Milwaukee-area primary transit system alternatives analysis, a planning effort initiated by the Commission during 1979. Two alternative future scenarios were developed. The scenarios provide a range in anticipated growth and change for the Region, with one future pointing toward moderate population and employment growth in the Region and the other pointing toward stability or moderate decline. The scenarios are presented in detail in SEWRPC Technical Report No. 25, Alternative Futures for Southeastern Wisconsin, published in December 1980.

Following the completion of SEWRPC Technical Report No. 25, and in light of the annual economic data provided by the U. S. Bureau of Economic Analysis and the Wisconsin Department of Industry, Labor and Human Relations, the need for a major reevaluation of the changes in the size, composition, and spatial distribution of the Region's employment, as well as the updating of the Commission's regional economic projections to the year 2010, was indicated. Accordingly, under the continuing regional land use-transportation study, such a reevaluation was again undertaken and new projections of employment within the Region were prepared to the year 2010.

The results of the reexamination and the updating of the economic data contained in SEWRPC Planning Reports Nos. 3, 7, and 25, the first edition of SEWRPC Technical Report No. 10, and SEWRPC Technical Report No. 25, and the development of new projections of the regional employment levels to the year 2010, prepared with the assistance of the Technical Coordinating and Advisory Committee on Regional Land Use-Transportation Planning, were documented in the second edition of SEWRPC Technical Report No. 10, The Economy of Southeastern Wisconsin, May 1984. The new projections of the regional employment levels set forth in that

report were developed utilizing the alternative futures concept. Three alternative future scenarios were postulated, two intended to identify extremes and one intended to identify an intermediate future—that is, a future which lies between extremes. This provided the "most reasonably optimistic" and "most reasonably pessimistic" scenarios of economic change by combining all factors that were internally consistent and would create favorable conditions for economic growth within the Region, and by similarly combining all factors that would create unfavorable conditions for economic growth within the Region. This process allowed the employment projections to be based on a range of possible conditions that had been evaluated for reasonableness and internal consistency. The 2010 regional employment projections include an optimistic employment projection of about 1,251,600 jobs; an intermediate employment projection of about 1,051,300 jobs; and a pessimistic employment projection of about 870,900 jobs (see Figure 4).

Following the preparation of the 2010 employment projections for the Region, the Commission continued to obtain annually the current estimates of jobs made by the U. S. Bureau of Economic Analysis and the Wisconsin Department of Industry, Labor and Human Relations, which were compared with the Commission's employment projections. The results of these comparisons were published in the Annual Reports of the Commission. In 1991, the regional employment figures were compared to the Commission's employment projections. The 1990 regional employment level of about 990,300 jobs was found to be about one-quarter of 1 percent above the 987,900 jobs anticipated under the optimistic projection; about 12 percent above the 880,900 jobs anticipated under the intermediate projection; and about 22 percent above the 811,300 jobs anticipated in the Region under the pessimistic projection.

Actual employment growth rates in specific employment categories significantly in excess of those envisioned under the alternative growth scenarios have occurred throughout the Region as a result of a better-than-anticipated recovery from the severe economic recession experienced within the Region from 1979 through 1983. Most notably, higher-than-expected employment growth rates were noted in the service sector in Kenosha and Milwaukee Counties; in the retail sector in Kenosha, Racine, and Milwaukee Counties; and in the industrial sector in Milwaukee, Walworth, and Washington Counties. In 1991, the Commission staff, with the guidance of the Technical Coordinating and Advisory Committee on Regional Land Use Planning, prepared a revised intermediate-growth employment projection, taking into account the higher employment growth rates. This revised projection became the Commission's official forecast of future employment, since it was then used in the preparation of the third-generation, design year 2010 regional land use plan adopted in 1992 and documented in SEWRPC Planning Report No. 40, A Regional Land Use Plan for Southeastern Wisconsin—2010, January 1992. Under this forecast, the design year 2010 employment of the Region was increased by about 43,700 jobs, or about 4 percent, from 1,051,300 jobs to 1,095,000 jobs.

THE PURPOSE OF THIS REPORT

In 1993, the U. S. Bureau of Economic Analysis (BEA) released revised, or "rebenchmarked," employment data for the Region for each year from 1969 through 1990 (see Figure 4). The revised BEA estimates indicated an employment level of 1,067,000 jobs in the Region in 1990, which level is 76,700 jobs, or 8 percent, higher than the Commission's estimate of 990,300 jobs within the Region in 1990. The Commission estimate of 990,300 jobs and the BEA revised estimate of 1,067,000 jobs are both higher than all three scenarios of the 1990 stage of the year 2010 alternative future employment projections prepared by the Commission. A reevaluation of the changes in size, composition, and spatial distribution of the Region's employment is thus needed in order to update the Commission's regional employment projections to the year 2020. Accordingly, under the continuing regional land use-transportation study, a major review of the changes in size, composition, and spatial distribution of the employment of the Region, of the State of Wisconsin, and of the United States was undertaken in order to permit proper assessment under the continuing planning process of the potential impact of the changes on the physical development of the Region. In addition, new projections of employment within the Region were prepared. The dominant/subdominant industry methodology utilized in both of the Commission's previous economic base and employment projections studies was again utilized.

This report is the third edition of SEWRPC Technical Report No. 10, The Economy of Southeastern Wisconsin, first published in 1972. The primary purpose of this report is to present the results of the reexamination and updating of the economic data contained in SEWRPC Planning Reports Nos. 3, 7, 25, and 40, the first and second editions of SEWRPC

Technical Report No. 10, and SEWRPC Technical Report No. 25, and to present new projections of regional employment levels to the year 2020. The reexamination and updating was accomplished with the assistance of the Technical Advisory Committee on Socio-economic Studies. The membership of that Committee is presented in Appendix A.

This report is a companion report to the third edition of SEWRPC Technical Report No. 11, The Population of Southeastern Wisconsin. The two reports were prepared concurrently. Although the analyses in each were pursued independently, the major findings of each study were compared as the studies were in progress. These comparisons were used to define further the directions of each study. The findings set forth in both of these reports are intended to provide two of the bases upon which all adopted regional plan elements, particularly the adopted regional land use and transportation plans, may be reappraised and updated to the year 2020. This study is also intended to assist local units of government and industrial development organizations within the Region in the undertaking of economic studies and in making economic development decisions.

This report is divided into three major chapters in addition to this introductory chapter and a summary chapter. The first major chapter, Chapter II, provides a general overview of the historic trends in the Region's economy during the last 40 years, with emphasis on the results of analyses of changes in the size, composition, and spatial distribution of the Region's labor force, as well as analyses of changing industrial location patterns and income levels within the Region. The second major chapter, Chapter III, presents the results of analyses of the Region's dominant and subdominant industries. The criteria used in determining an industry's dominance or subdominance are the same as those used in the Commission's prior work efforts. An industrial dominant is an industrial group within the Region which accounted for 4 percent or more of total regional employment in 1990. An industrial subdominant is an industrial group which accounted for 2 percent to 3.9 percent of total regional employment in 1990. The third major chapter, Chapter IV, reexamines the Commission's past employment forecasts and projections in light of changes in economic activity since the original forecasts were made in 1963, and presents new employment projections to the year 2020.

Chapter II

GENERAL ECONOMIC BACKGROUND

INTRODUCTION

This chapter presents a summary of the economic history of the Region since its settlement by Europeans, together with an analysis of the historical trends in economic activity in the Southeastern Wisconsin Region since 1950. For the purpose of this report, changes in the levels and distribution of economic activity are measured in terms of changes in the size, composition, and spatial distribution of the regional labor force, in the number and spatial distribution of jobs, in industrial location patterns, and in the levels of personal income. This analysis of the changes in the levels of economic activity in turn provides a basis for the economic analyses of the dominant and subdominant industries and for the preparation of the employment projections presented in subsequent chapters of this report.

ECONOMIC HISTORY

The modern history of the Region dates from 1743, when the Milwaukee Indians, a group of renegades from neighboring tribes, used a location near the present site of the City of Milwaukee as a trading center. Most other cities in the Region similarly trace their origins to trading posts established during the early 1800s. The first permanent European settlement in the Region was established at what became Milwaukee by Jacques Vieau in 1795.

The movement of European settlers into the Region was well under way by the mid-1830s. A wagon road from Chicago was opened in 1835 as far as Milwaukee, and from there another road was cut through the timber westward toward the Rock River. From Milwaukee northward, a trail extended along the lakeshore as far as Sauk Creek, affording access to the good agricultural lands in Ozaukee County. An important event in the history of the Region was the completion of the U. S. Public Land Survey in 1836 and the subsequent sale of government lands for private development. Rapid settlement, primarily by New Englanders interested in farming, followed. The early settlers were soon followed in large numbers by Irish, Scandinavians, Hollanders, Bohemians, and Austrians, but from 1844 to 1878, German immigration outnumbered immigration by all other nationalities. During the latter part of this period, Polish immigration began to increase. Each of these ethnic groups exercised its influence on the overall development of the Region.

Until 1850, the best trade route linking Milwaukee to the rest of the United States was via the Great Lakes. The City hoped for commercial prosperity to develop by means of trade during this time as the rich agricultural hinterland provided products for export. From 1841 to 1875, wheat was the principal export crop. This trade eventually won for Milwaukee the distinction of being the greatest primary wheat market in the world at that time.

The lead-mining areas of southwestern Wisconsin and northwestern Illinois, which at that time had a larger population than Milwaukee, presented a potential market for agricultural produce from the Milwaukee area. The citizens of Milwaukee also saw the Rock River valley as an important link with the lead-mining areas and devised plans to build a canal from Milwaukee to the Rock River.[1] These plans failed to materialize, but they nevertheless influenced the settlement of the Region.

As in the rest of the settled areas of Wisconsin, farmers began to turn to dairying and diversified farming when exclusive wheat cultivation exhausted the soil, and the ravages of rust, chinch bugs, and weevils, as well as low prices, made raising wheat unprofitable. Dairying operations began in the 1870s, and a large number of cheese factories and creameries were built within the Region. In addition, rye and oats were cultivated, and barley was grown in large quantities to supply the breweries which developed in Milwaukee. The raising of sheep and purebred livestock, wool production, and the growing of fruit, particularly apples, were major agricultural activities in the late 1800s.

During the late 1800s, the City of Milwaukee developed into a major urban center. More than any other group which settled in the City, the German immigrants shaped Milwaukee. They were skilled artisans, mechanics, and brewers, and were particu-

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[1] *See James E. Seybold, "A Backward Glance: The Milwaukee and Rock River Canal," SEWRPC Technical Record, Vol. 1, No. 5, June-July 1964, p. ii.*

larly skillful in metalworking. Many of the major industrial plants in the Milwaukee area can trace their beginnings to the small backyard shops of these immigrants. Many of these rapidly expanding manufacturing enterprises in Milwaukee utilized the raw materials supplied by nearby farms and forests. This was especially true of flour milling, meat packing, tanning, and brewing, and was true to a lesser extent of the iron and steel industry. In addition to the industry of its early settlers and the availability of raw materials, the area enjoyed a favorable location for serving growing eastern and midwestern markets—a locational advantage that has persisted to this day. In 1990, about 29 million people, about 12 percent of the Nation's population, lived within 250 miles of the center of the Region (see Map 1).

The economic development of the Southeastern Wisconsin Region took an important step forward with the introduction of steam railway technology during the mid-1800s.[2] The new railways were able to offer freight and passenger transportation services which were in many ways superior to those offered by plank roads, natural waterways, and canals. In 1851, the first steam railway in the State of Wisconsin was opened, operating between Milwaukee and Waukesha. Known as the Milwaukee and Mississippi Railroad, this railway line was later extended to the Mississippi River at Prairie du Chien and eventually became part of the Chicago, Milwaukee, St. Paul & Pacific Railroad Company, commonly known as the Milwaukee Road. By 1900, the steam railway network serving Milwaukee was largely complete. Only a few railway segments were constructed during the early part of the 20th century, most notably, a freight belt line around the City of Milwaukee. The railway system played an important part in the economic development of the Region, aiding in its industrial and commercial growth.

TRANSPORTATION FACILITIES

Railway Transportation Facilities

In 1990, railway freight service within the Region was provided by seven railway companies: the Chicago & North Western Transportation Company, the Wisconsin Central Ltd., the Soo Line Railroad Company, the Fox River Valley Railroad Company, the Wisconsin & Southern Railroad Company, the Wisconsin & Calumet Railroad Company, Inc., and the Municipality of East Troy Wisconsin Railroad. Railway freight service within the Region was provided over about 504 miles of railway line by these railway companies. Railway passenger service within the Region was provided by Amtrak and by the Northeast Illinois Railroad Corporation, or Metra, the commuter-rail division of the Regional Transportation Authority (RTA) for Northeastern Illinois. Within the Region, Amtrak currently operates passenger trains between Chicago and Milwaukee, and through Milwaukee between Chicago and Minneapolis-St. Paul and the West Coast. Passenger trains currently stop in the City of Milwaukee and the Village of Sturtevant. The commuter service between Kenosha and Chicago has been operated by the Chicago & North Western Transportation Company under an agreement with Metra.

Highway Transportation Facilities

The Region is served by a sound highway transportation system whose development in modern form began in the early 1920s.[3] The backbone of the regional highway system is formed by the freeway network of Interstate highways. The first section of Interstate highway in the Region, a 3.9-mile segment of the East-West Freeway located between N. 16th Street and N. 68th Street in the City of Milwaukee, was opened to traffic in January 1962; the system has since been expanded to its present total of 172 miles. To the south, IH 94 connects Chicago with Milwaukee, the hub of the Region's economic activity, while to the west, IH 94 connects Milwaukee with Madison and western Wisconsin. IH 43 provides a lakeshore route connecting Milwaukee with Green Bay and northern portions of the State, as well as a southwestern connection to the Janesville-Beloit-Rockford area. IH 894 provides a bypass of the central portion of the Milwaukee area, while IH 794 provides direct freeway access to Milwaukee's central business district and port facilities. Other freeways and expressways connecting the Region to other areas of Wisconsin and adjoining States include USH 41, which provides a

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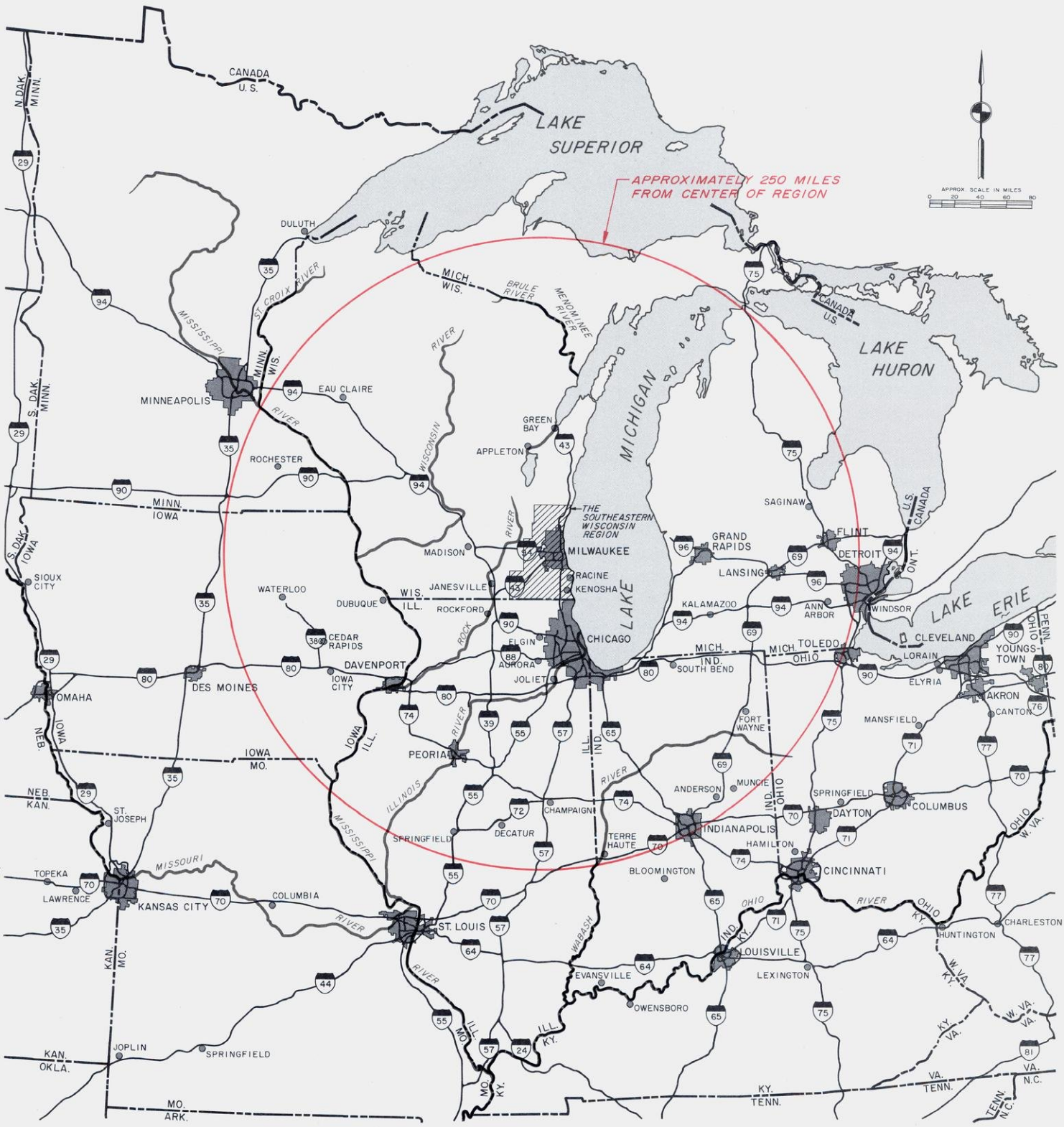
[2]*See Patricia J. Tegge, "A Backward Glance: Railroad Transportation in Southeastern Wisconsin," SEWRPC Technical Record, Vol. 2, No. 2, December 1964-January 1965, p. ii.*

[3]*See Jean C. Meier, "A Backward Glance: Highway Development in Southeastern Wisconsin: Part I—Early Wisconsin Roads[,] 1829-1900," SEWRPC Technical Record, Vol. 2, No. 5, June-July 1965, p. 39, and Jean C. Meier and Sheldon W. Sullivan,"A Backward Glance: Highway Development in Southeastern Wisconsin: Part II—Highways Come of Age[,] 1900-1966," SEWRPC Technical Record, Vol. 3, No. 1, 1968, pp. 29-38.*

Map 1

THE REGIONAL SETTING IN THE MIDWEST



Source: U. S. Bureau of the Census and SEWRPC.

connection between Milwaukee and the upper Fox River valley and northern Wisconsin; and STH 16, servicing the developing western areas of the Region.

At present, there are nearly 11,200 miles of streets and highways in the Region, including approximately 3,415 miles of arterial streets and highways, of which 247 miles, or 7 percent, are freeways. In terms of vehicle-miles of travel carried, the freeway system has developed into the primary means of travel within the Region. The freeway system carries about 36 percent of all vehicle-miles of travel within the Region.

Air Transportation Facilities

The Region is also served by good air transportation facilities, the development of which began in the 1920s.[4] A basic system of 11 public-use airports is intended to meet the commercial, business, vocational, personal, and military aviation needs of Southeastern Wisconsin. These 11 airports include 10 general aviation airports and General Mitchell International Airport in Milwaukee County, the Region's only scheduled air carrier airport. The other 10 general aviation airports in the basic regional airport system include Lawrence J. Timmerman Field in the northwest portion of Milwaukee County, West Bend Municipal Airport and Hartford Municipal Airport in Washington County, John H. Batten Field near the City of Racine, Burlington Municipal Airport and Sylvania Airport in Racine County, Kenosha Regional Airport in Kenosha County, East Troy Municipal Airport in Walworth County, and Waukesha County-Crites Field and Capitol Airport in Waukesha County. There are also 12 other public airports that are primarily intended to handle small aircraft. O'Hare International Airport in Chicago, Illinois, is located about 40 miles south of the Region.

Water Transportation Facilities

Major harbor facilities, dockage, and heavy cargo-handling equipment for both public and private use are located at the Port of Milwaukee. Public facilities of a lesser scale are available in the Ports of Racine, Kenosha, and Port Washington, principally for pleasure and some fishing craft. Coal is delivered to private port facilities in Oak Creek and Port Washington for utility use.

MEASURES OF ECONOMIC ACTIVITY

Labor Force Size and Composition

The labor force is that segment of the resident population which can be most closely related to the economy. By definition, the labor force of an area consists of all of its residents who are 16 years of age or older[5] and who either are employed at one or more jobs or are temporarily unemployed. Labor force data are often referred to as "place-of-residence" data, which are discussed in the following paragraphs. Historical changes in the size, composition, and distribution of an area's labor force can reflect changes in the area's economy, population growth or decline, especially in the working-age groups, and population movement from one area to another. This section focuses on national, statewide, and regional trends. Civilian labor force data for the Region's seven counties are provided in Appendix B.

Table 1 sets forth the changes that have occurred in the labor force size in the United States, Wisconsin, and the Region during the 40-year period from 1950 to 1990. As shown in the table, the labor force in the Region increased from about 538,700 persons in 1950 to about 934,200 persons in 1990, an increase of about 395,500 persons, or 73 percent. The increase of 19 percent from 1970 to 1980 was slightly higher than the increases of 18 percent from 1950 to 1960 and 16 percent from 1960 to 1970. Between 1980 and 1990, however, the increase in the total civilian labor force in the Region was only about 7 percent, significantly lower than that of the previous three decades. The regional labor force growth rate in the past three decades has been lower than that of either the Nation or the State, while from 1950 to 1960, the regional labor force increased at a rate greater than that of either the State or Nation. These trends indicate that the Region has experienced difficulty in competing for economic growth with other parts of the United States and with other areas of the State.

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[4]*See Sheldon W. Sullivan, "Characteristics of Air and Ground Travel Generated by General Mitchell Field Airport Terminal—May 1968," and "A Backward Glance: The Development of General Mitchell Field," SEWRPC Technical Record, Vol. 3, No. 4, September 1971, pp. 1-28 and 35-42, respectively.*

[5]*Through 1960, the labor force was defined as including persons 14 years of age and older. Since 1970, the labor force was redefined as including persons 16 years of age and older. The effect of this change in definition on comparative analyses is minimal. The number of employed persons in the Region aged 14 and 15 in 1970 was approximately 7,600, or about 1 percent of the total regional labor force.*

Table 1

CIVILIAN LABOR FORCE SIZE IN THE UNITED STATES, WISCONSIN, AND THE REGION: CENSUS YEARS 1950-1990

Geographic Area	Year[a]				
	1950	1960	1970	1980	1990
United States	59,303,700	68,144,100	80,051,000	104,449,800	123,473,500
Wisconsin	1,396,400	1,527,700	1,774,000	2,263,400	2,517,200
Southeastern Wisconsin Region	538,700	636,900	736,100	876,200	934,200

Geographic Area	Percent Change				
	1950-1960	1960-1970	1970-1980	1980-1990	1950-1990
United States	14.9	17.5	30.5	18.2	108.2
Wisconsin	9.4	16.1	27.6	11.2	80.3
Southeastern Wisconsin Region	18.2	15.6	19.0	6.6	73.4

[a]*The 1950 and 1960 Censuses defined the labor force as those persons 14 years of age or older who were employed or temporarily unemployed. The 1970, 1980, and 1990 Censuses defined the labor force as those persons 16 years of age or older who were employed or temporarily unemployed. The significance of this shift in definitions involving the two age groups is considered minimal in the Region. For example, the number of employed persons in the Region aged 14 and 15 in 1970 was approximately 7,600 persons, or about 1 percent of the regional labor force.*

Source: U. S. Bureau of the Census and SEWRPC.

Table 2 presents the trends in employment and unemployment and provides yet another indication of economic activity in the United States, the State of Wisconsin, and the Region. The number of people employed in the Region increased from about 524,600 in 1950 to about 882,700 in 1990, an increase of about 358,100 persons, or about 68 percent, in 40 years. This compares with the United States rate of about 106 percent and the Wisconsin rate of about 76 percent over the same period. In the 10-year period from 1980 to 1990, the number of employed persons in the Region increased by only about 7 percent, while the number of employed persons in the United States and Wisconsin increased by about 19 percent and 13 percent, respectively. It should be noted that the relatively modest increase in the number of employed persons in the Region during the 1980s is reflective of the severe economic recession experienced within the Region from 1979 to 1983; the rate of increase for the Region during the latter portion of the 1980s compares favorably with rates for the State and Nation.

The unemployed segment of the civilian labor force in the Region increased from 2.6 percent in 1950 to 5.5 percent in 1990. This is comparable to the change from 4.8 percent in the United States as a whole in 1950 to 6.3 percent in 1990. The change in the State was from 2.9 percent in 1950 to 5.2 percent in 1990. Between 1980 and 1990, the number of unemployed persons increased by about 4 percent in the Region and 14 percent in the United States, but decreased by about 13 percent in the State. The percentage of unemployed persons over the 40-year period is consistently lower for the Region than for the Nation. With the exception of 1990, the regional unemployment rate is also lower than that for the State.

The composition of the regional labor force from 1950 to 1990 is set forth in Table 3, which indicates that the number of females in the labor force has increased rapidly. An increase in the number of females in the labor force has occurred in every decade since 1950, ranging from about 15 percent in the 1980s to about 38 percent in the 1960s. In

Table 2

CIVILIAN LABOR FORCE EMPLOYMENT AND UNEMPLOYMENT IN THE UNITED STATES, WISCONSIN, AND THE REGION: CENSUS YEARS 1950-1990

Geographic Area	1950			1960			1970		
	Employed Persons	Unemployed Persons	Percent Unemployed	Employed Persons	Unemployed Persons	Percent Unemployed	Employed Persons	Unemployed Persons	Percent Unemployed
United States	56,449,400	2,854,300	4.8	64,639,300	3,504,800	5.1	76,553,600	3,497,400	4.4
Wisconsin	1,355,300	41,100	2.9	1,468,600	59,100	3.9	1,703,600	70,400	4.0
Southeastern Wisconsin Region	524,600	14,200	2.6	612,700	24,200	3.8	708,800	27,300	3.7

Geographic Area	1980			1990		
	Employed Persons	Unemployed Persons	Percent Unemployed	Employed Persons	Unemployed Persons	Percent Unemployed
United States	97,639,400	6,810,500	6.5	115,681,200	7,792,200	6.3
Wisconsin	2,114,500	149,900	6.6	2,386,400	130,800	5.2
Southeastern Wisconsin Region	826,500	49,700	5.7	882,700	51,500	5.5

Geographic Area	Percent Change									
	1950-1960		1960-1970		1970-1980		1980-1990		1950-1990	
	Employed Persons	Unemployed Persons	Employed Persons	Unemployed Persons	Employed Persons	Unemployed Persons	Employed Persons	Unemployed Persons	Employed Persons	Unemployed Persons
United States	14.9	23.7	18.4	-0.2	27.5	94.7	18.5	14.4	105.7	175.1
Wisconsin	8.4	43.8	16.0	19.1	24.1	112.9	12.9	-12.7	76.1	218.2
Southeastern Wisconsin Region	16.8	70.4	15.7	12.8	16.6	82.1	6.8	3.6	68.3	262.7

Source: U. S. Bureau of the Census and SEWRPC.

Table 3

CIVILIAN LABOR FORCE COMPOSITION IN THE REGION: CENSUS YEARS 1950-1990

Labor Force Composition	Year					Percent Change			
	1950[a]	1960[a]	1970[b]	1980[b]	1990[b]	1950-1960	1960-1970	1970-1980	1980-1990
Total Labor Force	538,700	636,900	736,100	876,200	934,200	18.2	15.6	19.0	6.6
Males	383,600	430,600	451,100	497,000	497,300	12.3	4.8	10.2	0.1
Females	155,100	206,300	285,000	379,200	436,900	33.0	38.1	33.1	15.2

Labor Force Composition	Year					Percentage-Point Change			
	1950[a]	1960[a]	1970[b]	1980[b]	1990[b]	1950-1960	1960-1970	1970-1980	1980-1990
Percent Males	71.2	67.6	61.3	56.7	53.2	-3.6	-6.3	-4.6	-3.5
Percent Females	28.8	32.4	38.7	43.3	46.8	3.6	6.3	4.6	3.5
Percent Labor Force of Total Population	43.4	40.5	41.9	49.6	51.6	-2.9	1.4	7.7	2.0
Percent Labor Force of Labor-Force-Age Population	56.7	58.0	61.5	65.9	67.6	1.3	3.5	4.4	1.7

[a] *Includes individuals 14 years of age or older, employed or temporarily unemployed.*

[b] *Includes individuals 16 years of age or older, employed or temporarily unemployed.*

Source: U. S. Bureau of the Census and SEWRPC.

comparison, the number of males has increased at lower rates, ranging from only about one-tenth of 1 percent in the 1980s to about 12 percent in the 1950s. Between 1980 and 1990, the civilian labor force increased by 58,000 persons, of which 57,700, or more than 99 percent, were females. Consequently, the proportion of the labor force represented by females increased from about 29 percent in 1950 to about 47 percent in 1990. The proportion represented by males declined from about 71 per-

cent in 1950 to about 53 percent in 1990. The relatively larger increases in the number of females in the labor force may be attributed in part to the trend toward smaller families, the increasing number of females working to supplement the family income, accelerated growth in retailing and service jobs, emphasis on equal employment opportunities for females, and the decision by an increasing number of females to more actively pursue full- or part-time employment in lieu of, or in addition to, marriage and family formation.

Table 3 also indicates that the percentage of the total population of the Region represented by the labor force declined from about 43 percent in 1950 to about 41 percent in 1960, and has since increased to about 52 percent in 1990. The general upward trend of this measure since 1960 is primarily the result of the increase in the number of females in the labor force and changes in the age structure of the resident population as a result of the rapidly declining birthrate in the Region during the 1960s and 1970s. A better measure of change in labor force composition is the participation rate, which removes the effect of the relative size of the nonlabor-force age groups—that is, the population less than 16 years of age. The participation rate compares the size of the labor force to the size of the population of labor force age. The participation rate has increased steadily from about 57 percent in 1950 to about 68 percent in 1990 (see Table 4).

As shown in Table 4, the total female participation rate increased from about 32 percent in 1950 to about 60 percent in 1990. Over this same time period, the male participation rate decreased from about 82 percent in 1950 to about 76 percent in 1990. A trend toward earlier retirement among males is believed to account, in part, for this decrease.

Changes occurring in the employed participation rate constitute another measure of change in economic conditions. This measure compares only the number of employed persons to the total population. Removing the unemployed persons from the ratio indicates how many employed persons are, in effect, supporting the total population of the area. Table 5 sets forth the changes in the employed participation rates for the United States, the State, and the Region from 1950 to 1990. The regional rate has been higher than either the State or national rate for virtually the entire period. Both the State and national rates, however, showed greater increases than did the regional rate over this period, indicating that participation in the employed labor force is becoming similar at the regional, State, and national levels.

Table 4

CIVILIAN LABOR FORCE PARTICIPATION RATES IN THE REGION: CENSUS YEARS 1950-1990

Participation Rate	1950	1960	1970	1980	1990
Male	82.4	80.0	79.4	78.6	76.1
Female	32.0	36.5	45.3	54.3	60.0
Total	56.7	58.0	61.5	65.9	67.6

Source: U. S. Bureau of the Census and SEWRPC.

Number of Available Jobs

Another measure of economic activity which is closely related to the labor force is the number of jobs available within the Region. Since jobs are enumerated at their location, they are often referred to as "place-of-work" data. It should be noted that the enumeration of jobs does not distinguish between full- or part-time jobs, or indicate whether the job is held by a resident of the jurisdiction in which the job is enumerated or by a commuter. Therefore, "place-of-residence" data and "place-of-work" data for a particular geographic area often differ in absolute values but generally exhibit similar trends. This section focuses on total jobs available. The number of jobs available by industry type in the Nation, State, and Region is presented in Chapter III. The number of jobs available by major employment category for the seven counties comprising the Region for each year from 1970 through 1990 is provided in Appendix C.

Table 6 sets forth changes in the number of jobs available in the Nation, State, and Region for the period from 1950 to 1990.[6] The number of jobs in the Region increased by about 86 percent during that period, from about 573,500 jobs in 1950 to about 1,067,200 jobs in 1990. During the same period, the number of jobs available increased in the United States by about 120 percent and in the

[6]*Historic employment data presented in this report are based upon updated and revised U. S. Bureau of Economic Analysis data released in 1993. These data may thus differ from similar data sets printed in earlier editions of this report.*

Table 5

EMPLOYED PARTICIPATION RATES FOR THE UNITED STATES, WISCONSIN, AND THE REGION: CENSUS YEARS 1950-1990[a]

Geographic Area	Employed Participation Rates					Percentage-Point Change: 1950-1990
	1950	1960	1970	1980	1990	
United States	37.2	36.0	33.6	43.1	46.5	9.3
Wisconsin	39.5	37.2	38.6	44.9	48.8	9.3
Southeastern Wisconsin Region	42.2	38.9	40.4	46.8	48.8	6.6

[a]*The employed participation rate is the number of employed members of the civilian labor force divided by the total population. It is used to indicate the number of one-job workers needed to support the population of an area.*

Source: U. S. Bureau of the Census and SEWRPC.

Table 6

NUMBER OF JOBS AVAILABLE IN THE UNITED STATES, WISCONSIN, AND THE REGION: 1950-1990

Geographic Area	Number of Jobs				
	1950	1960	1970	1980	1990
United States	61,701,200	72,057,000	87,861,200	111,274,800	135,902,800
Wisconsin	1,413,400	1,659,400	1,926,700	2,421,200	2,808,100
Southeastern Wisconsin Region	573,500	673,000	784,100	945,200	1,067,200

Geographic Area	Change in Number of Jobs					
	1950-1960		1960-1970		1970-1980	
	Number	Percent	Number	Percent	Number	Percent
United States	10,355,800	16.8	15,804,200	21.9	23,413,600	26.6
Wisconsin	246,000	17.4	267,300	16.1	494,500	25.7
Southeastern Wisconsin Region	99,500	17.3	111,100	16.5	161,100	20.5

Geographic Area	Change in Number of Jobs			
	1980-1990		1950-1990	
	Number	Percent	Number	Percent
United States	24,628,000	22.1	74,201,600	120.3
Wisconsin	386,900	16.0	1,394,700	98.7
Southeastern Wisconsin Region	122,000	12.9	493,700	86.1

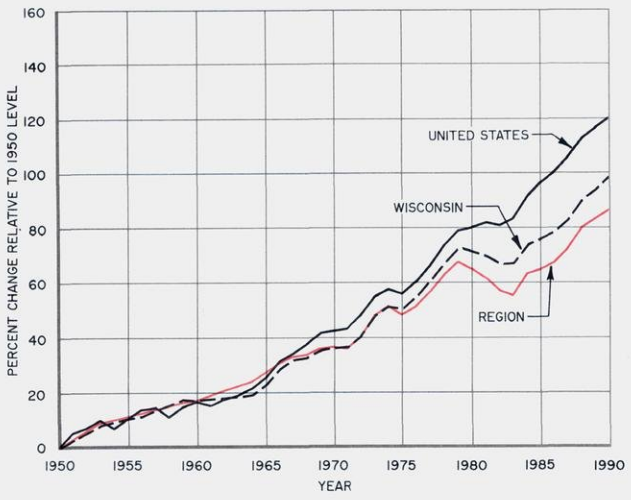
Source: U. S. Bureau of Economic Analysis and SEWRPC.

State by about 99 percent. By 1980, and again in 1990, the rate of increase in the creation of new jobs in the Region was below such rates for both the State and the Nation, in spite of the fact that the absolute increase in the number of jobs in the Region was greater during the two most recent decades than it was during either of the two preceding decades.

These disparate rates of growth are shown in Figure 5 for the period from 1950 to 1990. This time span includes the peaks of the two most recent economic expansions and the two intervening recessions. As shown, the amount of economic activity in the Region, measured by the number of available jobs, has changed at varying rates in recent years. In 1971, the Region lagged behind the Nation and State in recovering from the national economic recession which was centered on 1970. Between 1972 and 1974, growth in the national economy created jobs in the Nation, State, and Region at approximately equal rates, but the 1975 recession resulted in slightly greater relative job loss in the Region than in either the Nation or State. While the

Figure 5

RELATIVE JOB GROWTH IN THE UNITED STATES, WISCONSIN, AND THE REGION: 1950-1990



Source: U. S. Bureau of Economic Analysis and SEWRPC.

recovery beginning in 1976, like the 1972 recovery, began more slowly in the Region than in the Nation and State, job growth rates in the Nation, State, and Region were approximately equal between 1976 and 1979. The recession between 1979 and 1983 was more severe in the Region than in either the State or the Nation. Between 1984 and 1990, however, job growth in the Region, the State, and the Nation occurred at about the same rate.

In the most recent decade, short-term fluctuations in the number of jobs available between periods of economic expansion and recession have been greater for the Region than for either the Nation or State because of the higher concentration of capital goods production in the regional economy. This production, as a derived demand, is highly responsive to lesser fluctuations in general consumer demand for goods and services. In addition, the growing divergence in rates of job growth in the Region relative to the Nation and State reflects, to a certain extent, the increasing difficulty within the Region in competing for industrial development with other regions of the United States.

Changes in Distribution of Economic Activity

Significant changes in the distribution of economic activity within the Region have occurred since 1950. These changes are indicated in Table 7 in terms of comparative labor force and job trends during the past four decades. The number of jobs in the Region increased by about 86 percent, from about 573,500 in 1950 to about 1,067,200 in 1990. The largest increase in the number of jobs during this period occurred in Waukesha County. Between 1950 and 1990, about 175,100 jobs were added in Waukesha County, or about 35 percent of the total job growth in the Region. The counties which experienced the largest relative job growth rates during this period were Ozaukee, Walworth, Washington, and Waukesha Counties, with relative increases ranging from about 205 percent in Walworth County to over 1,000 percent in Waukesha County. The growth rates in all counties other than Kenosha and Milwaukee Counties were greater than the regional rate of 86 percent, indicating a general shift in economic activity toward the other five counties of the Region. Between 1950 and 1990, Milwaukee County's proportion of total regional jobs decreased from about 79 percent to about 57 percent. The proportion of regional jobs increased in all the remaining counties of the Region except Kenosha County, whose proportion declined from 5.1 percent of the total jobs in the Region in 1950 to 4.8 percent in 1990. The largest increase, from about 3 percent of the total jobs in the Region in 1950 to about 18 percent in 1990, occurred in Waukesha County. The distribution of jobs within the Region in 1963 and 1990 is shown on Map 2.

Table 7 also sets forth the levels of the total civilian labor force and the employed civilian labor force in each of the counties in the Region over the four decades since 1950. Because the labor force is enumerated by place of residence, trends in the size of the labor force generally parallel changes in population levels. The greatest relative increases in the labor force during this 40-year period have been in Ozaukee, Washington, and Waukesha Counties, those counties that have experienced the largest relative increases in resident population during this time. It can also be seen that in 1990, all counties except Milwaukee, Walworth, and Waukesha Counties contained a larger labor force residing within their boundaries than jobs available; while this had been true of Milwaukee County in all previous decades considered, this condition is first found in Walworth and Waukesha Counties in 1990, as decentralization of economic activity continued within the Region. Milwaukee County, however, is still the major supplier of jobs to the residents of the Region.

Table 8 sets forth the changes in industrial land use that have occurred in concert with the decentralization of jobs within the Region. These data

Table 7

CIVILIAN LABOR FORCE SIZE AND JOBS AVAILABLE IN THE REGION BY COUNTY: 1950-1990

Geographic Area	1950		1960		1970		1980		1990		Change: 1950-1990	
	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total	Number	Percent
Kenosha County												
Total Civilian Labor Force	32,500	6.0	39,700	6.2	47,200	6.4	59,600	6.8	64,200	6.9	31,700	97.5
Employed Civilian Labor Force	31,900	6.1	38,500	6.3	45,100	6.4	55,300	6.7	59,800	6.8	27,900	87.5
Jobs Available	29,100	5.1	42,200	6.3	42,000	5.4	53,900	5.7	50,900	4.8	21,800	74.9
Milwaukee County												
Total Civilian Labor Force	385,300	71.5	431,700	67.8	454,100	61.6	478,200	54.6	479,400	51.3	94,100	24.4
Employed Civilian Labor Force	374,800	71.4	414,200	67.6	437,200	61.7	450,900	54.5	446,600	50.7	71,800	19.2
Jobs Available	453,500	79.0	503,300	74.8	524,900	66.9	581,700	61.5	613,300	57.5	159,800	35.2
Ozaukee County												
Total Civilian Labor Force	9,600	1.8	14,400	2.3	22,100	3.0	34,500	3.9	40,100	4.3	30,500	317.7
Employed Civilian Labor Force	9,500	1.8	14,100	2.3	21,600	3.1	32,800	4.0	39,100	4.4	29,600	311.6
Jobs Available	6,600	1.2	10,200	1.5	21,200	2.7	28,100	3.0	36,400	3.4	29,800	451.5
Racine County												
Total Civilian Labor Force	46,800	8.7	54,900	8.6	68,300	9.3	84,300	9.6	89,400	9.6	42,600	91.0
Employed Civilian Labor Force	45,200	8.6	52,600	8.6	65,100	9.2	79,200	9.6	84,100	9.5	38,900	86.1
Jobs Available	44,500	7.7	49,900	7.4	64,500	8.2	80,900	8.6	88,800	8.3	44,300	99.6
Walworth County												
Total Civilian Labor Force	16,400	3.0	20,400	3.3	26,300	3.6	34,700	4.0	39,600	4.2	23,200	141.5
Employed Civilian Labor Force	16,100	3.1	19,700	3.2	25,100	3.5	32,500	3.9	38,100	4.3	22,000	136.6
Jobs Available	13,200	2.3	19,600	2.9	26,300	3.4	33,400	3.5	40,200	3.8	27,000	204.5
Washington County												
Total Civilian Labor Force	14,300	2.7	17,400	2.7	25,700	3.5	42,000	4.8	52,100	5.6	37,800	264.3
Employed Civilian Labor Force	14,000	2.7	17,000	2.8	25,100	3.5	39,600	4.8	50,500	5.7	36,500	260.7
Jobs Available	10,200	1.8	15,200	2.3	24,300	3.1	35,000	3.7	46,100	4.3	35,900	352.0
Waukesha County												
Total Civilian Labor Force	33,800	6.3	58,200	9.1	92,400	12.6	142,800	16.3	169,400	18.1	135,600	401.2
Employed Civilian Labor Force	33,200	6.3	56,600	9.2	89,500	12.6	136,300	16.5	164,500	18.6	131,300	395.5
Jobs Available	16,400	2.9	32,600	4.8	80,900	10.3	132,200	14.0	191,500	17.9	175,100	1,067.7
Southeastern Wisconsin Region												
Total Civilian Labor Force	538,700	100.0	636,700	100.0	736,100	100.0	876,100	100.0	934,200	100.0	395,500	73.4
Employed Civilian Labor Force	524,700	100.0	612,700	100.0	708,700	100.0	826,600	100.0	882,700	100.0	358,000	68.2
Jobs Available	573,500	100.0	673,000	100.0	784,100	100.0	945,200	100.0	1,067,200	100.0	493,700	86.1

Source: U. S. Bureau of the Census, U. S. Bureau of Economic Analysis, and SEWRPC.

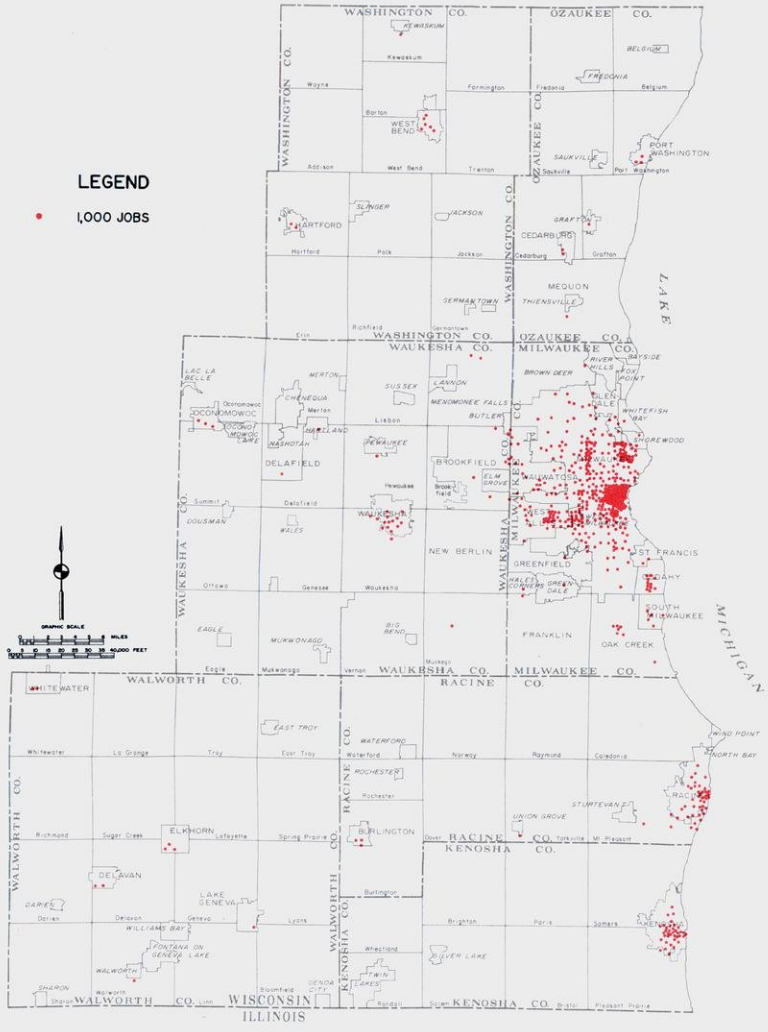
have been collated from the Regional Planning Commission's land use inventories for 1963 and 1990. Within the context of these inventories, industrial land is defined as land which is used for the manufacture of durable and nondurable goods, for wholesaling activities, or for warehouse or storage purposes. Net industrial land is defined as the actual site area devoted to such uses, that is, the ground-floor area occupied by any buildings, plus outside storage areas and related yards. Gross industrial land is defined as net industrial land plus associated off-street parking area.

