

MINNESOTA DEED REPORT

SNAPSHOT OF THE MINNESOTA ECONOMY

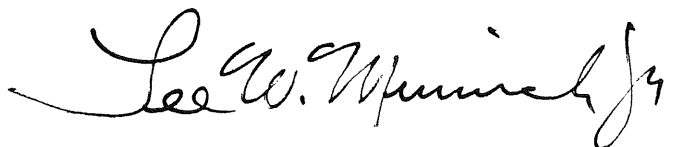
October 1985

PREFACE

This study presents an analysis of which industries have contributed to Minnesota's growth, why these sectors have advanced, their potential for future expansion, and Minnesota's dual economy.

This report was written by Brian Zucker, an economist in the Policy Analysis Division of the Minnesota Department of Energy and Economic Development. It represents a synthesis of his first year's work with the Department.

Policy Analysis Division
MINNESOTA DEPARTMENT OF ENERGY AND
ECONOMIC DEVELOPMENT

A handwritten signature in black ink, reading "Lee W. Munnich, Jr." with a stylized flourish at the end.

Lee W. Munnich, Jr.
Assistant Commissioner

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EXECUTIVE SUMMARY

INTRODUCTION

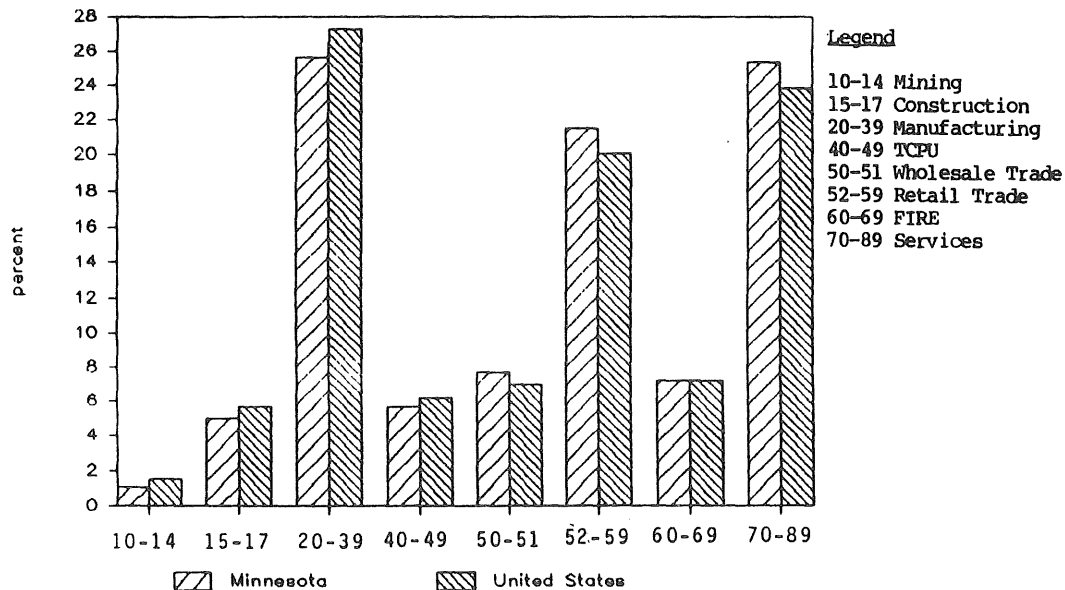
The Minnesota economy employs approximately 2.1 million workers in more than 110,000 businesses and government units. In 1984, income from these jobs exceeded \$34 billion, which represented roughly half of gross state product. Employment in Minnesota has increased at a rate substantially faster than in the nation for over 25 years. Between 1960 and 1980, employment in Minnesota increased by 68 percent compared with 57 percent nationally. In the following four years, however, Minnesota employment grew by 3.1 percent, compared with 4.2 percent nationally, due primarily to the 1982 recession.

INDUSTRY TRENDS

Almost all industries have contributed to the growth of Minnesota's economy, resulting in a convergence towards the national distribution of employment. By 1981, Minnesota's distribution of employment by industry more closely reflected the national distribution than at any previous time.

Tables 1, 2 and 3 show 1981 nonagricultural employment, annual payroll and employment growth rates between 1977 and 1981 for Minnesota and the U.S. by major sector.

TABLE 1: Distribution of Nonagricultural Employment by Major Sector, 1981

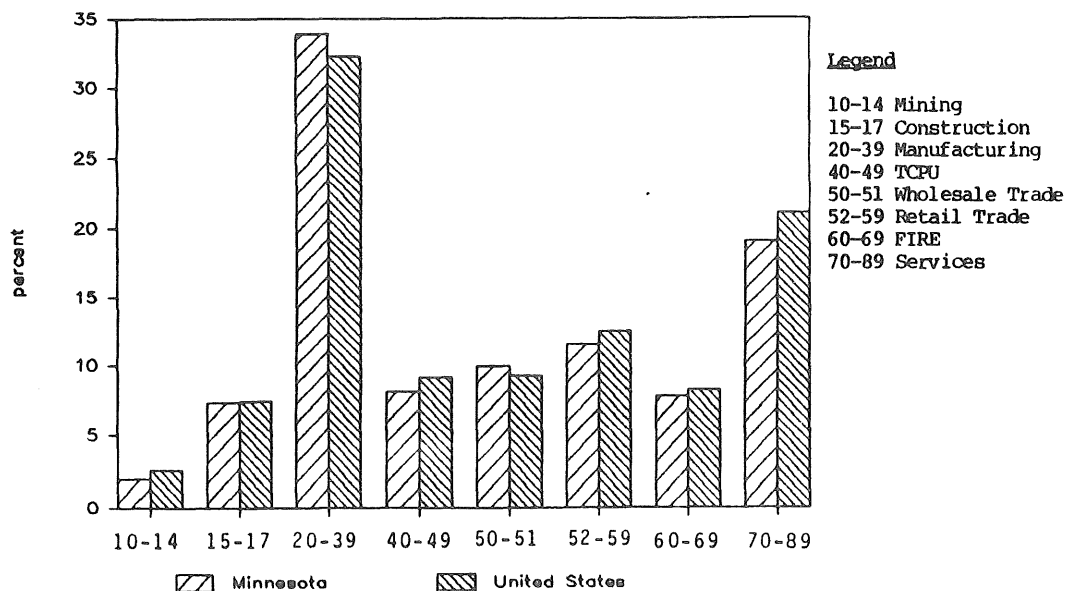


SOURCE: County Business Patterns

As Minnesota's economy has matured, its primary sources of income have moved from an extractive base in agriculture and mining and their related industries to the production of technologically intensive goods and human services. Minnesota's convergence towards the national distribution of