In 1990, net industrial land use in Southeastern Wisconsin totaled about 13,100 acres, or less than 1 percent of the total area of the Region. The net industrial land use in 1990 consisted of about 6,300 acres devoted to manufacturing uses and about 6,800 acres devoted to wholesaling and storage uses. Gross industrial land in the Region, consisting, as noted, of net industrial land plus related off-street parking, totaled about 16,700 acres (see Table 8). Net industrial land in the Region increased by about 5,800 acres, or about 79 percent, between 1963 and 1990, representing an average annual increase of about 214 acres over the 27-year period. Gross industrial land in the Region increased by about 8,100 acres, or about 94 percent, between 1963 and 1990, representing an average annual increase of about 300 acres over this period.

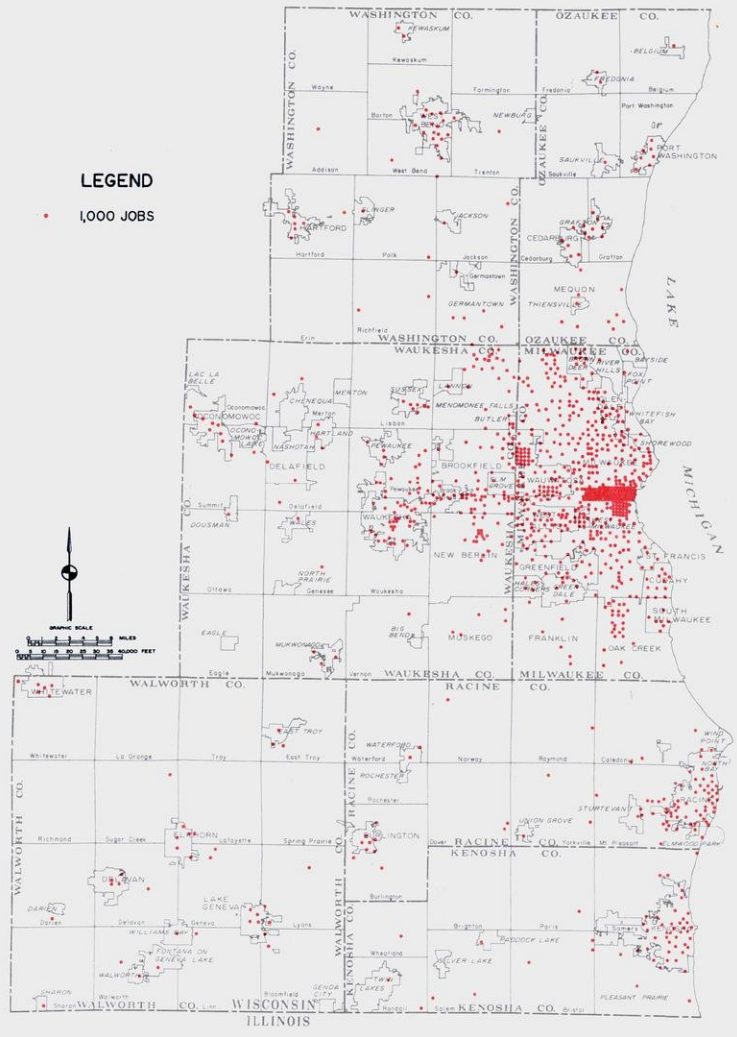
Map 2

DISTRIBUTION OF JOBS IN THE REGION: 1963 AND 1990

1963



1990



Source: Wisconsin Department of Industry, Labor and Human Relations; Classified Directory of Wisconsin Manufacturers; and SEWRPC.

Table 8

INDUSTRIAL LAND USE IN THE REGION BY COUNTY: 1963 AND 1990

County	Type of Industrial Use	Industrial Land			
		1963 (acres)	1990 (acres)	Change: 1963-1990	
				Acres	Percent
Kenosha	Manufacturing	211	327	116	55.0
	Wholesaling and Storage	500	454	-46	-9.2
	Net Industrial	711	781	70	9.8
	Related Parking	55	149	94	170.9
	Gross Industrial Total	766	930	164	21.4
Milwaukee	Manufacturing	2,176	2,725	549	25.2
	Wholesaling and Storage	2,082	2,840	758	36.4
	Net Industrial	4,258	5,565	1,307	30.7
	Related Parking	872	1,609	737	84.5
	Gross Industrial Total	5,130	7,174	2,044	39.8
Ozaukee	Manufacturing	175	383	208	118.9
	Wholesaling and Storage	98	275	177	180.6
	Net Industrial	273	658	385	141.0
	Related Parking	40	164	124	310.0
	Gross Industrial Total	313	822	509	162.6
Racine	Manufacturing	386	870	484	125.4
	Wholesaling and Storage	278	699	421	151.4
	Net Industrial	664	1,569	905	136.3
	Related Parking	133	346	213	160.2
	Gross Industrial Total	797	1,915	1,118	140.3
Walworth	Manufacturing	101	301	200	198.0
	Wholesaling and Storage	242	505	263	108.7
	Net Industrial	343	806	463	135.0
	Related Parking	37	158	121	327.0
	Gross Industrial Total	380	964	584	153.7
Washington	Manufacturing	139	412	273	196.4
	Wholesaling and Storage	150	462	312	208.0
	Net Industrial	289	874	585	202.4
	Related Parking	53	262	209	394.3
	Gross Industrial Total	342	1,136	794	232.2
Waukesha	Manufacturing	329	1,267	938	285.1
	Wholesaling and Storage	453	1,575	1,122	247.7
	Net Industrial	782	2,842	2,060	263.4
	Related Parking	142	963	821	578.2
	Gross Industrial Total	924	3,805	2,881	311.8
Region Total	Manufacturing	3,517	6,285	2,768	78.7
	Wholesaling and Storage	3,803	6,810	3,007	79.1
	Net Industrial	7,320	13,095	5,775	78.9
	Related Parking	1,332	3,651	2,319	174.1
	Gross Industrial Total	8,652	16,746	8,094	93.6

Source: SEWRPC.

Table 9

COMMERCIAL LAND USE IN THE REGION BY COUNTY: 1963 AND 1990

County	Type of Commercial Use	Commercial Land			
		1963 (acres)	1990 (acres)	Change: 1963-1990	
				Acres	Percent
Kenosha	Commercial	450	707	257	57.1
	Related Parking	131	390	259	197.7
	Gross Commercial Total	581	1,097	516	88.8
Milwaukee	Commercial	2,563	3,745	1,182	46.1
	Related Parking	1,007	2,667	1,660	164.8
	Gross Commercial Total	3,570	6,412	2,842	79.6
Ozaukee	Commercial	264	538	274	103.8
	Related Parking	57	259	202	354.4
	Gross Commercial Total	321	797	476	148.3
Racine	Commercial	528	1,010	482	91.3
	Related Parking	194	616	422	217.5
	Gross Commercial Total	722	1,626	904	125.2
Walworth	Commercial	581	849	268	46.1
	Related Parking	74	240	166	224.3
	Gross Commercial Total	655	1,089	434	66.3
Washington	Commercial	279	622	343	122.9
	Related Parking	67	344	277	413.4
	Gross Commercial Total	346	966	620	179.2
Waukesha	Commercial	945	2,242	1,297	137.2
	Related Parking	254	1,598	1,344	529.1
	Gross Commercial Total	1,199	3,840	2,641	220.3
Region Total	Commercial	5,610	9,713	4,103	73.1
	Related Parking	1,784	6,114	4,330	242.7
	Gross Commercial Total	7,394	15,827	8,433	114.1

Source: SEWRPC.

There was considerable variation in the rate of industrial development among the seven counties in Southeastern Wisconsin between 1963 and 1990. The increase in gross industrial land use ranged from a low of 164 acres—an average annual increase of about six acres—in Kenosha County to a high of 2,881 acres—an average annual increase of about 107 acres—in Waukesha County during this time. The rate of increase in gross industrial land ranged from a low of about 21 percent in Kenosha County to a high of about 312 percent in Waukesha County.

Table 9 sets forth the changes in commercial land use that have occurred within the Region between 1963 and 1990. Commercial land, as defined in the Commission's land use inventories, includes all types of retail- and service-oriented commercial uses, including neighborhood, community, and regional shopping areas, highway-oriented commercial areas, and professional and executive offices. Net commercial land is defined as the actual site area devoted to such uses, that is, the ground-floor area occupied by any buildings, plus related yard area. Gross commercial land is defined as net commercial land plus associated off-street parking area.

In 1990, net commercial land use in Southeastern Wisconsin totaled about 9,700 acres, or less than

Table 10

PERCENTAGE DISTRIBUTION OF INDUSTRIAL LAND IN THE REGION BY COUNTY: 1963 AND 1990

County	Gross Industrial Land[a]					
	1963		1990		Change: 1963-1990	
	Acres	Percent of Regional Total	Acres	Percent of Regional Total	Acres	Percent
Kenosha	766	8.9	930	5.6	164	21.4
Milwaukee	5,130	59.2	7,174	42.8	2,044	39.8
Ozaukee	313	3.6	822	4.9	509	162.6
Racine	797	9.2	1,915	11.4	1,118	140.3
Walworth	380	4.4	964	5.8	584	153.7
Washington	342	4.0	1,136	6.8	794	232.2
Waukesha	924	10.7	3,805	22.7	2,881	311.8
Region	8,652	100.0	16,746	100.0	8,094	93.6

[a]*Includes lands used for manufacturing, wholesaling and storage, and related parking.*

Source: SEWRPC.

1 percent of the total area of the Region. Gross commercial land in the Region, consisting, as noted, of net commercial land plus related off-street parking, totaled about 15,800 acres (see Table 9). Net commercial land in the Region increased by about 4,100 acres, or 73 percent, between 1963 and 1990, representing an average annual increase of about 152 acres over the 27-year period. Gross commercial land in the Region increased by about 8,400 acres, or about 114 percent, between 1963 and 1990, representing an average annual increase of about 312 acres over this period.

There was considerable variation in the rate of commercial development among the seven counties in Southeastern Wisconsin between 1963 and 1990. The increase in gross commercial land use ranged from a low of 434 acres—an average annual increase of about 16 acres—in Walworth County to a high of 2,842 acres—an average annual increase of about 105 acres—in Milwaukee County during this time. The rate of increase in gross commercial land ranged from a low of about 66 percent in Walworth County to a high of about 220 percent in Waukesha County.

As a result of these differing county growth rates, the distribution of industrial land use in the Region changed significantly between 1963 and 1990, with the most dramatic change occurring in Waukesha and Milwaukee Counties (see Table 10 and Maps 3 and 4). In 1963, Milwaukee County accounted for about 59 percent of all industrial land in the Region. Kenosha, Racine, and Waukesha Counties accounted for about 9 percent, 9 percent, and 11 percent, respectively. Ozaukee, Walworth, and Washington Counties each accounted for less than 5 percent of the regional total. By 1990, Milwaukee County's proportion of industrial land in the Region had decreased to about 43 percent, while Waukesha County's proportion had increased to about 23 percent. The proportion of industrial land also increased in Ozaukee, Racine, Walworth, and Washington Counties between 1963 and 1990, while Kenosha County's proportion of the regional total decreased slightly during this time.

The distribution of commercial land use in the Region also changed between 1963 and 1990, with the most dramatic changes once again occurring in Waukesha and Milwaukee Counties (see Table 11 and Maps 5 and 6). In 1963, Milwaukee County accounted for about 48 percent of all commercial land in the Region. Kenosha, Racine, Walworth, and Waukesha Counties accounted for about 8 percent, 10 percent, 9 percent, and 16 percent, respectively. Ozaukee and Washington Counties each accounted for less than 5 percent of the regional total. By 1990, Milwaukee County's proportion of commercial land in the Region had decreased to about 41 percent, while Waukesha County's proportion had increased to about 24 percent. The proportion of commercial

Table 11

PERCENTAGE DISTRIBUTION OF COMMERCIAL LAND IN THE REGION BY COUNTY: 1963 AND 1990

County	Gross Commercial Land[a]					
	1963		1990		Change: 1963-1990	
	Acres	Percent of Regional Total	Acres	Percent of Regional Total	Acres	Percent
Kenosha	581	7.9	1,097	6.9	516	88.8
Milwaukee	3,570	48.2	6,412	40.5	2,842	79.6
Ozaukee	321	4.3	797	5.0	476	148.3
Racine	722	9.8	1,626	10.3	904	125.2
Walworth	655	8.9	1,089	6.9	434	66.3
Washington	346	4.7	966	6.1	620	179.2
Waukesha	1,199	16.2	3,840	24.3	2,641	220.3
Region	7,394	100.0	15,827	100.0	8,433	114.1

[a]*Includes lands used for commercial uses and related parking.*

Source: SEWRPC.

land also increased in Ozaukee, Racine, and Washington Counties between 1963 and 1990, while the proportion of commercial land in the Region in Kenosha and Walworth Counties decreased slightly during this time.

Personal Income

Another indicator of the general trend of the economy of the Region is personal income. While income levels are generally identified by the Census year in which they are collected—e.g., 1950, 1960, 1970, 1980, or 1990—it should be noted that the income figures collected in each Census are for the year preceding that Census, that is, 1949, 1959, 1969, 1979, or 1989, respectively. It should also be noted that the following analysis of personal income is based upon converting all reported income figures to constant dollars[7] to provide for a more meaningful comparison of change in income over time. The figures reported below are also set forth in the accompanying tables.

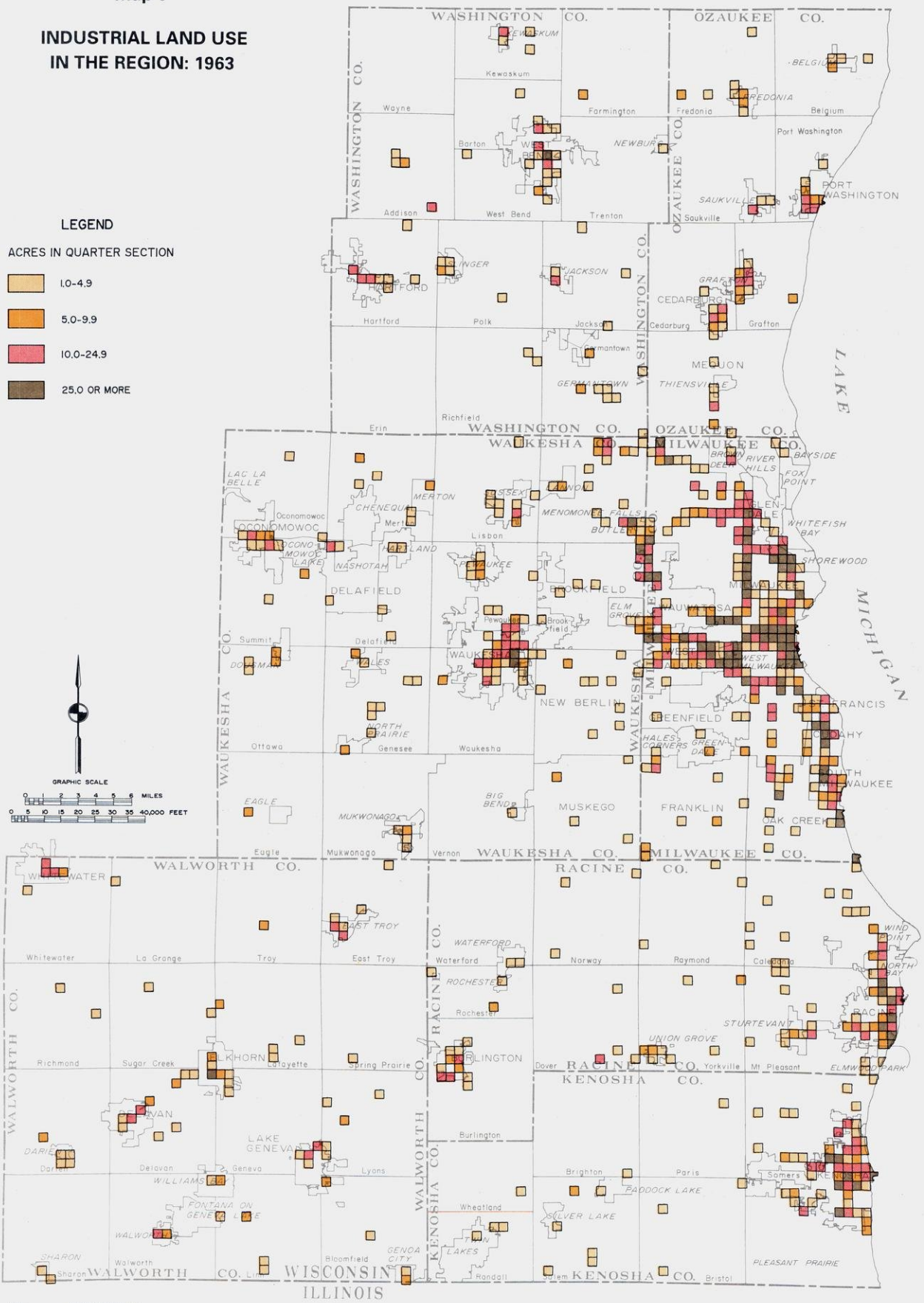
Personal income levels—aggregate, per capita, and median family—for the United States, Wisconsin, and the Region for Census years 1950 through 1990 are set forth in Table 12. As shown in this table, the Region's aggregate personal income, measured in constant 1989 dollars, increased by about 189 percent between 1950 and 1990. This rate of increase, however, is less than the 230 percent increase for the State and 295 percent increase for the Nation over this same period. Between 1950 and 1960, aggregate personal income increased at a greater rate in the Region than in either the State or the Nation. Since that time, however, the rates of increase for both the State and the Nation have exceeded the rate of increase for the Region.

The Region consistently exhibited higher per capita personal income levels than either the State or the Nation throughout the period from 1950 to 1990. The 1990 per capita income levels were $14,551, $13,276, and $14,420 for the Region, State, and Nation, respectively. Per capita income levels for the Region, State, and Nation converged over this period of time, however, as the rates of increase for both the State and the Nation were greater than that of the Region (see Table 12 and Figure 6). Between 1950 and 1990, per capita income levels, measured in constant 1989 dollars, increased by about 98 percent for the Region, by about 132 percent for the State, and by about 145 percent for the Nation. Between 1980 and 1990, however, per capita income in the Region actually decreased, measured in constant 1989 dollars, by about one-tenth of 1 percent.

[7]*Income figures have been converted to constant 1989 dollars using the U. S. Bureau of Labor Statistics Consumer Price Index (CPI) for urban wage earners and clerical workers. The A series (all items) was the specific series used.*

Map 3

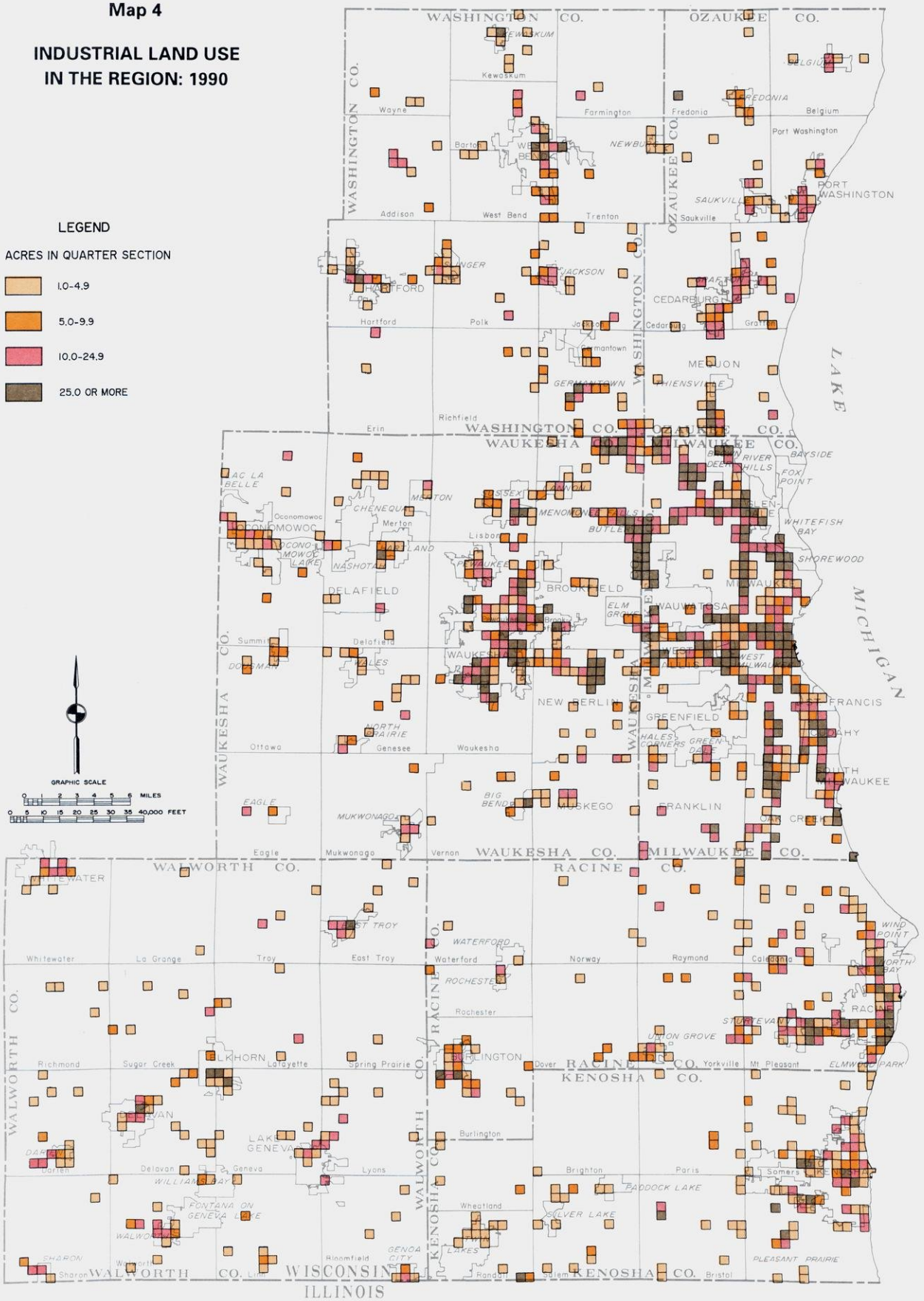
INDUSTRIAL LAND USE IN THE REGION: 1963



Source: SEWRPC.

Map 4

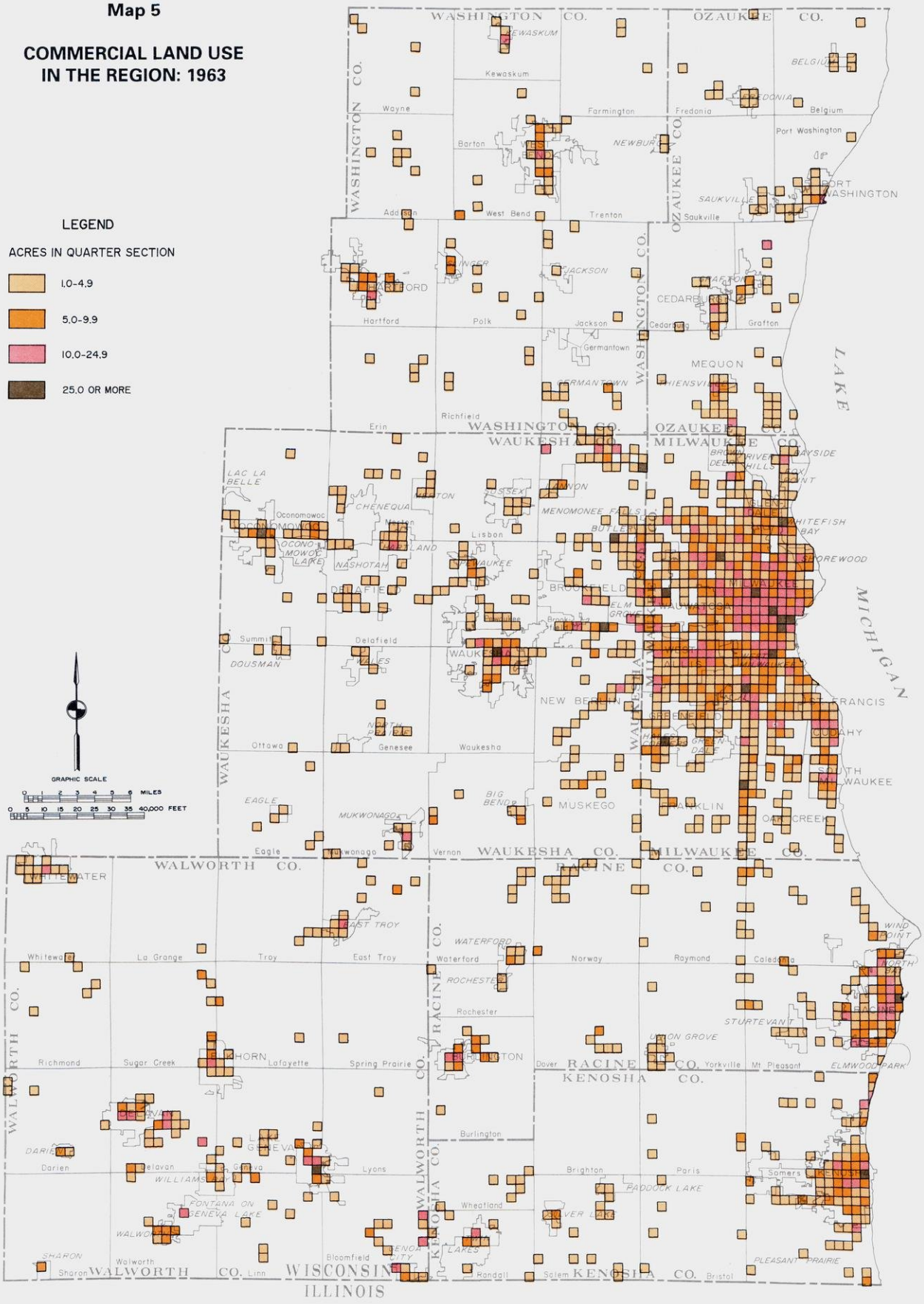
INDUSTRIAL LAND USE IN THE REGION: 1990



Source: SEWRPC.

Map 5

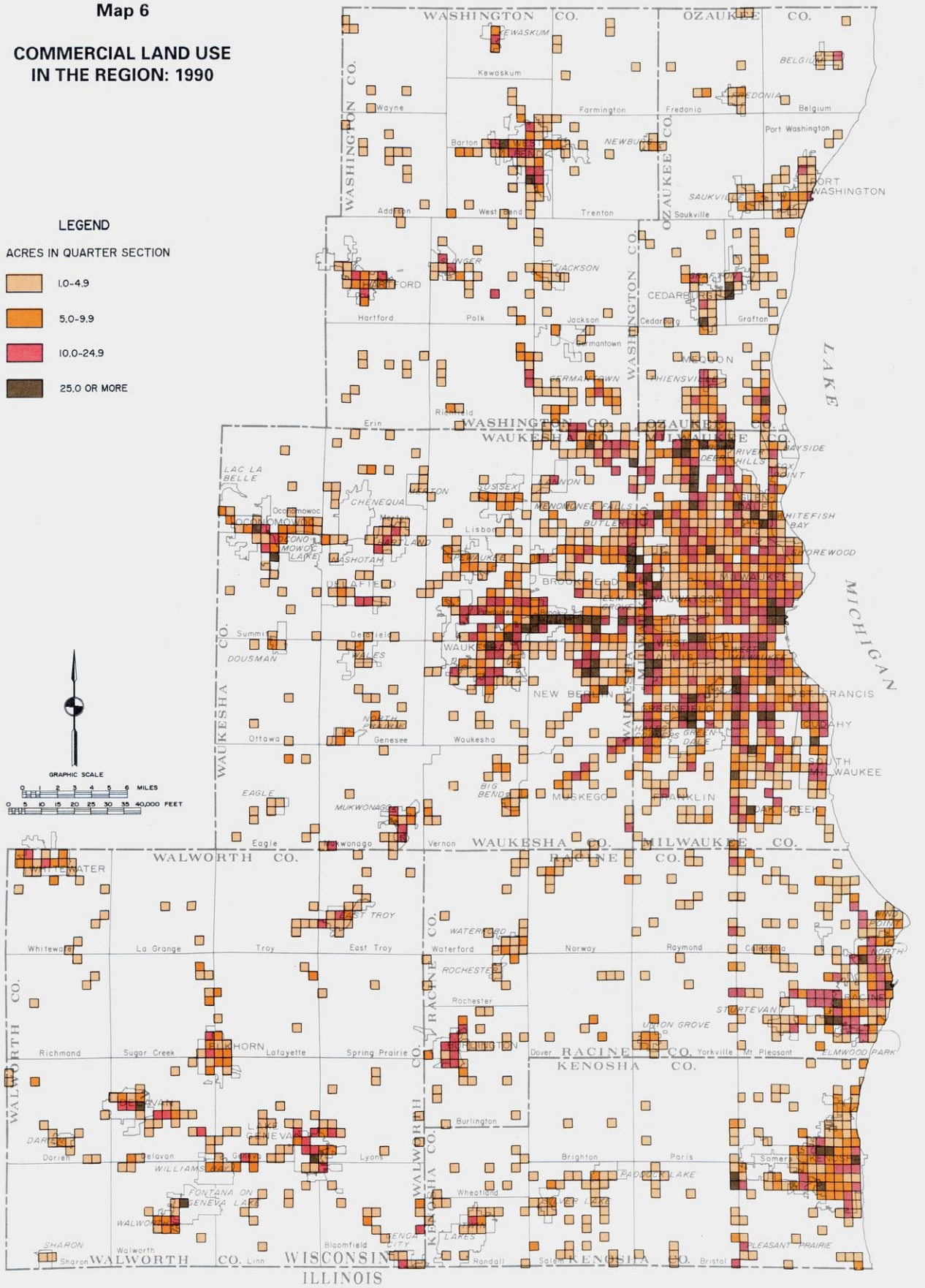
COMMERCIAL LAND USE IN THE REGION: 1963



Source: SEWRPC.

Map 6

COMMERCIAL LAND USE IN THE REGION: 1990



Source: SEWRPC.

Table 12

PERSONAL INCOME LEVELS IN THE UNITED STATES, WISCONSIN, AND THE REGION: CENSUS YEARS 1950-1990

Geographic Area	1950	1960	1970	1980	1990	Percent Change 1950-1960	1960-1970	1970-1980	1980-1990	1950-1990
United States										
Aggregate Personal Income[a]										
Reported Dollars	$165,063	$ 331,700	$ 635,563	$1,653,331	$3,586,466	101.0	91.6	160.1	116.9	2,072.8
Constant 1989 Dollars	907,615	1,468,933	2,291,522	2,952,188	3,586,466	61.8	56.0	28.8	21.5	295.2
Per Capita Personal Income										
Reported Dollars	1,070	1,849	3,128	7,298	14,420	72.8	69.2	133.3	97.6	1,247.7
Constant 1989 Dollars	5,884	8,188	11,278	13,031	14,420	39.2	37.7	15.5	10.7	145.1
Median Family Income										
Reported Dollars	3,073	5,660	9,590	19,917	35,225	84.2	69.4	107.7	76.9	1,046.3
Constant 1989 Dollars	16,897	25,065	34,577	35,564	35,225	48.3	37.9	2.9	-1.0	108.5
Wisconsin										
Aggregate Personal Income[a]										
Reported Dollars	$ 3,581	$ 7,287	$ 13,457	$ 34,083	$ 64,945	103.5	84.7	153.3	90.5	1,713.6
Constant 1989 Dollars	19,690	32,270	48,519	60,859	64,945	63.9	50.4	25.4	6.7	229.8
Per Capita Personal Income										
Reported Dollars	1,043	1,844	3,046	7,243	13,276	76.8	65.2	137.8	83.3	1,172.9
Constant 1989 Dollars	5,735	8,166	10,982	12,933	13,276	42.4	34.5	17.8	2.7	131.5
Median Family Income										
Reported Dollars	3,256	5,926	10,068	20,915	35,082	82.0	69.9	107.7	67.7	977.5
Constant 1989 Dollars	17,903	26,243	36,300	37,346	35,082	46.6	38.3	2.9	-6.1	96.0
Region										
Aggregate Personal Income[a]										
Reported Dollars	$ 1,660	$ 3,492	$ 6,029	$ 14,391	$ 26,343	110.4	72.7	138.7	83.1	1,486.9
Constant 1989 Dollars	9,128	15,464	21,738	25,697	26,343	69.4	40.6	18.2	2.5	188.6
Per Capita Personal Income										
Reported Dollars	1,338	2,219	3,433	8,154	14,551	65.8	54.7	137.5	78.5	987.5
Constant 1989 Dollars	7,357	9,827	12,378	14,560	14,551	33.6	26.0	17.6	-0.1	97.8
Median Family Income										
Reported Dollars	3,846	6,908	11,182	23,515	38,516	79.6	61.9	110.3	63.8	901.5
Constant 1989 Dollars	21,148	30,592	40,317	41,988	38,516	44.7	31.8	4.1	-8.3	82.1

[a] *In millions of dollars.*

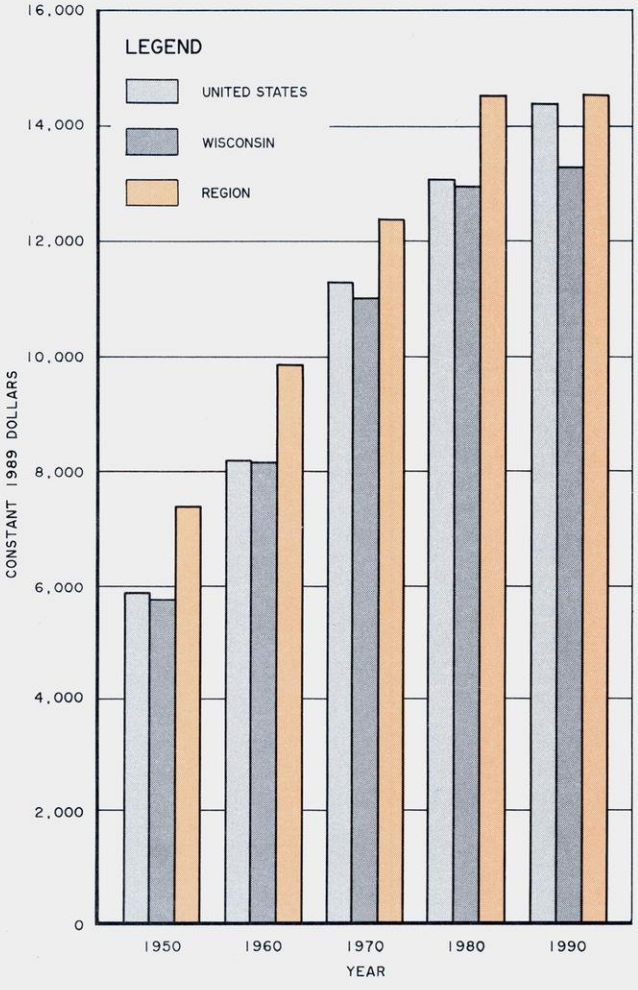
Source: U. S. Bureau of the Census, U. S. Bureau of Labor Statistics, and SEWRPC.

The pattern of change for median family income is similar to that of per capita income; that is, the median family income level has consistently been higher in the Region than in either the State or the Nation. The differences are becoming smaller over time, however, as the rates of increase for the State and Nation exceed that of the Region (see Table 12 and Figure 7). In 1990, median family income levels of $38,516, $35,082, and $35,225 were reported for the Region, State, and Nation, respectively. Between 1950 and 1990, median family income levels, measured in constant 1989 dollars, increased by about 82 percent in the Region, by about 96 percent in the State, and by about 109 percent in the Nation. Between 1980 and 1990, however, median family income, measured in constant 1989 dollars, actually decreased by about 8 percent in the Region, about 6 percent in the State, and about 1 percent in the Nation, representing the only decrease in each of these respective areas since 1950.

Personal income growth has not been uniform among the counties in the Region since 1950, but has been greatest in the suburban counties of Ozaukee, Washington, and Waukesha. Aggregate personal income, measured in constant 1989 dollars and set forth in Table 13, increased in all counties between 1950 and 1980. Between 1980 and 1990, Kenosha and Racine Counties experienced decreases in aggregate personal income of less than 1 percent, while the Milwaukee County level decreased by about 6 percent. Per capita income levels, as set forth in Table 14 and Figure 8, followed the same pattern as did aggregate income levels throughout the Region, with the Region overall staying at about the same per capita income level between 1980 and 1990, while per capita income for Kenosha, Milwaukee, and Racine Counties decreased by about 4 percent, 6 percent, and 1 percent, respectively. Ozaukee County exhibited the largest increase in per capita income, over 190 percent, between 1950 and 1990. Median family income, as set forth in

Figure 6

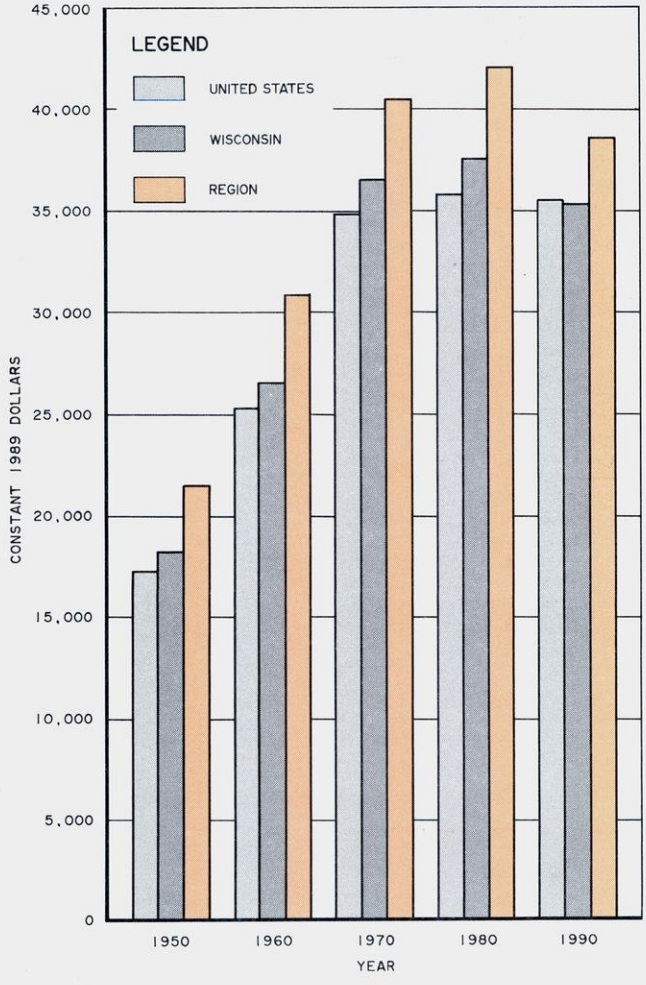
PER CAPITA INCOME IN THE UNITED STATES, WISCONSIN, AND THE REGION: CENSUS YEARS 1950-1990



Source: U. S. Bureau of the Census and SEWRPC.

Figure 7

MEDIAN FAMILY INCOME IN THE UNITED STATES, WISCONSIN, AND THE REGION: CENSUS YEARS 1950-1990



Source: U. S. Bureau of the Census and SEWRPC.

Table 15 and Figure 9, increased in each county of the Region during each decade between 1950 and 1980, with the exception of one decrease of about 1 percent in Milwaukee County between 1970 and 1980. Between 1980 and 1990, however, this trend changed dramatically, with decreases in median family income levels in each county, ranging from about 1 percent in Waukesha County to about 14 percent in Kenosha County.

SUMMARY

Between 1950 and 1960, the size of the regional labor force increased at a greater rate than did the sizes of the State and national labor forces, but since 1960, these rates of increase in the Nation and State have been greater than that of the Region. Between 1980 and 1990, the Region's labor force increased by about 7 percent, compared with about 11 percent for the State and about 18 percent for the Nation. Much of the Region's labor force growth has been the result of rapid increases in the number of females in the labor force. In each decade between 1950 and 1980, the number of females in the regional labor force increased by more than 30 percent; this rate of increase dropped to about 15 percent between 1980 and 1990. Between 1950 and 1980, the number of males in the regional labor force never increased by more than about 12 percent per decade; between 1980 and 1990, their number

Table 13

AGGREGATE PERSONAL INCOME LEVELS IN THE REGION BY COUNTY (IN MILLIONS OF DOLLARS): CENSUS YEARS 1950-1990

Geographic Area	1950	1960	1970	1980	1990	Percent Change 1950-1960	1960-1970	1970-1980	1980-1990	1950-1990
Kenosha County										
Reported Dollars	$ 94	$ 220	$ 362	$ 955	$ 1,700	134.0	64.5	163.8	78.0	1,708.5
Constant 1989 Dollars	517	974	1,305	1,705	1,700	88.4	34.0	30.7	-0.3	228.8
Milwaukee County										
Reported Dollars	$1,209	$ 2,371	$ 3,680	$ 7,673	$12,838	96.1	55.2	108.5	67.3	961.9
Constant 1989 Dollars	6,648	10,500	13,268	13,701	12,838	57.9	26.4	3.3	-6.3	93.1
Ozaukee County										
Reported Dollars	$ 28	$ 82	$ 202	$ 646	$ 1,402	192.9	146.3	219.8	117.0	4,907.1
Constant 1989 Dollars	154	363	728	1,153	1,402	135.7	100.6	58.4	21.5	810.4
Racine County										
Reported Dollars	$ 147	$ 296	$ 557	$ 1,380	$ 2,454	101.4	88.2	147.8	77.8	1,569.4
Constant 1989 Dollars	809	1,311	2,008	2,464	2,454	62.1	53.2	22.7	-0.4	203.3
Walworth County										
Reported Dollars	$ 44	$ 93	$ 186	$ 509	$ 1,014	111.4	100.0	173.7	99.2	2,204.5
Constant 1989 Dollars	242	412	671	909	1,014	70.2	62.8	35.5	11.6	319.0
Washington County										
Reported Dollars	$ 35	$ 86	$ 201	$ 646	$ 1,405	145.7	133.7	221.4	117.5	3,914.3
Constant 1989 Dollars	192	381	725	1,153	1,405	98.4	90.2	59.2	21.8	631.8
Waukesha County										
Reported Dollars	$ 103	$ 344	$ 841	$ 2,582	$ 5,530	234.0	144.5	207.0	114.2	5,268.9
Constant 1989 Dollars	566	1,523	3,032	4,610	5,530	169.1	99.1	52.0	19.9	877.0
Southeastern Wisconsin Region										
Reported Dollars	$1,660	$ 3,492	$ 6,029	$14,391	$26,343	110.4	72.7	138.7	83.1	1,486.9
Constant 1989 Dollars	9,128	15,464	21,738	25,697	26,343	69.4	40.6	18.2	2.5	188.6

Source: U. S. Bureau of the Census, U. S. Bureau of Labor Statistics, and SEWRPC.