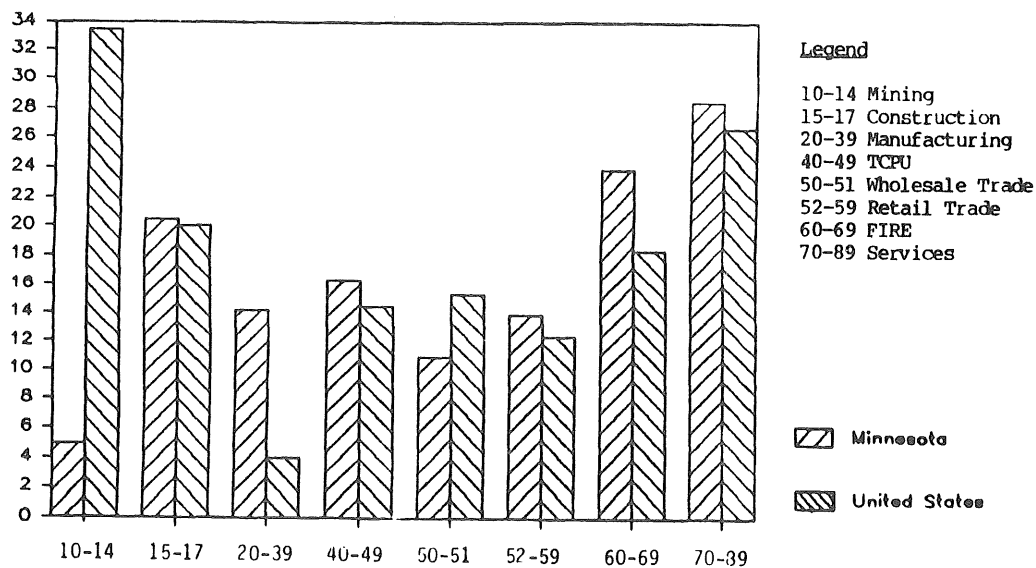
employment is the product of two trends, the decline of certain highly concentrated sectors relative to the nation, including retail and wholesale trade, and the emergence of certain previously under-represented sectors, including manufacturing, insurance, finance and consumer services.

TABLE 2: Distribution of Nonagricultural Payroll by Major Sector, 1981



Source: County Business Patterns, 1981

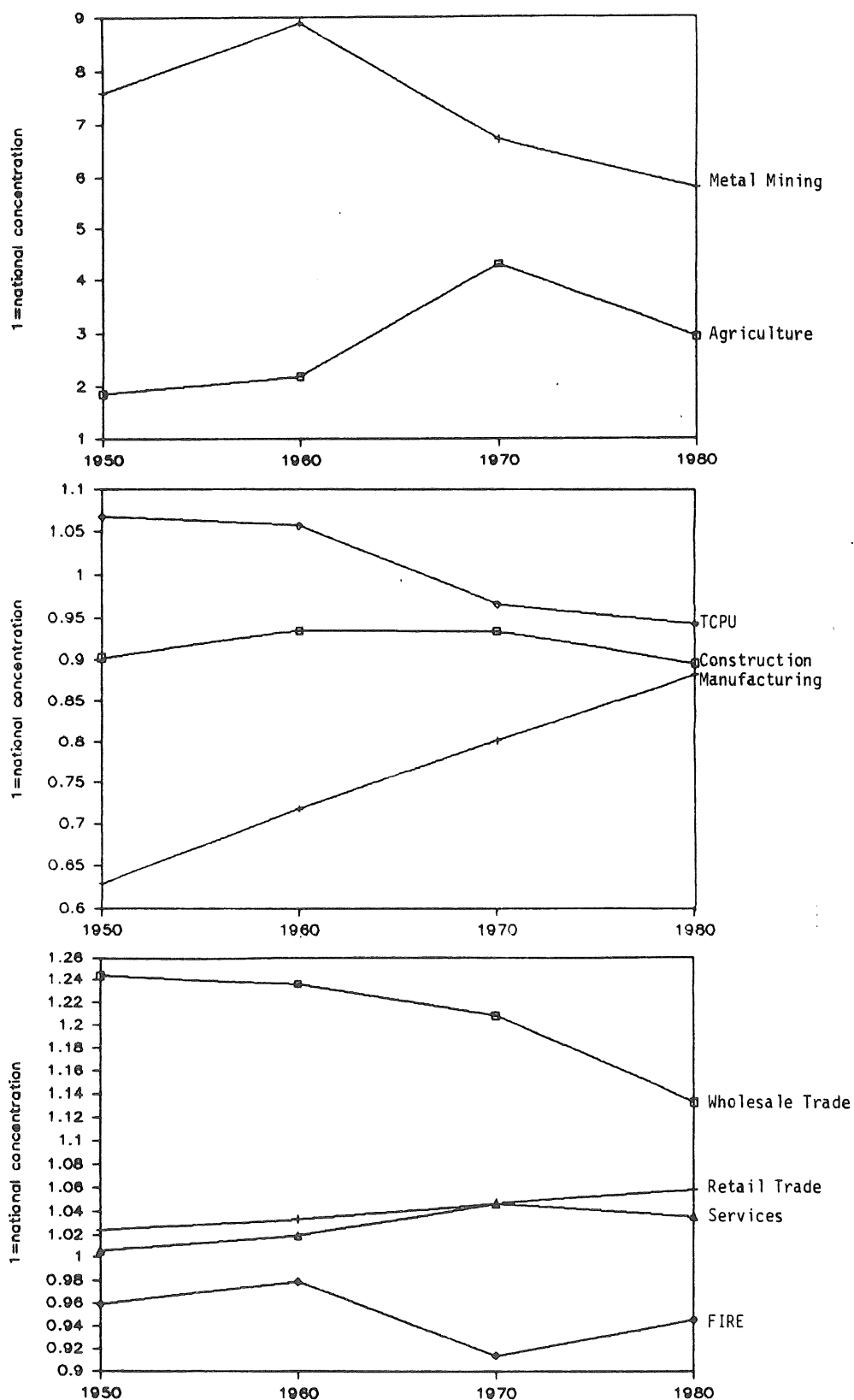
TABLE 3: Percent Change in Nonagricultural Employment by Major Sector, 1977-1981



Source: County Business Patterns

Table 4 shows Minnesota's concentration of employment by major sector relative to the nation for each decade since 1950. Those sectors with the most important growth trends are discussed below.

TABLE 4: Minnesota's Changing Concentration of Employment by Major Sector, 1950-1980



SOURCE: U.S. Census of Housing and Population 1960, 1980

MANUFACTURING

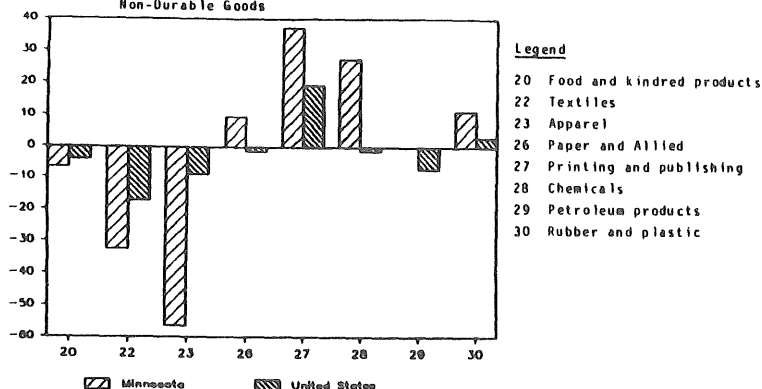
Manufacturing is Minnesota's third largest employer and the largest source of wage income and income growth. Since 1950, Minnesota's manufacturing sector has been gaining employment at three times the national rate and now represents 21 percent of nonagricultural employment, roughly the same as in the nation.

Between 1960 and 1980, almost 90 percent of Minnesota's growth in manufacturing employment has come from five industries: 1) fabricated metals, which produces defense related products and various shaped metal products; 2) nonelectrical machinery, which produces construction and farm equipment and computers; 3) electrical machinery, which produces communication equipment, appliances and semiconductors; 4) instruments, which produces medical devices, such as pacemakers, and measuring and control devices such as thermostats; and 5) printing and publishing, which produces newspapers, books, periodicals and custom printing.

Most of the output from these industries is distributed outside the upper midwest region, with over 20 percent shipped to foreign markets. The growth of these industries reflects a general trend for Minnesota manufacturing away from regional markets and final consumer demand towards national and international markets and interindustry demand.

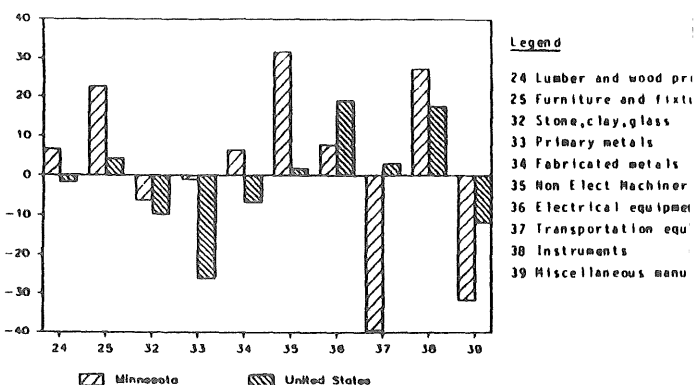
In recent years, Minnesota has demonstrated a strong trend towards increasing diversification of its manufacturing base. Table 5 shows changes in manufacturing employment between 1977 and 1984 for Minnesota and the U.S. During this period, several comparatively smaller and less concentrated industries gained substantially in new employment, including chemicals and allied products, which produces drugs, cosmetics and industrial chemicals, miscellaneous plastic products, furniture,

TABLE 5A: Percent Change in Manufacturing Employment, 1977-1984
Non-Durable Goods



Source: Bureau of Labor Statistics and Minnesota Department of Economic Security
Employment and Earnings, 1977-1984

TABLE 5B: Percent Change in Manufacturing Employment, 1977-1984
Durable Goods



Source: Bureau of Labor Statistics and Minnesota Department of Economic Security
Employment and Earnings, 1977-1984

stone, clay and glass, including abrasives and glass products such as test tubes, and lumber products, including plywood and structural timber. At the same time, some of Minnesota's largest and most concentrated manufacturing industries, including instruments, electrical and nonelectrical machinery, have slowed in employment growth, and a handful of extremely small industries, including apparel and textiles, experienced sharp declines.

SERVICES

Services are Minnesota's second largest source of employment and the third largest source of income. Minnesota's service industry has been growing at the national rate for three decades and currently represents more than one out of every three new jobs.

The fourteen industries which make up the service sector serve one of three distinct markets: businesses, private households, and the community-at-large, through nonprofit and human service organizations.

Business Services

Business services include personnel supply agencies, data processing, building maintenance, advertising, trade associations, engineering, architecture and accounting firms. Collectively, these industries represent 23 percent of service employment and 29 percent of service payroll.

While business services are one of the state's fastest growing industries, Minnesota's concentration in business service employment is about 10 percent below the national concentration and declining. This trend may be explained, in part, by the fact that many of these services are provided in-house by Minnesota firms. For example, Minnesota's manufacturers tend to employ more in-house computer operators and rely less on outside data processing services.

In addition, a number of specialized business services, including legal services and public relations, are highly concentrated in the nation's largest business centers. Many businesses in Minnesota may therefore rely on cities like New York or Chicago for such services.