Table 14

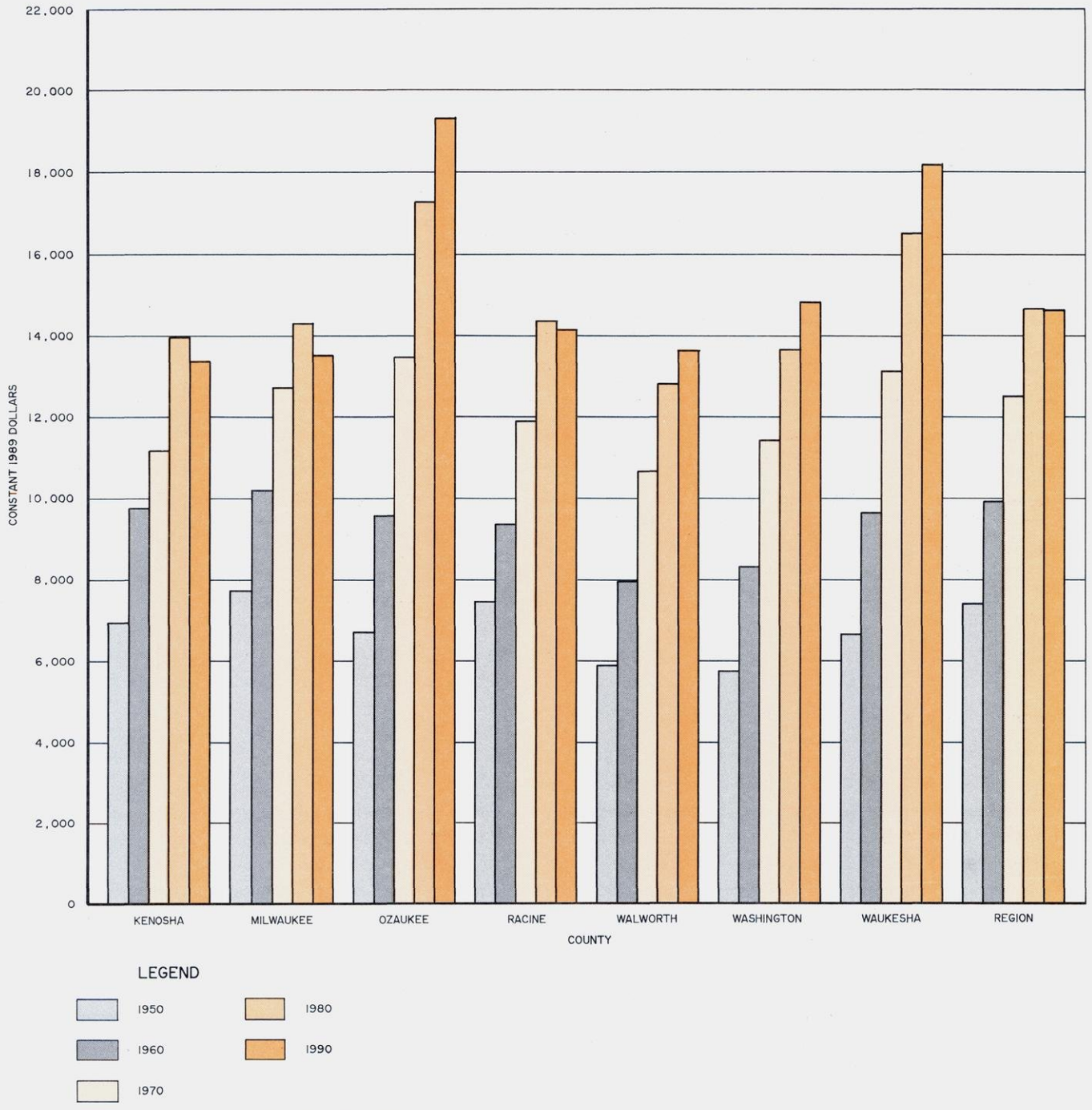
PER CAPITA PERSONAL INCOME LEVELS IN THE REGION BY COUNTY: CENSUS YEARS 1950-1990

Geographic Area	1950	1960	1970	1980	1990	Percent Change 1950-1960	1960-1970	1970-1980	1980-1990	1950-1990
Kenosha County										
Reported Dollars	$1,249	$ 2,187	$ 3,072	$ 7,756	$13,265	75.1	40.5	152.5	71.0	962.0
Constant 1989 Dollars	6,868	9,685	11,076	13,849	13,265	41.0	14.4	25.0	-4.2	93.1
Milwaukee County										
Reported Dollars	$1,388	$ 2,288	$ 3,490	$ 7,952	$13,383	64.8	52.5	127.9	68.3	864.2
Constant 1989 Dollars	7,632	10,132	12,583	14,199	13,383	32.8	24.2	12.8	-5.7	75.4
Ozaukee County										
Reported Dollars	$1,198	$ 2,133	$ 3,710	$ 9,640	$19,249	78.0	73.9	159.8	99.7	1,506.8
Constant 1989 Dollars	6,587	9,446	13,376	17,213	19,249	43.4	41.6	28.7	11.8	192.2
Racine County										
Reported Dollars	$1,341	$ 2,088	$ 3,260	$ 7,969	$14,023	55.7	56.1	144.4	76.0	945.7
Constant 1989 Dollars	7,374	9,247	11,754	14,229	14,023	25.4	27.1	21.1	-1.4	90.2
Walworth County										
Reported Dollars	$1,058	$ 1,776	$ 2,932	$ 7,123	$13,526	67.9	65.1	142.9	89.9	1,178.4
Constant 1989 Dollars	5,818	7,865	10,571	12,719	13,526	35.2	34.4	20.3	6.3	132.5
Washington County										
Reported Dollars	$1,032	$ 1,865	$ 3,145	$ 7,609	$14,736	80.7	68.6	141.9	93.7	1,327.9
Constant 1989 Dollars	5,675	8,259	11,339	13,587	14,736	45.5	37.3	19.8	8.5	159.7
Waukesha County										
Reported Dollars	$1,199	$ 2,174	$ 3,634	$ 9,211	$18,148	81.3	67.2	153.5	97.0	1,413.6
Constant 1989 Dollars	6,593	9,628	13,102	16,447	18,148	46.0	36.1	25.5	10.3	175.3
Southeastern Wisconsin Region										
Reported Dollars	$1,338	$ 2,219	$ 3,433	$ 8,154	$14,551	65.8	54.7	137.5	78.5	987.5
Constant 1989 Dollars	7,357	9,827	12,378	14,560	14,551	33.6	26.0	17.6	-0.1	97.8

Source: U. S. Bureau of the Census, U. S. Bureau of Labor Statistics, and SEWRPC.

Figure 8

PER CAPITA INCOME IN THE REGION
BY COUNTY: CENSUS YEARS 1950-1990



Source: U. S. Bureau of the Census and SEWRPC.

increased by only about one-tenth of 1 percent. The labor force participation rate for females in the Region rose from about 32 percent in 1950 to about 60 percent in 1990. Over this same time span, the labor force participation rate for males in the Region decreased from about 82 percent in 1950 to about 76 percent in 1990. As a result of these changes, the composition of the Region's labor force changed from about 71 percent male, 29 percent female in 1950 to about 53 percent male, 47 percent female in 1990.

Table 15

MEDIAN FAMILY INCOME LEVELS IN THE REGION BY COUNTY: CENSUS YEARS 1950-1990

Geographic Area	1950	1960	1970	1980	1990	Percent Change 1950-1960	1960-1970	1970-1980	1980-1990	1950-1990
Kenosha County										
Reported Dollars	$ 3,626	$ 6,916	$10,380	$23,161	$35,657	90.7	50.1	123.1	54.0	883.4
Constant 1989 Dollars	19,938	30,628	37,425	41,356	35,657	53.6	22.2	10.5	-13.8	78.8
Milwaukee County										
Reported Dollars	$ 3,926	$ 6,969	$10,980	$21,958	$33,988	77.5	57.6	100.0	54.8	765.7
Constant 1989 Dollars	21,588	30,862	39,588	39,208	33,988	43.0	28.3	-1.0	-13.3	57.4
Ozaukee County										
Reported Dollars	$ 3,636	$ 7,152	$12,620	$27,766	$47,578	96.7	76.5	120.0	71.4	1,208.5
Constant 1989 Dollars	19,993	31,673	45,501	49,579	47,578	58.4	43.7	9.0	-4.0	138.0
Racine County										
Reported Dollars	$ 3,930	$ 6,722	$10,968	$23,836	$37,991	71.0	63.2	117.3	59.4	866.7
Constant 1989 Dollars	21,609	29,768	39,545	42,562	37,991	37.8	32.8	7.6	-10.7	75.8
Walworth County										
Reported Dollars	$ 3,103	$ 5,692	$ 9,687	$20,796	$36,125	83.4	70.2	114.7	73.7	1,064.2
Constant 1989 Dollars	17,062	25,207	34,926	37,133	36,125	47.7	38.6	6.3	-2.7	111.7
Washington County										
Reported Dollars	$ 3,242	$ 6,209	$11,275	$23,962	$42,204	91.5	81.6	112.5	76.1	1,201.8
Constant 1989 Dollars	17,826	27,497	40,652	42,787	42,204	54.3	47.8	5.3	-1.4	136.8
Waukesha County										
Reported Dollars	$ 3,656	$ 7,190	$12,795	$27,648	$49,096	96.7	78.0	116.1	77.6	1,242.9
Constant 1989 Dollars	20,103	31,841	46,132	49,368	49,096	58.4	44.9	7.0	-0.6	144.2
Southeastern Wisconsin Region										
Reported Dollars	$ 3,846	$ 6,908	$11,182	$23,515	$38,516	79.6	61.9	110.3	63.8	901.5
Constant 1989 Dollars	21,148	30,592	40,317	41,988	38,516	44.7	31.8	4.1	-8.3	82.1

Source: U. S. Bureau of the Census, U. S. Bureau of Labor Statistics, and SEWRPC.

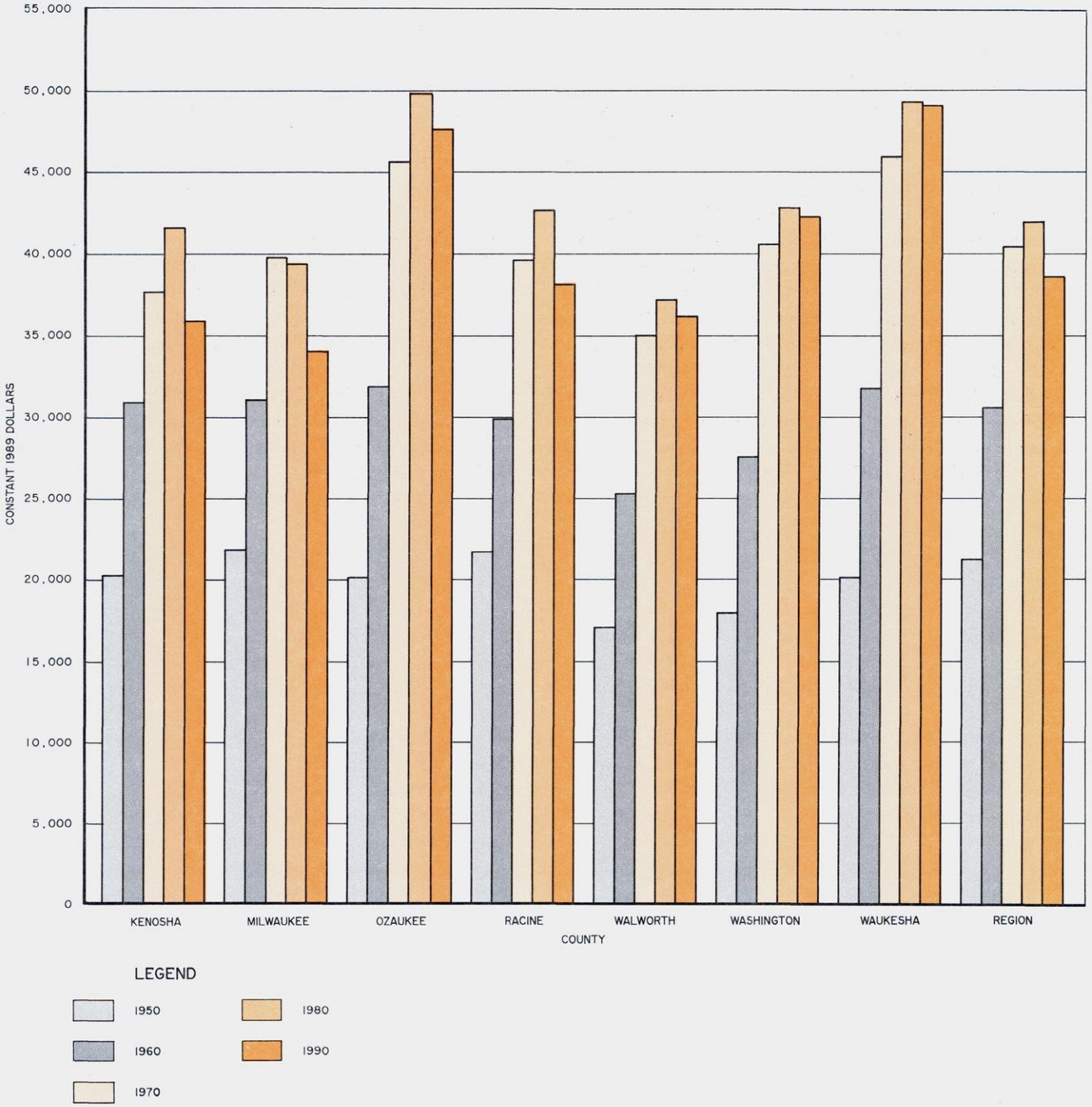
As has been the case with the size of the labor force, the number of jobs available has been increasing at lower rates in the Region than in the State and Nation. Between 1980 and 1990, the number of jobs available within the Region increased by about 13 percent, in comparison with increases of about 22 percent and 16 percent for the Nation and State, respectively. Between 1950 and 1990, the number of jobs available within the Region increased by about 86 percent, in comparison with increases of about 120 percent and 99 percent for the Nation and State, respectively. In the most recent decades, short-term fluctuations in the number of jobs available between periods of economic expansion and recession have been greater for the Region than for either the Nation or State because of the higher concentration of capital goods production in the regional economy.

Over the period from 1950 to 1990, there was a continuous decentralization of the Region's labor force and jobs from the older, more established urban areas of the Region into the more rural areas. In 1950, about 72 percent of the Region's labor force resided in Milwaukee County, and about 79 percent of the Region's jobs were located there. In 1990, Milwaukee County contained about 51 percent of the Region's labor force and about 58 percent of the Region's jobs. The majority of this shift has been to Waukesha County, whose proportion of the Region's total labor force increased from about 6 percent in 1950 to about 18 percent in 1990, and whose proportion of the Region's total jobs increased from about 3 percent in 1950 to about 18 percent in 1990.

As a result of the shifts in job locations, the amount of land devoted to industrial and commercial use has been increasing at more rapid rates in the outlying counties of the Region. Between 1963 and 1990, increases in gross industrial land use ranged from a low of 164 acres in Kenosha County to a high of 2,881 acres in Waukesha County. The rates of increase in gross industrial land use ranged from a low of about 21 percent in Kenosha County to a high of about 312 percent in Waukesha County.

Figure 9

MEDIAN FAMILY INCOME IN THE REGION BY COUNTY: CENSUS YEARS 1950-1990



Source: U. S. Bureau of the Census and SEWRPC.

Between 1963 and 1990, increases in gross commercial land use ranged from a low of 434 acres in Walworth County to a high of 2,842 acres in Milwaukee County. The rates of increase in gross commercial land use ranged from a low of about 66 percent in Walworth County to a high of about 220 percent in Waukesha County.

Per capita and median family income levels have been higher in the Region than in either the Nation

or State, but rates of increase since 1950 have been higher for both the Nation and the State. In 1990, the per capita income levels for the Region, State, and Nation were $14,551, $13,276, and $14,420, respectively. Between 1950 and 1990, per capita income levels, measured in constant 1989 dollars, increased by about 98 percent in the Region, by about 132 percent in the State, and by about 145 percent in the Nation. In 1990, median family income levels of $38,516, $35,082, and $35,225 were reported for the Region, State, and Nation, respectively. Between 1950 and 1990, median family income levels, measured in constant 1989 dollars, increased by about 82 percent in the Region, by about 96 percent in the State, and by about 109 percent in the Nation. Between 1980 and 1990, however, median family income, measured in constant 1989 dollars, decreased in each county in the Region; that decade has been the only decade since 1950 in which median family income levels have decreased in the Region, except between 1970 and 1980 in Milwaukee County only.

Personal income growth has not been uniform among the counties in the Region since 1950, but has been greatest in the suburban counties of Ozaukee, Washington, and Waukesha. Milwaukee County exhibited the lowest personal income growth rates between 1950 and 1990, and particularly during the most recent of the four decades. Although Milwaukee County was the most populous county within the Region, having a higher population than the other six counties of the Region combined, its residents in 1989 received less than one-half of the aggregate personal income within the Region. Rates of personal income growth in Kenosha, Racine, and Walworth Counties have generally been intermediate to those of Milwaukee County and the suburban counties of Ozaukee, Washington, and Waukesha. The highest levels of per capita and median family income are found in Ozaukee and Waukesha Counties; the lowest per capita income level is found in Kenosha County, while the lowest median family income level is in Milwaukee County.

Chapter III

STRUCTURE OF THE REGIONAL ECONOMY

INTRODUCTION

This chapter presents analyses of the dominant and subdominant industry groups identified within the Southeastern Wisconsin Region. Twelve such industry groups were identified in 1990. Dominant industry groups, as defined by the Regional Planning Commission, account for 4 percent or more of total regional employment, while subdominant industry groups account for 2 percent to 3.9 percent of total regional employment.

Those industry groups identified as dominant in the Southeastern Wisconsin Region in 1990 include construction; industrial machinery and equipment, formerly called nonelectrical machinery; transportation, communication, and utilities; wholesale trade; retail trade; finance, insurance, and real estate; business services; health services; and government and government enterprises. Those industry groups identified as subdominant in 1990 include printing and publishing; fabricated metals; and electrical and electronic machinery, equipment, and supplies. It should be noted that the only manufacturing industry with dominant status in the Region in 1990 was industrial machinery and equipment.

The analyses present, for the dominant and then for the subdominant manufacturing industries, information on the geographic locational patterns of each industry in the United States in terms of value added by manufacture[1] in 1949, 1959, 1969, 1978,[2] and 1989; comparative employment levels for 1950, 1960, 1970, 1980, and 1990; and comparative average hourly earnings for the United States, Wisconsin, and the Region for 1960, 1970, 1980, and 1990. Following the analyses of manufacturing industries, the nonmanufacturing dominant and subdominant industry analyses are presented. National, State, and regional data on employment levels between 1950 and 1990, supplemented by analyses of pertinent and available data on sales, number of establishments, and revenue, are presented. For variables measured in dollars, i.e., value added by manufacture, average hourly earnings, and sales, no attempt was made to compensate for the effect of price inflation over the period of these analyses. Since these data were analyzed to determine such things as rank order and relative rates of change over time between and among different geographic areas, it was not deemed necessary to construct constant-dollar comparisons.

Changes in the status of the dominant and subdominant industries of the Region are set forth in Table 16 for the years 1950, 1960, 1970, 1980, and 1990. Those industries accorded dominant status in 1990 accounted for 348,200 jobs in 1950 and 742,700 jobs in 1990, an increase of 394,500 jobs, or about 113 percent. Industries accorded subdominant status in 1990 accounted for 47,400 jobs in 1950 and 73,000 jobs in 1990, an increase of about 25,600 jobs, or about 54 percent. Employment in those industries accorded dominant status in 1990 increased from about 61 percent of total regional employment in 1950 to about 70 percent in 1990, while employment in those industries accorded subdominant status decreased from about 8 percent of total regional employment in 1950 to about 7 percent in 1990. Employment in the electrical and electronic machinery, equipment, and supplies industry, which was accorded subdominant status in 1950 and dominant status in 1960, 1970, and 1980, decreased by about 19,400 jobs, or about 45 percent, between 1960 and 1990; that industry was again accorded only subdominant status in 1990. Employment in three industries fell below 2 percent of regional employment between 1970 and 1990. The primary metals industry, which was accorded subdominant status in 1950, 1960, and 1970, employed about 16,800 in 1950 and 11,400 in 1990, a decrease of 5,400 jobs, or about 32 percent, and represented only about 1.1 percent of total regional employment in 1990. The food and kindred products industry, which was accorded subdominant status in 1950,

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[1]*Value added by manufacture is considered the best available measure for comparing the relative economic importance of manufacturing activity among industries and geographic areas. It is derived by subtracting the cost of raw materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments for products manufactured, and then adding receipts for services rendered.*

[2]*Data were not available for 1979 on value added by manufacture for detailed industry groups.*

Table 16

CHANGES IN THE STATUS OF DOMINANT AND SUBDOMINANT INDUSTRY GROUPS IN THE REGION: 1950, 1960, 1970, 1980, AND 1990

SIC Code Number(s)[a]	Industry	1950		1960		1970		1980		1990		1950-1990 Change		
		Number of Jobs	Percent of Regional Employment	Number of Jobs	Percent of Regional Employment	Number of Jobs	Percent of Regional Employment	Number of Jobs	Percent of Regional Employment	Number of Jobs	Percent of Regional Employment	Number of Jobs	Percent	Percentage-Point Change in Regional Employment
	Dominant Industries													
15-17	Construction	24,500	4.3	30,900	4.6	32,400	4.1	33,800	3.6	46,100	4.3	21,600	88.2	0.0
35	Industrial Machinery and Equipment[b]	64,400	11.2	58,900	8.8	70,200	9.0	75,000	7.9	55,600	5.2	-8,800	-13.7	-6.0
40-49	Transportation, Communication, and Utilities	26,900	4.7	33,600	5.0	38,400	4.9	42,200	4.5	46,000	4.3	19,100	71.0	-0.4
50-51	Wholesale Trade	24,000	4.2	27,400	4.1	37,200	4.7	46,100	4.9	54,900	5.1	30,900	128.8	0.9
52-59	Retail Trade	85,500	14.9	97,800	14.5	133,700	17.1	153,600	16.3	186,400	17.5	100,900	118.0	2.6
60-67	Finance, Insurance, and Real Estate	31,300	5.5	36,200	5.4	47,500	6.1	75,200	8.0	86,200	8.1	54,900	175.4	2.6
73	Business Services	11,600	2.0	13,000	1.9	16,700	2.1	32,300	3.4	64,700	6.1	53,100	457.8	4.1
80	Health Services	14,500	2.5	22,100	3.3	40,300	5.1	68,800	7.3	95,800	9.0	81,300	560.7	6.5
90-97	Government and Government Enterprises	65,500	11.4	72,600	10.8	86,200	11.0	101,600	10.7	107,000	10.0	41,500	63.4	-1.4
	Subtotal	348,200	60.7	392,500	58.3	502,600	64.1	628,600	66.5	742,700	69.6	394,500	113.3	8.9
	Subdominant Industries													
27	Printing and Publishing	10,000	1.7	14,400	2.1	15,000	1.9	16,200	1.7	22,900	2.1	12,900	129.0	0.4
34	Fabricated Metals	17,500	3.1	18,300	2.7	24,400	3.1	32,000	3.4	26,800	2.5	9,300	53.1	-0.6
36	Electrical and Electronic Machinery, Equipment, and Supplies	19,900	3.5	42,700	6.3	36,100	4.6	40,600	4.3	23,300	2.2	3,400	17.1	-1.3
	Subtotal	47,400	8.3	75,400	11.1	75,500	9.6	88,800	9.4	73,000	6.8	25,600	54.0	-1.5
	All Other Employment	177,900	31.0	205,100	30.6	206,000	26.3	227,800	24.1	251,500	23.6	73,600	41.4	-7.4
	Total Regional Employment	573,500	100.0	673,000	100.0	784,100	100.0	945,200	100.0	1,067,200	100.0	493,700	86.1	--

[a] *"SIC" refers to the Standard Industrial Classification established by the U. S. Office of Management and Budget.*

[b] *Formerly known as the nonelectrical machinery industry.*

Source: U. S. Bureau of Economic Analysis; Wisconsin Department of Industry, Labor and Human Relations; and SEWRPC.

1960, 1970, and 1980, employed 22,400 in 1960 and 16,600 in 1990, a decrease of 5,800 jobs, or about 26 percent, and represented only about 1.6 percent of total regional employment in 1990. Finally, the transportation equipment industry, which was accorded dominant status in 1950 and 1960 and subdominant status in 1970 and 1980, employed 27,000 in 1960 and 8,900 in 1990, a decrease of 18,100 jobs, or about 67 percent, and represented only about 0.8 percent of total regional employment in 1990. Due to decreased employment levels, the primary metals, food and kindred products, and transportation equipment industries were no longer accorded either dominant or subdominant status in 1990 and were thereby dropped from the analyses in this report. In addition, employment in the educational services industry, which was accorded dominant status in 1970 and 1980, has been included in the government and government enterprises industry group for the sake of consistency with current data sources.

The changes appear to reflect an overall stability in the general structure of the economy of the Region, although a general shift has occurred between the service and trade dominants and subdominants and their manufacturing counterparts. The manufacturing industries accorded dominant or subdominant status in 1990 accounted for about 20 percent of total regional employment in 1950, but only about 12 percent in 1990. Conversely, employment in service, trade, and other nonmanufacturing-oriented industries accorded dominant or subdominant status in 1990 increased from about 50 percent of the total jobs in the Region in 1950 to about 64 percent in 1990. This general trend was identified in the Commission's studies of the regional economy in 1963, 1972, and 1984.

Table 17

EMPLOYMENT LEVELS IN THE INDUSTRIAL MACHINERY AND EQUIPMENT INDUSTRY IN THE UNITED STATES, WISCONSIN, AND THE REGION: 1950, 1960, 1970, 1980, AND 1990[a]

Geographic Area	Number of Employees					Percent Change				
	1950	1960	1970	1980	1990	1950-1960	1960-1970	1970-1980	1980-1990	1950-1990
United States	1,217,000	1,487,500	1,995,000	2,684,500	2,301,500	22.2	34.1	34.6	-14.3	89.1
Wisconsin	82,400	89,500	112,000	128,300	111,600	8.6	25.1	14.6	-13.0	35.4
Southeastern Wisconsin Region	64,400	58,900	70,200	75,000	55,600	-8.5	19.2	6.8	-25.9	-13.7

Geographic Areas Compared	Percent					Percentage-Point Change				
	1950	1960	1970	1980	1990	1950-1960	1960-1970	1970-1980	1980-1990	1950-1990
Region Total as Percent of United States Total	5.3	4.0	3.5	2.8	2.4	-1.3	-0.5	-0.7	-0.4	-2.9
Region Total as Percent of Wisconsin Total	78.2	65.8	62.7	58.5	49.8	-12.4	-3.1	-4.2	-8.7	-28.4

[a]*The industrial machinery and equipment industry was formerly called the nonelectrical machinery industry.*

Source: U. S. Bureau of Economic Analysis; Wisconsin Department of Industry, Labor and Human Relations; and SEWRPC.

DOMINANT AND SUBDOMINANT INDUSTRIES

Industrial Machinery and Equipment

The industrial machinery and equipment industry, formerly called the nonelectrical machinery industry, has long been a dominant manufacturing industry in the Region. Although its share of total regional employment has declined over the past few decades, it nevertheless accounted for about 55,600 jobs, or about 5.2 percent of total employment in the Region, in 1990. Nationally, approximately 2.3 million persons were employed in the industrial machinery and equipment industry in 1990, while 111,600 persons were employed in this industry in Wisconsin.

As shown in Table 17, the industrial machinery and equipment industry had a considerably slower employment growth rate in the Region than in the State or Nation between 1950 and 1980. Between 1980 and 1990, employment in this industry decreased by about 14 percent in the Nation and by about 13 percent in the State, the first decrease after 1950 in either the Nation or the State; during the same decade, jobs in this industry decreased by about 26 percent in the Region. Accordingly, the Region's share of both national and State employment in this industry has been decreasing. The Region's share of State employment in this industry decreased from about 78 percent in 1950 to about 50 percent in 1990, indicating that a more viable industrial machinery and equipment industry exists in other parts of Wisconsin.

As shown in Table 18, this industry group includes the manufacture of engines and turbines; farm and garden machinery; construction, mining, and related machinery; metalworking machinery; office, computing, and accounting machines; refrigeration and service industry machinery; special industry machinery; general industrial machinery; and miscellaneous nonelectrical machinery. The industrial machinery industry in the Region is concentrated in the production of engines and turbines, metalworking machinery, and general industrial machinery, with the greatest concentration in the production of engines and turbines. Engine- and turbine-manufacturing employment accounted for 27.4 percent of total industrial machinery and equipment employment in the Region in 1987, compared with the national figure of 4.7 percent.

Table 19 lists the major employers in the industrial machinery and equipment industry in the Region. Nearly all of these firms have been active in this industry in the Region throughout the approximately 30-year period during which the Commission has conducted and prepared economic studies and forecasts. Ownership has changed in some cases through acquisitions, a few companies have ceased operations in the Region, and some firms have reduced employment levels to adjust to changing economic conditions; but overall, the industry has been fairly stable. The companies listed represented approximately 55 percent of the total regional employment in the industrial machinery industry in 1990.

Table 18

DISTRIBUTION OF EMPLOYMENT IN THE INDUSTRIAL MACHINERY AND EQUIPMENT INDUSTRY IN THE UNITED STATES, WISCONSIN, AND THE REGION: 1967, 1977, AND 1987

SIC Code Number[a]	Activity	Percent of Industry Employment								
		United States			Wisconsin			Region		
		1967	1977	1987	1967	1977	1987	1967	1977	1987
351	Engines and Turbines	5.3	6.2	4.7	19.8	21.4	21.4	25.6	23.1	27.4
352	Farm and Garden Machinery	7.3	7.2	4.5	13.1[b]	15.1	11.3	15.0	15.2	9.2
353	Construction, Mining, and Related Machinery	14.6	16.0	10.2	18.9	17.3	11.9	20.7	18.8	11.7
354	Metalworking Machinery	18.1	14.3	14.5	12.6	9.0	15.7	10.3	11.6	16.4
355	Special Industry Machinery	11.1	8.9	9.2	9.3	9.2	12.6	5.3	3.5	3.2
356	General Industrial Machinery	15.0	15.1	13.0	12.8	14.1	12.3	15.9	16.5	13.0
357	Office, Computing, and Accounting Machines	10.2	12.5	17.8	2.1	1.2	2.9	--	--	--
358	Refrigeration and Service Industry Machinery	7.3	9.2	10.3	6.1	6.4	9.0	2.2	2.7	5.6
359	Miscellaneous Machinery, except Electrical	10.9	10.7	15.8	5.3[b]	6.3[b]	2.9	4.9	8.6	13.5

[a] *"SIC" refers to the Standard Industrial Classification established by the U. S. Office of Management and Budget.*

[b] *Estimated.*

Source: Census of Manufactures and SEWRPC.

Table 19

MAJOR EMPLOYERS IN THE INDUSTRIAL MACHINERY AND EQUIPMENT INDUSTRY IN THE REGION: 1990

Applied Power, Inc.[a]	Oilgear Company
Artos Engineering	Outboard Marine Corporation
Bolens Corporation[a]	Perlick Corporation[a]
Briggs & Stratton Corporation	Racine Fluid Power, Inc.[a]
Bucyrus-Erie Company	Rexnord Corporation
J. I. Case Company	Rexworks, Inc.
Custom Products Corporation[a]	Simplicity Manufacturing, Inc.
Envirex, Inc.	A. O. Smith Corporation
Falk Corporation	Sta-Rite Industries
Gehl Company	Superior Die Set Corporation[a]
Harnischfeger Corporation	Tecumseh Products Company
Jacobsen Division, Textron, Inc.	Telsmith, Inc.
Kearney & Trecker Corporation[b]	Twin Disc, Inc.[a]
Kelley Company, Inc.[a]	Vilter Manufacturing Corporation[a]
Krones, Inc.[a]	Wacker Corporation[a]
Milwaukee Electric Tool Corporation	Waukesha Engine Division, Dresser Industries, Inc.
Nordberg, Inc.	Webster Electric Company, Inc.

[a] *Indicates companies added to list since publication of the second (May 1984) edition of this report.*

[b] *Kearney & Trecker Corporation was purchased in 1992 by the Giddings & Lewis Company, which subsequently ceased operations in the Region in 1993.*

Source: Wisconsin Department of Industry, Labor and Human Relations; Classified Directory of Wisconsin Manufacturers; and SEWRPC.

Table 20

CHANGES IN THE AMOUNT AND DISTRIBUTION OF VALUE ADDED BY MANUFACTURE IN THE INDUSTRIAL MACHINERY AND EQUIPMENT INDUSTRY IN THE UNITED STATES BY GEOGRAPHIC REGION: 1949, 1959, 1969, 1978, AND 1989

Geographic Region	Value Added by Manufacture in the Industrial Machinery and Equipment Industry						Percent Distribution of Value Added by Manufacture in the Industrial Machinery and Equipment Industry								
	Amount (millions of dollars)					1978-1989 Percent Change	Percent					Percentage-Point Change			
	1949	1959	1969	1978	1989		1949	1959	1969	1978	1989	1949-1959	1959-1969	1969-1978	1978-1989
New England	$ 818	$ 1,481	$ 2,797	$ 6,766	$ 10,999	62.6	10.6	10.2	8.7	8.5	8.2	-0.4	-1.5	-0.2	-0.3
Middle Atlantic	1,685	2,953	5,912	11,448	16,488	44.0	21.9	20.3	18.5	14.5	12.3	-1.6	-1.8	-4.0	-2.2
East North Central	3,889	6,695	13,472	27,952	39,326	40.7	50.6	45.8	42.1	35.4	29.2	-4.8	-3.7	-6.7	-6.2
West North Central	485	1,024	2,868	8,022	13,260	65.3	6.3	7.0	9.0	10.2	9.9	0.7	2.0	1.2	-0.3
South Atlantic	137	437	1,403	4,729	13,780	191.4	1.8	2.9	4.4	6.0	10.3	1.1	1.5	1.6	4.3
East South Central	134	295	1,124	3,393	7,684	126.5	1.7	2.0	3.5	4.3	5.7	0.3	1.5	0.8	1.4
West South Central	188	589	1,409	6,793	9,147	34.7	2.5	4.0	4.4	8.7	6.8	1.5	0.4	4.3	-1.9
Mountain	32	126	522	2,087	3,460	65.8	0.4	0.9	1.6	2.7	2.6	0.5	0.7	1.1	-0.1
Pacific	321	1,009	2,505	7,650	20,276	165.0	4.2	6.9	7.8	9.7	15.0	2.7	0.9	1.9	5.3
United States	$7,689	$14,609	$32,012	$78,840	$134,420	70.5	100.0	100.0	100.0	100.0	100.0	--	--	--	--

Source: Annual Survey of Manufactures, Geographic Areas Reference Manual, and SEWRPC.

Nationally, the industrial machinery industry has traditionally been concentrated in the Middle Atlantic and East North Central States. As measured on the basis of value added by manufacture, these two areas together in 1989 accounted for approximately 42 percent of the industry nationally. That concentration had been declining steadily since 1949, when the two areas had accounted for nearly 73 percent of the value added by manufacture in the industry nationally. As is the case in many manufacturing industries, the fastest-growing areas in this industry have been in the West and South. As shown in Table 20 and Figure 10, the share of value added by manufacture increased in the Pacific and South Atlantic States from about 6 percent of the national total in 1949 to about 25 percent in 1989, and represented the fastest growth nationally in this industry from 1978 to 1989.

Table 21 shows the 10 highest-ranking States in value added by manufacture in the industrial machinery and equipment industry group in 1989. As shown, California, up from number six in 1969 and number three in 1978, ranked number one in 1989, followed by Illinois and Ohio. Wisconsin ranked number six, up from the number seven position it had held in 1969 and 1978. As shown in Table 22, average hourly earnings in this industry have been consistently higher in the Region than in the State or the Nation. Hourly earnings in the Region increased at a rate which was greater than the State and national rates between 1960 and 1980 but lower than both the State and national rates between 1980 and 1990.

Overall, the industrial machinery and equipment industry in Southeastern Wisconsin went through some very difficult times in the 1980s. Employment dropped dramatically during the prolonged recession that plagued the Region between 1980 and 1982, and was generally flat for the remainder of the decade. Much of the employment decline can be attributed to permanent changes, as the industry was restructured to become more competitive in world markets. With this restructuring largely completed, it is unlikely that the industry will suffer another dramatic decline in employment. However, a return to the employment levels achieved in the late 1970s is not anticipated, especially given the Region's concentration in engines and turbines, a part of the industry with a relatively weak outlook.

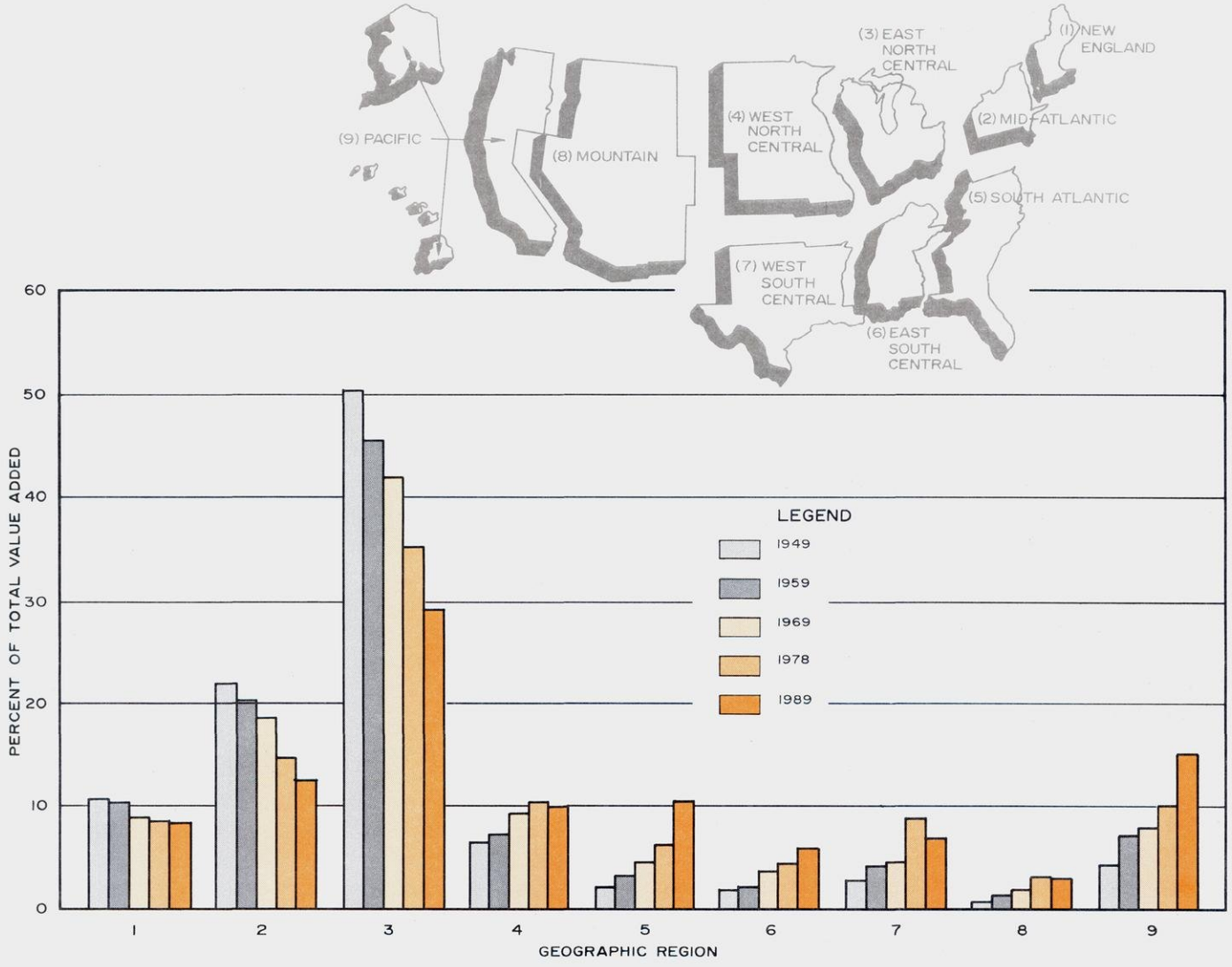
Printing and Publishing

The printing and publishing industry in the Southeastern Wisconsin Region, a subdominant industry in 1960 but not in 1970 or 1980, once again reached subdominant status in 1990. Approximately 22,900 persons in the Region were employed in this industry, representing 2.1 percent of total employment in the Region in 1990. Nationally, approximately 1.8 million persons were employed in the printing and publishing industry in 1990, while approximately 47,900 persons were employed in this industry in the State.

As shown in Table 23, employment in this industry in the Region increased by about 6,700 jobs, or about 41 percent, between 1980 and 1990, slightly less than the rate of growth in the State, but

Figure 10

DISTRIBUTION OF VALUE ADDED BY MANUFACTURE IN THE INDUSTRIAL MACHINERY AND EQUIPMENT INDUSTRY IN THE UNITED STATES BY GEOGRAPHIC REGION: 1949, 1959, 1969, 1978, AND 1989



Source: Annual Survey of Manufactures, Geographic Areas Reference Manual, and SEWRPC.

significantly higher than the rate of growth in the Nation. The regional share of State employment in this industry, however, declined from a high of about 66 percent in 1960 to about 48 percent in 1990.

Table 24 lists the types of activities which comprise this industry. These include the publishing of newspapers, periodicals, and books; commercial printing; the printing of business forms and greeting cards; bookbinding; service industries for the publishing trade; and miscellaneous publishing. Commercial printing and newspaper publishing are the major employers in this group on a national scale. These two activities are also the most important at the regional level, with commercial printing providing about 59 percent of total employment in this group in 1987, compared to 47 percent of total employment in this industry in the State and 37 percent of total employment in this industry in the Nation.

Table 25 lists the major companies in the printing, publishing, and allied industries in the Region in 1990. These companies accounted for about 48 per-

cent of total regional printing and publishing employment. Several of these companies have been major employers in this industry in the Region since the completion of the original Commission economic studies in the early 1960s.

Nationally, the Middle Atlantic and East North Central States accounted for about 46 percent of the value added by manufacture in the printing, publishing, and allied industries in 1989. As shown in Table 26 and Figure 11, this proportion was down from about 65 percent for those two areas together in 1949. The fastest-growing areas in this group since 1969 have been the Mountain and Pacific States.

Individual state rankings in this industry in the United States for 1989, in terms of value added

Table 21

TEN HIGHEST-RANKING STATES IN VALUE ADDED BY MANUFACTURE IN THE INDUSTRIAL MACHINERY AND EQUIPMENT INDUSTRY: 1989

State	Rank	1989 Amount (millions of dollars)	Percent Change 1978-1989
California	1	$17,547.8	164.2
Illinois	2	10,576.5	28.7
Ohio	3	9,428.5	35.7
Michigan	4	7,959.2	40.6
New York	5	7,468.6	42.8
Wisconsin	6	6,938.8	58.7
Texas	7	6,506.4	30.4
Massachusetts	8	6,269.4	73.6
Pennsylvania	9	6,103.5	44.0
North Carolina	10	5,762.4	402.3

Source: Annual Survey of Manufactures and SEWRPC.

Table 22

AVERAGE HOURLY EARNINGS IN THE INDUSTRIAL MACHINERY AND EQUIPMENT INDUSTRY IN THE UNITED STATES, WISCONSIN, AND THE REGION: 1960, 1970, 1980, AND 1990

Geographic Area	Amount				Percent Change			
	1960	1970	1980	1990	1960-1970	1970-1980	1980-1990	1960-1990
United States	$2.55	$3.77	$8.00	$11.77[a]	47.8	112.2	65.6	361.6
Wisconsin	2.60	3.91	9.04	13.25	50.4	131.2	46.6	409.6
Southeastern Wisconsin Region	2.65	4.05	9.63[b]	14.00[b]	52.8	137.8	45.4	428.3

[a] *Based on median weekly income.*

[b] *Based on Milwaukee, Ozaukee, Washington, and Waukesha Counties.*

Source: U. S. Bureau of Labor Statistics; Wisconsin Department of Industry, Labor and Human Relations; and SEWRPC.

Table 23

EMPLOYMENT LEVELS IN THE PRINTING, PUBLISHING, AND ALLIED INDUSTRIES IN THE UNITED STATES, WISCONSIN, AND THE REGION: 1950, 1960, 1970, 1980, AND 1990

Geographic Area	Number of Employees					Percent Change				
	1950	1960	1970	1980	1990	1950-1960	1960-1970	1970-1980	1980-1990	1950-1990
United States	760,400	926,400	1,122,600	1,495,200	1,757,600	21.8	21.2	33.2	17.5	131.1
Wisconsin	18,600	21,900	25,500	32,500	47,900	17.7	16.4	27.5	47.4	157.5
Southeastern Wisconsin Region	10,000	14,400	15,000	16,200	22,900	44.0	4.2	8.0	41.4	129.0

Geographic Areas Compared	Percent					Percentage-Point Change				
	1950	1960	1970	1980	1990	1950-1960	1960-1970	1970-1980	1980-1990	1950-1990
Region Total as Percent of United States Total	1.3	1.6	1.3	1.1	1.3	0.3	-0.3	-0.2	0.2	0.0
Region Total as Percent of Wisconsin Total	53.8	65.8	58.8	49.8	47.8	12.0	-7.0	-9.0	-2.0	-6.0

Source: U. S. Bureau of Economic Analysis; Wisconsin Department of Industry, Labor and Human Relations; and SEWRPC.

Table 24

DISTRIBUTION OF EMPLOYMENT IN THE PRINTING, PUBLISHING, AND ALLIED INDUSTRIES IN THE UNITED STATES, WISCONSIN, AND THE REGION: 1967, 1977, AND 1987

SIC Code Number[a]	Activity	Percent of Industry Employment								
		United States			Wisconsin			Region		
		1967	1977	1987	1967	1977	1987	1967	1977	1987
271	Newspapers	32.6	32.0	29.1	32.8	34.3	27.7	30.4	30.1	21.3
272	Periodicals	7.7	6.4	7.4	3.3	2.2[b]	3.2	3.4	3.3	5.1
273	Books	9.3	9.7	7.6	16.0	8.7	9.4	16.5	7.3	10.3
274	Miscellaneous Publishing	3.0	3.9	4.7	N/A	N/A	3.0	1.7	N/A	--
275	Commercial Printing	32.1	32.6	37.0	N/A	38.7	46.6	39.8	46.3	58.8
276	Business Forms	3.3	4.2	3.6	2.1	N/A	4.0	--	N/A	--
277	Greeting Cards	2.7	1.7	1.4	N/A	N/A	N/A	--	--	--
278	Blankbooks and Bookbinding	5.2	5.1	4.6	3.3	3.0[b]	1.7	4.7	6.5	--
279	Service Industries for the Publishing Trade	4.1	4.4	4.6	N/A	13.1[b]	4.4	2.0	6.5[b]	4.5

NOTE: "N/A" indicates data not available.