Consumer Services

Consumer services include hotels and lodging places, personal services such as barber shops, beauty parlors, furriers and funeral homes, automobile and other repair services, motion picture theatres and live entertainment. Collectively, these industries represent 19 percent of total employment and 15 percent of total payroll, compared with 22 percent and 17 percent nationally.

Minnesota's share of employment in consumer services is below the national share, but gaining rapidly. Currently, this sector is growing about 25 percent faster than its national counterpart.

Minnesota's comparatively higher growth in consumer services is a result of several factors. These include a rise in household disposable

income, which raises per capita demand; the continued growth of the Twin Cities metropolitan population, which helps support more specialized services, such as that provided by the St. Paul Ordway Theatre or the Minnesota Zoological Garden; and a 50 percent faster than national increase in tourism expenditures between 1979 and 1983.

Human and Nonprofit Services

Nonprofit and human services include health institutions, private education, including voc-tech schools, social service organizations such as the United Way, and membership and religious organizations. Nonprofit and human services are the largest of the three service sectors, representing over sixty percent of all new service sector jobs. Between 1950 and 1980, Minnesota's concentration of employment in human and nonprofit services increased with each successive decade. Since 1980, however, growth in this sector has slowed to the national rate. Minnesota currently has a 22 percent larger share of employment in human and nonprofit services than the nation.

Among other factors contributing to Minnesota's higher than national concentration in this sector are the state's high level of public expenditures, a comparatively higher rate of philanthropy among Minnesota foundations and private households, and the state's large centralized metropolitan population within the relatively sparsely populated upper-midwest region.

In part, Minnesota's recent deceleration to the national growth rate may be related to the state's already high concentration of employment in this sector, reflecting a limit to continued expansion; recent federal budget cuts which may have affected Minnesota's human service industry disproportionately; and shifts in how human services are delivered. Outpatient health services, for example have dramatically substituted for overnight hospital care services, and corporations outside the human service industry have become major providers of human services to their employees as part of a standard package of benefits.

FINANCE, INSURANCE AND REAL ESTATE (FIRE)

Since 1960, FIRE's share of total state employment has increased by nearly 50 percent, making it the fastest growing high wage sector. Despite strong growth, Minnesota has been gaining FIRE employment at a slower rate than the nation for over a decade. Minnesota's slower growth in this sector is largely accounted for by the increasing dominance of the nation's major financial centers, located in New York, Chicago, Los Angeles and San Francisco.

With the exception of two FIRE industries, insurance carriers and holding and other investment companies, both of which serve regional and national markets, most of the growth in this sector has come from industries which service local markets, such as credit unions, saving and loan institutions and real estate offices.

AGRICULTURE

Agriculture constitutes the basis not only of most of Minnesota's non-metropolitan economy, but a significant share of the metropolitan economy

as well. In aggregate, over 350,000 of the state's 2.1 million jobs are tied to Minnesota's agriculture sector, either as major consumers of agriculture products, such as the food processing industry, or as major suppliers to agriculture, such as the farm equipment or transportation industries.

Since 1970, Minnesota has lost farm employment at a faster rate than the nation. This loss has occurred almost entirely from family farms, which represent 88 percent of all farms in the state, compared with 67 percent nationally. This group of farmers has been most adversely affected by structural changes in the agriculture sector, and Minnesota's comparatively higher concentration of family farms has resulted in comparatively larger losses.

The decline of Minnesota's agriculture industry has also led to substantial employment losses in a number of other sectors, including direct losses in manufacturing, wholesale trade and transportation, and indirect losses in retail trade and services. Minnesota's particularly strong agricultural base, with over twice the national concentration of agriculture employment, is responsible for its disproportionate loss of employment and income relative to the nation.

MINING

Minnesota has been the nation's largest producer of iron ore for more than 40 years, with over seven times the national concentration in metal mining employment. While mining employs comparatively few people, less than 1 percent of total employment, the industry until recently represented almost one-sixth of the value added produced by the manufacturing sector.

Employment in metal mining peaked in 1957, with 21,400 workers, and slowly declined over the next twenty years, averaging 16,000 workers in the 1960's and 14,000 in the 1970's. By 1980, the industry hit a forty year low of 8,400 workers.

The decline of Minnesota's mining industry has resulted in a substantial loss of income which flows from other parts of the country. This loss is particularly severe because the mining industry is concentrated in the northeast region of Minnesota. The dependence of other industries on mining in the region has resulted in a loss of 21,000 employees out of a total regional labor force of 121,000 during the past five years.

TRADE

Trade is Minnesota's largest source of employment and the second largest source of payroll, with 26 percent of nonagricultural employment and 18.7 percent of nonagricultural payroll. Trade is made up of the wholesale sector, which sells merchandise for business-related and institutional consumption, and the retail sector, which sells merchandise for personal or household consumption.

Minnesota has had a higher concentration of trade employment than the U.S. for over thirty years. Since World War II, however, Minnesota's concentration of trade employment relative to the nation's has been

declining, and the state's role as a regional distribution center is of considerably less importance today.

In addition to slow growth in employment this sector has also been affected by low wages and low wage growth. This trend is primarily the product of both slow productivity growth and a steady decline in average weekly hours worked per employee in the retail trade industries.

FACTORS INFLUENCING INDUSTRY GROWTH

The various factors which relate to Minnesota's performance in these and other sectors are discussed on an industry-by-industry basis throughout the main report. These factors include geographic and demographic influences as well as changes in technology and industrial organization. A summary of the major influences is presented below.

1) Spatial isolation: Minnesota's emerging economy is dominated by growth within the St. Paul-Minneapolis and Rochester metropolitan areas. The Twin Cities contain the largest mass of population within 400 miles in all directions. Consequently, Minnesota's metro area serves as a central place within the continental system of cities. Historically, this factor contributed to Minnesota's large wholesale industry; it has also had a positive influence on such industries as printing and publishing, health and education.

The location of Minnesota's metropolitan economy, several hundred miles north of major shipping routes, has influenced the composition of industries and market orientation of Minnesota's manufacturing base. Most of the commodities currently produced by Minnesota's manufacturers are technologically intensive industrial goods with comparatively high value-to-weight ratios. In Minnesota, as compared with other states, a larger share of these commodities, including computers, scientific instruments, and industrial machinery, are shipped outside the region, with a significant share, roughly 20 percent, accounted for by foreign markets.

2) Highly concentrated metropolitan population: While an enormous outlying region has contributed to the expansion of Minnesota's metropolitan economy, it has also contributed to a condition referred to as primacy, where metropolitan growth occurs, in part, at the expense of growth in outlying areas. This phenomenon, which is most frequently observed in developing nations, occurs when a relatively young metropolitan area exists in an otherwise less industrialized region.

Under this condition, a metropolitan area may attract a disproportionate share of new investment because the marginal product of that investment is comparatively higher. While this disparity in investment opportunities is not responsible for the downturn of Minnesota's nonmetropolitan economy, it may contribute to its failure to diversify into non-extractive industries.

3) Small urban population and lower population density: While Minnesota supports a large centrally located metropolitan center, its share of urban population is smaller than the nation's and it is less densely populated. This has increased the state's concentration in certain transportation

industries and retail establishments in order to service a more dispersed population, while contributing to a lower concentration of business and consumer services, which require a larger more densely settled population to be economically feasible.

4) Natural endowments: Historically, the dominant share of Minnesota's economy was tied to resource extraction and processing industries, such as forestry, lumber, agriculture and mining. While many of the original resource based commodities are no longer produced here, such as construction grade timber, several of the industries linked to these extractive sectors have remained and adapted to new processes and the production of different commodities.

5) Higher participation rates among females and the young: Minnesota has consistently demonstrated labor force participation rates among its youth and female population which are roughly 20 percent higher than the nation's. This has resulted in higher household incomes and substantially higher than national concentrations of part-time employment in almost all industries.

6) Slower than national population growth: The population of Minnesota and the north western region is increasing more slowly than the national rate of growth, resulting in declining concentrations among industries tied to the expansion of final demand markets, such as retail trade and construction. Minnesota's mix of industries is substantially influenced by faster than national growth among intermediate demands from its manufacturing sector.

7) Well educated labor force: Minnesota has developed a labor pool with substantially higher than national concentrations in professional and technical skills and higher levels of educational attainment among almost all occupations. As the national structure of industry has come to place greater emphasis on innovative work environments and commodities which are highly skill intensive, this attribute has emerged as one of Minnesota's key comparative advantages. This higher concentration of high skilled occupations is likely to have a positive influence on the development and preservation of social amenities, including a strong public education system and extensive civic, cultural and environmental resources.

8) Industrial concentration and diversification: Minnesota's largest losses in employment have occurred in its most concentrated industries, food and kindred products, agriculture and mining. In recent years, Minnesota's concentration of employment in several already highly concentrated major industries, including printing and publishing, scientific and medical instruments, office and computing machinery and health services, has continued to increase. In general, this trend raises questions regarding the extent to which Minnesota's highly concentrated, high growth industries can be expected to grow before their markets become saturated. If Minnesota builds up excess capacity in its already highly concentrated industries, it may suffer disproportionate employment losses due to structural and cyclical changes in the national economy.

9) Growth in national and foreign demand: Between 1960 and 1980, the largest share of Minnesota's growth in manufacturing is accounted for by expansion into national and international markets. In addition, there is

evidence that a number of service industries, including health, education and some business services, have also expanded due to a rise in out of state demand. In the following decade, the growth of national and foreign demand will be critical to the expansion of Minnesota's economy. The rise of foreign competition, not only in industries which are labor-intensive, but in high skill industries as well, may limit the continued growth of some of Minnesota's key manufacturing industries, including the production of computers and instruments. Moreover, the strong growth of service industries outside Minnesota, including the phenomenal expansion of financial services in South Dakota, and business services in Illinois, reflects growing competition in regional markets.

REGIONAL DISTRIBUTION OF EMPLOYMENT GROWTH

Economic growth in Minnesota is becoming progressively more concentrated within the metropolitan parts of the state. During the past decade, net increases in nonagricultural employment have occurred almost entirely within the Twin Cities and Rochester metropolitan areas. Between 1973 and 1983, less than 21 percent of Minnesota's net increase in employment occurred outside these two metropolitan areas, even though this region represents over 40 percent of total employment. In contrast, Rochester accounted for 6 percent of Minnesota's net gain in employment but represents less than 2.7 percent of total employment and the Twin Cities, with 61 percent of total employment received 74 percent of Minnesota's net increase. In the previous decade, the outstate parts of Minnesota accounted for nearly 35 percent of the net gain in employment.

The largest part of this disparity is explained by the employment declines of Minnesota's agriculture and mining sectors. In addition, however, the outstate parts of Minnesota have been substantially unable to diversify their base from the extractive industries to manufacturing. Of the 46,900 manufacturing jobs gained between 1977 and 1981, a period of strong national growth, all but 300 occurred in the Rochester and Twin Cities metropolitan areas. The outstate region's slower growth in manufacturing has been exacerbated by its concentration of employment in slow growth industries, including food and kindred products, leather products, furniture and stone, clay and glass.

Although there has been a net increase of employment in industries other than manufacturing, this growth has occurred primarily in low wage sectors, such as retail trade and consumer services. Furthermore, average salaries in the outstate areas have been significantly lower than their metropolitan counterparts on an industry by industry basis. For example, outstate hospital employees earn 30 percent less than their metropolitan counterparts, and manufacturing employees nearly 16 percent less.

The weaker performance of the nonmetropolitan parts of Minnesota hinders the state's overall economic performance. It reduces average state income and decreases state and local revenues. It also reduces regional demand for Minnesota-produced commodities required by both industry and households. For Minnesota to become as efficient a producer as possible, the two economies of outstate and metropolitan Minnesota will have to become more thoroughly integrated.

OCCUPATIONAL TRENDS

Minnesota's distribution of employment by occupation is substantially different from the national distribution, with a higher concentration of sales, service and professional technical workers and a lower concentration of managers, clerical, craft and kindred, operatives and laborers.