[a] *"SIC" refers to the Standard Industrial Classification established by the U. S. Office of Management and Budget.*

[b] *Estimated.*

Source: Census of Manufactures and SEWRPC.

Table 25

MAJOR EMPLOYERS IN THE PRINTING, PUBLISHING, AND ALLIED INDUSTRIES IN THE REGION: 1990

Moebius Printing Company
Newspapers, Inc.
Quad/Graphics, Inc.
Ringier America, Inc. (formerly W. A. Krueger Company)
Serigraph Sales and Manufacturing, Inc.
Western Publishing Company, Inc.
Wisconsin Cuneo Press, Inc.

Source: Wisconsin Department of Industry, Labor and Human Relations; Classified Directory of Wisconsin Manufacturers; and SEWRPC.

by manufacture, are shown in Table 27. The populous States of New York, California, and Illinois were the leaders in this industry. Florida was the fastest-growing State in printing and publishing from 1978 to 1989, with a 264 percent increase in value added by manufacture in that industry during that time period.

As indicated in Table 28, average hourly earnings in the printing and publishing industry generally follow the same patterns demonstrated by other manufacturing industries, with a higher average hourly wage rate in the Region compared to those of the State and the Nation between 1960 and 1980, but with a recent slowing of the increase in wage rates, which allowed the regional wage rate to fall behind average hourly wage rates in the State and Nation by 1990.

The rapid growth in the printing and publishing industry in Southeastern Wisconsin during the 1980s slowed considerably at the end of the decade. However, the overall outlook for employment is much better than for most other manufacturing industries. In fact, moderate employment growth is expected, due, in part, to a slower rate of productivity growth and the expected continued strength in specialty periodicals publication and business-related printed materials, such as catalogs and forms.

Fabricated Metals

The fabricated metals industry was the second largest manufacturing industry in the Region in 1990, growing from third largest in 1980; it employed approximately 26,800 persons in 1990, thus accounting for 2.5 percent of total regional employment. Nationally, approximately 1.2 million persons were employed in the fabricated metals industry in 1990, while 60,300 persons were employed in this industry in the State.

Table 26

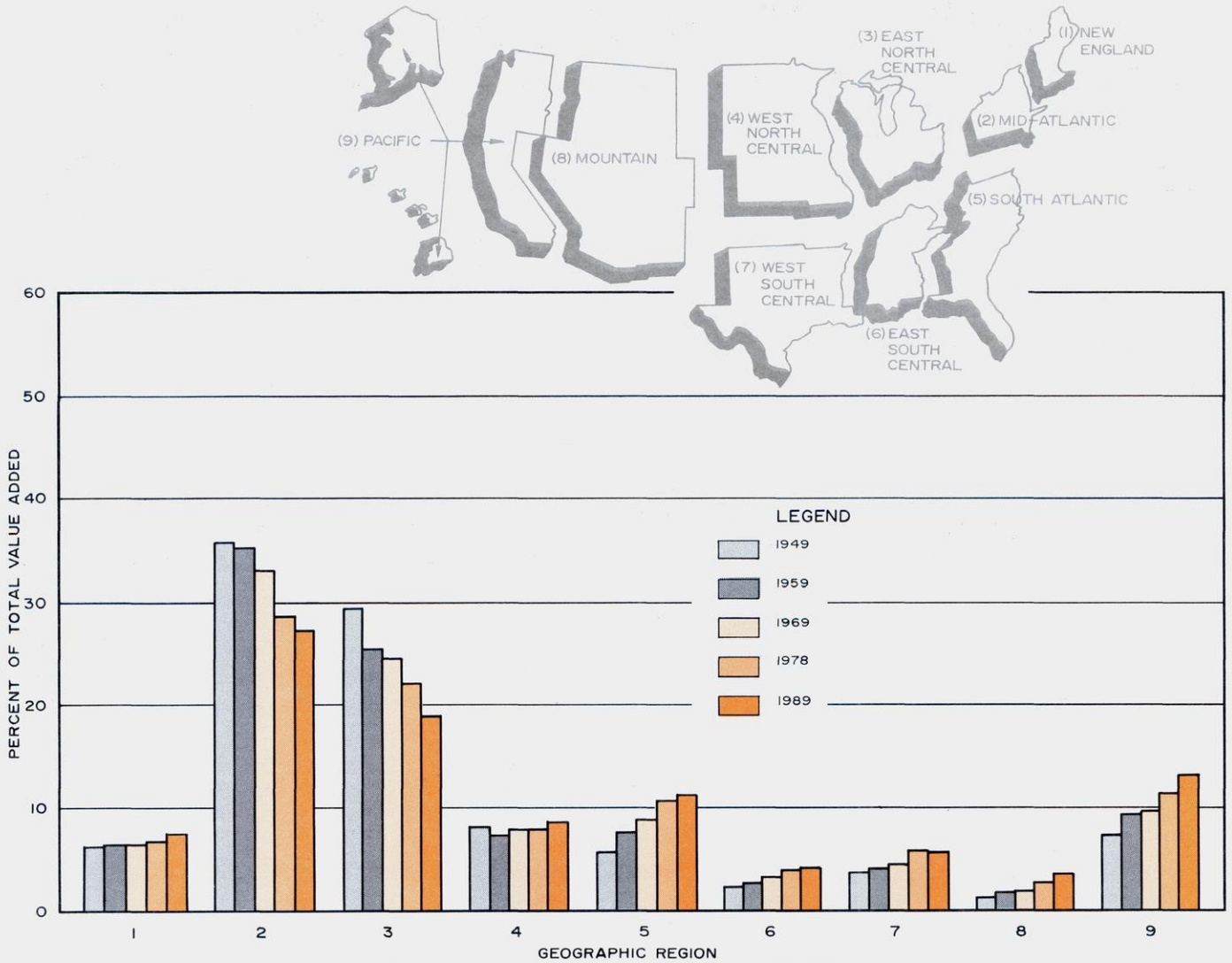
CHANGES IN THE AMOUNT AND DISTRIBUTION OF VALUE ADDED BY MANUFACTURE IN THE PRINTING, PUBLISHING, AND ALLIED INDUSTRIES IN THE UNITED STATES BY GEOGRAPHIC REGION: 1949, 1959, 1969, 1978, AND 1989

Geographic Region	Value Added by Manufacture in the Printing, Publishing, and Allied Industries						Percent Distribution of Value Added by Manufacture in the Printing, Publishing, and Allied Industries								
	Amount (millions of dollars)					1978-1989 Percent Change	Percent					Percentage-Point Change			
	1949	1959	1969	1978	1989		1949	1959	1969	1978	1989	1949-1959	1959-1969	1969-1978	1978-1989
New England	$ 294	$ 553	$ 1,081	$ 2,446	$ 7,191	194.0	6.3	6.4	6.4	6.8	7.5	0.1	0.0	0.4	0.7
Middle Atlantic	1,669	3,067	5,538	10,253	26,017	153.7	35.8	35.2	33.0	28.6	27.2	-0.6	-2.2	-4.4	-1.4
East North Central	1,370	2,212	4,114	7,920	18,099	128.5	29.4	25.4	24.5	22.1	18.9	-4.0	-0.9	-2.4	-3.2
West North Central	380	639	1,324	2,776	8,283	198.4	8.1	7.3	7.9	7.7	8.6	-0.8	0.6	-0.2	0.9
South Atlantic	265	663	1,472	3,844	10,767	180.1	5.7	7.6	8.8	10.7	11.2	1.9	1.2	1.9	0.5
East South Central	109	236	556	1,417	4,057	186.3	2.3	2.7	3.3	4.0	4.2	0.4	0.6	0.7	0.2
West South Central	174	354	753	2,114	5,343	152.7	3.7	4.1	4.5	5.9	5.6	0.4	0.4	1.4	-0.3
Mountain	60	162	338	995	3,419	243.6	1.3	1.9	2.0	2.8	3.6	0.6	0.1	0.8	0.8
Pacific	345	816	1,619	4,085	12,686	210.5	7.4	9.4	9.6	11.4	13.2	2.0	0.2	1.8	1.8
United States	$4,666	$8,702	$16,795	$35,850	$95,861	167.4	100.0	100.0	100.0	100.0	100.0	--	--	--	--

Source: Annual Survey of Manufactures, Geographic Areas Reference Manual, and SEWRPC.

Figure 11

DISTRIBUTION OF VALUE ADDED BY MANUFACTURE IN THE PRINTING, PUBLISHING, AND ALLIED INDUSTRIES IN THE UNITED STATES BY GEOGRAPHIC REGION: 1949, 1959, 1969, 1978, AND 1989



Source: Annual Survey of Manufactures, Geographic Areas Reference Manual, and SEWRPC.

Table 27

TEN HIGHEST-RANKING STATES IN VALUE ADDED BY MANUFACTURE IN THE PRINTING, PUBLISHING, AND ALLIED INDUSTRIES: 1989

State	Rank	1989 Amount (millions of dollars)	Percent Change 1978-1989
New York	1	$16,648.2	142.6
California	2	11,861.8	254.8
Illinois	3	7,283.1	113.4
Pennsylvania	4	5,902.2	193.4
New Jersey	5	4,447.7	222.7
Massachusetts	6	4,208.4	132.0
Ohio	7	4,063.2	198.0
Texas	8	3,697.8	173.6
Florida	9	3,410.2	264.0
Michigan	10	2,860.7	159.0

Source: Annual Survey of Manufactures and SEWRPC.

As shown in Table 29, employment in this industry increased at a greater rate in the Region than in the Nation between 1960 and 1990; thus, the regional share of total national employment in this industry group increased. Compared with the State as a whole, the Region essentially maintained a 54 percent share of total State employment in the industry between 1960 and 1980, but dropped to about 44 percent in 1990. These data indicate that while employment in this industry declined between 1980 and 1990 in the Nation and the Region, some growth, although modest, has occurred in other portions of the State.

As shown in Table 30, the fabricated metals industry group includes the production of metal cans and containers; cutlery, hand tools, and general hard-

Table 28

AVERAGE HOURLY EARNINGS IN THE PRINTING, PUBLISHING, AND ALLIED INDUSTRIES IN THE UNITED STATES, WISCONSIN, AND THE REGION: 1960, 1970, 1980, AND 1990

Geographic Area	Amount				Percent Change			
	1960	1970	1980	1990	1960-1970	1970-1980	1980-1990	1960-1990
United States	$2.68	$3.92	$7.53	$11.25[a]	46.3	92.1	49.4	319.8
Wisconsin	2.67	4.06	8.63	11.47	52.1	112.6	32.9	329.6
Southeastern Wisconsin Region	2.76	4.24	9.49[b]	11.19[b]	53.6	123.8	17.9	305.4

[a] *Based on median weekly income.*

[b] *Based on Milwaukee, Ozaukee, Washington, and Waukesha Counties.*

Source: U. S. Bureau of Labor Statistics; Wisconsin Department of Industry, Labor and Human Relations; and SEWRPC.

Table 29

EMPLOYMENT LEVELS IN THE FABRICATED METALS INDUSTRY IN THE UNITED STATES, WISCONSIN, AND THE REGION: 1950, 1960, 1970, 1980, AND 1990

Geographic Area	Number of Employees					Percent Change				
	1950	1960	1970	1980	1990	1950-1960	1960-1970	1970-1980	1980-1990	1950-1990
United States	941,000	1,110,100	1,407,500	1,421,200	1,177,300	18.0	26.8	1.0	-17.2	25.1
Wisconsin	36,100	33,900	44,000	59,100	60,300	-6.1	29.8	34.3	2.0	67.0
Southeastern Wisconsin Region	17,500	18,300	24,400	32,000	26,800	4.6	33.3	31.1	-16.3	53.1

Geographic Areas Compared	Percent					Percentage-Point Change				
	1950	1960	1970	1980	1990	1950-1960	1960-1970	1970-1980	1980-1990	1950-1990
Region Total as Percent of United States Total	1.9	1.6	1.7	2.3	2.3	-0.3	0.1	0.6	0.0	0.4
Region Total as Percent of Wisconsin Total	48.5	54.0	55.5	54.1	44.4	5.5	1.5	-1.4	-9.7	-4.1

Source: U. S. Bureau of Economic Analysis; Wisconsin Department of Industry, Labor and Human Relations; and SEWRPC.

Table 30

DISTRIBUTION OF EMPLOYMENT IN THE FABRICATED METALS INDUSTRY IN THE UNITED STATES, WISCONSIN, AND THE REGION: 1967, 1977, AND 1987

SIC Code Number[a]	Activity	Percent of Industry Employment								
		United States			Wisconsin			Region		
		1967	1977	1987	1967	1977	1987	1967	1977	1987
341	Metal Cans and Containers	4.5	4.7	3.3	N/A	6.0	4.4	10.1	7.5	8.8
342	Cutlery, Hand Tools, and General Hardware	11.6	10.8	10.0	N/A	7.9	10.4	9.1	8.5	18.6
343	Plumbing and Heating Equipment, except Electrical	4.8	3.4	3.2	N/A	10.1	5.0	6.2	3.6	N/A
344	Fabricated Structural Metal Products	28.9	27.4	27.9	N/A	24.1	24.8	25.9	19.2	23.7
345	Screw-Machine Products and Bolts, Nuts, Screws, Rivets, and Washers	8.6	6.7	6.5	N/A	4.8	5.4	6.8	6.8	5.2
346	Metal Forgings and Stampings	16.8	18.5	17.5	N/A	28.0	26.9	24.9	29.4	23.1
347	Metal Services	N/A	6.0	7.7	N/A	N/A	5.0	N/A	7.0[b]	5.2
348	Ordnance and Accessories	N/A	4.5	6.0	N/A	N/A	3.5	N/A	1.2[b]	N/A
349	Miscellaneous Fabricated Metal Products	24.8	18.0	17.9	N/A	19.1	14.6	17.0[b]	16.8[b]	15.4

NOTE: "N/A" indicates data not available.

[a] *"SIC" refers to the Standard Industrial Classification established by the U. S. Office of Management and Budget.*

[b] *Estimated.*

Source: Census of Manufactures and SEWRPC.

ware; plumbing and heating equipment; fabricated structural metal; screw-machine products, bolts, nuts, and screws; metal forgings and stampings; metal services; ordnance and accessories; and miscellaneous fabricated metal products. Employment in this industry is predominantly in the production of fabricated structural metal products and metal forgings and stampings. These two activities accounted for about 45 percent of the national industry employment, 52 percent of the State industry employment, and 47 percent of the regional industry employment in 1987. The cutlery, hand tools, and hardware sector of this industry experienced a faster rate of employment growth in the Region than in the Nation or State from 1977 to 1987.

Table 31 lists the major employers in the Region in the fabricated metals industry in 1990. The companies listed accounted for about 38 percent of total regional employment in fabricated metals. This industry is characterized by companies having relatively low employment levels when compared to other manufacturing sectors, such as industrial machinery and equipment.

Table 31

MAJOR EMPLOYERS IN THE FABRICATED METALS INDUSTRY IN THE REGION: 1990

Amron Corporation
Bradley Corporation[a]
Ladish Company, Inc.
Master Lock Company
Maysteel Corporation[a]
Milwaukee Forge
Milwaukee Valve Company, Inc.
Modine Manufacturing Company
Regal Ware, Inc.
Snap-on Tools Corporation
Super Steel Products Corporation
Tri-Clover, Inc.[a]
Walker Forge, Inc.[a]
Western Industries, Inc.
Wrought Washer Manufacturing, Inc.
Young Radiator Company[a]

[a] *Indicates companies added to list since publication of the second (May 1984) edition of this report.*

Source: Wisconsin Department of Industry, Labor and Human Relations; Classified Directory of Wisconsin Manufacturers; and SEWRPC.

Table 32

CHANGES IN THE AMOUNT AND DISTRIBUTION OF VALUE ADDED BY MANUFACTURE IN THE FABRICATED METALS INDUSTRY IN THE UNITED STATES BY GEOGRAPHIC REGION: 1949, 1959, 1969, 1978, AND 1989

Geographic Region	Value Added by Manufacture in the Fabricated Metals Industry						Percent Distribution of Value Added by Manufacture in the Fabricated Metals Industry								
	Amount (millions of dollars)					1978-1989 Percent Change	Percent					Percentage-Point Change			
	1949	1959	1969	1978	1989		1949	1959	1969	1978	1989	1949-1959	1959-1969	1969-1978	1978-1989
New England	$ 423	$ 902	$ 1,523	$ 3,578	$ 6,011	68.0	8.8	8.6	7.3	7.1	7.5	-0.2	-1.3	-0.2	0.4
Middle Atlantic	1,217	2,365	3,962	7,547	11,002	45.8	25.3	22.7	19.1	15.0	13.7	-2.6	-3.6	-4.1	-1.3
East North Central	2,168	4,074	8,561	19,532	27,821	42.4	44.8	39.2	41.3	38.8	34.5	-5.6	2.1	-2.5	-4.3
West North Central	225	563	1,144	3,243	6,792	109.4	4.6	5.4	5.5	6.4	8.5	0.8	0.1	0.9	2.1
South Atlantic	193	571	1,318	4,051	6,906	70.5	3.9	5.5	6.4	8.1	8.6	1.6	0.9	1.7	0.5
East South Central	133	350	903	2,561	5,024	96.2	2.7	3.4	4.4	5.2	6.3	0.7	1.0	0.8	1.1
West South Central	123	408	1,083	3,757	6,119	62.9	2.5	3.9	5.2	7.5	7.6	1.4	1.3	2.3	0.1
Mountain	22	86	212	780	1,565	100.7	0.5	0.8	1.0	1.6	1.9	0.3	0.2	0.6	0.3
Pacific	332	1,096	2,033	5,221	9,139	75.0	6.9	10.5	9.8	10.3	11.4	3.6	-0.7	0.5	1.1
United States	$4,836	$10,415	$20,739	$50,270	$80,381	59.9	100.0	100.0	100.0	100.0	100.0	--	--	--	--

Source: Annual Survey of Manufactures, Geographic Areas Reference Manual, and SEWRPC.

Like the industrial machinery and equipment industry, this metal-based industry has been concentrated nationally in the Middle Atlantic and East North Central States, as measured by value added by manufacture. Over 48 percent of the total industry was located in these areas in 1989 (see Table 32 and Figure 12). However, this concentration has declined over the past few decades. In 1949, over 70 percent of the value added by manufacture in this industry was located in these two areas. This shift of concentration in the fabricated metals industry is evidenced by an increase in value added by manufacture in this industry between 1978 and 1989 which occurred more rapidly in areas of the Nation other than the Middle Atlantic and East North Central States, most notably the West North Central, Mountain, East South Central, and Pacific States.

In terms of individual state concentration, as shown in Table 33, Ohio, California, Michigan, Illinois, and Pennsylvania were ranked numbers one through five, respectively, in value added by manufacture in the fabricated metals industry in 1989, the same five States as in 1978. Wisconsin ranked number nine in 1989, rising from the number 10 position it had held in both 1969 and 1978.

As in the industrial machinery and equipment industry, average hourly earnings in the fabricated metals industry in the Region were higher than in the State or the Nation over the period from 1960 to 1990. Table 34 shows that the average hourly earnings in this industry in the Region increased by almost 150 percent between 1970 and 1980, but only by about 20 percent between 1980 and 1990. This sharp decrease in the percent change in earnings for the Region resulted in almost uniform average wage rates for the Region, State, and Nation in 1990.

Table 33

TEN HIGHEST-RANKING STATES IN VALUE ADDED BY MANUFACTURE IN THE FABRICATED METALS INDUSTRY: 1989

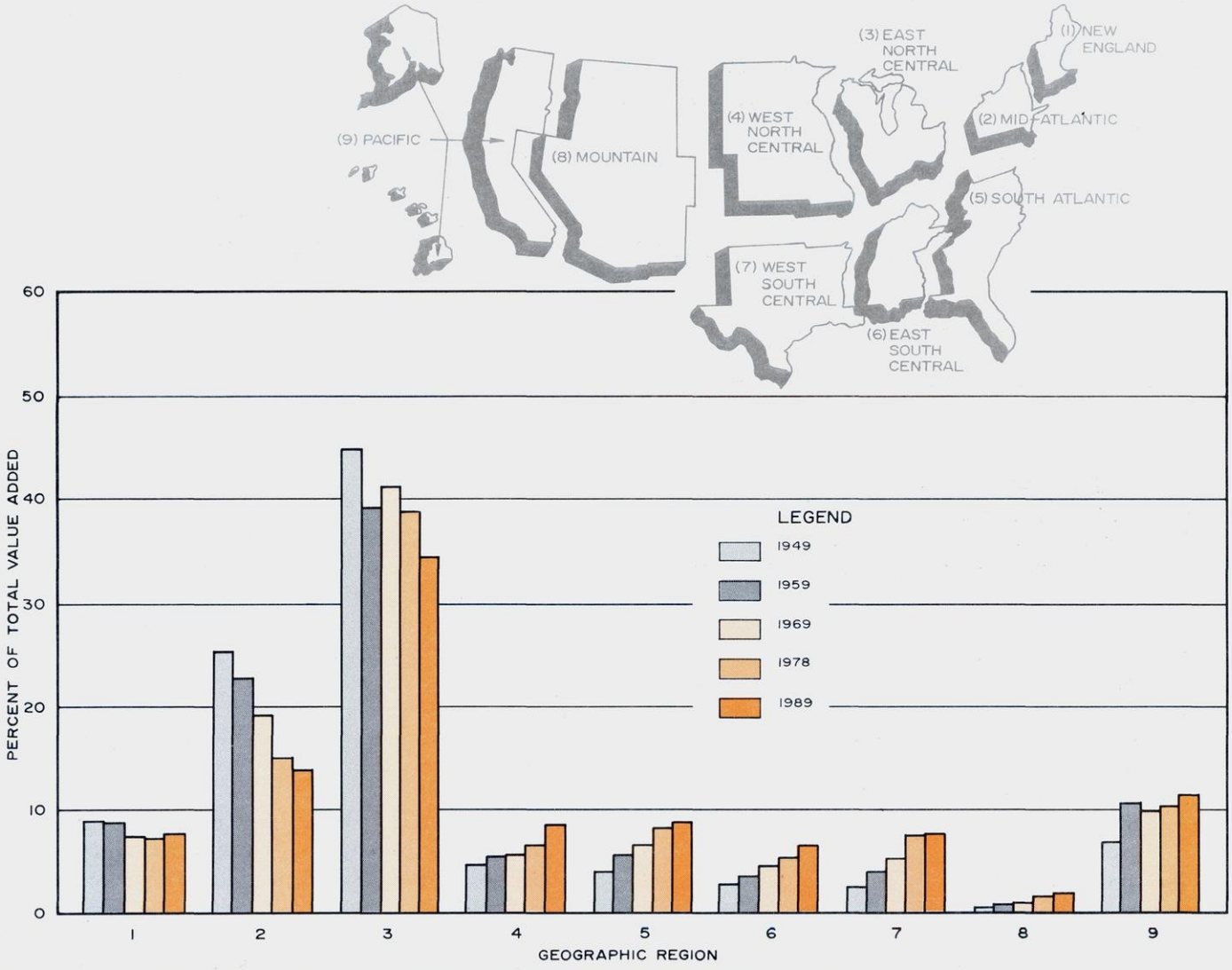
State	Rank	1989 Amount (millions of dollars)	Percent Change 1978-1989
Ohio	1	$8,473.4	39.9
California	2	7,843.8	75.8
Michigan	3	6,625.8	31.6
Illinois	4	6,310.8	34.5
Pennsylvania	5	4,985.3	54.6
New York	6	3,717.2	47.6
Texas	7	3,624.6	51.4
Indiana	8	3,222.5	61.1
Wisconsin	9	3,188.9	83.0
Missouri	10	2,448.6	137.2

Source: Annual Survey of Manufactures and SEWRPC.

In terms of employment, the fabricated metals industry in Southeastern Wisconsin has undergone significant changes. After dramatic employment growth through most of the 1970s, the industry suffered through a major restructuring in the early 1980s that saw most of those employment gains eliminated. While the situation improved slightly in the latter half of that decade, the outlook for future decades is not promising. This is especially true for the metal-forging sector of the industry.

Figure 12

DISTRIBUTION OF VALUE ADDED BY MANUFACTURE IN THE FABRICATED METALS INDUSTRY IN THE UNITED STATES BY GEOGRAPHIC REGION: 1949, 1959, 1969, 1978, AND 1989



Source: Annual Survey of Manufactures, Geographic Areas Reference Manual, and SEWRPC.

Table 34

AVERAGE HOURLY EARNINGS IN THE FABRICATED METALS INDUSTRY IN THE UNITED STATES, WISCONSIN, AND THE REGION: 1960, 1970, 1980, AND 1990

Geographic Area	Amount				Percent Change			
	1960	1970	1980	1990	1960-1970	1970-1980	1980-1990	1960-1990
United States	$2.43	$3.53	$7.45	$10.83[a]	45.3	111.0	45.4	345.7
Wisconsin	2.29	3.53	8.07	10.92	54.1	128.6	35.3	376.9
Southeastern Wisconsin Region	2.53	3.68	9.15[b]	10.97[b]	45.5	148.6	19.9	333.6

[a] *Based on median weekly income.*

[b] *Based on Milwaukee, Ozaukee, Washington, and Waukesha Counties.*

Source: U. S. Bureau of Labor Statistics; Wisconsin Department of Industry, Labor and Human Relations; and SEWRPC.

Table 35

EMPLOYMENT LEVELS IN THE ELECTRICAL AND ELECTRONIC MACHINERY, EQUIPMENT, AND SUPPLIES INDUSTRY IN THE UNITED STATES, WISCONSIN, AND THE REGION: 1950, 1960, 1970, 1980, AND 1990

Geographic Area	Number of Employees					Percent Change				
	1950	1960	1970	1980	1990	1950-1960	1960-1970	1970-1980	1980-1990	1950-1990
United States	1,005,200	1,499,100	1,944,200	2,207,300	1,905,700	49.1	29.7	13.5	-13.7	89.6
Wisconsin	36,000	55,700	49,300	57,300	39,500	54.7	-11.5	16.2	-31.1	9.7
Southeastern Wisconsin Region	19,900	42,700	36,100	40,600	23,300	114.6	-15.5	12.5	-42.6	17.1

Geographic Areas Compared	Percent					Percentage-Point Change				
	1950	1960	1970	1980	1990	1950-1960	1960-1970	1970-1980	1980-1990	1950-1990
Region Total as Percent of United States Total	2.0	2.8	1.9	1.8	1.2	0.8	-0.9	-0.1	-0.6	-0.8
Region Total as Percent of Wisconsin Total	55.3	76.7	73.2	70.9	59.0	21.4	-3.5	-2.3	-11.9	3.7

Source: U. S. Bureau of Economic Analysis; Wisconsin Department of Industry, Labor and Human Relations; and SEWRPC.

Electrical and Electronic Machinery, Equipment, and Supplies

The electrical and electronic machinery, equipment, and supplies industry dropped from the second largest manufacturing sector in the Region in 1980 to the third largest in 1990, as measured by employment, accounting for approximately 23,300 jobs, or 2.2 percent of total 1990 regional employment. Employment in this industry has declined significantly in the Region, decreasing by about 45 percent from the 1960 level of 42,700 jobs. Much of this loss has occurred in companies which manufacture electric motors.

Nationally, this industry accounted for approximately 1.9 million jobs in 1990. As shown in Table 35, industry employment in the Region accounted for about 1 percent of the national total in this group, decreasing from about 2 percent in both 1970 and 1980. Statewide, this industry employed approximately 39,500 persons in 1990, with the Region accounting for about 59 percent of that total. The regional share of total State employment in this industry, however, is down significantly from a high of about 77 percent in 1960.

As shown in Table 36, this industry includes the production of electric transmission and distribution equipment; electrical industrial apparatus; household appliances; lighting and wiring equipment; household audio and video equipment; communication equipment; electronic components; and miscellaneous electrical machinery, equipment, and supplies. Nationally, employment in this industry group is concentrated in the manufacture of communication equipment and electronic components, which together accounted for slightly more than one-half of total industry employment in 1987. On a State and regional basis, employment in this industry is concentrated in the manufacture of electrical industrial apparatus. Other strong sectors in this industry within the State and Region in comparison to the Nation are the production of electric transmission and distribution equipment and household appliances.

Table 37 lists the major employers in the electrical and electronic machinery, equipment, and supplies industry in the Region in 1990. These companies accounted for over 71 percent of the total industry group employment in the Region in that year. Most of the companies listed have been identified as major employers in the Commission's previous economic reports.

Nationally, the electrical and electronic machinery, equipment, and supplies industry, like the industrial machinery industry, was, in terms of value added by manufacture, historically concentrated in the Middle Atlantic and East North Central States. However, these areas are fast losing their share of the industry, as shown in Table 38 and Figure 13. In 1949, the Middle Atlantic and East North Central areas together accounted for over 77 percent of the value added by manufacture in the industry, but by 1989 their combined share had declined to approximately 33 percent. Most of that lost share was gained by the Pacific and South Atlantic States.

Table 36

DISTRIBUTION OF EMPLOYMENT IN THE ELECTRICAL AND ELECTRONIC MACHINERY, EQUIPMENT, AND SUPPLIES INDUSTRY IN THE UNITED STATES, WISCONSIN, AND THE REGION: 1967, 1977, AND 1987

SIC Code Number[a]	Activity	Percent of Industry Employment								
		United States			Wisconsin			Region		
		1967	1977	1987	1967	1977	1987	1967	1977	1987
361	Electric Transmission and Distribution Equipment	9.4	6.7	4.9	N/A	11.6	14.8	17.2	10.2	12.5
362	Electrical Industrial Apparatus	11.0	11.5	10.6	N/A	40.6	40.1	54.5	47.1	48.4
363	Household Appliances	9.0	9.4	7.5	N/A	14.5	15.3	7.4	13.3	21.3
364	Lighting and Wiring Equipment	8.4	9.6	10.6	N/A	N/A	3.8	1.4	3.0	N/A
365	Household Audio and Video Equipment	6.9	5.7	2.9	N/A	1.8	1.1	1.9	1.1[b]	N/A
366	Communication Equipment	28.0	26.6	16.6	N/A	5.3	1.9	3.2	7.1[b]	N/A
367	Electronic Components	21.5	21.7	34.9	N/A	6.9	7.4	12.3	6.0	8.9
369	Miscellaneous Electrical Machinery, Equipment, and Supplies	5.7	8.9	12.0	N/A	19.3[b]	15.6	2.0	12.2	8.9

NOTE: "N/A" indicates data not available.

[a] *"SIC" refers to the Standard Industrial Classification established by the U. S. Office of Management and Budget.*

[b] *Estimated.*

Source: Census of Manufactures and SEWRPC.

Between 1978 and 1989, the fastest-growing area for this industry, in terms of total value added by manufacture, was the Pacific States area. The fastest growth in the industry in terms of percent increase in value added by manufacture during this time period occurred in the Mountain States area.

In terms of individual states, as shown in Table 39, California, New York, and Texas were the top-ranking States in terms of value added by manufacture in the industry in 1989. Texas, which was not among the top 10 States in 1969, moved to number eight in 1978 and number three in 1989. Wisconsin did not rank in the top 10 in value added by manufacture in 1989, but did rank number 10 in 1978 and number nine in 1969.

Average hourly earnings in this industry in the Nation, State, and Region more than doubled between 1970 and 1980, but experienced a more modest increase between 1980 and 1990, as indicated in Table 40. Average hourly earnings in the Region were higher than in the State and Nation from 1960 to 1990, and increased at a greater rate than in the State or Nation over the 30-year period as a whole.

Table 37

MAJOR EMPLOYERS IN THE ELECTRICAL AND ELECTRONIC MACHINERY, EQUIPMENT, AND SUPPLIES INDUSTRY IN THE REGION: 1990

ABB Robotics, Inc.[a]
Allen-Bradley Company
Broan Manufacturing Company, Inc.
Cooper Power Systems (formerly RTE Corporation)
Deltrol Controls Division, Deltrol Corporation
Eaton Corporation, Operations & Technical Center
ECM Motor Company[a]
Generac Corporation
General Electric Company
Globe Battery Division, Johnson Controls, Inc.
Helwig Carbon Products, Inc.
In-Sink-Erator Division, Emerson Electronic Corporation
Lamb Electric Division, Ametek[a]
Leeson Electric Corporation
MagneTek[a]
Manu-Tronics[a]
Oster Division, Sunbeam Corporation
Square D Company
West Bend Company

[a] *Indicates companies added to list since publication of the second (May 1984) edition of this report.*

Source: Wisconsin Department of Industry, Labor and Human Relations; Classified Directory of Wisconsin Manufacturers; and SEWRPC.

Table 38

CHANGES IN THE AMOUNT AND DISTRIBUTION OF VALUE ADDED BY MANUFACTURE IN THE ELECTRICAL AND ELECTRONIC MACHINERY, EQUIPMENT, AND SUPPLIES INDUSTRY IN THE UNITED STATES BY GEOGRAPHIC REGION: 1949, 1959, 1969, 1978, AND 1989

Geographic Region	Value Added by Manufacture in the Electrical and Electronic Machinery, Equipment, and Supplies Industry						Percent Distribution of Value Added by Manufacture in the Electrical and Electronic Machinery, Equipment, and Supplies Industry								
	Amount (millions of dollars)					1978-1989 Percent Change	Percent					Percentage-Point Change			
	1949	1959	1969	1978	1989		1949	1959	1969	1978	1989	1949-1959	1959-1969	1969-1978	1978-1989
New England	$ 433	$ 1,317	$ 2,641	$ 4,661	$ 9,582	105.6	11.2	10.4	9.3	8.2	9.0	-0.8	-1.1	-1.1	0.8
Middle Atlantic	1,455	3,518	6,883	10,169	14,402	41.6	37.4	27.8	24.4	17.8	13.6	-9.6	-3.4	-6.6	-4.2
East North Central	1,567	4,769	8,712	15,327	21,053	37.4	40.1	37.7	30.8	26.9	19.8	-2.4	-6.9	-3.9	-7.1
West North Central	183	578	1,394	3,587	6,281	75.1	4.6	4.6	4.9	6.4	5.9	0.0	0.3	1.5	-0.5
South Atlantic	102	659	2,181	6,244	14,492	132.1	2.6	5.2	7.7	10.9	13.6	2.6	2.5	3.2	2.7
East South Central	40	464	1,442	3,382	6,593	94.9	1.0	3.6	5.2	5.9	6.2	2.6	1.6	0.7	0.3
West South Central	17	209	936	3,999	9,747	143.7	0.4	1.6	3.3	7.0	9.2	1.2	1.7	3.7	2.2
Mountain	2	61	488	1,269	4,078	221.4	0.1	0.5	1.7	2.3	3.9	0.4	1.2	0.6	1.6
Pacific	104	1,093	3,603	8,272	20,027	142.1	2.6	8.6	12.7	14.6	18.8	6.0	4.1	1.9	4.2
United States	$3,903	$12,668	$28,280	$56,910	$106,255	86.7	100.0	100.0	100.0	100.0	100.0	--	--	--	--

Source: Annual Survey of Manufactures, Geographic Areas Reference Manual, and SEWRPC.

Nationally, the employment outlook for the electrical and electronic machinery industry is not encouraging. The same is true for the Region. While the dramatic declines in employment that characterized most of the 1980s for this industry are not expected to continue, the Region is still expected to experience continued erosion in the number of jobs in this industry in the years to come.

Construction

The construction industry in the Region was a dominant employer in 1990, providing about 46,100 jobs and accounting for about 4.3 percent of total regional employment. As shown in Table 41, employment in this industry is highly cyclical. Employment gains of 26 percent and 36 percent occurred in the Region during the 1950s and 1980s, respectively, with increases in the two intervening decades of only about 5 percent between 1960 and 1970, and about 4 percent between 1970 and 1980.

Unlike such employment within the Region, employment in the construction industry at the State level has shown a trend of constant growth between 1950 and 1980, and then a significant increase between 1980 and 1990. Employment in this industry in the State grew from a level of 63,800 jobs in 1950 to about 124,600 jobs in 1990, an increase of about 60,800 jobs, or about 95 percent. National employment in the construction industry increased at an even faster rate, showing steady increases of over 20 percent in each of the four decades studied. The regional share of national and State employment in this industry has therefore generally shown a downward trend since 1960.

Table 39

TEN HIGHEST-RANKING STATES IN VALUE ADDED BY MANUFACTURE IN THE ELECTRICAL AND ELECTRONIC MACHINERY, EQUIPMENT, AND SUPPLIES INDUSTRY: 1989

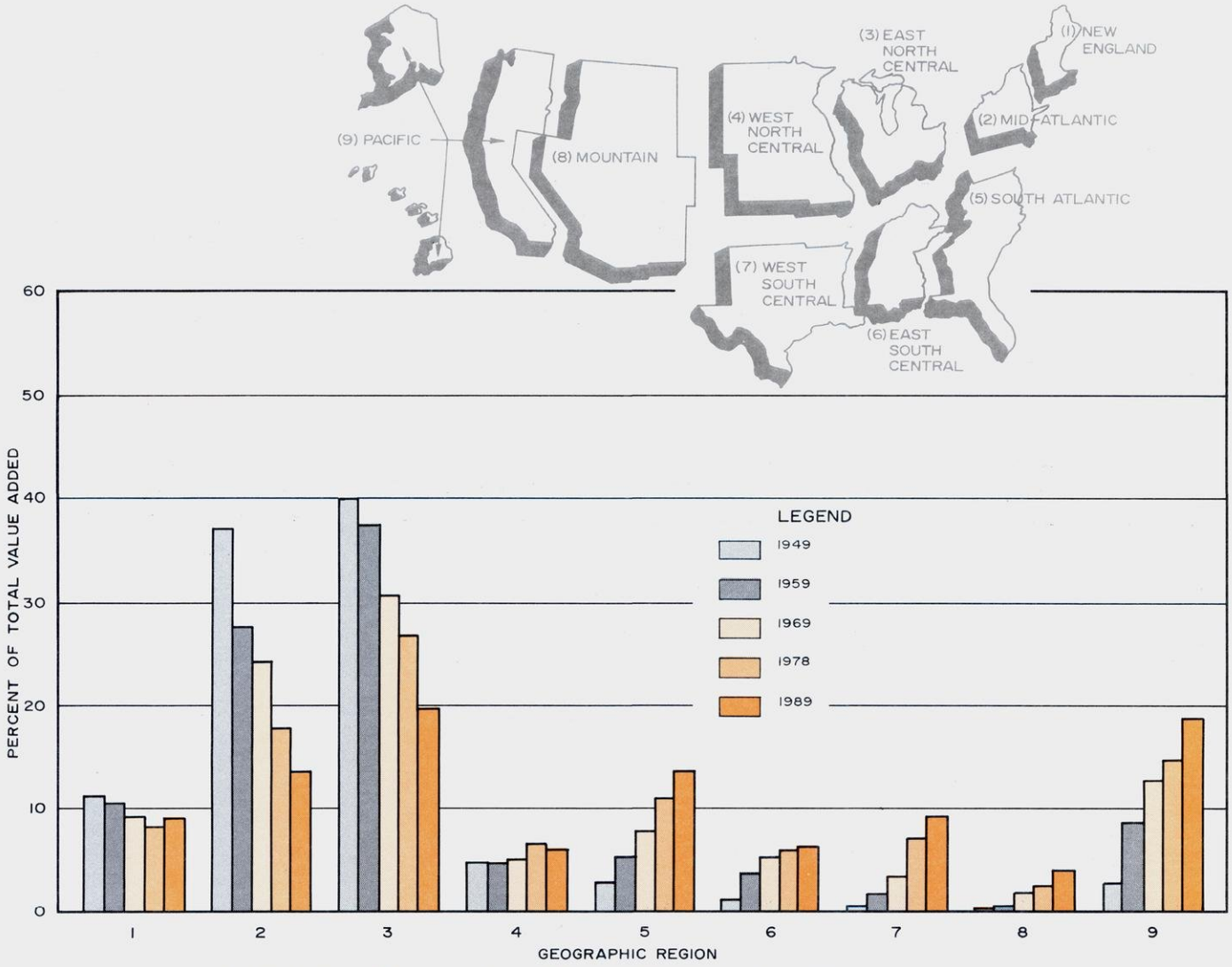
State	Rank	1989 Amount (millions of dollars)	Percent Change 1978-1989
California	1	$18,696.0	137.3
New York	2	7,507.5	214.6
Texas	3	6,837.3	43.9
Illinois	4	6,518.2	35.9
Ohio	5	6,031.2	51.2
Massachusetts	6	5,211.0	107.7
Pennsylvania	7	4,543.2	33.9
Florida	8	4,289.9	177.1
North Carolina	9	4,273.8	193.0
Indiana	10	3,940.8	4.5

Source: Annual Survey of Manufactures and SEWRPC.

The cyclical nature of the construction industry makes short- to medium-range forecasts difficult because of the need to anticipate swings in the business cycle correctly. From a longer-term perspective which ignores these cyclical fluctuations, moderate growth in regional construction employment can be expected. This growth is likely to be somewhat slower than the historical trends in the industry, however, due to the anticipated slowdown in overall population growth and the gradual progression of the "baby boom" generation out of the prime home-buying age brackets. Construction

Figure 13

DISTRIBUTION OF VALUE ADDED BY MANUFACTURE IN THE ELECTRICAL AND ELECTRONIC MACHINERY, EQUIPMENT, AND SUPPLIES INDUSTRY IN THE UNITED STATES BY GEOGRAPHIC REGION: 1949, 1959, 1969, 1978, AND 1989



Source: Annual Survey of Manufactures, Geographic Areas Reference Manual, and SEWRPC.

Table 40

AVERAGE HOURLY EARNINGS IN THE ELECTRICAL AND ELECTRONIC MACHINERY, EQUIPMENT, AND SUPPLIES INDUSTRY IN THE UNITED STATES, WISCONSIN, AND THE REGION: 1960, 1970, 1980, AND 1990

Geographic Area	Amount				Percent Change			
	1960	1970	1980	1990	1960-1970	1970-1980	1980-1990	1960-1990
United States	$2.28	$3.29	$6.95	$10.31[a]	44.3	111.2	48.3	352.2
Wisconsin	2.44	3.52	7.56	10.16	44.3	114.8	34.4	316.4
Southeastern Wisconsin Region	2.71	3.88	8.52[b]	12.69[b]	43.2	119.6	48.9	368.3

[a] *Based on median weekly income.*

[b] *Based on Milwaukee, Ozaukee, Washington, and Waukesha Counties.*

Source: U. S. Bureau of Labor Statistics; Wisconsin Department of Industry, Labor and Human Relations; and SEWRPC.

Table 41

EMPLOYMENT LEVELS IN THE CONSTRUCTION INDUSTRY IN THE UNITED STATES, WISCONSIN, AND THE REGION: 1950, 1960, 1970, 1980, AND 1990

Geographic Area	Number of Employees					Percent Change				
	1950	1960	1970	1980	1990	1950-1960	1960-1970	1970-1980	1980-1990	1950-1990
United States	2,911,400	3,603,600	4,388,100	5,638,300	7,184,300	23.8	21.8	28.5	27.4	146.8
Wisconsin	63,800	72,700	85,100	96,900	124,600	13.9	17.1	13.9	28.6	95.3
Southeastern Wisconsin Region	24,500	30,900	32,400	33,800	46,100	26.1	4.9	4.3	36.4	88.2

Geographic Areas Compared	Percent					Percentage-Point Change				
	1950	1960	1970	1980	1990	1950-1960	1960-1970	1970-1980	1980-1990	1950-1990
Region Total as Percent of United States Total	0.8	0.9	0.7	0.6	0.6	0.1	-0.2	-0.1	0.0	-0.2
Region Total as Percent of Wisconsin Total	38.4	42.5	38.1	34.9	37.0	4.1	-4.4	-3.2	2.1	-1.4

Source: U. S. Bureau of Economic Analysis; Wisconsin Department of Industry, Labor and Human Relations; and SEWRPC.

Table 42

EMPLOYMENT LEVELS IN THE TRANSPORTATION, COMMUNICATION, AND UTILITIES INDUSTRY IN THE UNITED STATES, WISCONSIN, AND THE REGION: 1950, 1960, 1970, 1980, AND 1990

Geographic Area	Number of Employees					Percent Change				
	1950	1960	1970	1980	1990	1950-1960	1960-1970	1970-1980	1980-1990	1950-1990
United States	3,117,400	3,802,200	4,857,100	5,660,800	6,545,300	22.0	27.7	16.5	15.6	110.0
Wisconsin	62,400	74,700	89,400	103,200	121,300	19.7	19.7	15.4	17.5	94.4
Southeastern Wisconsin Region	26,900	33,600	38,400	42,200	46,000	24.9	14.3	9.9	9.0	71.0

Geographic Areas Compared	Percent					Percentage-Point Change				
	1950	1960	1970	1980	1990	1950-1960	1960-1970	1970-1980	1980-1990	1950-1990
Region Total as Percent of United States Total	0.9	0.9	0.8	0.7	0.7	0.0	-0.1	-0.1	0.0	-0.2
Region Total as Percent of Wisconsin Total	43.1	45.0	43.0	40.9	37.9	1.9	-2.0	-2.1	-3.0	-5.2

Source: U. S. Bureau of Economic Analysis; Wisconsin Department of Industry, Labor and Human Relations; and SEWRPC.

employment is likely to benefit somewhat, however, from increased spending on infrastructure elements such as roads, bridges, and highways, and the eventual recovery of the commercial real estate market.

Transportation, Communication, and Utilities

The transportation, communication, and utilities industry was a dominant industry in the Region in 1990, accounting for approximately 46,000 jobs, or 4.3 percent of total regional employment. This industry has been a dominant industry since 1950, when it accounted for 4.7 percent of total regional employment.

In the 40-year period from 1950 to 1990, industry employment in the Region increased by about 19,100 jobs, or about 71 percent, as shown in Table 42. Despite this growth, however, the overall rates of growth during this period at the national and State levels were higher. As a result, the Region's share of total national and State employment in this industry has shown a long-term decline. Regional employment in 1990 accounted for less than 1 percent of national employment and approximately 38 percent of State employment in this industry.

Table 43

EMPLOYMENT LEVELS IN THE WHOLESALE TRADE INDUSTRY IN THE UNITED STATES, WISCONSIN, AND THE REGION: 1950, 1960, 1970, 1980, AND 1990

Geographic Area	Number of Employees					Percent Change				
	1950	1960	1970	1980	1990	1950-1960	1960-1970	1970-1980	1980-1990	1950-1990
United States	2,888,000	3,444,700	4,171,400	5,740,300	6,714,500	19.3	21.1	37.6	17.0	132.5
Wisconsin	50,100	58,900	73,700	104,400	124,900	17.6	25.1	41.7	19.6	149.3
Southeastern Wisconsin Region	24,000	27,400	37,200	46,100	54,900	14.2	35.8	23.9	19.1	128.8

Geographic Areas Compared	Percent					Percentage-Point Change				
	1950	1960	1970	1980	1990	1950-1960	1960-1970	1970-1980	1980-1990	1950-1990
Region Total as Percent of United States Total	0.8	0.8	0.9	0.8	0.8	0.0	0.1	-0.1	0.0	0.0
Region Total as Percent of Wisconsin Total	47.9	46.5	50.5	44.2	44.0	-1.4	4.0	-6.3	-0.2	-3.9

Source: U. S. Bureau of Economic Analysis; Wisconsin Department of Industry, Labor and Human Relations; and SEWRPC.

Table 44

NUMBER OF WHOLESALE TRADE ESTABLISHMENTS IN THE UNITED STATES, WISCONSIN, AND THE REGION: 1954, 1958, 1963, 1967, 1972, 1977, 1982, AND 1987

Geographic Area	Number (thousands)								Percent Change	
	1954	1958	1963	1967	1972	1977	1982	1987	1977-1987	1954-1987
United States	250.3	287.0	308.2	311.5	369.8	382.8	435.1	466.7	21.9	86.5
Wisconsin	5.6	6.3	6.7	6.6	8.2	7.9	8.2	8.8	11.4	57.1
Southeastern Wisconsin Region	2.2	2.5	2.7	2.6	2.9	3.0	3.2	3.6	20.0	63.6

Source: Census of Wholesale Trade and SEWRPC.

In reviewing the historical trends for the transportation, communication, and utilities sector, it is important to recognize both the diverse nature of the industry and the fact that its components have entered an era of significant change. The combination of rapid technological innovation and increased competition is transforming the communication industry and imposing limits on the opportunities for growth. An industrywide shift toward increased competition in the utilities sector is also likely to limit employment growth. The employment outlook for the transportation component is somewhat stronger. Overall, the combined industry is expected to show modest growth which will not be evenly distributed among its component sectors.

Wholesale Trade

Wholesale trade was a dominant industry in the Region in 1990, accounting for about 54,900 jobs, or 5.1 percent of total regional employment. In 1950, wholesale trade employed 24,000 persons in the Region and accounted for 4.2 percent of total regional employment.

The overall changes in wholesale trade employment between 1950 and 1990 within the Region, State, and Nation have not been significantly different from one another. Employment levels in the three areas increased by about 129 percent, 149 percent, and 133 percent, respectively, as shown in Table 43. The increase in wholesale trade employment in the State occurred at a rate higher than that for the Nation during each decade between 1960 and 1990, while the rate of increase in the Region was higher than both the State and national rates from 1960 to 1970 only. The regional share of State wholesale trade employment has therefore declined from about 48 percent in 1950 to about 44 percent in 1990.

The number of establishments and the sales trends in wholesale trade have followed a similar pattern, as shown in Tables 44 and 45. The number of whole-

Table 45

WHOLESALE SALES VOLUME IN THE UNITED STATES, WISCONSIN, AND THE REGION: 1954, 1958, 1963, 1967, 1972, 1977, 1982, AND 1987

Geographic Area	Amount (millions of dollars)								Percent Change	
	1954	1958	1963	1967	1972	1977	1982	1987	1977-1987	1954-1987
United States	$234,650	$285,727	$358,386	$459,476	$695,224	$1,258,400	$1,997,895	$2,523,688	100.5	975.5
Wisconsin	3,569	4,536	5,502	7,300	10,839	19,648	27,404	33,699	71.5	844.2
Southeastern Wisconsin Region	2,022	2,687	3,142	4,263	5,972	10,711	13,918	17,204	60.6	750.9

Source: Census of Wholesale Trade and SEWRPC.

Table 46

EMPLOYMENT LEVELS IN THE RETAIL TRADE INDUSTRY IN THE UNITED STATES, WISCONSIN, AND THE REGION: 1950, 1960, 1970, 1980, AND 1990

Geographic Area	Number of Employees					Percent Change				
	1950	1960	1970	1980	1990	1950-1960	1960-1970	1970-1980	1980-1990	1950-1990
United States	8,054,100	9,840,000	13,672,000	17,852,500	22,994,200	22.2	38.9	30.6	28.8	185.5
Wisconsin	198,500	233,200	331,900	410,200	499,900	17.5	42.3	23.6	21.9	151.8
Southeastern Wisconsin Region	85,500	97,800	133,700	153,600	186,400	14.4	36.7	14.9	21.4	118.0

Geographic Areas Compared	Percent					Percentage-Point Change				
	1950	1960	1970	1980	1990	1950-1960	1960-1970	1970-1980	1980-1990	1950-1990
Region Total as Percent of United States Total	1.1	1.0	1.0	0.9	0.8	-0.1	0.0	-0.1	-0.1	-0.3
Region Total as Percent of Wisconsin Total	43.1	41.9	40.3	37.4	37.3	-1.2	-1.6	-2.9	-0.1	-5.8

Source: U. S. Bureau of Economic Analysis; Wisconsin Department of Industry, Labor and Human Relations; and SEWRPC.

sale establishments has generally been increasing at the national, State, and regional levels. In the Region, the number of establishments increased steadily from 2,200 in 1954 to 3,600 in 1987, an increase of about 64 percent. The number of establishments in the State increased from 5,600 to 8,800, or by about 57 percent, while at the national level, the number of wholesale trade establishments increased from 250,300 to 466,700, or by about 87 percent, over the same time period.

Wholesale trade sales in the United States in 1987 totaled over $2.5 trillion, compared with about $34 billion at the State level and over $17 billion at the regional level. Each of these figures represents an increase to more than eight times the corresponding 1954 levels.

This solid growth in sales has, in turn, led to a very respectable performance in job creation. While changes in distribution channels and ongoing advances in computer technology may have some dampening effects, the overall expectation is modest growth in wholesale trade employment in the Region.

Retail Trade

Retail trade is a dominant industry group in the Region, accounting for 17.5 percent of total regional employment in 1990, an increase from 14.9 percent in 1950. National employment in retail trade stood at approximately 23 million jobs in 1990, an increase of more than 5 million jobs over the 1980 level. Rates of increase in retail trade employment have been greater in the Nation and the State than in the Region over the four decades shown in Table 46. These rates correlate with general population growth trends. The Region's share of retail trade employment in the State has generally declined in correspondence to the decline in its proportion of State population. Nonetheless, this industry has provided a large number of new

Table 47

NUMBER OF RETAIL TRADE ESTABLISHMENTS IN THE UNITED STATES, WISCONSIN, AND THE REGION: 1954, 1958, 1963, 1967, 1972, 1977, 1982, AND 1987

Geographic Area	Number (thousands)								Percent Change	
	1954	1958	1963	1967	1972	1977	1982	1987	1977-1987	1954-1987
United States	1,721.7	1,788.3	1,707.9	1,763.3	1,912.9	1,855.1	1,923.2	1,503.6	-18.9	-12.7
Wisconsin	47.9	47.9	44.3	45.1	46.1	42.8	42.7	32.2	-24.8	-32.8
Southeastern Wisconsin Region	15.8	15.8	14.3	14.4	15.0	13.6	13.7	10.7	-21.3	-32.3

Source: Census of Retail Trade and SEWRPC.

Table 48

RETAIL SALES VOLUME IN THE UNITED STATES, WISCONSIN, AND THE REGION: 1954, 1958, 1963, 1967, 1972, 1977, 1982, AND 1987

Geographic Area	Amount (millions of dollars)								Percent Change	
	1954	1958	1963	1967	1972	1977	1982	1987	1977-1987	1954-1987
United States	$169,968	$199,646	$244,202	$310,214	$459,040	$723,134	$1,065,917	$1,493,309	106.5	778.6
Wisconsin	3,924	4,455	5,185	6,634	9,290	14,930	20,554	27,803	86.2	608.5
Southeastern Wisconsin Region	1,588	1,825	2,161	2,679	3,774	5,872	7,988	10,754	83.1	577.2

Source: Census of Retail Trade and SEWRPC.

job opportunities in the Region each decade, with a total increase of over 100,000 jobs, or 118 percent, between 1950 and 1990.

As shown in Table 47, the number of retail establishments at the national, State, and regional levels has been decreasing, especially between 1982 and 1987, even though retail trade employment has been increasing at all levels. A slowing of population growth, accompanied by the trend toward larger retail establishments at the expense of smaller retail businesses, has caused a reduction in establishment numbers.

Table 48 shows retail sales trends from 1954 to 1987 at the national, State, and regional levels. As shown, retail sales have generally increased faster at the national level than at the State level, and in both the State and Nation have increased at rates faster than the rate in the Region.

Table 49 sets forth the number of retail trade establishments and total retail sales in the Region in 1987. Eating and drinking places accounted for one-third of the total regional retail trade establishments. Automotive dealers accounted for the largest share of retail sales, about $2.3 billion, or about 22 percent, followed closely by food stores, with retail sales of about $2.0 billion, or about 19 percent of total retail sales in the Region.

The retail trade industry has been an important source of jobs in Southeastern Wisconsin over the years, and its growth is likely to continue. In fact, it is expected that retail trade employment growth will significantly outpace wholesale trade employment growth in the years to come. However, it is important to note that a significant number of jobs in retail trade are part-time, and that some jobs offer relatively low pay. The expected continuation of an industry trend toward large-volume and discount establishments suggests that many of the jobs to be created will also be part-time.

Finance, Insurance, and Real Estate

The finance, insurance, and real estate industry was a dominant service industry in the Region in 1990, accounting for approximately 86,200 jobs, or 8.1 percent of total regional employment. The finance, insurance, and real estate industry has been a dominant industry since 1950, when it accounted for 5.5 percent of total regional employment.

Table 49

NUMBER OF RETAIL ESTABLISHMENTS AND TOTAL RETAIL SALES BY ESTABLISHMENT TYPE IN THE SOUTHEASTERN WISCONSIN REGION: 1987

Retail Establishment Type	Retail Establishments		Retail Sales	
	Number	Percent of Total	Amount (thousands of dollars)	Percent of Total
Building Materials and Garden Supplies Stores	470	4.4	$ 527,741	4.9
General Merchandise Establishments	187	1.7	1,306,845	12.2
Food Stores	985	9.2	2,046,155	19.0
Automotive Dealers	546	5.1	2,348,921	21.8
Gasoline Service Stations	861	8.0	817,978	7.6
Apparel and Accessory Stores	975	9.1	497,256	4.6
Furniture and Home Furnishings Stores	781	7.3	640,654	6.0
Eating and Drinking Places	3,581	33.3	1,149,312	10.7
Drug and Proprietary Stores	378	3.5	411,131	3.8
Miscellaneous Retail Stores	1,982	18.4	1,008,264	9.4
Total	10,746	100.0	$10,754,257	100.0

Source: Census of Retail Trade and SEWRPC.

Table 50

EMPLOYMENT LEVELS IN THE FINANCE, INSURANCE, AND REAL ESTATE INDUSTRY IN THE UNITED STATES, WISCONSIN, AND THE REGION: 1950, 1960, 1970, 1980, AND 1990

Geographic Area	Number of Employees					Percent Change				
	1950	1960	1970	1980	1990	1950-1960	1960-1970	1970-1980	1980-1990	1950-1990
United States	3,081,900	4,291,500	6,103,500	8,725,800	10,819,400	39.2	42.2	43.0	24.0	251.1
Wisconsin	53,100	75,600	101,900	172,300	195,800	42.4	34.8	69.1	13.6	268.7
Southeastern Wisconsin Region	31,300	36,200	47,500	75,200	86,200	15.7	31.2	58.3	14.6	175.4

Geographic Areas Compared	Percent					Percentage-Point Change				
	1950	1960	1970	1980	1990	1950-1960	1960-1970	1970-1980	1980-1990	1950-1990
Region Total as Percent of United States Total	1.0	0.8	0.8	0.9	0.8	-0.2	0.0	0.1	-0.1	-0.2
Region Total as Percent of Wisconsin Total	58.9	47.9	46.6	43.6	44.0	-11.0	-1.3	-3.0	0.4	-14.9

Source: U. S. Bureau of Economic Analysis; Wisconsin Department of Industry, Labor and Human Relations; and SEWRPC.

As shown in Table 50, employment in this industry in the Region increased nearly 15 percent between 1980 and 1990. This rate of increase was about the same as the State rate, 14 percent, but slower than the national rate, 24 percent. In the 40-year period from 1950 to 1990, finance, insurance, and real estate industry employment in the Region increased by more than 175 percent but, despite this rapid growth, increased at a lower rate than did industry employment levels in the Nation and State, which increased by 251 percent and 269 percent, respectively. As a result of these divergent growth rates, the Region's share of total national and State employment in this industry has shown a long-term decline. Regional employment in 1990 accounted for less than 1 percent of national employment and approximately 44 percent of State employment in this industry.

Table 51

EMPLOYMENT LEVELS IN THE BUSINESS SERVICES INDUSTRY IN THE UNITED STATES, WISCONSIN, AND THE REGION: 1950, 1960, 1970, 1980, AND 1990

Geographic Area	Number of Employees					Percent Change				
	1950	1960	1970	1980	1990	1950-1960	1960-1970	1970-1980	1980-1990	1950-1990
United States	1,255,600	1,593,400	2,229,800	4,100,800	7,212,500	26.9	39.9	83.9	75.9	474.4
Wisconsin	18,400	22,300	27,800	55,500	106,700	21.2	24.7	99.6	92.3	479.9
Southeastern Wisconsin Region	11,600	13,000	16,700	32,300	64,700	12.1	28.5	93.4	100.3	457.8

Geographic Areas Compared	Percent					Percentage-Point Change				
	1950	1960	1970	1980	1990	1950-1960	1960-1970	1970-1980	1980-1990	1950-1990
Region Total as Percent of United States Total	0.9	0.8	0.7	0.8	0.9	-0.1	-0.1	0.1	0.1	0.0
Region Total as Percent of Wisconsin Total	63.0	58.3	60.1	58.2	60.6	-4.7	1.8	-1.9	2.4	-2.4

Source: U. S. Bureau of Economic Analysis; Wisconsin Department of Industry, Labor and Human Relations; and SEWRPC.

Despite this decline in the Region's share of overall industry growth, the finance, insurance, and real estate industry in Southeastern Wisconsin has been among the more rapidly growing dominant industries. In addition, the industry has enjoyed the reputation of being a conservative sector that produces a steady stream of high-quality jobs. Changes in the nature of financial services, coupled with the impact of demographic forces on insurance and real estate, suggest a slowing in this historical growth rate. Nevertheless, the finance, insurance, and real estate industry is expected to remain among the more rapidly growing dominant industries in the Region.

Business Services

As shown in Table 51, the business services industry employed approximately 64,700 persons in the Region in 1990, an increase of about 458 percent over the 1950 total of 11,600 persons. The growth rate in this industry in the 1980s was higher in the Region than in the State or Nation. The regional rate of increase in employment in this industry was lower than both the State and national rates between 1950 and 1960, but was higher than the State rate between 1960 and 1970, and was higher than the national rate between 1970 and 1980. Over the 40-year period from 1950 to 1990, business services employment in the Nation and the State increased by about 474 percent and about 480 percent, respectively. The regional share of State employment in this industry decreased slightly during this 40-year period, from about 63 percent to about 61 percent. The regional share of national employment in this industry remained relatively constant at slightly less than 1 percent during this time period.

The business services industry consists of establishments providing services such as advertising, services to buildings, personnel supply, and computer and data-processing services. This industry has been among the fastest-growing nationally since the 1970s. Within the Region, the growth rate of business services employment has also been quite rapid, especially in the late 1980s. This growth has been fueled by decisions on the part of many private firms and governmental units to outsource support services that are not part of their core products or services. In addition, to achieve greater flexibility and lower costs, many firms have expanded their use of temporary employees, who are usually provided by personnel supply services.

The business services industry is expected to continue as one of the most rapidly growing industries, both nationally and in the Region. This growth is likely to be somewhat slower than in the recent past, however, as the industry matures and firms approach their limits in terms of effective substitution of temporary employees for permanent employees.

Health Services

As shown in Table 52, the health services industry, the fastest-growing of all dominant industries, employed approximately 95,800 persons in the Region in 1990, an increase of about 561 percent over the 1950 total of 14,500 persons. Employment growth in this industry in the 1970s and 1980s

Table 52

EMPLOYMENT LEVELS IN THE HEALTH SERVICES INDUSTRY IN THE UNITED STATES, WISCONSIN, AND THE REGION: 1950, 1960, 1970, 1980, AND 1990

Geographic Area	Number of Employees					Percent Change				
	1950	1960	1970	1980	1990	1950-1960	1960-1970	1970-1980	1980-1990	1950-1990
United States	1,691,600	2,575,700	3,816,900	6,913,900	11,119,300	52.3	48.2	81.1	60.8	557.3
Wisconsin	37,200	56,800	97,000	169,500	240,600	52.7	70.8	74.7	41.9	546.8
Southeastern Wisconsin Region	14,500	22,100	40,300	68,800	95,800	52.4	82.4	70.7	39.2	560.7

Geographic Areas Compared	Percent					Percentage-Point Change				
	1950	1960	1970	1980	1990	1950-1960	1960-1970	1970-1980	1980-1990	1950-1990
Region Total as Percent of United States Total	0.9	0.9	1.1	1.0	0.9	0.0	0.2	-0.1	-0.1	0.0
Region Total as Percent of Wisconsin Total	39.0	38.9	41.5	40.6	39.8	-0.1	2.6	-0.9	-0.8	0.8

Source: U. S. Bureau of Economic Analysis; Wisconsin Department of Industry, Labor and Human Relations; and SEWRPC.

was slower in the Region than in the State or Nation. This is the reverse of the trend in the 1960s, when jobs in this industry increased at a higher rate in the Region than in the State or Nation. Over the 40-year period from 1950 to 1990, health services employment in the Nation and the State increased by about 557 percent and about 547 percent, respectively. The regional share of State employment in this industry increased slightly during this 40-year period, from about 39 percent to about 40 percent. The regional share of national employment in this industry remained relatively constant at approximately 1 percent during this time period.

The health services industry is expected to continue as one of the more rapidly growing dominant industries in Southeastern Wisconsin. However, the pace of the 1980s is likely to be tempered by the emerging trend toward consolidation among organizations providing health care and by the associated elimination of some duplication of functions. Further, the overall picture is greatly clouded by the current uncertainty regarding changes in legislation related to health care. Nevertheless, the combination of technological advances and an aging population whose health care needs can be expected to rise is likely to fuel continued job growth in health care. The nature of those jobs is likely to change, however, as health care delivery continues to move away from hospitals and toward clinics and home health care.

Government and Government Enterprises

Government enterprises are government agencies that usually cover more than one-half of their operating costs by the sale of goods and services to the public. Government and government enterprises comprised a dominant industry in the regional economy in 1990, accounting for 107,000 jobs, or about 10 percent of total regional employment, a decrease of about one percentage point from the 1960, 1970, and 1980 levels. The rate of growth in government and government enterprises employment in the Region has been slowing since the 1960s, as shown in Table 53. While national, statewide, and regional employment growth rates in this industry group have been very erratic over the 40-year period studied, the regional share of the national and State totals for government and government enterprises employment has remained fairly stable since 1950.

Growth in government-sector employment is expected to be limited by constraints on revenue. Despite attempts to slow tax increases in recent years, the overall tax burden in Wisconsin and the Southeastern Wisconsin Region is relatively heavy. To some extent, the need for additional government services may be moderated by attempts to reduce the size and cost of government. However, offsetting pressures include the need for increased education spending to accommodate the children who comprise the "echo" of the baby boom as well as the need to provide the growing number of services mandated by the Federal and State governments.

SUMMARY

Total employment in the Southeastern Wisconsin Region increased from 573,500 jobs in 1950 to 1,067,200 jobs in 1990, representing an increase of 493,700 jobs, or about 86 percent. During the

Table 53

EMPLOYMENT LEVELS IN GOVERNMENT AND GOVERNMENT ENTERPRISES IN THE UNITED STATES, WISCONSIN, AND THE REGION: 1950, 1960, 1970, 1980, AND 1990

Geographic Area	Number of Employees					Percent Change				
	1950	1960	1970	1980	1990	1950-1960	1960-1970	1970-1980	1980-1990	1950-1990
United States	11,781,100	12,804,700	13,094,000	16,345,000	18,486,000	8.7	2.3	24.8	13.1	56.9
Wisconsin	203,100	243,200	265,900	312,300	342,400	19.7	9.3	17.5	9.6	68.6
Southeastern Wisconsin Region	65,500	72,600	86,200	101,600	107,000	10.8	18.7	17.9	5.3	63.4

Geographic Areas Compared	Percent					Percentage-Point Change				
	1950	1960	1970	1980	1990	1950-1960	1960-1970	1970-1980	1980-1990	1950-1990
Region Total as Percent of United States Total	0.6	0.6	0.7	0.6	0.6	0.0	0.1	-0.1	0.0	0.0
Region Total as Percent of Wisconsin Total	32.3	29.9	32.4	32.5	31.3	-2.4	2.5	0.1	-1.2	-1.0

Source: U. S. Bureau of Economic Analysis; Wisconsin Department of Industry, Labor and Human Relations; and SEWRPC.

same time period, employment in those industries accorded dominant status in 1990 within the Region increased from 348,200 jobs to 742,700 jobs, an increase of 394,500 jobs, or about 113 percent, while employment in those industries accorded subdominant status increased from 47,400 jobs to 73,000 jobs, an increase of about 25,600 jobs, or about 54 percent. Manufacturing industries accorded dominant or subdominant status in 1990 decreased from about 20 percent of total regional employment in 1950 to about 12 percent in 1990, while service, trade, and other nonmanufacturing industries with 1990 dominant or subdominant status increased from about 50 percent to about 64 percent of total regional employment during the same 40-year period.

Total employment in the electrical and electronic machinery, equipment, and supplies industry, which was accorded subdominant status in 1950 and dominant status in 1960, 1970, and 1980, decreased by 45 percent between 1960 and 1990, and thus was accorded only subdominant status in 1990. The primary metals, food and kindred products, and transportation equipment industries, which were accorded either dominant or subdominant status in previous decades, represented only about 1.1 percent, 1.6 percent, and 0.8 percent, respectively, of total employment in the Region in 1990 and were thus not included in the analyses in this report.

The overall change in employment levels in the dominant and subdominant industries from 1980 to 1990, like the change in total regional employment, is not encouraging when compared with State and national growth in the same industries and in total employment over the period. Between 1980 and 1990, employment in the dominant and subdominant industries increased by about 14 percent in the Region, by about 18 percent in the State, and by about 25 percent in the Nation. Total employment in the Region grew by about 13 percent over the same period, compared with about 16 percent in the State and about 22 percent in the Nation.

Employment in the health services industry in the Region increased by about 561 percent between 1950 and 1990, making that industry the only dominant or subdominant industry to increase at a rate higher than both the State and national rates. Employment in the electrical and electronic machinery, equipment, and supplies industry in the Region increased by about 17 percent between 1950 and 1990, a rate which was higher than the State rate but lower than the national rate. Employment in the fabricated metals industry and in government and government enterprises in the Region increased by about 53 percent and 63 percent, respectively, between 1950 and 1990, at rates higher than those for the Nation but lower than those for the State. The regional rates of change in the employment levels of all other industries accorded dominant or subdominant status in 1990 were generally lower between 1950 and 1990 than both the State and national rates.

The analysis of employment in the major industrial groups in the Region has shown a continuation of a trend, described in earlier Commission studies, toward a geographic shift of manufacturing industries from the traditional concentration in the East

North Central and Middle Atlantic States to the South Atlantic States, the West South Central States, and the Pacific States. In each of the Region's dominant and subdominant manufacturing industries, except printing and publishing, the East North Central States, which include Wisconsin, provide a larger share of the total value added by manufacture than any other area of the United States. The East North Central States' share of value added by manufacture in the United States, however, has been steadily declining in each of the dominant and subdominant industry groups.

The continued reduction in these States' share of this economic indicator, coupled with the smaller share of national employment growth—in Wisconsin and the Region in particular—suggests a need for a concerted effort to moderate or reverse this trend. Some adjustments may have already begun. Increases in average hourly earnings in the manufacturing industries in the Region, which have historically been higher than those of either the State or Nation, have moderated, resulting in a more competitive wage structure when the Region is compared to the State and Nation.

Chapter IV

ALTERNATIVE ECONOMIC ACTIVITY PROJECTIONS FOR SOUTHEASTERN WISCONSIN

INTRODUCTION

As noted in Chapter I, the primary purpose of the study reported herein is to reevaluate and revise as necessary the employment projections required for the preparation of regional land use and supporting infrastructure system plans for the Southeastern Wisconsin Region. This chapter presents the revised employment projections and describes the approach used to develop these projections.

PROJECTIONS AND FORECASTS

Because economists are seldom confident that a single, most likely level of future economic activity can be forecast, they are inclined to bracket the probable future course of economic change by developing a group of alternative scenarios of future economic activity, using a variety of projection techniques or a single projection technique based on a variety of assumptions concerning possible future changes in economic activity. Generally, it is then presumed that the future course of change will not be greater than the highest projection produced nor lower than the lowest projection produced, and that some intermediate projection will be the most probable level of future economic activity. Once a consensus has been established as to which of the possible intermediate projections is the most likely, that projection is often then referred to as a "forecast."

This distinction between a forecast and a projection is important, particularly in view of the fact that either a forecast or a projection, or, in some cases, a current estimate may be produced utilizing the same technique. There are a variety of techniques which use facts about the economy at a particular time to reach conclusions about that economy at some other time. If the time for which a projection is made is in the present or past, the result of this process is called an estimate; if that time is in the future, the result is called a projection or forecast. The term "projection" implies a conditional assertion about future economic conditions based upon a stated set of assumptions concerning expected change; the term "forecast" implies an unconditional assertion about future magnitudes and characteristics of economic activity. As identified and used by the Commission, a forecast is a projection selected from a range of projections for use in plan preparation.

PROJECTION TARGET DATE

An important consideration in the preparation of necessary projections is the target date. Both the land use pattern and the supporting infrastructure systems must be planned in consideration of, although not necessarily to meet, anticipated demand at some future time.

In the planning of physical facility systems, this future time, or "design year," is usually established by the expected life of the first facilities to be constructed in implementation of the plan. Depending on the particular facilities involved, this design year can be from 20 to more than 50 years in the future. Although it may be argued that the design year for land use development should be extended farther into the future than that for physical facilities because of the basic irreversibility of many land use development decisions, practical considerations—including limitations on the ability to make the necessary economic and demographic projections with any reliability—dictate that the land use planning design year be scaled to the facility design year requirement.

Because of the need to designate a design year based upon the expected life of the first facilities constructed in implementation of the plan under development, a projection period of 20 to 30 years is normally required for comprehensive planning purposes. Consequently, a target year of 2020 has been selected for the projections presented herein. This situation places some severe requirements upon projections produced as part of the planning process.

Experience has indicated that the error rate of projections tends to vary directly with the length of the projection period, and that this is especially the case for subnational projections. For this reason, it is generally recommended that the long-term projections required in comprehensive planning be produced by the more involved disaggregate tech-

niques, such as the dominant-subdominant industry approach utilized by the Commission, rather than by simpler aggregate techniques. While there is no evidence that these more elaborate disaggregate techniques produce more accurate long-term projections, they do facilitate analyses in that they permit, and indeed require, explicit consideration of the individual components of economic change. They are generally preferred for this reason.

An additional advantage of disaggregate projection techniques lies in the manner in which projections produced by these techniques can be monitored during the projection period. Since the projections are prepared based upon assumptions made about the component parts of the whole, it is possible to monitor changes in each of these discrete parts. In the event that the future course of events fails to unfold in the manner anticipated by the projection, it may be possible to identify which component parts are not changing as anticipated and thereby identify specific assumptions which are not being borne out by the actual course of events. The use of disaggregate projection techniques does have a particular disadvantage, however, in that the need to develop specific assumptions concerning the future behavior of each of the component parts involved in the projection can increase the level of uncertainty surrounding the projection.

ACCURACY REQUIREMENTS

While forecasters have long been concerned about the accuracy of projections and have attempted to develop procedures whereby the accuracy of a projection could be evaluated by a quantitative measure, it is not currently possible to establish levels of reliability for projections in either statistical or probabilistic terms that are useful for planning purposes. Realistically, projections can only be evaluated qualitatively, with the results interpreted in light of the uses to which the projections are to be put. Once a particular projection has been selected for use in the preparation of long-range plans, common practice is to assess its accuracy by a subsequent comparison with an official count or estimate.

While the comparison of projected change to observed change can be revealing, it still provides no standard by which to judge the overall accuracy of the projection. The question of accuracy in the preparation of projections for small geographic areas is further complicated by the fact that relative competitive advantages between and among geographic areas seldom remain constant over long periods of time. Therefore, projections for smaller areas tend to have the potential for larger deviations between the conditions projected and the conditions that actually occur. Moreover, whatever the size of the geographic area concerned, short-range projections are likely to have smaller deviations than those of long-range projections.

Lacking objective tests—similar in function to statistical tests of significance—for determining projection reliability, projection accuracy requirements are, in practice, largely a function of the use to be made of the projections. As applied to land use and physical facilities planning, the critical consideration is what effect any potential projection inaccuracies will have on the basic structure of the plans to be produced. It is important to attempt to keep the projection tolerances within that range wherein only the timing, and not the basic structure, of the plans will be affected.

It is the collective professional opinion of the engineers and planners involved that projection inaccuracies on the order of plus or minus 10 percent would be very good over a 10-year period, and that certainly no greater level of accuracy should be anticipated. It is similarly the collective professional opinion of the engineers and planners involved that such variances would not significantly affect the structure of the plans. In fact, experience has indicated that if the basic projections, including economic projections, required for the preparation of land use and physical facilities plans can be made to within plus or minus 10 percent per decade, then only the timing, and not the structure, of the plans is likely to be affected.

METHODOLOGY

Many methods have been developed for projecting economic change in a region such as Southeastern Wisconsin. Some of these methods are quite simple and some highly complex, but all are ultimately based upon historical experience and, in general, rely on a combination of mathematical formulation and professional judgment to analyze this experience and project it into the future.

The principal difference between or among any of the projection methods is generally the degree of emphasis placed upon these two basic elements. At one extreme, a method may involve little or no mathematical formulation and may depend almost entirely upon the professional judgment of a person or group of persons. Because the considerations entering into such judgments are most often not clearly articulated, even in the minds of the persons

making them, such statements of future economic activity levels are generally not capable of being replicated by others or of being reduced to a precise procedure which can be expressed mathematically.

At the other extreme, a method may depend almost entirely upon mathematical formulation and require little exercise of professional judgment. These methodologies, founded as they are in a precise procedure, may be readily replicated once the rules of the procedure are established. These procedural rules may be called projection models and, if expressed in mathematical terms, may be designated as mathematical models.[1]

There are two basic types of projection techniques: those which treat the system and changes in the system as a single aggregate, and those which deal with disaggregate components of the system and changes in the system. Aggregate approaches include graphical and mathematical extrapolation and ratio and analogue techniques. Disaggregate approaches include the various types of econometric models and the dominant-subdominant industry approach utilized by the Commission.

The disaggregate approaches have two general advantages over the aggregate approaches: 1) they permit explicit consideration of the components of the economy, and 2) they provide more detailed projections of the various economic components. Disaggregate techniques, however, while more complex, are not necessarily more accurate than the generally simpler aggregate techniques.

As noted in Chapter I, the Commission, under its initial land use and transportation study conducted in the early 1960s, developed an economic simulation model of the regional economy. This model, which was based on detailed input-output analysis, was used to project employment to the plan design year 1990, and its results were compared to projections developed by the dominant-subdominant industry approach.

In general, the two approaches produced similar projections of employment. While analysis of the resulting projections did not indicate that either approach was necessarily superior to the other, the input-output model did have greater data requirements and was, therefore, comparatively more expensive to use. For this reason, the Commission has continued to use the simpler dominant-subdominant industry approach for its employment projections.

Application of the Dominant-Subdominant Industry Methodology

For purposes of this study, the dominant-subdominant industry methodology, developed for the Commission by Professor Richard B. Andrews of the University of Wisconsin-Madison, was applied in the same manner by the Commission as in 1962, 1972, and 1984. That is, rather than a single regional projection, separate projections were made for each of the dominant and subdominant industry groups within the Region. In accordance with the dominant-subdominant methodology, the balance of regional employment, including self-employment and those industry groups not accorded dominant or subdominant status, was analyzed as a single aggregate grouping.

For each dominant or subdominant industry group, employment projections were made to the year 2020. These employment projections were developed from a series of analyses and reports which included

1. historical trends in certain pertinent characteristics of each major industry group, as presented in Chapter III of this report;

2. linear and nonlinear extrapolations to the year 2020 of employment trends from 1969 to 1989 in each major industry group;

3. industry outlooks as published by the U. S. Department of Commerce in U. S. Industrial Outlook 1993, January 1993;

4. industry outlooks for the State to 2000 as published by the Wisconsin Department of Industry, Labor and Human Relations, Bureau of Labor Market Information, in Wisconsin Projections, 1988-2000, Industries, Occupations, Labor Force, January 1991;

[1] *A model is a replica or representation of some other object or thing. Models are often used to simulate the operation of complex, real-world systems composed of a large number of interacting elements. A mathematical model uses a set of mathematical relationships (equations) to operate on a set of typical real data. The model is then used to simulate the operation of the real system. The modeled system may be the flow of motor-vehicle traffic in a highway network, streamflow in a river system, change in the size and structure of a regional economy, or some other real system.*

5. industry outlooks for the State to 2005 as published by the Wisconsin Department of Industry, Labor and Human Relations, Bureau of Workforce Policy and Information, in Wisconsin Projections, 1990-2005, Industries, Occupations, Labor Force, January 1993;

6. economic outlooks for the State to 2000 as published by William A. Strang and John P. Klus of the University of Wisconsin-Madison, in Wisconsin's Economy in the Year 2000, 1991;

7. economic outlooks for the State and the Nation to 2040 as published by the U. S. Department of Commerce, Bureau of Economic Analysis, in BEA Regional Projections to 2040, 1990;

8. industry outlooks for the State and the Nation to 2017 as reported by the Wisconsin Department of Revenue in "Wisconsin Economic Trends for the Next Twenty-Five Years," Wisconsin Economic Outlook, June 1993;

9. industry outlooks for the State and the Nation to 2000 as published by the Wisconsin Department of Development in Wisconsin Long-Range Economic Forecast: 1987 to 2000, December 1988;

10. industry outlooks for its six-county service area to 2013 as published by the Wisconsin Electric Power Company in Advance Plan 7, a report filed with the Wisconsin Public Service Commission, January 1994;

11. industry outlooks for the Nation to 2005 as published by the U. S. Department of Commerce, Bureau of Labor Statistics, in "Industry Output, Job Growth Slowdown Continues into Next Century," Monthly Labor Review, November 1991; and

12. trends in the relationship between regional and national employment for each industry group, 1969-1990.

Because of the uncertainties involved, three separate projections were prepared for each industry. These projections were to reflect high-, intermediate-, and low-economic-growth scenarios. Together, these three projections were expected to convey a sense of the margin for error underlying the projection process and to offer an opportunity to conduct sensitivity analyses in subsequent planning processes.

The three projections contained in this report were developed using the reports and analyses described above. Those reports make use of a variety of projection techniques and cover different time periods, target dates, and geographic areas. Thus, as one would expect, the reports vary in their projections for each dominant or subdominant industry. Collectively, however, these projections offer a fairly comprehensive summary of the most likely alternative futures that might be expected for each industry.

Given these existing projections, the Commission was faced with the choice of selecting among them; generating completely new, independent projections; or forming composite projections. The composite approach was selected for three reasons. First, selecting among the existing projections would have been problematic; no clear criteria were available on which to base the selection of one projection over others, and doing so would mean ignoring the potentially useful information contained in the other projections. Second, completely new projections would have been quite costly to develop and unlikely to generate significant new information about expected future employment patterns. Third, extensive evidence indicates that a combination of several projections tends to perform better than any single projection.

To develop the composite projections, various employment growth patterns embodied in the previously cited reports and analyses were examined for each dominant or subdominant industry. These growth paths were then extended and applied to data for the Southeastern Wisconsin Region to create a collection of growth paths to the year 2020 for each dominant or subdominant industry. All growth paths were carefully reviewed for consistency and plausibility, and this review process led to the elimination of a number of extreme and therefore less likely projections. The remaining projections were rank-ordered and averages calculated for a selected group of the higher-, middle-, and lower-level projections. The results can be considered consensus projections reflecting high-growth, intermediate-growth, and low-growth scenarios for each dominant or subdominant industry.

Table 54

PROJECTED RATES OF CHANGE IN REGIONAL EMPLOYMENT BY INDUSTRY GROUP FOR THE YEAR 2020: DOMINANT-SUBDOMINANT INDUSTRY ANALYSIS

Industry Group	1950-1990 Average Annual Rate of Change (percent)	1990-2020 Anticipated Average Annual Rate of Change (percent)		
		High-Growth Scenario	Intermediate-Growth Scenario	Low-Growth Scenario
Dominant Industries				
Construction	1.59	0.31	0.11	-0.03
Industrial Machinery and Equipment	-0.37	-0.57	-0.97	-1.30
Transportation, Communication, and Utilities	1.35	0.44	0.25	0.12
Wholesale Trade	2.09	0.43	0.20	-0.08
Retail Trade	1.97	1.08	0.93	0.77
Finance, Insurance, and Real Estate	2.56	1.21	0.97	0.75
Business Services	4.39	2.16	1.91	1.78
Health Services	4.83	1.46	1.28	1.12
Government and Government Enterprises	1.23	0.82	0.66	0.61
Subdominant Industries				
Printing and Publishing	2.09	1.27	1.13	1.03
Fabricated Metals	1.07	0.00	-0.24	-0.64
Electrical and Electronic Machinery, Equipment, and Supplies	0.40	-1.24	-1.44	-1.99

Source: U. S. Bureau of Economic Analysis and SEWRPC.

EMPLOYMENT PROJECTIONS TO 2020

The range of anticipated average annual rates of change that emerge for each dominant or subdominant industry in the Region are set forth in Table 54. Several notable features are apparent from these rates. First, in every industry analyzed, the expected rate of future job growth is notably slower than that experienced between 1950 and 1990. This slowed growth reflects a combination of declines in population growth rates over that 40-year period, the maturity of certain major industries, and expected advances in productivity.

Second, the growth rates anticipated for different industries vary substantially. Some, such as the electrical and electronic machinery, equipment, and supplies industry, are expected to contract over the 30-year forecast period. Others, such as business services and health services, are expected to grow relatively rapidly.

Third, the size of the bracket established by the alternative futures methodology varies among industries. For some industries, such as printing and publishing, or government and government enterprises, the bracket is relatively narrow. In contrast, such industries as finance, insurance, and real estate; fabricated metals; and electrical and electronic machinery, equipment, and supplies have notably wider growth-rate brackets which reflect a greater degree of uncertainty.

The regional employment projections to the year 2020 that result from applying the high, intermediate, and low anticipated average annual growth rates are set forth in Table 55, along with information on the share of total regional employment attributed to each industry. The staging of these regional projections for selected years between 1990 and 2020 is set forth in Table 56 and Figures 14 through 27, which reflect general patterns of relatively rapid growth in the early years and notable slowing in later years. As indicated in Table 55, employment in the Region in 2020 is projected to range from 1,216,900 jobs to 1,362,600 jobs. The span in this range illustrates the major differences in economic growth rates between the high-growth and low-growth scenarios, which are intended to represent reasonable extremes.

Table 55 indicates that projected 2020 employment levels in the group of dominant industries range from 899,400 jobs under the low-growth scenario to 1,000,400 jobs under the high-growth scenario. These levels result from net increases of between

Table 55

ALTERNATIVE EMPLOYMENT PROJECTIONS FOR THE REGION BY INDUSTRY GROUP FOR THE YEAR 2020

Industry Group	Estimated 1990 Employment		Projected 2020 Employment					
			High-Growth Scenario		Intermediate-Growth Scenario		Low-Growth Scenario	
	Number of Jobs	Percent of Total	Number of Jobs	Percent of Total	Number of Jobs	Percent of Total	Number of Jobs	Percent of Total
Dominant Industries								
Construction	46,100	4.3	50,600	3.7	47,600	3.7	45,600	3.7
Industrial Machinery and Equipment	55,600	5.2	46,800	3.4	41,500	3.2	37,500	3.1
Transportation, Communication, and Utilities	46,000	4.3	52,500	3.9	49,600	3.9	47,800	3.9
Wholesale Trade	54,900	5.1	62,500	4.6	58,300	4.6	53,600	4.4
Retail Trade	186,400	17.5	257,200	18.9	245,800	19.2	234,800	19.3
Finance, Insurance, and Real Estate	86,200	8.1	123,600	9.1	115,200	9.0	108,000	8.9
Business Services	64,700	6.1	122,800	9.0	114,000	8.9	110,000	9.0
Health Services	95,800	9.0	147,800	10.8	140,100	11.0	133,700	11.0
Government and Government Enterprises	107,000	10.0	136,600	10.0	130,400	10.2	128,400	10.6
Subtotal	742,700	69.6	1,000,400	73.4	942,500	73.8	899,400	73.9
Subdominant Industries								
Printing and Publishing	22,900	2.1	33,500	2.5	32,100	2.5	31,100	2.6
Fabricated Metals	26,800	2.5	26,700	2.0	24,900	1.9	22,100	1.8
Electrical and Electronic Machinery, Equipment, and Supplies	23,300	2.2	16,100	1.2	15,100	1.2	12,800	1.1
Subtotal	73,000	6.8	76,300	5.6	72,100	5.6	66,000	5.4
Total Dominant-Subdominant	815,700	76.4	1,076,700	79.0	1,014,600	79.4	965,400	79.3
Other Employment	251,500	23.6	285,900	21.0	262,500	20.6	251,500	20.7
Region Total	1,067,200	100.0	1,362,600	100.0	1,277,100	100.0	1,216,900	100.0

Source: U. S. Bureau of Economic Analysis and SEWRPC.

156,700 and 257,700 jobs in the dominant industry groups over 1990 levels. Of the dominant industries, only the industrial machinery and equipment industry is projected to show significant job decreases under all growth scenarios, while construction and wholesale trade are expected to experience slight net declines under the low-growth scenario. All other dominant industries are projected to realize job growth under all three scenarios, ranging from a relatively modest increase for transportation, communication, and utilities to relatively significant increases for health and business services.

Two of the subdominant industries, the fabricated metals industry and the electrical and electronic machinery, equipment, and supplies industry, are expected to contract under all three economic scenarios, while printing and publishing is projected to show increases under all scenarios.

Regional Dominant Industry Groups

Construction: Construction is a locally oriented, dominant service activity in the Region, employing approximately 46,100 persons in 1990. The employment trend in this industry group in the Region has been one of long-term expansion accompanied by significant fluctuations associated with business cycles. The industry may be expected to benefit from increased public spending for repair and replacement of such infrastructure elements as streets and highways. However, an expected slowdown in population growth and in the rate of household formation under a low-growth scenario may be expected to have a dampening effect on new construction.

Under the high-growth economic scenario, a strong regional economy and infrastructure rebuilding would lead to in-migration, which would partially offset the slowdown in natural population growth. This net growth in population would produce demand sufficient for construction industry employment to grow at an average rate of about 0.31 percent per year, for a net increase of about 4,500 jobs between 1990 and 2020 (see Table 56 and Figure 15). The intermediate-growth scenario projects a job gain in the construction industry of about 1,500 jobs between 1990 and 2020. Under a low-growth economic future, with a much less robust economy and net out-migration of population, employment in this industry would decrease slightly, resulting in a net loss of 500 jobs between 1990 and 2020. Construction employment under all three scenarios may be expected to grow during the first decade of the forecast period, decline modestly during the second decade, and generally stabilize between 2010 and 2020.