These differences are the products of both a unique mix of industries and unique industry staffing patterns. For example, Minnesota has a higher than national concentration of employment in such technological industries as the manufacturing of computers, scientific and medical instruments and defense-related products. This unique mix of industries contributes to Minnesota's higher than national concentration of professional and technical employees. In addition, the proportion of professional and technical employees within each of these industries, is also greater, reflecting unique staffing. Both factors contribute to Minnesota's distribution of occupational employment.

The growth rates for each occupational group in Minnesota also differ from those of their national counterparts. Professional, technical and clerical occupations are increasing 30 percent faster in Minnesota than in the U.S. as a whole. Sales occupations are growing at nearly twice the national rate and machine operatives have increased at nearly ten times the national rate. On the other hand, managers, service workers, and craft and kindred workers are all growing substantially slower in Minnesota.

In aggregate, Minnesota is gaining white collar employment at a rate 20 percent faster than the nation. This growth has been led by professional and technical workers, which is among the highest paid and most skill intensive occupational group.

Minnesota's comparatively faster growth in white collar employment has been strongest in the manufacturing sector, where roughly 80 percent of all new manufacturing employment has been among white collar workers since 1970. Currently, Minnesota has a twenty percent higher concentration of white collar employment in manufacturing than the nation. This higher concentration of white collar employment is also a reflection of the number of manufacturing headquarters located in Minnesota. As of 1983, Minnesota had over twice the national share of employment in manufacturing headquarter facilities, which are primarily concerned with marketing, finance, administrative and research and development, as opposed to production activities.

Despite Minnesota's strong growth in well paying high growth potential jobs, over one-fourth of Minnesota's labor force is still employed in low skill or low growth potential occupations, many of which are growing well above the average rate of employment growth. Minnesota's concentration of employment in several of these occupations is comparatively higher than for the nation, and appears to be increasing at a faster rate.

TRENDS IN INCOME

Average salaries and growth in annual income are influenced by a number of factors, including the mix of industries, the mix of occupations

within each industry and the number of hours worked per employee. In Minnesota, the fastest growing industries tend to be clustered at opposite ends of the wage scale, with low-wage industries, including, retail trade, health care and consumer services dominating total employment growth. Consequently, Minnesota's fast growing low wage industries are reducing average income in the state.

In contrast, Minnesota's unique mix of occupations with its relatively high concentration of professional and technical employment has raised average incomes in Minnesota.

The net effect of these two factors has been a reduction in average income and comparatively slower income growth per employee. Between 1977 and 1981, U.S. average payroll per employee grew about 1 percent faster than in Minnesota.

Total household income in Minnesota, however, continues to increase at a faster rate than for the nation, due to faster than national growth in employment and higher labor participation rates. In the long run, however, Minnesota growth in participation rates will slow down, and growth in low wage industries can be expected to dampen growth in household income.

INTRODUCTION

This paper describes the changing composition of Minnesota's economy. Its primary objective is to provide a basic understanding of Minnesota's economic structure in terms of key industries and occupations and to identify how this structure is changing.

The body of this report is organized in two sections: In Section One, growth in industrial employment is examined in terms of the following questions:

- 1) How much employment and income are accounted for by each major industry group?
- 2) How does this distribution compare with the national distribution?
- 3) How is this composition changing with respect to national trends?
- 4) How much of this growth is occurring in the metropolitan versus nonmetropolitan regions?

In Section Two, the occupational structure of employment in Minnesota is examined with respect to the following questions:

- 1) To what extent is Minnesota's growth in manufacturing employment accounted for by production versus non-production workers?
- 2) How does Minnesota's distribution of occupations differ from the national distribution?
- 3) How much of this difference is accounted for by a unique mix of industries and how much by unique staffing patterns?
- 4) What are the implications of Minnesota's recent industrial and occupational trends with respect to the distribution and growth of personal income?

While this analysis draws on data from as far back as 1950, the bulk of research was conducted using data from 1977 to 1981. This time frame was selected to capture the most recent trends in Minnesota's economy during a period of national growth. Because 1983 data of sufficient detail is not yet available from federal statistical sources and 1982 was a period of recession, focusing on the 1977 to 1981 period captured shifts in employment which were more structural than cyclical.

SECTION I: INDUSTRY GROWTH TRENDS

In the following section, recent and long term Minnesota industries are discussed on a sector-by-sector basis. The industries which make up each sector have been grouped according to the 1972 U.S. Standard Industrial classification scheme and are presented in the following order: Trade, Services, Manufacturing, Transportation, Agriculture, Mining, Construction, Communication and Public Utilities, Finance, Insurance and Real Estate.

TRADE

Trade is made up of two major industry groups: wholesale trade, which includes establishments primarily engaged in selling merchandise to retailers or to industrial, commercial, institutional, farm, or professional business users' or to other wholesalers, and retail, which includes establishments engaged in selling merchandise for personal or household consumption, and rendering services incidental to the sale of those goods.

Trade is Minnesota's largest source of employment and the second largest source of payroll. As of 1983, trade represented 26 percent of nonagricultural employment and 18.7 percent of nonagricultural payroll, compared with 23.1 percent and 17.2 percent nationally. In terms of employment growth, trade contributed more than 28 percent of all new jobs during the past decade, with an average annual growth rate of nearly 3 percent.

Minnesota has had a significantly higher concentration in trade employment than the nation for more than 30 years. Since World War II, however, Minnesota has gained retail and wholesale employment at a slower rate than the nation and is declining in importance as a regional distribution center.