Table 56

EXISTING 1990 AND PROJECTED 2000, 2010, AND 2020 LEVELS OF EMPLOYMENT IN THE REGION BY INDUSTRY GROUP

Industry Group	Number of Jobs									
		High-Growth Scenario			Intermediate-Growth Scenario			Low-Growth Scenario		
	1990	2000	2010	2020	2000	2010	2020	2000	2010	2020
Dominant Industries										
Construction	46,100	51,800	50,200	50,600	49,400	47,800	47,600	47,100	46,700	45,600
Industrial Machinery and Equipment	55,600	54,800	50,700	46,800	52,000	47,900	41,500	47,900	44,600	37,500
Transportation, Communication, and Utilities	46,000	48,700	51,000	52,500	47,900	49,300	49,600	47,400	48,600	47,800
Wholesale Trade	54,900	61,100	60,000	62,500	58,500	58,400	58,300	57,000	56,000	53,600
Retail Trade	186,400	207,500	231,100	257,200	204,400	224,100	245,800	201,300	217,400	234,800
Finance, Insurance, and Real Estate	86,200	104,900	119,400	123,600	101,800	113,700	115,200	98,300	107,200	108,000
Business Services	64,700	97,000	114,500	122,800	87,900	105,000	114,000	84,700	101,600	110,000
Health Services	95,800	124,200	138,300	147,800	118,500	131,800	140,100	115,000	126,100	133,700
Government and Government Enterprises	107,000	119,700	128,100	136,600	116,900	124,200	130,400	112,900	120,300	128,400
Subtotal	742,700	869,700	943,300	1,000,400	837,300	902,200	942,500	811,600	868,500	899,400
Subdominant Industries										
Printing and Publishing	22,900	26,300	29,800	33,500	25,600	28,700	32,100	25,100	28,100	31,100
Fabricated Metals	26,800	27,900	27,700	26,700	27,100	26,700	24,900	25,500	25,100	22,100
Electrical and Electronic Machinery, Equipment, and Supplies	23,300	21,000	18,600	16,100	20,200	17,500	15,100	18,500	14,800	12,800
Subtotal	73,000	75,200	76,100	76,300	72,900	72,900	72,100	69,100	68,000	66,000
Total Dominant-Subdominant	815,700	944,900	1,019,400	1,076,700	910,200	975,100	1,014,600	880,700	936,500	965,400
Other Employment	251,500	265,100	273,900	285,900	255,100	258,700	262,500	251,500	251,500	251,500
Region Total	1,067,200	1,210,000	1,293,300	1,362,600	1,165,300	1,233,800	1,277,100	1,132,200	1,188,100	1,216,900

Source: U. S. Bureau of Economic Analysis and SEWRPC.

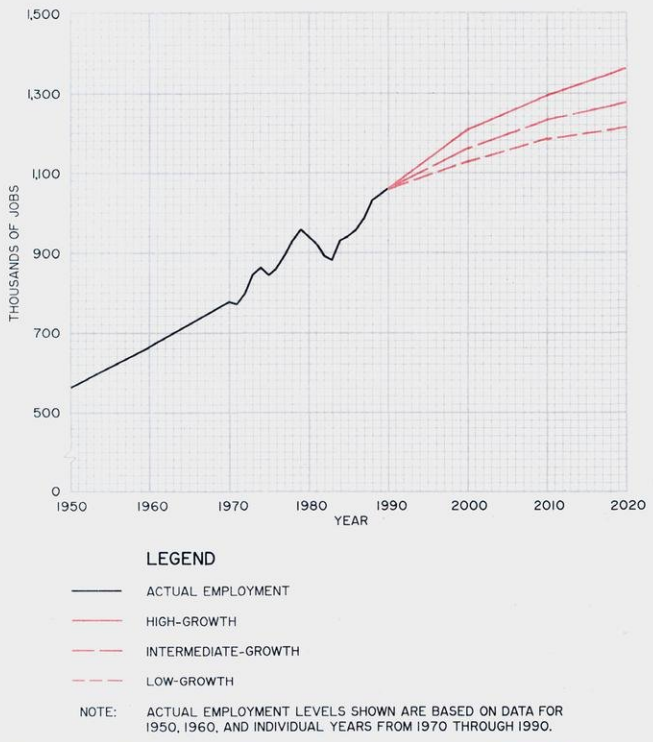
Industrial Machinery and Equipment: The industrial machinery industry, the largest manufacturing sector in Southeastern Wisconsin, suffered greatly in the early 1980s. In 1990 the industry provided approximately 55,600 jobs, which represents a decrease of more than 25 percent from 1980 and is slightly fewer jobs than were available in this industry in 1960. Much of this employment decline may be attributed to permanent changes, as the industry was restructured to become more competitive in world markets. Much of this restructuring has been completed, but employment prospects for this industry are still not good. Productivity increases may be expected to limit employment growth nationally. In addition, the regional industry suffers from a relatively unfavorable product mix. It is not a major participant in the rapidly growing computer industry, and it has a fairly high concentration in engines and turbines, a sector with a relatively weak outlook.

Under the high-growth future conditions, employment in this industry may be expected to contract by an average of approximately 0.57 percent annually between 1990 and 2020. The result would be a total decrease of 8,800 jobs. Prospects for the industry are notably worse under even the intermediate-growth scenario, under which an average annual decline of about 1 percent would lead to a job count of only 41,500 by 2020. Under the low-growth scenario, the decline is even more pronounced, with a net job loss of 18,100 due to an average annual decline of about 1.30 percent. The more detailed staging displayed in Table 56 and Figure 16 shows that the industry's contraction may be expected to be somewhat more severe in the later years than in the first decade of the projection period.

Transportation, Communication, and Utilities: Given the diverse nature of the three components

Figure 14

TOTAL EMPLOYMENT PROJECTIONS FOR THE REGION: 1990-2020



Source: U. S. Bureau of Economic Analysis and SEWRPC.

Figure 15

EMPLOYMENT PROJECTIONS FOR THE CONSTRUCTION INDUSTRY IN THE REGION: 1990-2020

Source: U. S. Bureau of Economic Analysis and SEWRPC.

of this sector, the relatively narrow range of alternative futures projected for this industry group is somewhat surprising. To some extent, this narrow range may reflect the work of partially offsetting growth patterns that are a consequence of this diversity. The possibly dampening effects of increased competition and technological change in the communication and utility industries, when combined with the higher growth envisioned for the transportation industry, would lead to modest growth in overall employment for this industry group.

Under the high-growth scenario, all components of this industry group would realize modest growth as a consequence of a healthy and growing economy that may be expected to fuel greater demand for all three industries. These conditions would lead to an overall increase of 6,500 jobs, from 46,000 jobs in 1990 to 52,500 jobs in 2020, or the equivalent of approximately 0.44 percent growth per year. The intermediate-growth scenario envisions an average annual growth rate of 0.25 percent, as competition would force more extensive restructuring in the utility industry. As a consequence, the total employment level for this industry group would move from 46,000 jobs in 1990 to approximately 49,600 jobs by 2020. Under the low-growth scenario, employment in this group would achieve a level of 47,800 jobs by the end of the 30-year period, growing at an average rate of 0.12 percent annually.

Table 56 and Figure 17 indicate that job growth may be expected to outpace these annual average rates over the first two decades of the forecast period, and then to slow considerably after 2010. In fact, a modest decline in jobs may be anticipated between 2010 and 2020 under the low-growth scenario.

Figure 16

EMPLOYMENT PROJECTIONS FOR THE INDUSTRIAL MACHINERY AND EQUIPMENT INDUSTRY IN THE REGION: 1990-2020

Source: U. S. Bureau of Economic Analysis and SEWRPC.

Figure 17

EMPLOYMENT PROJECTIONS FOR THE TRANSPORTATION, COMMUNICATION, AND UTILITIES INDUSTRY IN THE REGION: 1990-2020

Source: U. S. Bureau of Economic Analysis and SEWRPC.

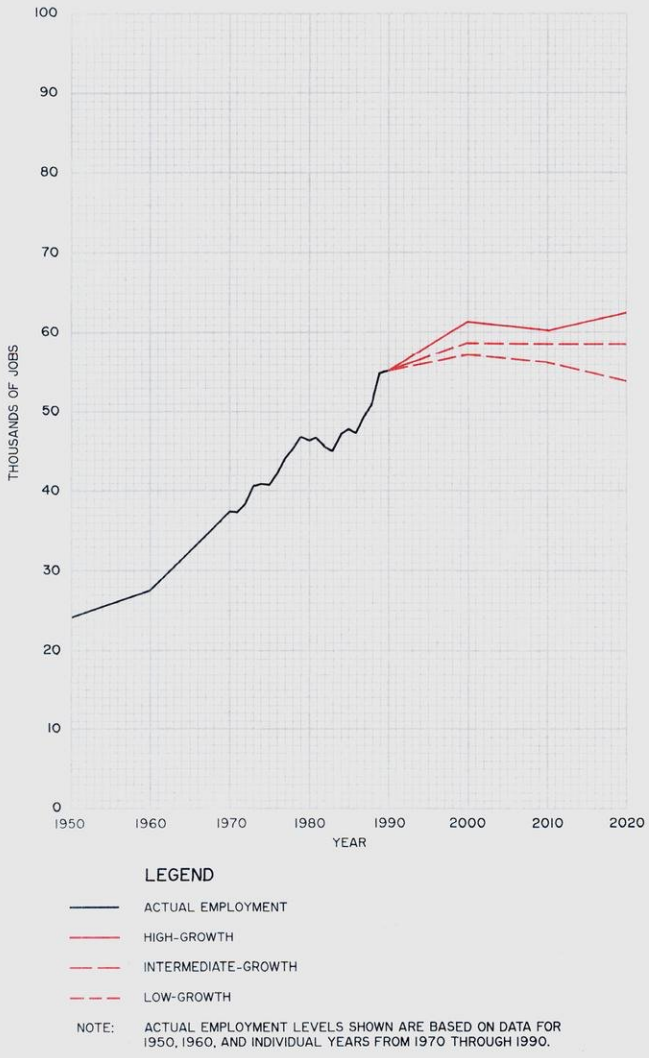
Wholesale Trade: Wholesale trade has historically been a steadily growing, locally oriented, dominant industry group within the Region. Despite ongoing changes in distribution channels and advances in computer technology which may retard hiring, the overall expectation is modest growth in wholesale trade employment. Under the high-growth scenario, a healthy regional economy would combine with the historical stability of the industry's customer base to produce an average annual growth rate of about 0.43 percent. Employment under this scenario would be expected to increase by 7,600 jobs, from 54,900 jobs in 1990 to 62,500 jobs in 2020. These annual increases could be moderated somewhat as the impacts of computerized and automated handling techniques continue to spread through the industry. The intermediate-growth scenario allows for the possibility that these effects will be more pronounced. Consequently, under this scenario, a total of 58,300 jobs are projected in 2020, or an average annual growth rate of 0.20 percent between 1990 and 2020.

If the local economy is more sluggish in the decades to come, and if industrywide changes in product distribution procedures limit the need for new personnel, then this industry may register a small decline in employment over 30 years. Under the low-growth scenario, total wholesale trade employment would decline by approximately 1,300 jobs between 1990 and 2020.

The staging in Table 56 and Figure 18 indicates that, regardless of the scenario, the vast majority of the job growth in wholesale trade employment may be expected to occur during the 1990s. Between 2000 and 2010, relatively modest declines in employment may be anticipated. After 2010, the situation would become more uncertain, with moderate growth occurring under the high-growth scenario, moderate contraction under the low-growth scenario, and relative stability in wholesale trade employment under the intermediate-growth scenario.

Figure 18

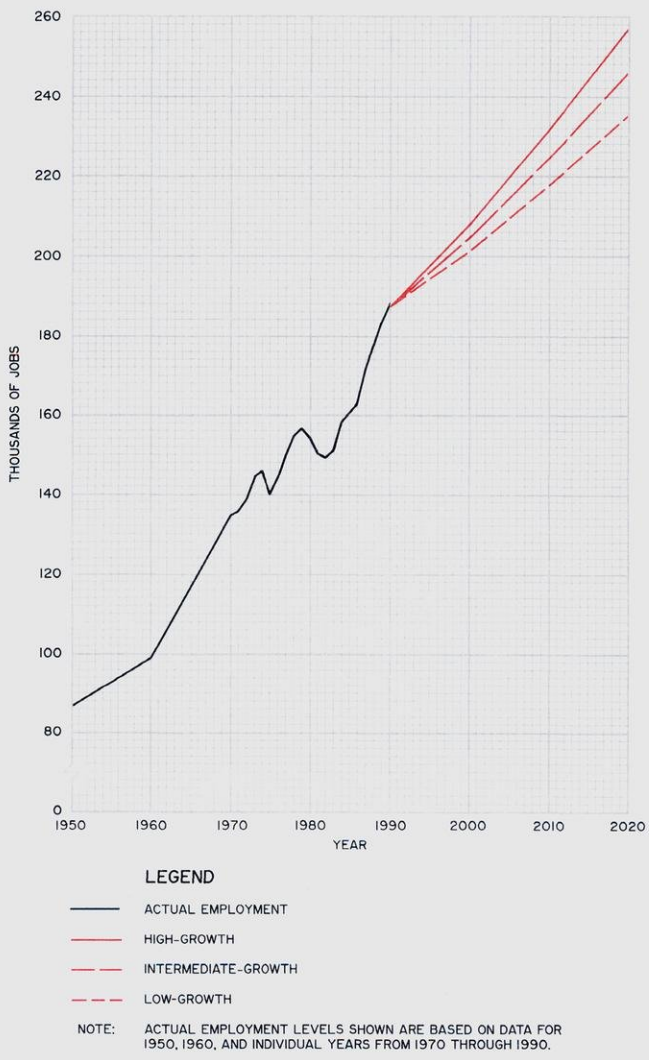
EMPLOYMENT PROJECTIONS FOR THE WHOLESALE TRADE INDUSTRY IN THE REGION: 1990-2020



Source: U. S. Bureau of Economic Analysis and SEWRPC.

Figure 19

EMPLOYMENT PROJECTIONS FOR THE RETAIL TRADE INDUSTRY IN THE REGION: 1990-2020



Source: U. S. Bureau of Economic Analysis and SEWRPC.

Retail Trade: The largest single industry group in the Region in 1990, retail trade had an employment level in that year of 186,400 jobs. This relative position may be expected to be maintained, as the industry is projected to be among the more rapidly growing in the Region. The high-growth economic scenario calls for an average annual growth rate of about 1.08 percent through the year 2020. This rate translates to employment growth of approximately 70,800 jobs between 1990 and 2020. The intermediate-growth scenario envisions an expansion of about 0.93 percent per year, resulting in an employment gain of 59,400 jobs between 1990 and 2020.

Under the low-growth scenario, the more sluggish overall regional economy would lead to more restrained consumer purchasing and to a continuation of current industry trends toward operations with fewer employees to serve customers, and toward more nonstore purchasing through mail orders. Projections for regional retail trade employment under the low-growth scenario indicate average annual growth of about 0.77 percent, with the 2020 employment level reaching 234,800 jobs. As shown in Table 56 and Figure 19, the growth in retail trade employment may be expected to be relatively steady over the entire forecast period under all three economic scenarios.

Finance, Insurance, and Real Estate: The finance, insurance, and real estate sector endured a period of stagnation in employment during the first half of the 1980s as it adapted to the disinflationary environment. Otherwise, this industry group has shown remarkably constant growth over the past several decades. As the nature of financial institutions continues to evolve, and as the population ages, the growth rate in this industry group may be expected to moderate somewhat. However, finance, insurance, and real estate may be expected to continue to be an important source of new jobs in the Region.

Under the high-growth economic scenario, a healthy regional economy and low-to-moderate interest rates would provide an environment within which this industry could sustain a long-term average growth rate of 1.21 percent per year. The projected regional employment increase under this scenario is approximately 37,400 jobs, from 86,200 jobs in 1990 to 123,600 jobs in 2020. This strong growth would be moderated somewhat under the intermediate economic scenario, which projects a long-term average growth rate of about 0.97 percent per year and total job growth of approximately 29,000 jobs between 1990 and 2020. Under the low-growth scenario, the net regional job growth for this industry group would approximate 21,800 jobs, based on an average annual growth rate of 0.75 percent.

The employment growth under all three scenarios may be expected to vary systematically from the above summary growth rates. Increases in employment may be anticipated to be notably greater in the first decade of the forecast period (see Table 56 and Figure 20) and to slow significantly in each subsequent decade.

Business Services: The business services industry is projected to have the highest employment growth rates of the dominant and subdominant industries in the Region. These high rates reflect an expectation that the growing tendency for firms to buy various support services rather than provide them internally will continue, as will efforts to gain greater flexibility through the use of temporary workers.

Under the high-growth scenario for this industry, the trend toward increased reliance on business services would continue unabated at a 2.16 percent average annual rate, causing regional employment in the industry to rise from 64,700 jobs in 1990 to 122,800 jobs in 2020. Under the intermediate-growth scenario, business services employment in the Region would reach 114,000 jobs, which implies an average annual growth rate of about 1.91 percent. Even under the low-growth scenario, the industry's job-creating performance would be impressive, in that employment would increase by approximately 1.78 percent per year, on average, leading to 45,300 new jobs by the year 2020.

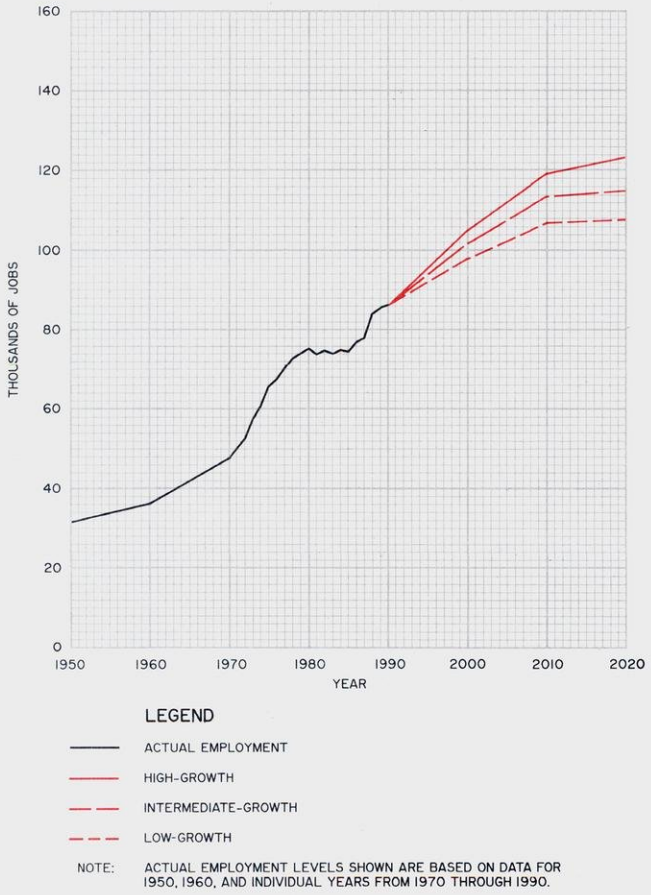
The combination of demographic trends and the popularity of outsourcing is expected to produce very rapid job growth in the business services industry during the 1990s (see Table 56 and Figure 21). This growth will begin to slow somewhat after the first decade, as population growth slows and the movement toward outsourcing begins to approach practical limits. Even with this slowing, however, the business services industry will be an important source of job growth over the entire forecast period.

Health Services: The health services industry has had, from 1950 to 1990, the highest overall employment growth rate of any industry group in the Region. Regional employment in this industry increased by about 39 percent in 10 years, from about 68,800 jobs in 1980 to about 95,800 jobs in 1990. Recent years have seen the beginning of a trend toward consolidation among organizations providing health care, and the associated elimination of some duplication of functions. Further, the future of this industry is clouded by the current uncertainty regarding changes in legislation related to health care. Still, the industry may be expected to grow rapidly over the next three decades as the health care needs of an aging population increase.

In order to meet these needs, the health services industry may be expected to expand employment at an average annual rate exceeding 1 percent under all three scenarios. Under the high-growth scenario, long-term growth is projected to be approximately 1.46 percent per year, leading to 147,800 jobs by 2020, an increase of 52,000 jobs over the 1990 figure of 95,800 jobs. The intermediate-growth scenario assumes a somewhat lower average annual growth rate of 1.28 percent, which translates into 44,300 new jobs between 1990 and 2020. The low-growth scenario envisions continued growth in employment in this sector, but at a long-term rate of 1.12 percent per year. This rate translates into an increase of approximately 37,900 jobs by the year 2020. Table 56 and Figure 22 indicate that much of this growth will occur in the early years. In fact, over

Figure 20

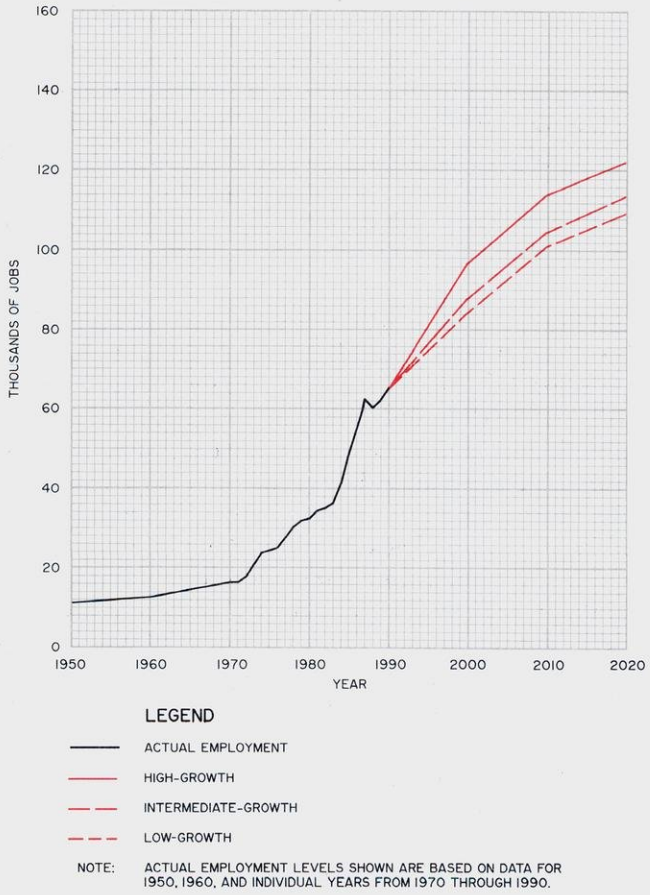
EMPLOYMENT PROJECTIONS
FOR THE FINANCE, INSURANCE, AND
REAL ESTATE INDUSTRY IN THE REGION: 1990-2020



Source: U. S. Bureau of Economic Analysis and SEWRPC.

Figure 21

EMPLOYMENT PROJECTIONS
FOR THE BUSINESS SERVICES INDUSTRY
IN THE REGION: 1990-2020



Source: U. S. Bureau of Economic Analysis and SEWRPC.

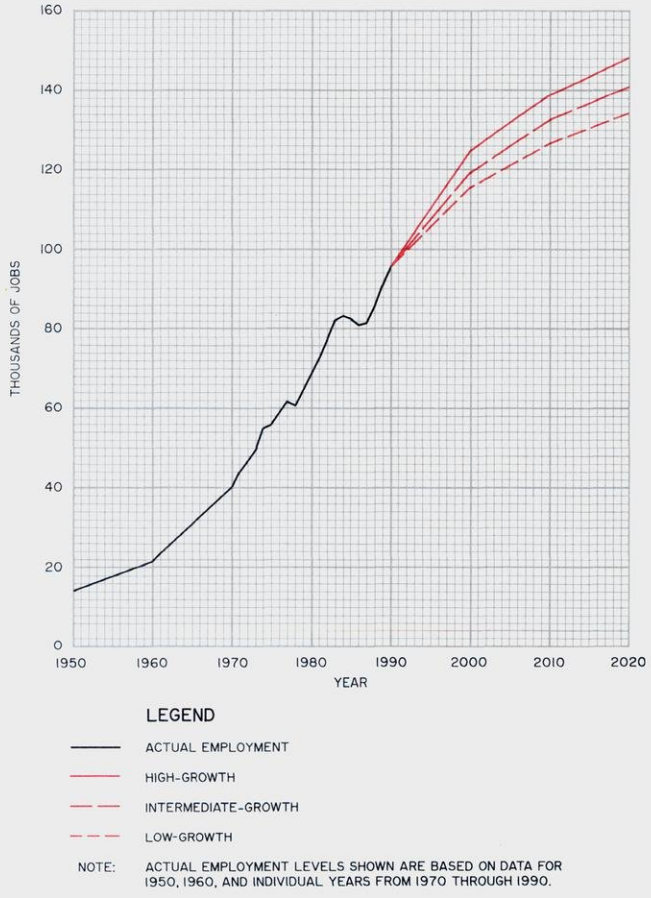
one-half of the total job growth is expected to occur between 1990 and 2000 under all three scenarios.

Government and Government Enterprises: Government employment, which for purposes of this report includes public employment in educational services and in health services, is a locally oriented employment group that, during the 1970s, tended to grow steadily with only occasional, brief periods of modest decline. Circumstances were notably different in the 1980s, during which four years of significant decline were followed by a rapid recovery and then somewhat sluggish growth toward the end of the decade. Employment growth in this industry may be expected to stabilize in the years ahead, as ongoing efforts to consolidate and more efficiently provide public services are counterbalanced by the growing need for public-sector education and health service personnel. As a result, future employment increases in the Region may be expected to be fairly steady. It should be noted, however, that the relatively steady projected increase in government-sector employment could be moderated as a result of recent attempts to downsize government. If such downsizing were to occur, the reduction in projected employment levels in the government sector would likely be offset by corresponding increases in the business services sector, since such government services as street and highway maintenance, solid waste collection and disposal, sanitary sewerage and stormwater drainage, water supply, and emergency services are absolutely essential to any modern society.

Under the high-growth economic scenario, a long-term rate of growth in employment of approximately

Figure 22

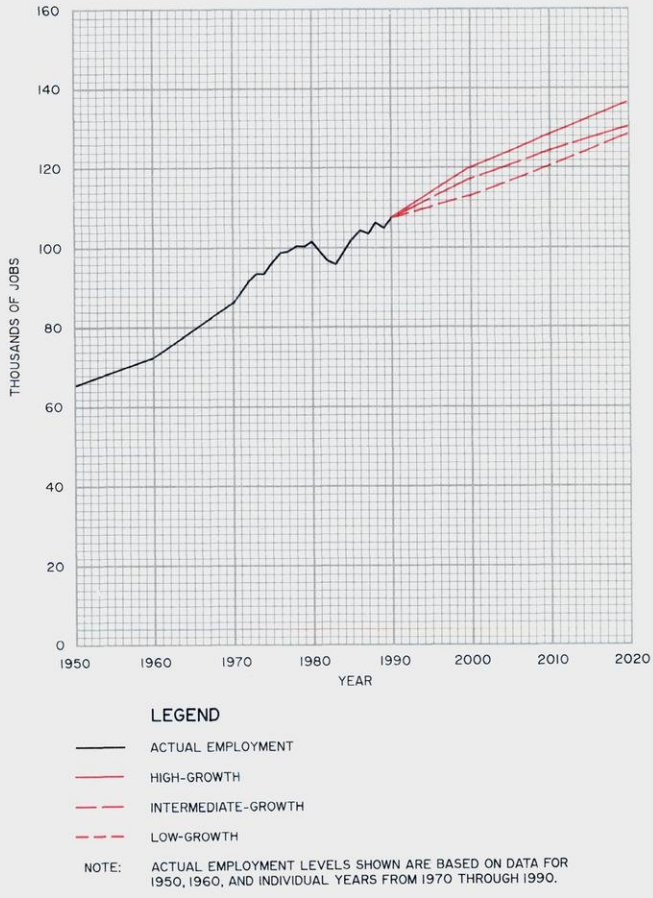
EMPLOYMENT PROJECTIONS FOR THE HEALTH SERVICES INDUSTRY IN THE REGION: 1990-2020



Source: U. S. Bureau of Economic Analysis and SEWRPC.

Figure 23

EMPLOYMENT PROJECTIONS FOR GOVERNMENT AND GOVERNMENT ENTERPRISES IN THE REGION: 1990-2020



Source: U. S. Bureau of Economic Analysis and SEWRPC.

0.82 percent per year is envisioned, for a net gain of approximately 29,600 jobs, from 107,000 jobs in 1990 to 136,600 jobs in 2020. The intermediate economic scenario calls for an increase of 23,400 jobs between 1990 and 2020 as a consequence of a 0.66 percent average annual growth rate. Under the low-growth scenario, the long-term rate of growth may be expected to approximate 0.61 percent per year, leading to 21,400 new jobs by the year 2020.

As shown in Table 56 and Figure 23, government job creation may be expected to be somewhat more rapid during the 1990s than in the later decades of the projection period under both the high-growth and intermediate-growth scenarios. Still, over one-quarter of the new jobs may be expected to be created in the final decade of the forecast period under all three scenarios.

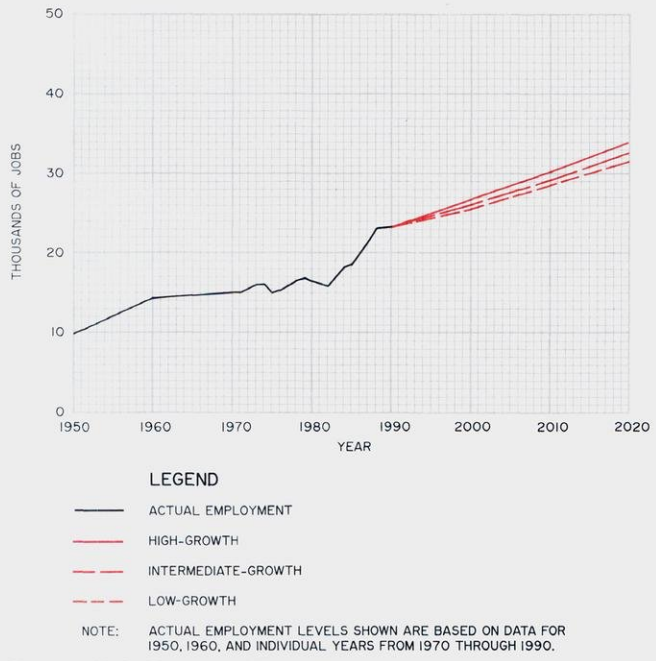
Regional Subdominant Industry Groups

Printing and Publishing: Despite significant growth during the 1980s, the printing and publishing industry is the smallest regional industry to be analyzed separately in this report. The industry's relative importance in the regional economy is likely to increase, however; the outlook for printing and publishing is generally favorable due to continued expansion of specialty periodical publications, which may be expected to offset more sluggish employment growth in newspaper publishing.

Under the high-growth scenario, the industry may be expected to see its 1990 employment level of 22,900 jobs expand to 33,500 jobs by the year 2020.

Figure 24

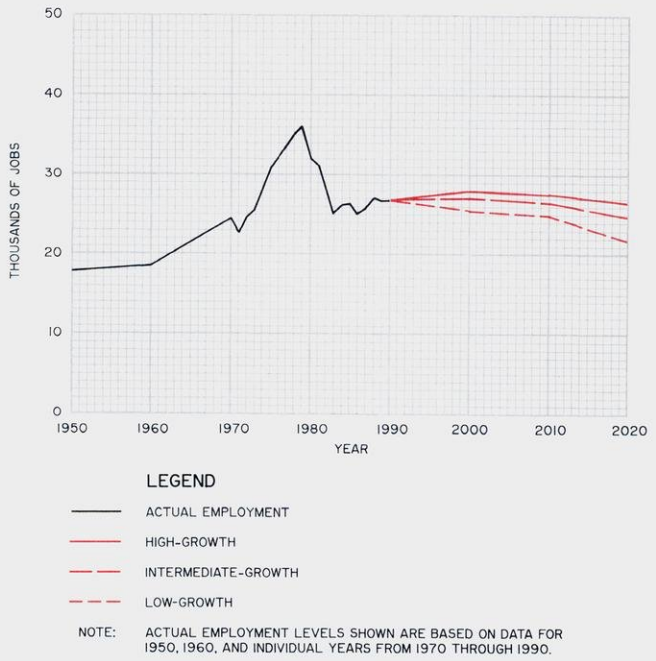
EMPLOYMENT PROJECTIONS FOR THE PRINTING AND PUBLISHING INDUSTRY IN THE REGION: 1990-2020



Source: U. S. Bureau of Economic Analysis and SEWRPC.

Figure 25

EMPLOYMENT PROJECTIONS FOR THE FABRICATED METALS INDUSTRY IN THE REGION: 1990-2020



Source: U. S. Bureau of Economic Analysis and SEWRPC.

This employment level would be the end result of an average annual rate of growth of 1.27 percent over the period. The intermediate-growth scenario envisions an average growth rate of 1.13 percent per year, which would result in a total of 32,100 jobs by 2020. Even under the low-growth economic scenario, the industry may be expected to create 8,200 new jobs by the year 2020 as a result of a relatively healthy 1.03 percent average annual growth rate. These average annual rates generally may be expected to hold over the entire forecast period (see Table 56 and Figure 24).

Fabricated Metals: The fabricated metals industry in Southeastern Wisconsin enjoyed very rapid employment growth during the 1960s and 1970s, followed by difficult times in the early 1980s, which resulted in the elimination of most of the job growth in the previous decade. Such dramatic swings are not anticipated over the 30-year forecast period, but the outlook for employment in fabricated metals is not expected to be particularly favorable.

Under even the high-growth economic scenario, this industry group is projected to experience about the same level of employment in 2020 as in 1990; that is, only about 100 fewer jobs than the 1990 level of about 26,800 jobs. This slight decrease would be the end result of a pattern of job growth during the 1990s that would then be offset gradually by declines over the subsequent years (see Table 56 and Figure 25). The intermediate economic scenario projects a decline of 1,900 jobs in this industry group between 1990 and 2020, as employment falls about 0.24 percent annually, on average. Most of the decline, however, would occur in the final 10 years of the forecast period.

The outlook for the industry under the low-growth scenario is notably worse, with employment projected to decrease by approximately 4,700 jobs between 1990 and 2020. If the fabricated metals industry does experience this 0.64 percent average annual rate of decline in jobs, it would quite likely lose its status as a subdominant industry in the Region. However, because the most significant decline in employment would not be expected until after 2010, a status change would not be anticipated until sometime after that year.

Electrical and Electronic Machinery, Equipment, and Supplies: The electrical machinery and equipment industry is so diverse in the array of products produced that projection is difficult. In fact, care is needed in reviewing the historical record for this industry, because the Standard Industrial Classification was altered effective in 1988, accounting for a portion of the decline in employment from the previous year. Nevertheless, the prospects for this industry are not expected to be encouraging, either nationally or in the Region. Under all three economic scenarios, regional employment declines are anticipated.

The high-growth projection for this industry envisions a decline in regional employment from about 23,300 jobs in 1990 to about 16,100 jobs in 2020, or an average decrease of about 1.24 percent per year. The intermediate-growth scenario envisions a 1.44 percent average annual decrease in regional employment, for a loss of about 8,200 jobs between 1990 and 2020. The low-growth projection for this industry envisions employment declines of about 1.99 percent annually, resulting in a year 2020 level of about 12,800 jobs, or only 1.1 percent of total regional employment. No pronounced fluctuations in these rates of decline may be expected over the three decades of the forecast period (see Table 56 and Figure 26).

Other Regional Employment

Other employment in the Region consists of self-employment and all industry groups not otherwise considered. These are the industry groups that individually accounted for less than 2 percent of total regional employment in 1990, but collectively accounted for a bit less than one-quarter of total regional employment. The diverse nature of this somewhat artificial grouping of industries seriously undermines most projection methodologies; partly for that reason, an assumption of "no change" was employed in previous Commission economic reports. In the group of industries that comprise the "other" category in this report, however, notable fluctuations about a positive trend have been experienced for at least two decades prior to 1990, during which time the average annual growth rate was approximately 1 percent. Thus, a "no change" assumption does not appear reasonable, except perhaps as a low-growth scenario.

The high-growth economic scenario for regional employment outside the dominant and subdominant industries assumes an average annual growth rate of approximately 0.43 percent. This rate would produce an additional 34,400 jobs for the Region by the year 2020, increasing "other" employment from 251,500 jobs in 1990 to 285,900 jobs in 2020, with almost 40 percent of this increase occurring by the year 2000 (see Table 56 and Figure 27). The intermediate-growth scenario assumes a growth rate of approximately 0.14 percent annually, which causes employment in this group within the Region to increase relatively constantly from 251,500 jobs in 1990 to 262,500 jobs by 2020. Under the low-growth scenario, increases in some industries would be offset by declines in others, such that the total would remain stable over the 30-year period from 1990 to 2020.

DISTRIBUTION OF EMPLOYMENT BY COUNTY UNDER THE ALTERNATIVE ECONOMIC ACTIVITY PROJECTIONS

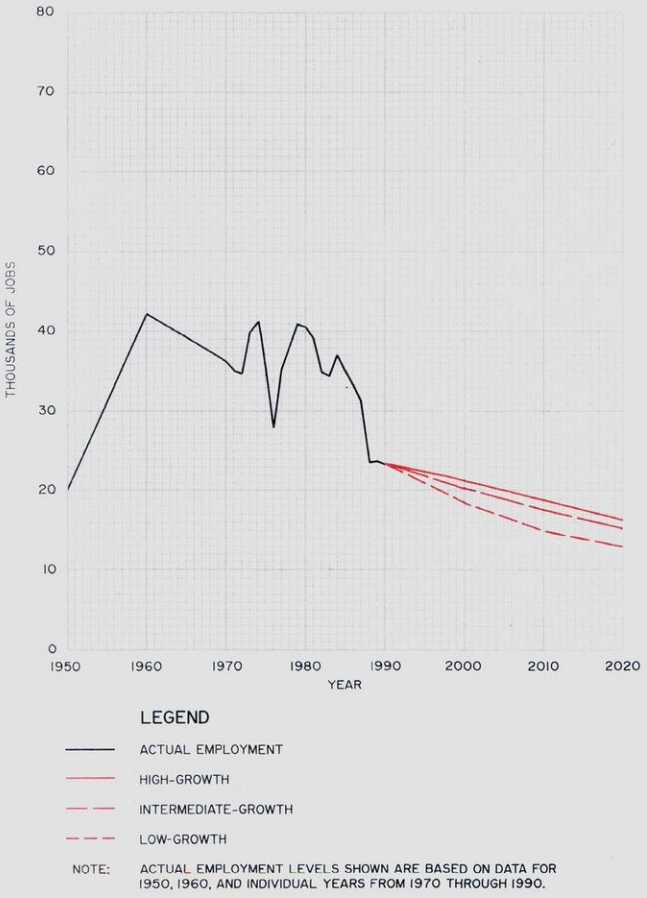
The historic trend in the spatial distribution of employment in the Region has been one of decentralization. This dispersion has been fairly narrowly focused, however, in that regional employment has shifted primarily from Milwaukee County toward Waukesha County. This shift is shown in Figure 28, which illustrates the historical path in the proportion of total regional employment within each county. For Kenosha, Ozaukee, Racine, Walworth, and Washington Counties, the most notable feature of Figure 28 is the relative stability of the employment shares. Ozaukee, Walworth, and Washington Counties, the three with the smallest job shares, have increased their shares of regional employment slightly, and Kenosha County's share has fallen slightly. However, none of these changes is of a significant magnitude.

The situation in Milwaukee and Waukesha Counties, as illustrated in Figure 28, is notably different. Between 1970 and 1990, there has been a pronounced shift in the distribution of regional employment from Milwaukee County to Waukesha County. The Milwaukee County share declined 9.4 percentage points, from 66.9 percent to 57.5 percent. Over the same period, the Waukesha County share of regional employment increased by 7.6 percentage points, from 10.3 percent to 17.9 percent.

While the total number of jobs in Milwaukee County is projected to increase over time, the historical decline in its percentage of total regional jobs may be expected to continue. It is assumed that by 2020, the Milwaukee County proportion of total regional employment will have declined another 6.3 percentage points, to 51.2 percent. At the same time, Waukesha County may be expected to experience

Figure 26

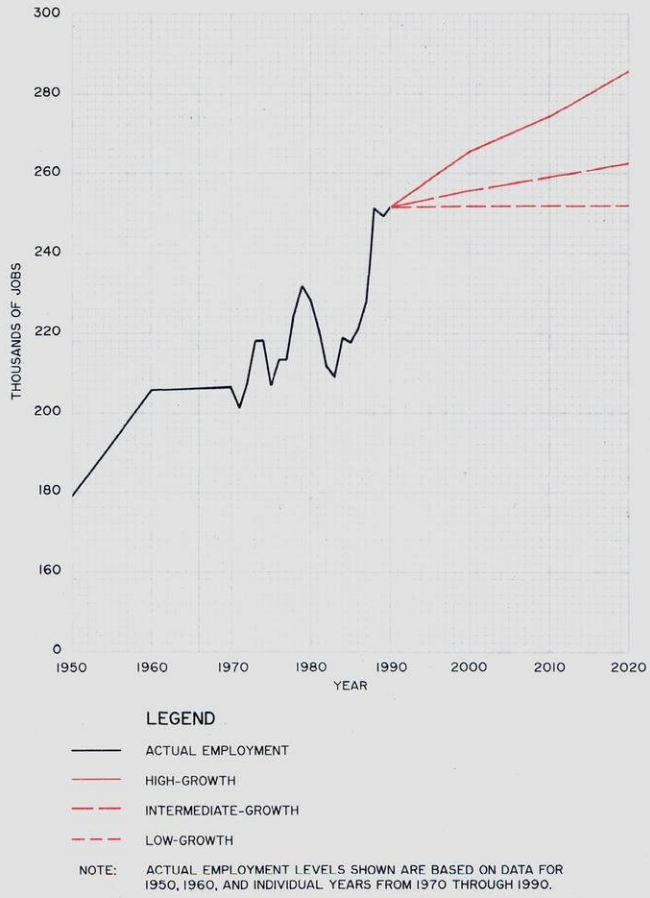
EMPLOYMENT PROJECTIONS FOR THE ELECTRICAL AND ELECTRONIC MACHINERY, EQUIPMENT, AND SUPPLIES INDUSTRY IN THE REGION: 1990-2020



Source: U. S. Bureau of Economic Analysis and SEWRPC.

Figure 27

EMPLOYMENT PROJECTIONS FOR OTHER EMPLOYMENT IN THE REGION: 1990-2020



Source: U. S. Bureau of Economic Analysis and SEWRPC.

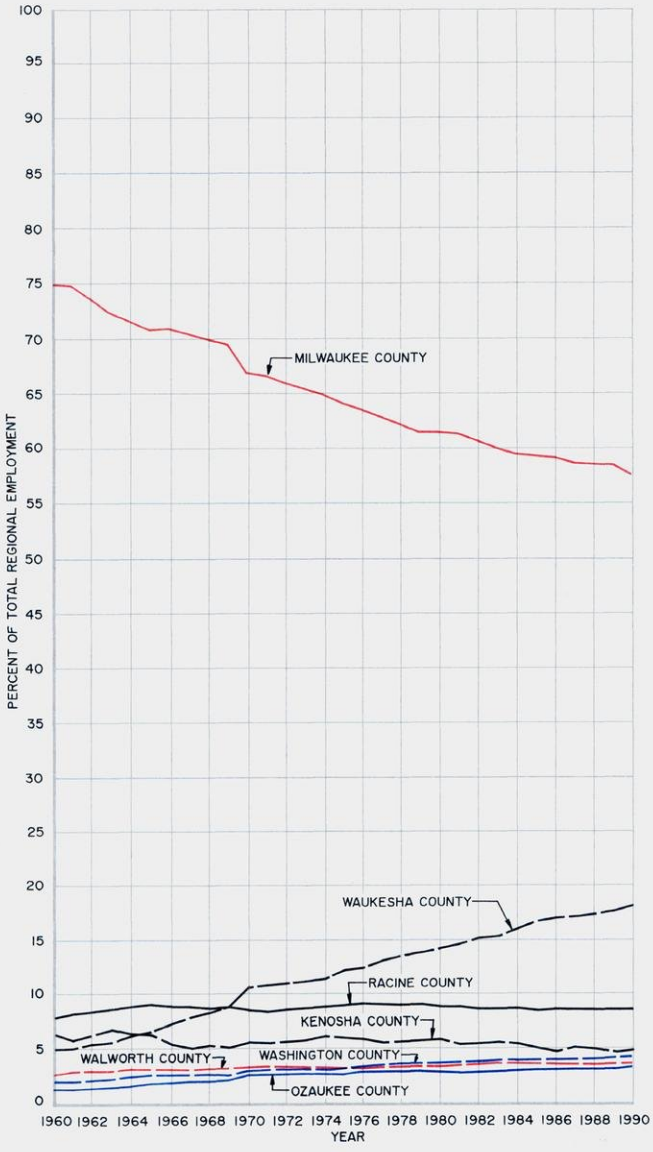
significant growth in both its absolute number of jobs and its percentage of total regional jobs. Kenosha County may be expected to show an increase in its percentage of total regional employment despite a historic decline, and recent increases in the Walworth County share of regional employment are expected to continue. These projected increases for Kenosha and Walworth Counties may be attributed, in part, to an envisioned continuation of recent trends toward new urban development in the northeastern Illinois area. Ozaukee, Racine, and Washington Counties are expected to experience percentage-point increases in their respective shares of regional employment smaller than those envisioned for Waukesha and Walworth Counties.

Projections of total jobs by county under the three alternative scenarios are set forth in Table 57. These are based on the anticipated job shares, which are also shown in Table 57. The distribution is based on the magnitude and direction of historic trends in employment distribution in the Region, albeit with some recognition of the tendency for strong historical trends to moderate over time.

It should be noted that these alternative projections are not necessarily intended to be used directly in the preparation of long-range plans, since one of the functions of areawide planning is to attempt to influence the distribution of economic activity when such action is deemed to be in the public interest. Consequently, areawide plans may attempt to change the projected course of events in such a manner as to modify historic trends. Therefore, these projections are presented not to determine the distribution of economic activity for which plans must be prepared, but rather to represent points of comparison and possibly of departure in plan preparation.

Figure 28

SPATIAL DISTRIBUTION OF TOTAL EMPLOYMENT IN THE REGION BY COUNTY: 1960-1990



Source: U. S. Bureau of Economic Analysis and SEWRPC.

COMPARISON OF COMMISSION 2020 ALTERNATIVE EMPLOYMENT PROJECTIONS WITH COMMISSION EMPLOYMENT FORECASTS AND PROJECTIONS FOR PLAN DESIGN YEARS 1990, 2000, AND 2010

As shown in Figure 29, all three regional employment projections to the year 2020 begin from a point lower than the regional employment forecast prepared by the Commission in 1963 for the design year 1990, tend for the year 2000 to be at levels similar to the employment forecast prepared in 1974 for the design year 2000, and generally fall between the high-growth and intermediate-growth alternative employment projections prepared in 1984 for the design year 2010.

The downward revision from the high-growth projection prepared for design year 2010 is primarily a result of significant decreases in employment levels in the industrial and electronic machinery industries in the Region. These industries, which had been the backbone of the regional economy in the 1960s and early 1970s, and had been projected to increase in employment, have since shown severe losses in employment levels. The upward revision from the intermediate projections for design year 2010 indicates the effects of the recovery from the severe economic recession of the late 1970s and early 1980s, which had significantly influenced the economic projections prepared in 1984; those projections envisioned job loss under the low-growth scenario and only modest levels of job growth under the intermediate-growth scenario.

COMPARISON OF COMMISSION EMPLOYMENT PROJECTIONS WITH EMPLOYMENT FORECASTS AND PROJECTIONS PREPARED BY STATE, FEDERAL, AND PRIVATE AGENCIES

In order to place in perspective the alternative employment projections presented herein, and thereby assist the officials involved in both regional and local planning in utilizing such projections in various kinds of planning and engineering applications, it is helpful to compare those projections to other independently prepared forecasts and projections. Because of differences in the projection periods, in the techniques used, and in the geographic areas involved, direct comparison of different forecasts and projections is difficult. Even given these limitations, however, comparisons of both magnitudes and relative rates of growth can offer useful insights into the validity of the various long-term forecasts and projections for planning.

Accordingly, the Commission's new employment projections for the Region were compared with the Wisconsin Department of Industry, Labor and Human Relations (DILHR) projection for the State of Wisconsin; the Wisconsin Department of Reve-

Table 57

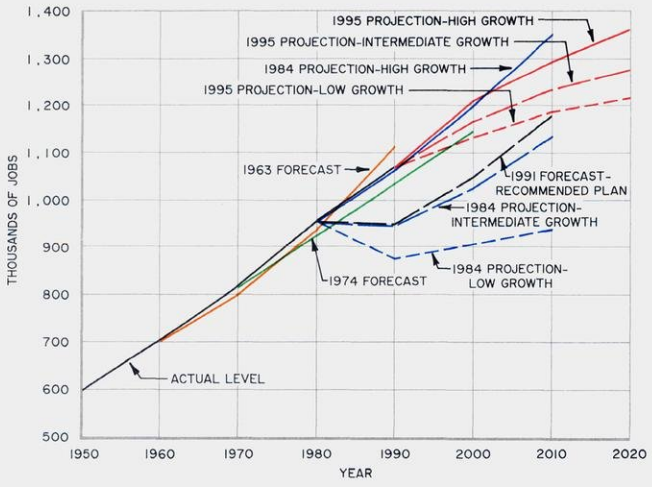
ALTERNATIVE EMPLOYMENT PROJECTIONS FOR THE REGION BY COUNTY FOR THE YEAR 2020

County	1970 Employment		1990 Employment		Projected 2020 Employment			
					Number of Jobs			
	Number of Jobs	Percent of Total	Number of Jobs	Percent of Total	High-Growth Scenario	Intermediate-Growth Scenario	Low-Growth Scenario	Percent of Total (all growth scenarios)
Kenosha	42,000	5.4	50,900	4.8	74,900	70,200	66,900	5.5
Milwaukee	524,900	66.9	613,300	57.5	697,700	653,900	623,100	51.2
Ozaukee	21,200	2.7	36,400	3.4	54,500	51,100	48,700	4.0
Racine	64,500	8.2	88,800	8.3	115,800	108,600	103,400	8.5
Walworth	26,300	3.4	40,200	3.8	65,400	61,300	58,400	4.8
Washington	24,300	3.1	46,100	4.3	68,100	63,800	60,800	5.0
Waukesha	80,900	10.3	191,500	17.9	286,200	268,200	255,600	21.0
Total	784,100	100.0	1,067,200	100.0	1,362,600	1,277,100	1,216,900	100.0

Source: U. S. Bureau of Economic Analysis and SEWRPC.

Figure 29

COMPARISON OF COMMISSION 1963, 1974, AND 1991 EMPLOYMENT FORECASTS AND 1984 AND 1995 EMPLOYMENT PROJECTIONS



NOTE: EMPLOYMENT LEVELS FOR 1963, 1974, AND 1991 FORECASTS, 1984 PROJECTIONS, AND ACTUAL LEVELS HAVE BEEN REVISED TO REFLECT THE "REBENCHMARKED" EMPLOYMENT DATA UPON WHICH THE 1995 EMPLOYMENT PROJECTIONS ARE BASED.

Source: U. S. Bureau of Economic Analysis and SEWRPC.

nue (DOR) forecast for the Region; the U. S. Department of Commerce, Bureau of Economic Analysis (BEA) projections for the counties comprising the Region; and the Wisconsin Electric Power Company (WEPCo) forecast for its six-county service area.[2]

[2]*The Wisconsin Electric Power Company forecasts were prepared for a service area which includes Kenosha, Milwaukee, Ozaukee, Racine, Washington, and Waukesha Counties—or the Southeastern Wisconsin Region less Walworth County.*

Each forecast or projection has been adjusted to be consistent with the base-year data and geographic area used by the Commission. Specifically, all forecasts and projections were assumed to begin with a 1990 base-year regional employment level of 1,067,200 jobs. An average annual rate of change, based upon each respective agency forecast or projection, was in each case calculated and applied to the base-year employment to arrive at an adjusted agency employment forecast or projection comparable with the Commission employment projections.

Table 58 sets forth the rates of employment growth anticipated for each of the three decades through 2020 under each of these forecasts and projections. The levels of employment anticipated for various years through 2020 by the Commission, and those of other public and private agencies, are set forth in Table 59 and Figure 30.

For the year 2000, less than an 8 percent difference separates the highest and lowest envisioned levels of employment shown. Except for the Commission's low-growth projection, all of the alternatives fall within 5 percent of one another. The BEA projection is about the same as the intermediate Commission projection, and the WEPCo forecast is slightly above the high Commission figure. The two others, the DOR forecast and the DILHR projection, fall between the high and intermediate Commission projections.

For the year 2005, the most optimistic employment level, that forecast by WEPCo, is still only about 11 percent above the most pessimistic envisioned

Table 58

COMPARISON OF AVERAGE ANNUAL RATES OF CHANGE FOR COMMISSION 2020 ALTERNATIVE EMPLOYMENT PROJECTIONS WITH RATES FOR EMPLOYMENT FORECASTS AND PROJECTIONS FROM OTHER SOURCES FOR THE REGION: 1990-2020

Agency	Year Released	Projection Period	Average Annual Percentage Rate of Change			
			1990-2000	2000-2010	2010-2020	1990-2020
Wisconsin Department of Industry, Labor and Human Relations	1993	1990-2005	0.99	N/A	N/A	N/A
Wisconsin Department of Revenue	1995	1990-2017	1.02	0.46	N/A	N/A
U. S. Bureau of Economic Analysis	1990	1988-2040	0.89	0.31	-0.26	0.31
Wisconsin Electric Power Company	1994	1992-2013	1.33	0.97	N/A	N/A
SEWRPC—High-Growth Scenario	1995	1990-2020	1.26	0.67	0.52	0.82
SEWRPC—Intermediate-Growth Scenario	1995	1990-2020	0.88	0.57	0.34	0.60
SEWRPC—Low-Growth Scenario	1995	1990-2020	0.59	0.48	0.24	0.44

NOTE: "N/A" indicates data not available.

Source: Wisconsin Department of Industry, Labor and Human Relations; Wisconsin Department of Revenue; U. S. Bureau of Economic Analysis; Wisconsin Electric Power Company; and SEWRPC.

Table 59

COMPARISON OF COMMISSION 2020 ALTERNATIVE EMPLOYMENT PROJECTIONS WITH EMPLOYMENT FORECASTS AND PROJECTIONS FROM OTHER SOURCES FOR THE REGION: SELECTED YEARS, 2000-2020

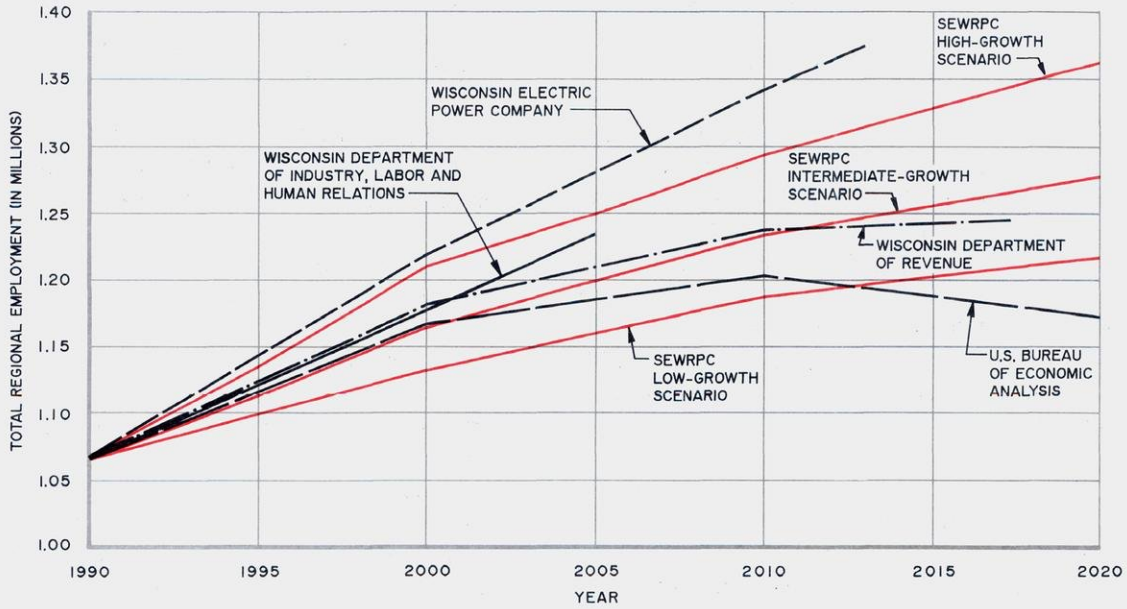
Agency	Employment Level (thousands of jobs)					
	2000	2005	2010	2013	2017	2020
Wisconsin Department of Industry, Labor and Human Relations	1,177.7	1,237.2	N/A	N/A	N/A	N/A
Wisconsin Department of Revenue	1,181.4	1,209.1	1,237.4	1,242.3	1,244.3	N/A
U. S. Bureau of Economic Analysis	1,166.4	1,184.4	1,202.7	1,193.3	1,181.0	1,171.8
Wisconsin Electric Power Company	1,218.4	1,288.0	1,342.1	1,374.9	N/A	N/A
SEWRPC—High-Growth Scenario	1,209.9	1,250.9	1,293.2	1,313.7	1,341.1	1,362.6
SEWRPC—Intermediate-Growth Scenario	1,165.4	1,198.5	1,233.8	1,246.7	1,263.6	1,277.1
SEWRPC—Low-Growth Scenario	1,132.2	1,159.8	1,188.1	1,196.7	1,207.7	1,216.9

NOTE: "N/A" indicates data not available.

Source: Wisconsin Department of Industry, Labor and Human Relations; Wisconsin Department of Revenue; U. S. Bureau of Economic Analysis; Wisconsin Electric Power Company; and SEWRPC.

Figure 30

COMPARISON OF COMMISSION 2020 ALTERNATIVE EMPLOYMENT PROJECTIONS WITH EMPLOYMENT FORECASTS AND PROJECTIONS FROM OTHER SOURCES FOR THE REGION: 1990-2020



Source: Wisconsin Department of Industry, Labor, and Human Relations; Wisconsin Department of Revenue; U. S. Bureau of Economic Analysis; Wisconsin Electric Power Company; and SEWRPC.

level, that projected under the Commission's low-growth alternative. The Commission's intermediate projection for 2005 is bracketed from above by the DOR forecast and the DILHR projection, and is bracketed from below by the BEA projection. The Commission's high-growth projection for 2005 is modestly higher than the DILHR projection and is modestly below the WEPCo forecast. For the year 2010, the spread among the employment forecasts and projections expands slightly. Still, a degree of consensus is evident, with the DOR forecast and the BEA and intermediate-growth Commission projections falling into a relatively tight band. This band is bracketed by the Commission's high- and low-growth projections and by the WEPCo forecast, which together generate an overall spread of about 13 percent for the envisioned 2010 employment levels.

As might be expected, the range of the projected and forecast employment levels continues to expand as the target date moves further into the future. Close to the middle of the range for the year 2013, and very similar to each other, are the Commission's intermediate-growth projection and the DOR forecast. Defining the lower range of the band are the BEA projection and the Commission's low-growth projection. The upper range is established by the Commission's high-growth projection and the WEPCo forecast. As shown in Table 59, only two agencies other than the Commission continue to set forth projections or forecasts beyond the year 2013. Of these, it may be appropriate to discount the BEA figures somewhat because they are the oldest projections and are only part of a national projection effort. This leaves the DOR forecast to 2017 as the primary benchmark for comparison. The DOR forecast for 2017 is less than 2 percent below the Commission's intermediate-growth projection.

The year 2020 employment levels envisioned for the Region under the Commission alternative growth projections, set forth in Table 59 and Figure 30, would thus range from 1,216,900 jobs under the low-growth projection to 1,362,600 jobs under the high-growth projection, with an intermediate-growth projection of 1,277,100 jobs. The 2020 high-growth projection is thus 85,500 jobs, or about 6.7 percent, higher than the 2020 intermediate-growth projection, while the 2020 low-growth projection is 60,200 jobs, or about 4.7 percent, lower than the 2020 intermediate-growth projection.

The span of 145,700 jobs between the Commission's projected high- and low-growth year 2020 employment levels attempts to balance the desirability of a wide range that fully reflects the uncertainties regarding future regional employment levels with the need to keep the range sufficiently narrow to be practical for planning and engineering purposes. Moreover, the Commission projections are monitored against actual developments on an annual basis by the Commission. If actual employment levels are found to depart substantially from the employment ranges envisioned for a given year, interim adjustments to the projections can be made prior to the next major reevaluation, which is anticipated to be initiated subsequent to the year 2000 U. S. Census of Population and Housing.

It should be noted that the Technical Advisory Committee on Socio-economic Studies deliberated at length on the range of the Commission employment projections presented in Table 59 and Figure 30. As previously mentioned, the Commission projects a range of about 145,700 jobs between the 2020 high-growth and low-growth employment projections, or a total of 11.4 percent above and below the intermediate-growth projection. To illustrate the effect of an employment projection range of about 1 percent per year, or 25 percent over a 25-year period, an additional table and figure, setting forth a range of employment projections equal to 12.5 percent above and below the intermediate-growth projection, were prepared (see Appendix D). The resultant total difference between the 2020 high-growth and low-growth employment projections, utilizing the 12.5 percent bands, would be 319,200 jobs. The Commission staff noted, however, that so increasing the range of employment projections would result in an even broader range of population projections, given the fact that a ratio significantly greater than one-to-one exists between population and employment levels. Upon careful consideration, the Technical Advisory Committee on Socio-economic Studies acted to recommend adoption of the Commission employment projections reflected in Table 59.

COMPARISON OF ALTERNATIVE PROJECTIONS OF POPULATION AND EMPLOYMENT LEVELS FOR THE YEAR 2020

It has long been recognized that regional population and employment levels are interdependent. Certain characteristics of the population, such as the number of school-age children, number of households, and size and characteristics of the labor force, have a marked impact on the employment patterns in certain industries. Similarly, the economic vitality of the Region is a major determinant of the level of migration that, in turn, is so important a determinant of the overall population levels. For these reasons, it is important that the sets of population

Table 60

ACTUAL AND PROJECTED TOTAL JOBS, PERCENTAGE OF MULTIPLE JOB HOLDERS, UNEMPLOYMENT RATES, AND LABOR FORCE PARTICIPATION RATES FOR THE REGION: 1970-2020

Category	1970	1980	1990	High-Growth Scenario			Intermediate-Growth Scenario			Low-Growth Scenario		
				2000	2010	2020	2000	2010	2020	2000	2010	2020
Total Jobs	784,100	945,200	1,067,200	1,209,900	1,293,200	1,362,600	1,165,400	1,233,900	1,277,100	1,132,200	1,188,100	1,216,900
Percentage of Multiple Job Holders	5.0	5.0	10.6	9.4	7.3	5.5	10.6	9.2	8.6	11.1	11.8	12.2
Unemployment Rate	3.7	5.7	5.5	5.3	5.2	5.0	5.5	5.5	5.5	5.7	5.8	6.0
Labor Force Participation Rate												
Male	79.4	78.6	76.1	75.3	74.7	74.0	75.0	74.0	73.0	74.7	73.3	72.0
Female	45.3	54.3	60.0	61.7	63.3	65.0	62.3	64.7	67.0	63.3	66.7	70.0
Total	61.5	65.9	67.6	68.2	68.8	69.4	68.4	69.2	69.9	68.8	69.9	71.0

Source: U. S. Bureau of the Census, U. S. Bureau of Economic Analysis, and SEWRPC.

and employment projections prepared by the Commission be coordinated; that is, that the assumptions underlying each set of projections be consistent with those underlying the other. Table 60 summarizes the employment and lifestyle factors that were considered in combination to develop the three alternative future scenarios.

Multiple job holders are considered in each alternative scenario because of their effect on the relationship between the number of jobs available and the size of the employed civilian labor force. Nationally, an average of about 11 percent of all employed persons in 1990 held more than one job. That average represents an increase from the national average in 1980, when about 5 percent of all employed persons held more than one job. While no figures exist for the State or Southeastern Wisconsin, there is no reason to believe that the rate of multiple job holding is vastly different in the Region than in the Nation as a whole. As indicated in Table 60, the rates of multiple job holding vary according to the degree of economic growth associated with each of the employment projections, with the lowest year 2020 rate, 5.5 percent, postulated for the high-growth scenario and the highest rate, 12.2 percent, postulated for the low-growth scenario.

An assumed unemployment rate also was postulated for each alternative scenario. As with multiple job holding, the rate was varied according to the degree of economic growth associated with each of the employment projections, with the lowest year 2020 unemployment rate, 5 percent, postulated for the high-growth scenario and the highest rate, 6 percent, postulated for the low-growth scenario.

Assumptions concerning the labor force participation rate, which is the number of persons in the labor force expressed as a percentage of total persons of working age, were particularly important because of the increase in labor force participation among females and because of the potential impact of this factor on migration. Employment gains can be filled by the existing population if greater proportions of residents enter the labor force, thereby dampening what would be a natural in-migration catalyst. The historical and projected changes in regional labor force participation rates are presented in Figure 31.

Overall, the female labor force participation rate is projected to continue to increase in the Region, but less rapidly than in the recent past, from the 1990 level of 60 percent to 65 percent in 2020 under the high-growth scenario and 70 percent in 2020 under the low-growth scenario. The male labor force participation rate is projected to continue to decrease slightly, from the 1990 level of about 76 percent to 74 percent in 2020 under the high-growth scenario and 72 percent in 2020 under the low-growth scenario. The impact of a higher proportion of females in the labor force will be an increase in the total labor force participation rate for the Region, from approximately 68 percent in 1990 to between 69 percent and 71 percent in 2020.

The Commission projections of total regional employment in 2020, ranging from 1,216,900 jobs to 1,362,600 jobs, are compatible with the Commission regional population projections of between 1,925,000 persons and 2,367,000 persons, which would yield between 1,582,000 persons and 1,845,500 persons of labor-force age to support these jobs.

It should be noted that the above range of employment and population projections should enable the Commission to prepare a plan, or alternative plans, for the physical development of the Region which will perform well under a range of future conditions. Through incorporation of the alternative employment and population projections set

Figure 31

HISTORICAL AND PROJECTED LABOR FORCE PARTICIPATION RATES FOR THE REGION: 1950-2020

Source: U. S. Bureau of the Census and SEWRPC.

forth, such plans can be designed to deal with uncertainties regarding factors that affect growth and development within the Region. For example, in the preparation of sanitary sewer service area plans, sewerage facilities plans, and transportation plans, the Commission should consider the range of possible future employment and population levels which may reasonably be expected to occur in a given geographic area.

Specifically, consideration of high-growth employment and population projections may be appropriate in delineating a sewer service area and in designing certain components of the sewerage system that have a long life. With respect to the size of the service area, the high-growth population forecast may be the most logical to use; since the Commission forecasting methodology indicates that such a level is indeed achievable, a sewer service area size based upon that level may be desirable in order to provide flexibility to the community in determining the spatial distribution of anticipated new urban development and to facilitate the operation of the urban land market. With respect to the design of certain components of the sewerage system, including gravity flow conveyance facilities and such treatment plant components as hydraulic conduits and tanks, the use of a high-growth population projection may also be desirable because the relatively long physical life of such facilities extends beyond the 30-year projection period.

In contrast, the design, construction, and installation of such mechanical and electrical components of sewage treatment facilities as pumps, compressors, and chemical-feed equipment are typically based upon relatively short-term population loading projections. These facilities are often replaced and rebuilt at intervals of 10 to 15 years and are amenable to expansion in a staged manner. Accordingly, capital investment in such facilities is limited to what is relatively certain to be needed over a 15- to 20-year design period. Thus, an intermediate population projection may be most appropriate for use in the design of such facilities.

Similarly, considering the range of population and employment projections may be desirable in the construction of certain transportation facilities. For example, the utilization of the high-growth projection may be desirable in the consideration of widths for bridges and for highway rights-of-way, since such facilities should be designed to accommodate possible growth and development beyond the 30-year projection period presented. However, the

intermediate-growth population and employment projections may be desirable in the determination of actual pavement widths, since such facilities may be subject to reconstruction or improvement during a 20-year plan design period.

For the foregoing reasons, the Commission will not at this time select any one projection of employment and population to use as the official forecast and thus the basis for the preparation of all physical development plans. Rather, the selection of a projection to use as the forecast will be made each time a specific physical development plan is being prepared; thus, depending upon the plan or plan element under consideration, the projection selected could fall anywhere within the range set forth herein.

SUMMARY

In the consideration of any projections, it must be realized that no one can predict the future and that all projections involve uncertainties. To help deal with these uncertainties, the Commission has prepared alternative projections of regional employment to the year 2020. Instead of a single, most probable future employment level, the alternatives seek to identify a possible range of future employment levels and extreme, but nonetheless reasonable, upper and lower limits of such levels within the Region.

The three projections of employment set forth in this report were developed by drawing upon a variety of forecasts and projections prepared by governmental agencies and by private industry, each of which had independently analyzed employment trends in the industries of interest. These reports, while differing in forecasting techniques, time frames, target dates, and geographic areas considered, offered a fairly comprehensive summary of the more likely alternative futures that might be expected for employment within the Region.

The Commission generated its alternative projections of employment by developing a series of composite projections based on analyses of the various employment growth patterns exhibited by individual industries present within the Region. The analyses involved the review, for consistency and plausibility, of the potential growth paths to the year 2020 for each dominant or subdominant industry. A number of extreme and therefore less likely projections for each industry group were eliminated and a final subset of projections selected and rank-ordered. Averages were calculated for a selected group of the higher-, middle-, and lower-level projections, and the results became the consensus projections reflecting the high-, intermediate-, and low-growth scenarios for each dominant or subdominant industry.

The alternative futures approach to projecting regional employment presented in this report is similar to that used by the Commission in its earlier work programs. A range of projections for each of the dominant and subdominant industry groups within the Region was prepared in order to arrive at projections of total regional employment to the year 2020 under the most optimistic, or high-growth, and most pessimistic, or low-growth, futures that could be reasonably envisioned for the economy of Southeastern Wisconsin. This range of employment projections allows for the development of regional system plans and local facilities plans that may be expected to remain viable under greatly varying future conditions.

Under the high-growth scenario, where all industries would achieve their most optimistic projected growth, total employment in the Region would increase from about 1,067,200 jobs in 1990 to about 1,362,600 jobs in 2020, an increase of approximately 295,400 jobs, or about 28 percent. Employment in the dominant industries under the high-growth scenario would increase from about 742,700 jobs in 1990 to about 1,000,400 jobs in 2020—an increase of about 257,700 jobs, or about 35 percent. This sector would be led by the fast-growing business services industry, in which employment would increase by about 58,100 jobs, or 90 percent, and the health services industry, in which employment would increase by about 52,000 jobs, or 54 percent. The retail trade industry would also experience a large increase of about 70,800 jobs, or about 38 percent, over the 1990 level of about 186,400 jobs. Employment in the subdominant industries under the high-growth scenario would increase from about 73,000 jobs in 1990 to about 76,300 jobs in 2020, an increase of about 3,300 jobs, or about 5 percent. This increase would occur primarily as a result of an envisioned increase of about 10,600 jobs in the printing and publishing industry. Employment in fabricated metals would remain virtually unchanged, while the electrical and electronic machinery industry would experience a decline in jobs under this scenario.

Under the intermediate-growth scenario, total employment in the Region would increase from about 1,067,200 jobs in 1990 to about 1,277,100 jobs in 2020, an increase of about 209,900 jobs, or almost

20 percent. Employment in the dominant industries under the intermediate-growth scenario would increase from about 742,700 jobs in 1990 to approximately 942,500 jobs in 2020, an increase of about 199,800 jobs, or about 27 percent. Employment in business services, health services, and retail trade would increase by about 49,300 jobs, or 76 percent; 44,300 jobs, or 46 percent; and 59,400 jobs, or 32 percent, respectively, over 1990 levels. Employment in the subdominant industries under the intermediate-growth scenario would decline from about 73,000 jobs in 1990 to about 72,100 jobs in 2020, a modest decrease of about 900 jobs, or about 1 percent. Of the subdominant industries, only printing and publishing would experience an increase in employment levels, growing by about 9,200 jobs, or 40 percent, between 1990 and 2020. Employment levels in both fabricated metals and electrical and electronic machinery are envisioned to decrease under the intermediate-growth scenario, by about 7 percent and 35 percent, respectively.

Under the low-growth economic scenario, where all industries would simultaneously achieve only their most pessimistic growth performances, total employment in the Region would rise from about 1,067,200 jobs in 1990 to approximately 1,216,900 jobs in 2020, an increase of about 149,700 jobs, or 14 percent. Employment in the dominant industries under the low-growth scenario would increase from about 742,700 jobs in 1990 to about 899,400 jobs in 2020, an increase of about 156,700 jobs, or about 21 percent. The driving forces behind much of this growth would be business services and health services. Partially offsetting these growth industries would be industrial machinery, which would contract significantly, and construction and wholesale trade, which would decline more modestly. All other dominant industries would experience employment gains between 1990 and 2020. Employment in the subdominant industries would not fare as well under the low-growth scenario, with a projected loss of about 7,000 jobs, or almost 10 percent, overall. Printing and publishing employment would increase by about 36 percent, from about 22,900 jobs in 1990 to about 31,100 jobs in 2020. In contrast, fabricated metals would lose about 18 percent of its jobs over this period, with total jobs in this industry declining to about 22,100 by the year 2020. Electrical and electronic machinery would fare no better, losing about 10,500, or roughly 45 percent, of its jobs by 2020.

All three regional employment projections to the year 2020 begin from a point in 1990 lower than the regional employment forecast prepared by the Commission in 1963 for the design year 1990, tend for the year 2000 to be at levels similar to the employment forecast prepared in 1974 for the design year 2000, and generally fall between the high-growth and intermediate-growth alternative employment projections prepared in 1984 for the design year 2010. The upward revision from the intermediate-level projections for design year 2010 indicates a recovery from the severe economic recession of the late 1970s and early 1980s, which had significantly influenced the economic projections prepared in 1984; those projections envisioned 2010 job loss under the low-growth scenario and only low levels of job growth under the intermediate-growth scenario.

Comparisons were made between Commission employment projections and other employment forecasts and projections prepared independently by private, State, and Federal agencies. The rates of growth used by these agencies and those used by the Commission exhibited a relatively high degree of consistency. When placed in the context of the other forecasts and projections, the Commission's alternative projections appear to provide a reasonable gauge of the range of economic conditions that can be expected to occur in Southeastern Wisconsin through the year 2020.

It has long been recognized that regional population and employment levels are interdependent, with elements of each acting to influence the other. Comparisons of the regional population and economic projections can, therefore, provide mutual checks on each projection. The Commission projections of total regional employment in 2020, ranging from 1,216,900 jobs to 1,362,600 jobs, are compatible with the Commission overall regional population projections of between 1,925,000 persons and 2,367,000 persons, which would yield between 1,582,000 persons and 1,845,500 persons of labor-force age to support these jobs.

Chapter V

SUMMARY

This report is the third edition of SEWRPC Technical Report No. 10, The Economy of Southeastern Wisconsin, first published in 1972. The primary purpose of this report is to present the results of a reevaluation of the projections and supporting data presented in SEWRPC Planning Reports Nos. 3, 7, 25, and 40, the first and second editions of SEWRPC Technical Report No. 10, and SEWRPC Technical Report No. 25, and to present new projections of regional employment levels to the year 2020. The reevaluation and extension were accomplished under the guidance of the Commission's Technical Advisory Committee on Socio-economic Studies.

This report is a companion report to the third edition of SEWRPC Technical Report No. 11, The Population of Southeastern Wisconsin, October 1995. The two reports were prepared concurrently. Although the analyses in each were pursued independently, the findings of the analyses were coordinated as the studies progressed in order to assure that the population and economic activity projections would be consistent. The findings set forth in these two related reports are intended to provide important information for the review, reevaluation, and, as may be found necessary, revision of all adopted regional plan elements, particularly the adopted regional land use and transportation plans, and for the extension of these plans to the year 2020. This study is also intended to assist local units of government and industrial development organizations within the Region in the undertaking of economic studies and in making economic development decisions.

This report is divided into three major chapters in addition to the introductory chapter and this summary chapter. The first major chapter, Chapter II, provides a general overview of the historic trends in regional economic activity over the 40 years from 1950 to 1990, with emphasis on the results of analyses of changes in the size, composition, and spatial distribution of the Region's labor force, as well as analyses of changing industrial location patterns and income levels within the Region. The second major chapter, Chapter III, presents the results of analyses of the dominant and subdominant industries of the Region. Industrial "dominants" were defined as those industrial groups within the Region which, as groups, accounted for 4 percent or more of total regional employment in 1990. Industrial "subdominants" were defined as those industrial groups which, as groups, accounted for 2 percent to 3.9 percent of total regional employment in 1990. The third major chapter, Chapter IV, reexamines the past Commission employment forecasts and projections in light of changes in the regional economy since the original forecasts were made in 1963, and presents new employment projections to the year 2020.

Between 1950 and 1960, the size of the regional labor force increased at a higher rate than that of either the State or Nation. Rates of increase in the size of the labor force for the Region have been lower than such rates of increase for the State and Nation since 1960. Between 1980 and 1990, the regional labor force increased by about 7 percent, compared with increases of about 11 percent for the State and about 18 percent for the Nation.

Much of the growth in the size of the regional labor force has been the result of rapid increases in the number of females in the labor force. In each decade between 1950 and 1980, the number of females in the regional labor force increased by more than 30 percent; between 1980 and 1990, this rate of increase was about 15 percent. Between 1950 and 1980, the number of males in the regional labor force never increased by more than about 12 percent in a single decade; between 1980 and 1990, their number increased only by about one-tenth of 1 percent. The labor force participation rate for females in the Region rose from about 32 percent in 1950 to about 60 percent in 1990. Over this same time span, the labor force participation rate for males in the Region decreased from about 82 percent in 1950 to about 76 percent in 1990. As a result of these changes, the composition of the regional labor force changed from about 71 percent male, 29 percent female in 1950 to about 53 percent male, 47 percent female in 1990.

As has been the case with the size of the labor force, the number of jobs available has increased at generally lower rates within the Region than within the State and Nation. Between 1980 and 1990, the number of jobs available within the Region increased by

about 13 percent, compared with about 16 percent and about 22 percent for the State and the Nation, respectively. Between 1950 and 1990, the number of jobs available within the Region increased by about 86 percent, compared to about 99 percent and about 120 percent for the State and Nation, respectively. In the most recent decades, short-term fluctuations in the number of jobs available between periods of economic expansion and recession have been greater for the Region than for either the State or Nation, largely because of the higher concentration of capital goods production in the regional economy.

From 1950 to 1990 within the Region, job locations and the labor force exhibited a continuous decentralization outward from the older, more established urban areas of the Region into the more rural areas. In 1950, about 72 percent of the regional labor force resided in Milwaukee County, and about 79 percent of the jobs within the Region were located there. In 1990, Milwaukee County contained about 51 percent of the regional labor force and about 58 percent of the jobs within the Region. The majority of this shift has been to Waukesha County. The Waukesha County proportion of the total regional labor force increased from about 6 percent in 1950 to about 18 percent in 1990, while the Waukesha County proportion of the total jobs in the Region increased from about 3 percent in 1950 to about 18 percent in 1990.

As a result of the shifts in job locations, the amount of land devoted to industrial and commercial use has been increasing rapidly in the outlying counties of the Region. Between 1963 and 1990, increases in gross industrial land use ranged from a low of 164 acres, or about 21 percent, in Kenosha County to a high of 2,881 acres, or about 312 percent, in Waukesha County. Between 1963 and 1990, increases in gross commercial land use ranged from a low of 434 acres in Walworth County to a high of 2,842 acres in Milwaukee County. The rates of increase in gross commercial land use over the same time period ranged from a low of about 66 percent in Walworth County to a high of about 220 percent in Waukesha County.

From 1950 to 1990, per capita and median family income levels have been higher in the Region than in either the State or Nation. However, the rates of increase in such levels over the same 40-year period have generally been higher for both the State and Nation. In 1990, the per capita income levels for the Region, State, and Nation were $14,551, $13,276, and $14,420, respectively. Between 1950 and 1990, per capita income levels, measured in constant 1989 dollars, increased by about 98 percent within the Region, by about 132 percent within the State, and by about 145 percent within the Nation.

In 1990, median family income levels of $38,516, $35,082, and $35,225 were reported for the Region, State, and Nation, respectively. Between 1950 and 1990, median family income levels, as measured in constant 1989 dollars, increased by about 82 percent within the Region, by about 96 percent within the State, and by about 109 percent within the Nation. Between 1980 and 1990, however, median family income, as measured in constant 1989 dollars, decreased in each county of the Region; that decade was the first in which such income had decreased within the Region since 1950, with the exception of a decrease in Milwaukee County from 1970 to 1980.

Personal income growth has not been uniform among the counties in the Region during the 40-year period studied, but has been greatest in the suburban counties of Ozaukee, Washington, and Waukesha. Milwaukee County generally exhibited the lowest personal income growth rates between 1950 and 1990, and particularly during the 1980s. Although a greater number of persons resided in Milwaukee County than in the other six counties of the Region combined, Milwaukee County residents in 1989 received less than one-half of the aggregate personal income within the Region. Rates of personal income growth in Kenosha, Racine, and Walworth Counties have generally been intermediate to those of Milwaukee County and the suburban counties of Ozaukee, Washington, and Waukesha. In 1990, the highest levels of per capita and median family income were found in Ozaukee and Waukesha Counties; the lowest per capita income level was found in Kenosha County, while the lowest median family income level was found in Milwaukee County.

Total employment in the Southeastern Wisconsin Region increased from about 573,500 jobs in 1950 to about 1,067,200 jobs in 1990, an increase of about 493,700 jobs, or about 86 percent. During the same time period, employment in those industries accorded dominant status in 1990 within the Region increased from about 348,200 jobs to about 742,700 jobs, an increase of about 394,500 jobs, or about 113 percent; and employment in those industries accorded 1990 subdominant status increased from about 47,400 jobs to about 73,000 jobs, an increase of about 25,600 jobs, or about 54 percent.

Employment in manufacturing industries accorded 1990 dominant or subdominant status decreased from about 20 percent of total regional employment in 1950 to about 12 percent in 1990, while employment in service, trade, and other nonmanufacturing industries with 1990 dominant or subdominant status increased from about 50 percent to about 64 percent of total regional employment during the same time period.

Employment in the electrical and electronic machinery, equipment, and supplies industry, which was accorded subdominant status in 1950 and dominant status in 1960, 1970, and 1980, decreased by about 45 percent between 1960 and 1990; thus, that industry was again accorded only subdominant status in 1990. Employment in the primary metals, food and kindred products, and transportation equipment industries, which were accorded either dominant or subdominant status in previous decades, represented only about 1.1 percent, 1.6 percent, and 0.8 percent, respectively, of total employment in the Region in 1990; thus, those three industries were not accorded either dominant or subdominant status in 1990.

The overall rate of change in regional employment levels in the dominant and subdominant industries from 1980 to 1990 and the rate of change in total regional employment were lower than both the State and national rates for that decade in the same industries and in total employment. Employment in the Region's 1990 dominant and subdominant industries together increased between 1980 and 1990 by about 14 percent in the Region, by about 18 percent in the State, and by about 25 percent in the Nation. Total employment in the Region grew by about 13 percent over the same period, compared with about 16 percent for the State and about 22 percent for the Nation.

Employment in the health services industry in the Region increased by about 561 percent between 1950 and 1990, the only dominant or subdominant industry employment level to increase at a rate higher than both the State and national rates. Employment in the electrical and electronic machinery, equipment, and supplies industry in the Region increased by about 17 percent between 1950 and 1990, a rate which was higher than the State rate but lower than the national rate. Regional employment in the fabricated metals industry and in government and government enterprises increased by about 53 percent and about 63 percent, respectively, between 1950 and 1990, rates which were lower than those for the State but higher than those for the Nation. The regional rates of change in the employment levels of all other industries accorded 1990 dominant or subdominant status were generally lower than both the State and national rates between 1950 and 1990.

Analyses of employment in the major industrial groups in the Region indicate a continuation of a trend, described in earlier Commission studies, toward a geographic shift of manufacturing industries from their traditional concentration in the East North Central States and Middle Atlantic States to the South Atlantic States, the West South Central States, and the Pacific States. In each of the Region's dominant and subdominant manufacturing industries, except printing and publishing, the East North Central States, which include Wisconsin, provide a larger share of the total value added by manufacture than any other area of the United States. The East North Central States' share of value added by manufacture in the United States, however, has been steadily declining in each of these dominant and subdominant industry groups. The continued reduction in these States' share of this economic indicator, coupled with the smaller share of national employment growth—in Wisconsin and the Region in particular—suggests a need for a concerted effort to moderate or reverse this trend. Some adjustments may have already begun. Increases in average hourly earnings in the manufacturing industries in the Region, which have historically been higher than those in either the State or Nation, have moderated, resulting in a more competitive earnings structure when the Region is compared to the State and Nation.

In the consideration of any projections, it must be realized that it is impossible to predict the future and that all projections therefore involve uncertainty. To help deal with this uncertainty, the Commission has prepared alternative projections of regional employment levels to the year 2020. Instead of a single, most probable future employment level, the alternatives seek to identify a possible range of future employment levels and extreme, but nonetheless reasonable, upper and lower limits of such levels within the Region.

The three projections of employment set forth in this report were developed by drawing upon a variety of forecasts and projections prepared by governmental agencies and by private industry, each of which had independently analyzed employment trends in the industries of interest. These reports, while differing in techniques, time frames, target dates, and geographic areas considered,

offered a fairly comprehensive summary of the more likely alternative futures that might be expected for employment within the Region.

The Commission generated its alternative projections of employment by developing a series of composite projections based on analyses of the various employment growth patterns exhibited by individual industries present within the Region. The analyses involved the review, for consistency and plausibility, of the potential growth paths to the year 2020 for each dominant or subdominant industry. Averages were calculated for a selected group of the higher-, middle-, and lower-level projections, and the results became the consensus projections reflecting high-, intermediate-, and low-growth scenarios for each dominant or subdominant industry. This range of employment projections allows for the development of regional-level system plans and county- and local-level facilities plans that may be expected to remain viable under greatly varying future conditions.

Under the high-growth scenario, which assumes that all industries would achieve their most optimistic projected growth, total employment in the Region would increase from about 1,067,200 jobs in 1990 to about 1,362,600 jobs in 2020, an increase of approximately 295,400 jobs, or about 28 percent. Employment in the dominant industries under the high-growth scenario would increase from about 742,700 jobs in 1990 to about 1,000,400 jobs in 2020, an increase of about 257,700 jobs, or about 35 percent. This sector would be led by the fast-growing business services industry, in which employment would increase by about 58,100 jobs, or 90 percent, and the health services industry, in which employment would increase by about 52,000 jobs, or 54 percent. The retail trade industry would also experience a large increase of about 70,800 jobs, or about 38 percent, over the 1990 level of about 186,400 jobs. Employment in the subdominant industries under the high-growth scenario would increase from about 73,000 jobs in 1990 to about 76,300 jobs in 2020, an increase of about 3,300 jobs, or about 5 percent. This increase would occur primarily as a result of an envisioned increase of about 10,600 jobs in the printing and publishing industry. Employment in the fabricated metals industry would remain virtually unchanged, while the electrical and electronic machinery, equipment, and supplies industry would experience a decline in employment under this scenario.

Under the intermediate-growth scenario, total employment in the Region would increase from about 1,067,200 jobs in 1990 to about 1,277,100 jobs in 2020, an increase of about 209,900 jobs, or almost 20 percent. Employment in the dominant industries under the intermediate-growth scenario would increase from about 742,700 jobs in 1990 to about 942,500 jobs in 2020, an increase of about 199,800 jobs, or about 27 percent. Employment in business services, health services, and retail trade would increase by about 49,300 jobs, or 76 percent; 44,300 jobs, or 46 percent; and 59,400 jobs, or 32 percent, respectively, over 1990 levels. Employment in the subdominant industries under the intermediate-growth scenario would decline from about 73,000 jobs in 1990 to about 72,100 jobs in 2020, a modest decrease of about 900 jobs, or about 1 percent. Of the subdominant industries, only printing and publishing would experience an increase in employment levels, growing by about 9,200 jobs, or 40 percent, between 1990 and 2020. Employment levels in both the fabricated metals industry and the electrical and electronic machinery, equipment, and supplies industry are envisioned to decrease under the intermediate-growth scenario, by about 7 percent and 35 percent, respectively.

Under the low-growth scenario, which assumes that all industries would achieve only their most pessimistic growth projections, total employment in the Region would increase from about 1,067,200 jobs in 1990 to about 1,216,900 jobs in 2020, an increase of about 149,700 jobs, or about 14 percent. Employment in the dominant industries under the low-growth scenario would increase from about 742,700 jobs in 1990 to about 899,400 jobs in 2020, an increase of about 156,700 jobs, or about 21 percent. The driving forces behind much of this growth would be business services and health services. Partially offsetting the effects of these growth industries would be industrial machinery, which would decline significantly, and construction and wholesale trade, which would decline more modestly. All other dominant industries would experience employment gains between 1990 and 2020. Employment in the subdominant industries would not fare as well under the low-growth scenario as under the other two scenarios, with a projected loss of about 7,000 jobs, or almost 10 percent, overall. Printing and publishing employment would increase by about 36 percent, from 22,900 jobs in 1990 to about 31,100 jobs in 2020. In contrast, the fabricated metals industry would lose about 18 percent of its jobs over this period, declining to about 22,100 jobs by the year 2020. The electrical and electronic machinery, equipment, and supplies industry would also fare poorly, losing about 10,500, or roughly 45 percent, of its jobs by 2020.

The year 2020 employment levels envisioned for the Region under the Commission alternative growth projections would thus range from 1,362,600 jobs under the high-growth projection to 1,216,900 jobs under the low-growth projection, with an intermediate-growth projection of 1,277,100 jobs. The 2020 high-growth projection is thus 85,500 jobs, or about 6.7 percent, higher than the 2020 intermediate-growth projection, while the 2020 low-growth projection is 60,200 jobs, or about 4.7 percent, lower than the 2020 intermediate-growth projection.