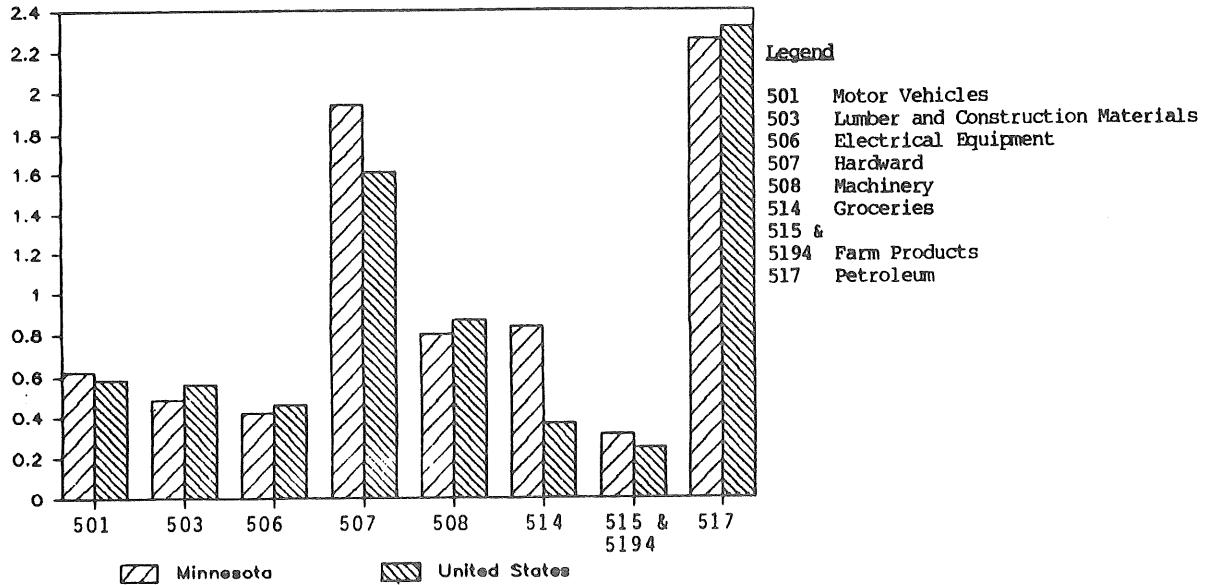
While the wholesale and retail sectors are frequently grouped together, they represent fundamentally different activities, utilize different staffing patterns and are declining in concentration for different reasons which are discussed below.

Wholesale Trade

Employment in wholesale trade is characterized by high wages (27 percent above the state average wage), few part-time employees (less than 20 percent of total wholesale employment), and a very low percentage of female workers (13 percent of total wholesale employment).

As of 1983, wholesale trade represented 6.4 percent of nonagricultural employment and 8.0 percent of nonagricultural payroll compared with 5.9 percent and 7.3 percent nationally. As with the nation, roughly two-thirds of wholesale employment is in durable goods, with sales dominated by machinery and related equipment and supplies. Nondurables account for the remaining third with over half the sales directly or indirectly related to the production of food.

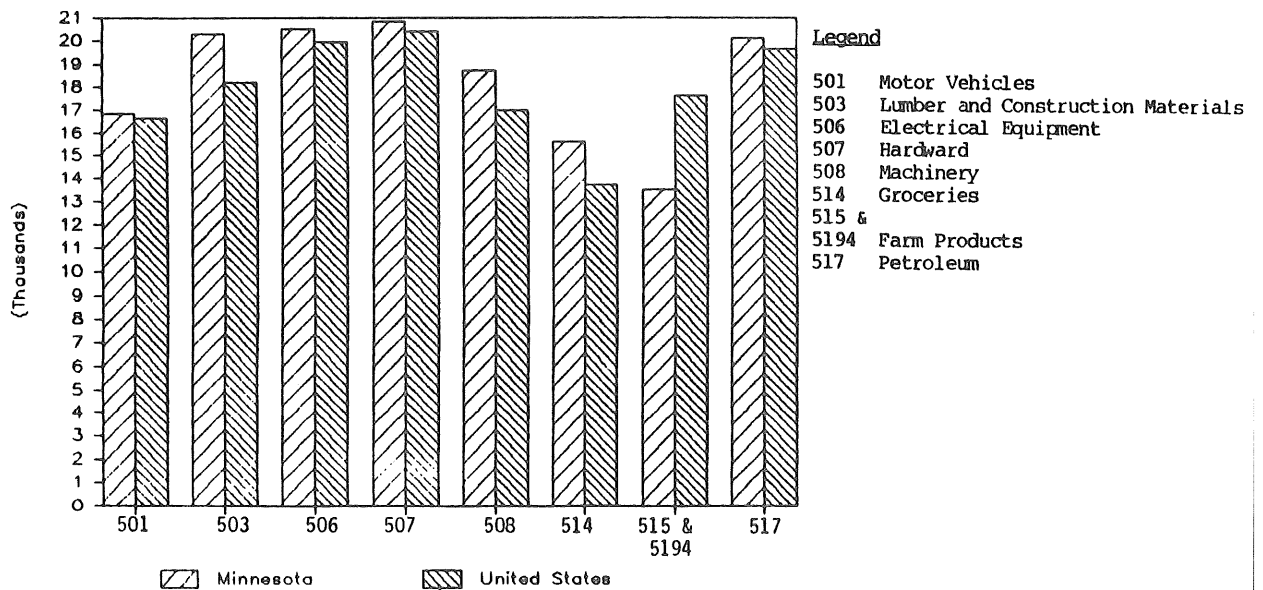
TABLE 6: Distribution of Employment in Wholesale Trade, 1981



SOURCE: County Business Patterns, 1981

Minnesota historically has served as a regional center of wholesale trade, distributing both industrial commodities related to the state's key industries and general commodities to the retail sector. This latter function, however, has been steadily declining. Since 1940, Minnesota's concentration of wholesale employment has dropped from 40 percent above the national concentration to just 7 percent above in 1983. Average sales per capita and per employee have declined as well, but remain above the national average.

TABLE 7: Annual Average Salaries in Wholesale Trade, 1981



SOURCE: County Business Pattern 1981

This shift away from specialization in wholesale trade is occurring in response to both national and regional trends. Specifically, four trends are identified and discussed below.

1. Decreasing centralization of wholesale trade activities

Between 1940 and 1984, wholesale trade's share of total employment for the U.S. increased from 2.7 percent to 6 percent. This increase in employment reflects a reduction in the minimum population size necessary to support wholesale activities due to improvements in transportation and communications. The geographic dispersal of employment in wholesale trade is evidenced by a steady decline over the past 30 years in the concentration of wholesale trade among virtually all larger or more centralized cities in the U.S. At the same time, smaller cities and less populated parts of the country previously served by larger distribution centers have gained significantly in wholesale employment. This trend has been particularly strong in Minnesota, which historically had serviced an enormous outlying region, including Montana, North and South Dakota, northern Iowa and southwestern Wisconsin.