The span of 145,700 jobs between the Commission's projected high- and low-growth year 2020 employment levels attempts to balance the desirability of a wide range that fully reflects the uncertainties regarding future regional employment levels with the need to keep the range sufficiently narrow to be practical for planning and engineering purposes.

All three regional employment projections to the year 2020 begin from a point in 1990 lower than the regional employment forecast prepared by the Commission in 1963 for the design year 1990, tend for the year 2000 to be at levels similar to the employment forecast prepared in 1974 for the design year 2000, and generally fall between the high-growth and intermediate-growth alternative employment projections prepared in 1984 for the design year 2010. The upward revision from the intermediate-level projections for design year 2010 indicates a recovery from the severe economic recession of the late 1970s and early 1980s, which had significantly influenced the economic projections prepared in 1984; those projections envisioned a loss of jobs by the year 2010 under the low-growth scenario and only low levels of job growth under the intermediate-growth scenario.

Comparisons were made between Commission employment projections and other projections and forecasts prepared independently by private, State, and Federal agencies. The rates of growth used by these agencies and rates used by the Commission exhibited a relatively high degree of consistency. When placed in the context of the other forecasts and projections, the Commission alternative projections appear to provide a reasonable gauge of the range of economic conditions that may be expected to occur in Southeastern Wisconsin through the year 2020.

It has long been recognized that regional population and employment levels are interdependent, with elements of each acting to influence the other. Comparisons of the regional population and economic projections can, therefore, provide mutual checks on the projections. The Commission projections of total regional employment in 2020, ranging from 1,216,900 jobs to 1,362,600 jobs, are compatible with the Commission overall year 2020 regional population projections of between 1,925,000 persons and 2,367,000 persons, which would yield between 1,582,000 persons and 1,845,500 persons of labor-force age to fill those jobs.

APPENDICES

Appendix A

TECHNICAL ADVISORY COMMITTEE ON SOCIO-ECONOMIC STUDIES

Kurt W. Bauer ..... Executive Director, Southeastern Wisconsin Regional Planning Commission
Chairman and Secretary

James K. Caldwell ..... President, First Citizens State Bank, Whitewater

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Special acknowledgment is due the following individuals who served as alternate Committee members:

Linda L. Dreyer ..... Plan Program Analyst, Southeastern Wisconsin Area Agency on Aging

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Appendix B

DETAILED CIVILIAN LABOR FORCE DATA FOR THE UNITED STATES, WISCONSIN, AND THE SOUTHEASTERN WISCONSIN REGION BY COUNTY: CENSUS YEARS 1950-1990

Table B-1

CIVILIAN LABOR FORCE LEVELS IN THE UNITED STATES, WISCONSIN, AND THE REGION BY COUNTY: CENSUS YEARS 1950-1990

Geographic Area	Labor Force Levels (number of persons)					Change: 1950-1990	
	1950	1960	1970	1980	1990	Number	Percent
United States	59,303,720	68,144,079	80,051,046	104,449,817	123,473,450	64,169,730	108.2
Wisconsin	1,396,383	1,527,722	1,774,008	2,263,413	2,517,238	1,120,855	80.3
Kenosha County	32,535	39,726	47,171	59,625	64,192	31,657	97.3
Milwaukee County	385,261	431,746	454,085	478,184	479,374	94,113	24.4
Ozaukee County	9,645	14,438	22,105	34,468	40,114	30,469	315.9
Racine County	46,771	54,947	68,255	84,330	89,356	42,585	91.1
Walworth County	16,448	20,444	26,345	34,727	39,642	23,194	141.0
Washington County	14,255	17,384	25,727	42,044	52,106	37,851	265.5
Waukesha County	33,801	58,216	92,390	142,776	169,369	135,568	401.1
Region Total	538,716	636,901	736,078	876,154	934,153	395,437	73.4

Source: U. S. Bureau of the Census and SEWRPC.

Table B-2

CIVILIAN LABOR FORCE EMPLOYMENT AND UNEMPLOYMENT LEVELS IN THE UNITED STATES, WISCONSIN, AND THE REGION BY COUNTY: CENSUS YEARS 1950-1990

Geographic Area	1950			1960		
	Employed Persons	Unemployed Persons	Percent Unemployed	Employed Persons	Unemployed Persons	Percent Unemployed
United States	56,449,409	2,854,311	4.8	64,639,252	3,504,827	5.1
Wisconsin	1,355,283	41,100	2.9	1,468,631	59,091	3.9
Kenosha County	31,859	676	2.1	38,498	1,228	3.1
Milwaukee County	374,755	10,506	2.7	414,234	17,512	4.1
Ozaukee County	9,504	141	1.5	14,146	292	2.0
Racine County	45,180	1,591	3.4	52,558	2,389	4.3
Walworth County	16,071	377	2.3	19,734	710	3.5
Washington County	14,022	233	1.6	16,971	413	2.4
Waukesha County	33,162	639	1.9	56,586	1,630	2.8
Region Total	524,553	14,163	2.6	612,727	24,174	3.8

Geographic Area	1970			1980		
	Employed Persons	Unemployed Persons	Percent Unemployed	Employed Persons	Unemployed Persons	Percent Unemployed
United States	76,553,599	3,497,447	4.4	97,639,355	6,810,462	6.5
Wisconsin	1,703,629	70,379	4.0	2,114,473	148,940	6.6
Kenosha County	45,145	2,026	4.3	55,280	4,345	7.3
Milwaukee County	437,207	16,878	3.7	450,851	27,333	5.7
Ozaukee County	21,638	467	2.1	32,757	1,711	5.0
Racine County	65,098	3,157	4.6	79,169	5,161	6.1
Walworth County	25,067	1,278	4.9	32,478	2,249	6.5
Washington County	25,126	601	2.3	39,594	2,450	5.8
Waukesha County	89,519	2,871	3.1	136,329	6,447	4.5
Region Total	708,800	27,278	3.7	826,458	49,696	5.7

Geographic Area	1990		
	Employed Persons	Unemployed Persons	Percent Unemployed
United States	115,681,202	7,792,248	6.3
Wisconsin	2,386,439	130,799	5.2
Kenosha County	59,827	4,365	6.8
Milwaukee County	446,630	32,744	6.8
Ozaukee County	39,100	1,014	2.5
Racine County	84,059	5,297	5.9
Walworth County	38,093	1,549	3.9
Washington County	50,498	1,608	3.1
Waukesha County	164,509	4,860	2.9
Region Total	882,716	51,437	5.5

Source: U. S. Bureau of the Census and SEWRPC.

Table B-3

CIVILIAN LABOR FORCE COMPOSITION IN THE UNITED STATES, WISCONSIN, AND THE REGION BY COUNTY: CENSUS YEARS 1950-1990

Geographic Area	1950				1960			
	Number of Females in Labor Force	Number of Males in Labor Force	Total Labor Force	Labor Force as Percent of Total Population	Number of Females in Labor Force	Number of Males in Labor Force	Total Labor Force	Labor Force as Percent of Total Population
United States	16,535,636	42,768,084	59,303,720	39.2	22,381,410	45,762,669	68,144,079	38.0
Wisconsin	369,182	1,027,201	1,396,383	40.7	476,214	1,051,508	1,527,722	38.7
Kenosha County	7,959	24,576	32,535	43.2	11,334	28,392	39,726	39.5
Milwaukee County	116,610	268,651	385,261	44.2	145,994	285,752	431,746	41.7
Ozaukee County	2,334	7,311	9,645	41.3	4,117	10,321	14,438	37.6
Racine County	12,369	34,402	46,771	42.7	17,431	37,516	54,947	38.8
Walworth County	4,011	12,437	16,448	39.6	6,454	13,990	20,444	39.0
Washington County	3,637	10,618	14,255	42.0	4,947	12,437	17,384	37.7
Waukesha County	8,148	25,653	33,801	39.3	16,023	42,193	58,216	36.8
Region Total	155,068	383,648	538,716	43.4	206,300	430,601	636,901	40.5

Geographic Area	1970				1980			
	Number of Females in Labor Force	Number of Males in Labor Force	Total Labor Force	Labor Force as Percent of Total Population	Number of Females in Labor Force	Number of Males in Labor Force	Total Labor Force	Labor Force as Percent of Total Population
United States	30,501,807	49,549,239	80,051,046	39.4	44,523,329	59,926,488	104,449,817	46.1
Wisconsin	665,424	1,108,584	1,774,008	40.2	963,674	1,299,739	2,263,413	48.1
Kenosha County	17,458	29,713	47,171	40.0	24,781	34,844	59,625	48.4
Milwaukee County	182,624	271,461	454,085	43.1	215,273	262,911	478,184	49.6
Ozaukee County	7,768	14,337	22,105	40.6	14,056	20,412	34,468	51.5
Racine County	25,157	43,098	68,255	40.0	35,312	49,018	84,330	48.7
Walworth County	10,298	16,047	26,345	41.5	14,843	19,884	34,727	48.6
Washington County	9,489	16,238	25,727	40.3	17,412	24,632	42,044	49.6
Waukesha County	31,190	61,200	92,390	39.9	57,518	85,258	142,776	51.0
Region Total	283,984	452,094	736,078	41.9	379,195	496,959	876,154	49.6

Geographic Area	1990			
	Number of Females in Labor Force	Number of Males in Labor Force	Total Labor Force	Labor Force as Percent of Total Population
United States	56,487,249	66,986,201	123,473,450	49.5
Wisconsin	1,162,129	1,355,109	2,517,238	51.5
Kenosha County	29,466	34,726	64,192	50.1
Milwaukee County	231,168	248,206	479,374	50.0
Ozaukee County	17,920	22,194	40,114	55.1
Racine County	41,216	48,140	89,356	51.1
Walworth County	18,166	21,476	39,642	52.9
Washington County	23,357	28,749	52,106	54.7
Waukesha County	75,598	93,771	169,369	55.6
Region Total	436,891	497,262	934,153	51.6

Source: U. S. Bureau of the Census and SEWRPC.

Table B-4

NUMBER OF FEMALES IN THE CIVILIAN LABOR FORCE IN THE UNITED STATES, WISCONSIN, AND THE REGION BY COUNTY: CENSUS YEARS 1950-1990

Geographic Area	1950		1960		1970		1980		1990	
	Number of Females in Labor Force	Percent of Labor Force	Number of Females in Labor Force	Percent of Labor Force	Number of Females in Labor Force	Percent of Labor Force	Number of Females in Labor Force	Percent of Labor Force	Number of Females in Labor Force	Percent of Labor Force
United States	16,535,636	27.9	22,381,410	32.8	30,501,807	38.1	44,523,329	42.6	56,487,249	45.7
Wisconsin	369,182	26.4	476,214	31.2	665,424	37.5	963,674	42.6	1,162,129	46.2
Kenosha County	7,959	24.5	11,334	28.5	17,458	37.0	24,781	41.6	29,466	45.9
Milwaukee County	116,610	30.3	145,994	33.8	182,624	40.2	215,273	45.0	231,168	48.2
Ozaukee County	2,334	24.2	4,117	28.5	7,768	35.1	14,056	40.8	17,920	44.7
Racine County	12,369	26.4	17,431	31.7	25,157	36.9	35,312	41.9	41,216	46.1
Walworth County	4,011	24.4	6,454	31.6	10,298	39.1	14,843	42.7	18,166	45.8
Washington County	3,637	25.5	4,947	28.5	9,489	36.9	17,412	41.4	23,357	44.8
Waukesha County	8,148	24.1	16,023	27.5	31,190	33.8	57,518	40.3	75,598	44.6
Region Total	155,068	28.8	206,300	32.4	283,984	38.6	379,195	43.3	436,891	46.8

Source: U. S. Bureau of the Census and SEWRPC.

Appendix C

NUMBER OF JOBS BY MAJOR EMPLOYMENT CATEGORY FOR THE UNITED STATES, WISCONSIN, AND THE SOUTHEASTERN WISCONSIN REGION BY COUNTY: INDIVIDUAL YEARS FROM 1970 THROUGH 1990

Table C-1

NUMBER OF JOBS BY MAJOR EMPLOYMENT CATEGORY IN THE UNITED STATES: INDIVIDUAL YEARS 1970-1990

Major Employment Category	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Agriculture	3,899,000	3,844,000	3,789,000	3,796,000	3,926,000	3,905,000	3,929,000	3,812,000	3,756,000	3,764,000	3,798,000
Construction	4,388,100	4,447,400	4,721,000	5,061,700	5,030,500	4,650,700	4,755,500	5,074,300	5,594,800	5,889,900	5,638,300
Manufacturing	19,684,400	18,851,800	19,342,700	20,409,800	20,397,100	18,651,100	19,368,800	20,086,500	20,963,900	21,493,200	20,776,600
Transportation, Communication, and Utilities	4,857,100	4,819,000	4,915,000	5,063,200	5,134,800	4,971,100	4,985,200	5,153,100	5,405,200	5,616,800	5,660,800
Wholesale Trade	4,171,400	4,229,800	4,336,700	4,528,100	4,654,700	4,869,700	5,010,900	5,172,900	5,441,500	5,671,200	5,740,300
Retail Trade	13,672,000	13,995,800	14,361,600	14,984,200	15,263,500	15,137,200	15,764,100	16,408,700	17,260,000	17,750,400	17,852,500
Finance, Insurance, and Real Estate	6,103,500	6,348,600	6,671,100	7,111,400	7,312,000	7,303,500	7,555,000	7,952,800	8,249,900	8,506,100	8,725,800
Services	16,726,200	17,089,200	17,989,400	18,914,900	19,407,000	19,851,800	20,577,300	21,542,500	22,735,700	23,719,500	24,558,100
Government and Government Enterprises[a]	13,094,000	13,458,000	13,857,000	14,232,000	14,692,000	15,148,000	15,260,000	15,496,000	15,890,000	16,111,000	16,345,000
Miscellaneous[b]	1,265,500	1,279,800	1,310,000	1,369,900	1,440,900	1,530,200	1,617,000	1,725,900	1,861,400	2,016,100	2,179,400
Total Jobs	87,861,200	88,363,400	91,293,500	95,471,200	97,258,500	96,018,300	98,822,800	102,424,700	107,158,400	110,538,200	111,274,800

Major Employment Category	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Agriculture	3,750,000	3,657,000	3,880,000	3,669,000	3,466,000	3,335,000	3,275,000	3,226,000	3,196,000	3,119,000
Construction	5,548,500	5,353,200	5,480,100	6,098,500	6,425,300	6,726,600	6,891,300	7,127,200	7,234,700	7,184,300
Manufacturing	20,658,600	19,266,100	18,911,800	19,878,700	19,782,800	19,495,300	19,574,000	19,919,200	20,024,600	19,731,000
Transportation, Communication, and Utilities	5,701,500	5,641,100	5,587,400	5,815,700	5,912,200	5,951,400	6,125,800	6,248,000	6,381,700	6,545,300
Wholesale Trade	5,831,600	5,721,400	5,692,200	5,984,200	6,140,400	6,179,400	6,324,600	6,482,900	6,712,400	6,714,500
Retail Trade	18,086,600	18,171,700	18,587,300	19,585,600	20,293,300	20,785,000	21,526,600	22,182,200	22,746,400	22,994,200
Finance, Insurance, and Real Estate	8,819,200	8,943,400	8,968,900	9,218,000	9,554,000	9,977,900	10,263,200	10,738,200	10,719,800	10,819,400
Services	25,399,400	26,398,400	27,609,900	29,171,500	30,840,300	32,153,300	33,602,000	35,331,100	36,267,900	37,880,300
Government and Government Enterprises[a]	16,111,000	15,924,000	15,986,000	16,184,000	16,524,000	16,869,000	17,185,000	17,592,000	17,984,000	18,486,000
Miscellaneous[b]	2,417,700	2,460,100	2,373,100	2,478,700	2,526,700	2,380,500	2,430,400	2,441,200	2,380,300	2,428,800
Total Jobs	112,324,100	111,536,400	113,076,700	118,083,900	121,464,800	123,853,400	127,197,900	131,288,000	133,647,800	135,902,800

[a] *Excludes armed forces.*

[b] *Includes agricultural services, forestry, commercial fishery, mining, and jobs held by U. S. residents working for international organizations.*

Source: U. S. Bureau of Economic Analysis and SEWRPC.

Table C-2

NUMBER OF JOBS BY MAJOR EMPLOYMENT CATEGORY IN THE STATE OF WISCONSIN: INDIVIDUAL YEARS 1970-1990

Major Employment Category	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Agriculture	146,399	144,533	145,561	144,825	149,220	151,147	145,786	144,103	145,300	150,588	150,850
Construction	85,049	83,795	84,299	89,821	88,197	83,341	89,602	99,312	105,587	108,361	96,929
Manufacturing	510,387	487,158	503,210	540,515	554,470	515,635	528,359	547,036	576,615	597,679	567,784
Transportation, Communication, and Utilities	89,388	89,213	89,978	92,210	93,101	90,849	90,910	94,327	98,294	102,560	103,159
Wholesale Trade	73,690	75,193	77,069	80,761	81,770	91,840	94,394	97,603	100,365	104,568	104,376
Retail Trade	331,917	337,859	342,428	358,740	364,832	352,021	366,240	384,228	399,043	412,516	410,248
Finance, Insurance, and Real Estate	101,903	106,820	113,953	125,609	133,625	145,233	148,496	156,047	160,890	166,806	172,256
Services	310,313	321,103	339,672	361,701	374,873	388,599	408,322	430,886	453,351	471,153	485,329
Government and Government Enterprises[a]	265,895	271,929	279,824	283,336	281,960	291,370	301,560	303,117	306,830	308,715	312,275
Miscellaneous[b]	11,723	11,281	11,218	11,643	12,067	13,137	14,053	14,807	16,013	17,258	17,994
Total Jobs	1,926,664	1,928,884	1,987,212	2,089,161	2,134,115	2,123,172	2,187,722	2,271,466	2,362,288	2,440,204	2,421,200

Major Employment Category	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Agriculture	143,358	141,868	149,473	140,714	131,499	123,368	121,303	119,519	114,479	114,063
Construction	92,642	86,948	86,871	94,845	96,260	102,323	106,642	112,990	118,464	124,572
Manufacturing	550,539	505,727	492,890	526,103	520,898	523,804	537,600	561,487	568,238	568,630
Transportation, Communication, and Utilities	103,115	101,203	100,450	105,519	108,050	108,741	110,320	112,839	116,593	121,279
Wholesale Trade	105,713	103,338	103,085	105,920	106,464	106,979	112,498	116,920	123,357	124,927
Retail Trade	405,352	403,866	408,970	425,412	434,206	442,851	458,685	470,330	485,285	499,898
Finance, Insurance, and Real Estate	169,499	169,551	166,441	168,676	167,477	172,696	175,680	187,973	190,479	195,856
Services	499,065	515,976	524,385	547,364	574,209	593,707	618,384	647,756	662,133	691,146
Government and Government Enterprises[a]	306,192	303,625	303,708	312,358	319,247	322,778	321,160	327,920	332,810	342,414
Miscellaneous[b]	19,055	19,500	19,825	22,209	22,086	22,761	23,908	24,819	24,424	25,344
Total Jobs	2,394,530	2,351,602	2,356,098	2,449,120	2,480,396	2,520,008	2,586,180	2,682,553	2,736,262	2,808,129

[a] *Excludes armed forces.*

[b] *Includes agricultural services, forestry, commercial fishery, mining, and jobs held by Wisconsin residents working for international organizations.*

Source: U. S. Bureau of Economic Analysis and SEWRPC.

Table C-3

NUMBER OF JOBS BY MAJOR EMPLOYMENT CATEGORY IN THE SOUTHEASTERN WISCONSIN REGION: INDIVIDUAL YEARS 1970-1990

Major Employment Category	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Agriculture	11,689	11,263	11,174	10,878	11,143	10,924	10,236	9,948	9,922	10,156	10,023
Construction	32,373	31,433	31,904	33,620	32,791	29,798	31,614	35,237	38,001	39,033	33,786
Manufacturing	254,337	240,191	246,255	264,390	272,072	251,496	249,539	255,389	268,775	279,815	264,193
Transportation, Communication, and Utilities	38,448	38,260	38,206	39,530	39,589	38,052	38,298	38,549	39,885	42,479	42,152
Wholesale Trade	37,174	37,156	38,147	40,356	40,689	40,562	41,961	44,131	45,136	46,718	46,148
Retail Trade	133,674	134,943	137,899	143,483	145,351	138,669	143,288	149,242	154,033	155,861	153,590
Finance, Insurance, and Real Estate	47,491	49,767	52,420	57,426	60,594	65,784	67,496	70,550	72,917	74,122	75,241
Services	140,100	143,926	151,704	161,821	169,700	174,607	181,555	190,772	200,061	207,890	214,090
Government and Government Enterprises[a]	86,192	88,507	91,600	93,295	93,327	96,190	98,561	99,148	100,287	100,286	101,583
Miscellaneous[b]	2,658	2,635	2,508	2,642	2,631	2,954	3,344	3,594	3,946	4,235	4,380
Total Jobs	784,136	778,081	801,817	847,441	867,887	849,036	865,892	896,560	932,963	960,595	945,186

Major Employment Category	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Agriculture	9,407	9,136	9,587	8,967	8,324	7,741	7,567	7,438	7,110	7,090
Construction	31,992	29,623	29,570	32,796	33,850	36,525	39,176	41,330	43,577	46,060
Manufacturing	249,609	224,516	211,118	227,030	217,748	213,185	216,957	225,156	224,569	221,593
Transportation, Communication, and Utilities	41,684	40,577	39,936	41,686	42,887	43,346	43,476	44,118	45,671	46,042
Wholesale Trade	46,561	45,391	44,865	46,925	47,474	47,003	49,235	50,817	54,583	54,934
Retail Trade	149,701	148,324	150,292	157,183	159,860	162,301	170,944	176,835	182,670	186,408
Finance, Insurance, and Real Estate	73,658	74,648	74,017	74,774	74,291	76,812	78,179	84,175	85,668	86,192
Services	219,291	224,880	227,639	238,872	251,470	260,637	271,990	287,084	293,673	305,449
Government and Government Enterprises[a]	99,105	96,918	95,945	99,150	102,355	104,276	103,525	106,250	104,679	107,008
Miscellaneous[b]	4,697	4,819	5,016	5,922	5,772	5,922	6,129	6,381	6,336	6,426
Total Jobs	925,705	898,832	887,985	933,305	944,031	957,748	987,178	1,029,584	1,048,536	1,067,202

[a] *Excludes armed forces.*

[b] *Includes agricultural services, forestry, commercial fishery, mining, and jobs held by residents of the Region working for international organizations.*

Source: U. S. Bureau of Economic Analysis and SEWRPC.

Table C-4

NUMBER OF JOBS BY MAJOR EMPLOYMENT CATEGORY IN KENOSHA COUNTY: INDIVIDUAL YEARS 1970-1990

Major Employment Category	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Agriculture	1,337	1,274	1,251	1,205	1,223	1,264	1,226	1,226	1,258	1,283	1,253
Construction	1,564	1,553	1,650	1,677	1,690	1,656	1,672	1,824	2,772	3,801	3,097
Manufacturing	16,520	15,247	16,444	18,620	20,845	18,127	17,583	16,322	17,117	18,453	18,240
Transportation, Communication, and Utilities	1,350	1,580	1,466	1,364	1,626	1,531	1,592	1,757	1,891	1,810	1,716
Wholesale Trade	715	734	786	866	954	1,060	980	1,035	1,157	1,096	981
Retail Trade	7,390	7,379	7,483	8,046	8,135	8,297	8,311	8,451	8,704	8,859	9,066
Finance, Insurance, and Real Estate	1,337	1,326	1,522	1,736	1,828	2,075	2,177	2,330	2,397	2,351	2,284
Services	6,801	7,138	7,542	8,035	8,429	8,676	8,908	9,082	9,470	9,764	9,980
Government and Government Enterprises[a]	4,945	5,366	5,800	6,029	6,082	6,362	6,672	6,779	6,926	7,013	6,931
Miscellaneous[b]	108	95	127	128	161	166	347	328	351	375	412
Total Jobs	42,067	41,692	44,071	47,706	50,973	49,214	49,468	49,134	52,043	54,805	53,960

Major Employment Category	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Agriculture	1,152	1,112	1,171	1,093	1,013	938	920	901	858	857
Construction	2,242	2,087	1,923	1,927	1,891	1,881	2,315	2,278	2,343	2,618
Manufacturing	15,735	14,939	15,596	16,250	12,788	10,702	13,484	14,361	11,489	10,265
Transportation, Communication, and Utilities	1,579	1,306	1,372	1,471	1,466	1,536	1,558	1,663	1,799	1,755
Wholesale Trade	997	1,029	1,005	988	1,085	1,072	1,130	1,132	1,162	1,422
Retail Trade	8,749	8,532	8,386	8,626	8,542	8,726	9,316	9,748	10,310	11,568
Finance, Insurance, and Real Estate	2,112	2,053	1,906	1,881	1,874	1,886	1,974	2,245	2,475	2,558
Services	10,125	10,888	10,652	10,774	11,017	10,990	11,378	11,375	11,604	12,803
Government and Government Enterprises[a]	6,715	6,881	7,006	7,100	7,132	7,277	6,939	6,810	6,505	6,650
Miscellaneous[b]	367	235	233	257	250	260	307	331	342	378
Total Jobs	49,773	49,062	49,250	50,367	47,058	45,268	49,321	50,844	48,887	50,874

[a] *Excludes armed forces.*

[b] *Includes agricultural services, forestry, commercial fishery, mining, and jobs held by residents of the County working for international organizations.*

Source: U. S. Bureau of Economic Analysis and SEWRPC.

Table C-5

NUMBER OF JOBS BY MAJOR EMPLOYMENT CATEGORY IN MILWAUKEE COUNTY: INDIVIDUAL YEARS 1970-1990

Major Employment Category	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Agriculture	661	587	543	482	464	430	381	357	347	366	368
Construction	18,154	16,953	17,585	18,237	17,603	15,108	16,090	17,419	18,078	18,243	16,160
Manufacturing	167,340	156,804	157,856	166,937	168,346	157,215	153,164	155,144	161,018	164,971	155,494
Transportation, Communication, and Utilities	29,501	29,160	29,003	30,251	29,699	27,446	27,304	26,894	27,652	29,955	29,346
Wholesale Trade	29,206	28,535	28,422	29,867	29,950	28,440	29,224	29,971	30,195	30,956	30,848
Retail Trade	89,561	91,282	92,893	95,398	96,331	88,701	90,934	93,988	95,967	94,967	92,866
Finance, Insurance, and Real Estate	36,574	38,264	39,169	42,396	43,983	45,729	46,488	47,849	48,689	49,742	50,592
Services	97,042	98,563	103,742	110,709	116,631	119,411	123,747	128,623	134,611	139,484	142,958
Government and Government Enterprises[a]	55,884	56,953	58,487	58,863	58,547	59,801	60,757	60,708	60,953	60,924	61,696
Miscellaneous[b]	985	974	950	1,029	1,024	1,077	1,193	1,246	1,418	1,439	1,366
Total Jobs	524,908	518,075	528,650	554,169	562,578	543,358	549,282	562,199	578,928	591,047	581,694

Major Employment Category	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Agriculture	346	341	357	324	292	260	252	245	229	229
Construction	16,015	14,568	14,375	15,765	16,448	17,554	18,044	18,873	19,297	20,095
Manufacturing	147,632	131,738	119,132	123,405	117,290	112,953	110,996	112,507	112,039	110,367
Transportation, Communication, and Utilities	28,528	27,450	26,683	27,641	28,606	28,786	28,125	28,212	29,623	29,209
Wholesale Trade	30,498	29,191	28,417	29,241	28,591	28,466	29,443	29,943	32,587	30,516
Retail Trade	88,928	86,659	87,356	89,787	90,951	91,432	98,437	103,399	106,795	104,934
Finance, Insurance, and Real Estate	49,727	49,711	49,552	50,640	49,466	50,843	51,700	55,331	55,804	54,472
Services	145,895	146,952	149,740	157,583	164,884	171,167	178,308	187,426	191,530	197,699
Government and Government Enterprises[a]	58,926	57,505	55,972	58,913	61,648	62,683	61,947	64,485	62,640	63,788
Miscellaneous[b]	1,568	1,615	1,664	2,071	1,981	1,977	2,019	2,018	2,065	2,023
Total Jobs	568,063	545,730	533,248	555,370	560,157	566,121	579,271	602,439	612,609	613,332

[a] *Excludes armed forces.*

[b] *Includes agricultural services, forestry, commercial fishery, mining, and jobs held by residents of the County working for international organizations.*

Source: U. S. Bureau of Economic Analysis and SEWRPC.

Table C-6

NUMBER OF JOBS BY MAJOR EMPLOYMENT CATEGORY IN OZAUKEE COUNTY: INDIVIDUAL YEARS 1970-1990

Major Employment Category	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Agriculture	1,445	1,316	1,235	1,135	1,086	1,096	1,051	1,036	1,045	1,046	1,006
Construction	855	789	914	1,091	1,014	994	1,107	1,225	1,277	1,307	1,144
Manufacturing	8,707	8,785	8,929	9,527	9,650	8,126	9,051	9,424	10,225	10,995	9,046
Transportation, Communication, and Utilities	678	666	691	721	560	560	551	594	581	597	601
Wholesale Trade	283	285	469	560	581	674	794	845	1,070	1,103	1,068
Retail Trade	3,352	3,450	3,392	3,619	3,705	3,890	4,279	4,380	4,298	4,578	4,556
Finance, Insurance, and Real Estate	972	1,026	1,230	1,544	1,694	2,094	2,107	2,326	2,412	2,334	2,269
Services	2,745	2,940	3,188	3,406	3,673	3,709	3,968	4,379	4,665	4,893	5,305
Government and Government Enterprises[a]	1,978	2,043	2,120	2,274	2,353	2,503	2,600	2,689	2,788	2,790	2,773
Miscellaneous[b]	166	188	210	211	214	165	181	221	226	259	311
Total Jobs	21,181	21,488	22,378	24,088	24,530	23,811	25,689	27,119	28,587	29,902	28,079

Major Employment Category	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Agriculture	925	872	923	868	811	760	750	739	706	705
Construction	1,065	1,054	1,057	1,227	1,284	1,329	1,438	1,464	1,458	1,568
Manufacturing	7,852	7,038	6,970	7,925	8,139	8,367	8,839	8,846	9,069	9,585
Transportation, Communication, and Utilities	581	603	645	625	675	696	746	735	754	811
Wholesale Trade	1,028	1,004	1,031	1,010	1,083	1,099	1,190	1,309	1,354	1,335
Retail Trade	4,713	4,740	4,871	5,226	5,313	5,332	5,463	5,705	6,123	6,583
Finance, Insurance, and Real Estate	2,222	2,281	2,182	2,284	2,189	2,198	2,229	2,603	2,683	2,942
Services	5,773	6,189	6,315	6,734	7,356	7,923	8,092	8,835	8,720	9,360
Government and Government Enterprises[a]	2,760	2,724	2,751	2,782	2,806	2,858	2,873	2,953	2,977	3,077
Miscellaneous[b]	303	322	303	361	362	408	471	491	449	469
Total Jobs	27,222	26,827	27,048	29,042	30,018	30,970	32,091	33,680	34,293	36,435

[a] *Excludes armed forces.*

[b] *Includes agricultural services, forestry, commercial fishery, mining, and jobs held by residents of the County working for international organizations.*

Source: U. S. Bureau of Economic Analysis and SEWRPC.

Table C-7

NUMBER OF JOBS BY MAJOR EMPLOYMENT CATEGORY IN RACINE COUNTY: INDIVIDUAL YEARS 1970-1990

Major Employment Category	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Agriculture	1,975	1,925	1,943	1,913	2,014	1,945	1,790	1,727	1,717	1,765	1,740
Construction	2,503	2,679	2,534	2,722	2,613	2,605	2,587	2,858	3,154	3,065	2,517
Manufacturing	25,217	23,605	25,308	27,878	29,484	27,570	28,430	29,003	30,357	32,031	30,152
Transportation, Communication, and Utilities	2,524	2,256	2,110	2,265	2,281	2,326	2,455	2,517	2,455	2,214	2,300
Wholesale Trade	1,885	1,898	2,180	2,305	2,438	2,505	2,718	2,803	2,718	2,750	2,510
Retail Trade	10,260	10,124	10,497	11,207	11,367	11,533	11,968	12,274	12,865	13,526	13,399
Finance, Insurance, and Real Estate	2,715	2,722	3,035	3,045	3,280	3,822	3,973	4,207	4,351	4,467	4,365
Services	10,228	10,778	11,383	12,354	12,725	13,391	13,658	14,305	14,664	15,237	15,578
Government and Government Enterprises[a]	6,921	7,035	7,191	7,412	7,448	7,762	8,022	8,113	8,270	8,057	7,974
Miscellaneous[b]	278	298	276	295	272	276	267	286	313	343	365
Total Jobs	64,506	63,320	66,537	71,396	73,922	73,735	75,868	78,093	80,864	83,455	80,900

Major Employment Category	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Agriculture	1,624	1,578	1,660	1,547	1,431	1,323	1,296	1,269	1,206	1,204
Construction	2,325	2,042	2,081	2,323	2,433	2,625	2,719	2,966	3,365	3,715
Manufacturing	28,131	24,836	23,740	26,072	25,114	25,006	25,219	26,256	26,711	26,768
Transportation, Communication, and Utilities	2,333	2,179	2,322	2,324	2,222	2,916	3,035	3,024	3,016	2,902
Wholesale Trade	2,617	2,592	2,590	2,652	2,445	2,445	2,580	2,530	2,920	2,913
Retail Trade	14,012	14,135	14,191	14,923	15,260	15,658	16,051	16,302	16,380	16,999
Finance, Insurance, and Real Estate	4,087	3,753	3,653	3,566	3,466	3,575	3,619	3,782	3,661	3,751
Services	15,719	16,441	16,465	17,051	17,725	18,177	19,167	20,421	20,666	21,731
Government and Government Enterprises[a]	7,881	7,352	7,566	7,490	7,475	7,533	7,639	7,909	8,037	8,166
Miscellaneous[b]	381	401	457	487	485	523	547	570	582	619
Total Jobs	79,110	75,309	74,725	78,435	78,056	79,781	81,872	85,029	86,544	88,768

[a] *Excludes armed forces.*

[b] *Includes agricultural services, forestry, commercial fishery, mining, and jobs held by residents of the County working for international organizations.*

Source: U. S. Bureau of Economic Analysis and SEWRPC.

Table C-8

NUMBER OF JOBS BY MAJOR EMPLOYMENT CATEGORY IN WALWORTH COUNTY: INDIVIDUAL YEARS 1970-1990

Major Employment Category	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Agriculture	2,559	2,520	2,547	2,523	2,627	2,471	2,229	2,096	2,034	2,060	2,011
Construction	1,141	1,127	1,204	1,313	1,279	1,240	1,332	1,475	1,561	1,576	1,377
Manufacturing	5,371	5,715	5,913	6,405	6,667	5,505	5,685	6,358	6,777	7,163	6,844
Transportation, Communication, and Utilities	967	1,046	1,164	1,228	1,340	1,124	1,046	1,138	1,175	1,013	1,039
Wholesale Trade	364	358	493	471	498	722	767	925	1,093	1,105	1,079
Retail Trade	5,020	4,845	5,035	5,277	5,208	5,229	5,543	5,920	6,330	6,927	6,790
Finance, Insurance, and Real Estate	978	1,081	1,265	1,383	1,453	1,597	1,685	1,817	1,883	1,854	1,834
Services	5,133	5,233	5,282	5,538	5,674	5,637	5,730	6,425	6,817	6,957	7,022
Government and Government Enterprises[a]	4,570	4,575	4,589	4,607	4,552	4,701	4,892	4,900	4,957	5,042	5,079
Miscellaneous[b]	215	211	194	189	198	225	216	238	261	265	286
Total Jobs	26,318	26,711	27,686	28,934	29,496	28,451	29,125	31,292	32,888	33,962	33,361

Major Employment Category	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Agriculture	1,873	1,802	1,891	1,774	1,655	1,545	1,513	1,489	1,427	1,422
Construction	1,341	1,380	1,411	1,526	1,527	1,695	1,940	2,031	2,176	2,493
Manufacturing	6,789	6,447	6,517	7,580	7,464	7,303	7,302	7,841	7,966	7,789
Transportation, Communication, and Utilities	1,020	1,073	1,046	1,137	1,165	1,195	1,176	1,215	1,139	1,347
Wholesale Trade	1,170	1,255	1,216	1,016	1,074	1,094	1,193	1,275	1,317	1,235
Retail Trade	6,688	6,664	6,767	7,120	7,046	7,195	7,280	7,311	7,530	7,832
Finance, Insurance, and Real Estate	1,827	1,877	1,802	1,696	1,656	1,808	1,784	2,002	1,881	1,999
Services	7,267	7,429	7,585	7,777	8,265	8,163	8,242	8,539	8,804	9,175
Government and Government Enterprises[a]	5,227	5,200	5,380	5,447	5,535	5,705	6,027	5,997	6,346	6,440
Miscellaneous[b]	305	282	272	292	305	322	378	399	406	453
Total Jobs	33,507	33,409	33,887	35,365	35,692	36,025	36,835	38,099	38,992	40,185

[a] *Excludes armed forces.*

[b] *Includes agricultural services, forestry, commercial fishery, mining, and jobs held by residents of the County working for international organizations.*

Source: U. S. Bureau of Economic Analysis and SEWRPC.

Table C-9

NUMBER OF JOBS BY MAJOR EMPLOYMENT CATEGORY IN WASHINGTON COUNTY: INDIVIDUAL YEARS 1970-1990

Major Employment Category	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Agriculture	1,975	1,942	1,949	1,934	1,985	1,952	1,848	1,800	1,789	1,880	1,919
Construction	1,099	1,165	1,232	1,273	1,198	1,296	1,470	1,824	2,000	2,038	1,777
Manufacturing	9,254	9,202	10,080	10,533	11,015	9,478	10,370	10,697	11,611	12,008	10,899
Transportation, Communication, and Utilities	1,010	1,034	1,049	1,033	1,035	1,031	1,100	1,126	1,125	1,160	1,134
Wholesale Trade	323	412	482	539	463	814	911	1,012	987	1,138	1,003
Retail Trade	3,740	3,735	3,762	4,019	4,162	4,154	4,385	4,742	4,984	5,280	5,535
Finance, Insurance, and Real Estate	1,125	1,185	1,349	1,560	1,792	2,168	2,250	2,470	2,597	2,602	2,641
Services	3,105	3,053	3,287	3,535	3,755	3,903	4,406	5,059	5,472	5,603	5,826
Government and Government Enterprises[a]	2,433	2,573	2,716	2,957	3,070	3,278	3,436	3,564	3,710	3,796	3,967
Miscellaneous[b]	207	213	200	211	194	222	226	245	273	290	291
Total Jobs	24,271	24,514	26,106	27,594	28,669	28,296	30,402	32,539	34,548	35,795	34,992

Major Employment Category	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Agriculture	1,858	1,858	1,946	1,824	1,694	1,580	1,543	1,520	1,454	1,451
Construction	1,699	1,599	1,615	1,922	2,019	2,264	2,519	2,722	2,930	3,082
Manufacturing	10,108	9,148	9,381	9,795	9,395	9,805	10,546	11,820	12,764	12,837
Transportation, Communication, and Utilities	1,123	1,181	1,240	1,383	1,520	1,466	1,642	1,783	1,486	1,697
Wholesale Trade	1,028	954	959	923	972	1,038	1,055	1,143	1,208	1,562
Retail Trade	5,667	5,965	6,205	6,647	6,916	6,823	6,987	7,053	7,473	7,648
Finance, Insurance, and Real Estate	2,566	2,740	2,572	2,596	2,825	2,918	2,997	3,191	3,189	3,509
Services	6,042	6,425	6,514	6,948	7,297	7,399	7,757	8,343	8,432	8,965
Government and Government Enterprises[a]	4,354	4,226	4,239	4,298	4,349	4,403	4,417	4,459	4,584	4,851
Miscellaneous[b]	298	297	324	334	343	380	389	405	407	455
Total Jobs	34,743	34,393	34,995	36,670	37,330	38,076	39,852	42,439	43,927	46,057

[a] *Excludes armed forces.*

[b] *Includes agricultural services, forestry, commercial fishery, mining, and jobs held by residents of the County working for international organizations.*

Source: U. S. Bureau of Economic Analysis and SEWRPC.

Table C-10

NUMBER OF JOBS BY MAJOR EMPLOYMENT CATEGORY IN WAUKESHA COUNTY: INDIVIDUAL YEARS 1970-1990

Major Employment Category	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Agriculture	1,737	1,699	1,706	1,686	1,744	1,766	1,711	1,706	1,732	1,756	1,726
Construction	7,057	7,167	6,785	7,307	7,394	6,899	7,356	8,612	9,159	9,003	7,714
Manufacturing	21,928	20,833	21,645	24,490	26,065	25,475	25,256	28,441	31,670	34,194	33,518
Transportation, Communication, and Utilities	2,418	2,518	2,723	2,668	3,048	4,034	4,250	4,523	5,006	5,730	6,016
Wholesale Trade	4,398	4,934	5,315	5,748	5,805	6,347	6,567	7,540	7,916	8,570	8,659
Retail Trade	14,351	14,128	14,837	15,917	16,443	16,865	17,868	19,487	20,885	21,724	21,378
Finance, Insurance, and Real Estate	3,790	4,163	4,850	5,762	6,564	8,299	8,816	9,551	10,588	10,772	11,256
Services	15,046	16,221	17,280	18,244	18,813	19,880	21,138	22,899	24,362	25,952	27,421
Government and Government Enterprises[a]	9,461	9,962	10,697	11,153	11,275	11,783	12,182	12,395	12,683	12,664	13,163
Miscellaneous[b]	699	656	551	579	568	823	914	1,030	1,104	1,264	1,349
Total Jobs	80,885	82,281	86,389	93,554	97,719	102,171	106,058	116,184	125,105	131,629	132,200

Major Employment Category	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Agriculture	1,629	1,573	1,639	1,537	1,428	1,335	1,293	1,275	1,230	1,222
Construction	7,305	6,893	7,108	8,106	8,248	9,177	10,201	10,996	12,008	12,489
Manufacturing	33,362	30,370	29,782	36,003	37,558	39,049	40,571	43,525	44,531	43,982
Transportation, Communication, and Utilities	6,520	6,785	6,628	7,105	7,233	6,751	7,194	7,486	7,854	8,321
Wholesale Trade	9,223	9,366	9,647	11,095	12,224	11,789	12,644	13,485	14,035	15,951
Retail Trade	20,944	21,629	22,516	24,854	25,832	27,135	27,410	27,317	28,059	30,844
Finance, Insurance, and Real Estate	11,117	12,233	12,350	12,111	12,815	13,584	13,876	15,021	15,975	16,961
Services	28,470	30,556	30,368	32,005	34,926	36,818	39,046	42,145	43,917	45,716
Government and Government Enterprises[a]	13,242	13,030	13,031	13,120	13,410	13,817	13,683	13,637	13,590	14,036
Miscellaneous[b]	1,475	1,667	1,763	2,120	2,046	2,052	2,018	2,167	2,085	2,029
Total Jobs	133,287	134,102	134,832	148,056	155,720	161,507	167,936	177,054	183,284	191,551

[a] *Excludes armed forces.*

[b] *Includes agricultural services, forestry, commercial fishery, mining, and jobs held by residents of the County working for international organizations.*

Source: U. S. Bureau of Economic Analysis and SEWRPC.

Appendix D

COMPARISON OF COMMISSION 2020 ALTERNATIVE EMPLOYMENT PROJECTIONS, ASSUMING A BAND OF ±12.5 PERCENT ABOVE AND BELOW THE COMMISSION INTERMEDIATE-GROWTH PROJECTION, WITH EMPLOYMENT FORECASTS AND PROJECTIONS FROM OTHER SOURCES FOR THE REGION: 1990-2020

Agency	Employment Level (thousands of jobs)					
	2000	2005	2010	2013	2017	2020
Wisconsin Department of Industry, Labor and Human Relations	1,177.7	1,237.2	N/A	N/A	N/A	N/A
Wisconsin Department of Revenue	1,181.4	1,209.1	1,237.4	1,242.3	1,244.3	N/A
U. S. Bureau of Economic Analysis	1,166.4	1,184.4	1,202.7	1,193.3	1,181.0	1,171.8
Wisconsin Electric Power Company	1,218.4	1,288.0	1,342.1	1,374.9	N/A	N/A
SEWRPC—Intermediate-Growth Scenario +12.5 percent	1,250.1	1,304.5	1,361.3	1,383.5	1,413.6	1,436.6
SEWRPC—Intermediate-Growth Scenario	1,165.4	1,198.5	1,233.8	1,246.7	1,263.6	1,277.1
SEWRPC—Intermediate-Growth Scenario -12.5 percent	1,097.1	1,104.2	1,111.3	1,113.2	1,115.6	1,117.4

NOTE: "N/A" indicates data not available.

Source: Wisconsin Department of Industry, Labor and Human Relations; Wisconsin Department of Revenue; U. S. Bureau of Economic Analysis; Wisconsin Electric Power Company; and SEWRPC.