2. Increased utilization of in-house sales personnel as opposed to contracting with a wholesale firm

This trend is reflected in the increased percentage of non-production workers employed by the manufacturing sector. Between 1970 and 1980 Minnesota's wholesale trade industry gained 27,800 jobs, roughly 5,000 of which were sales representatives. During this same period manufacturers hired more than 6,000 sales representatives. This resulted in a 24 percent increase in the percentage of sales representatives employed in manufacturing in 1970. More in-house sales personnel are directly substituting for jobs otherwise created in the wholesale sector. In Minnesota, where there is twice the national concentration of employment in manufacturing administrative and auxiliary offices, this trend is stronger than for the nation as a whole. While in-house sales contribute to a reduction in wholesale employment, they serve the same distributive role and imply that Minnesota's decline as a distribution center is not as great as industrial employment data might suggest.

3. Strong linkages with agricultural-related industries

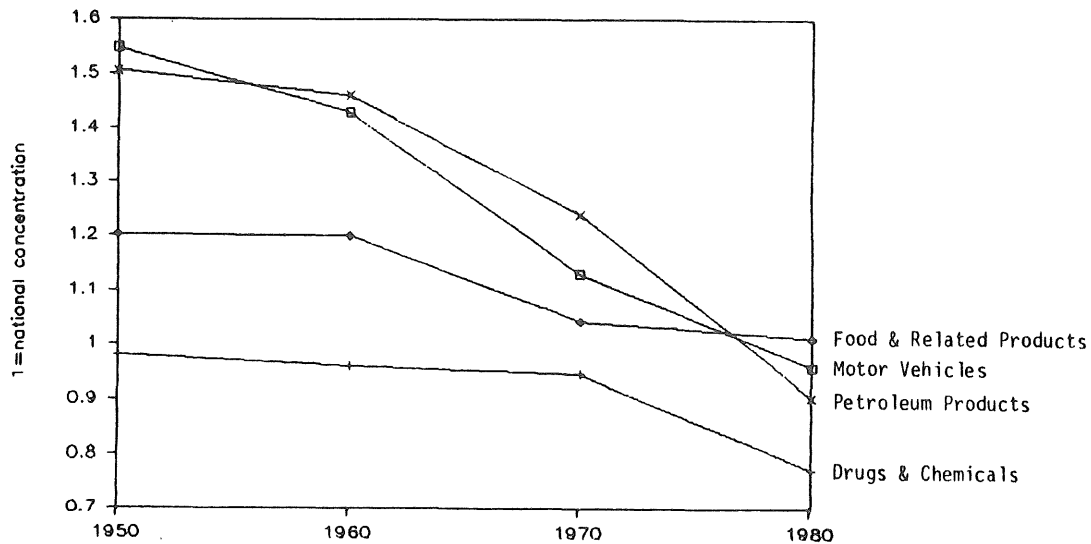
More than one of four wholesale jobs are related to food production in terms of both inputs and outputs. As the food industry has declined with significant losses in agriculture and food and kindred employment, wholesale distributors have had to face declining markets.

4. A regional market which is growing more slowly than the national market

Between 1970 and 1980, the population of the west central region of the U.S. grew by 5.2 percent compared with 11.4 percent nationally. The eastern north central region which includes Ohio, Illinois and Indiana grew by even less, 3.5 percent. In terms of labor force, the west north central region grew by 19.5 percent and the east north central by 6.2 percent compared with 21.6 percent growth nationally.

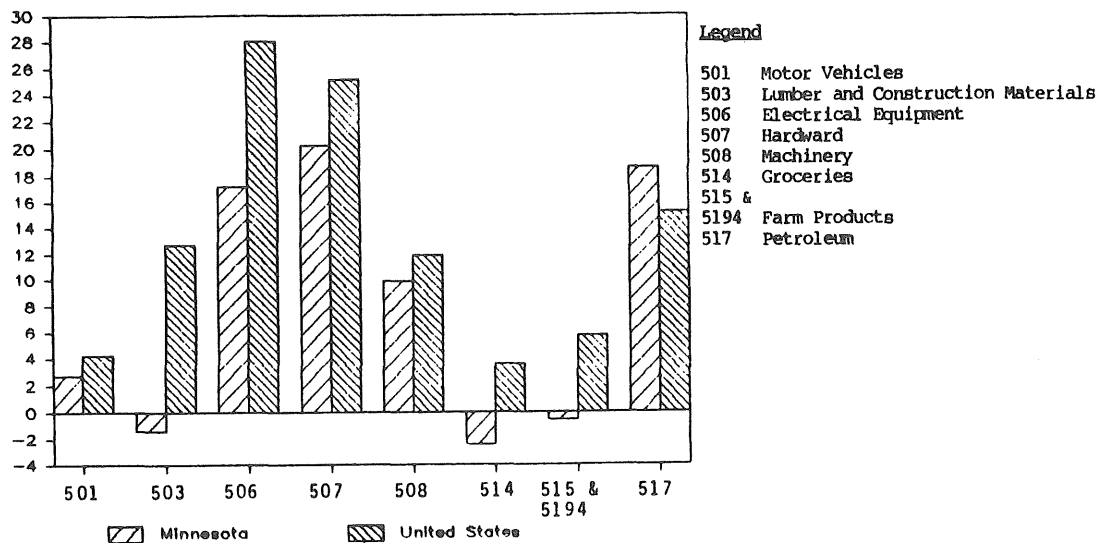
Minnesota's specialization in the wholesale distribution of commodities related to its major industries has remained strong. Its role as a general distributor to the retail sector, however, has declined in importance as outlying regions have gained in their concentration of wholesale establishments and slower regional population growth has reduced demand relative to the nation. In aggregate, wholesale trade will continue as an important source of income but its total share of payroll will most likely continue to decline.

TABLE 8: Minnesota's Changing Concentration of Employment in Wholesale Trade, 1950-1980



SOURCE: U.S. Census of Housing and Population 1960, 1980

TABLE 9: Percent Change in Wholesale Trade Employment, 1977-1981



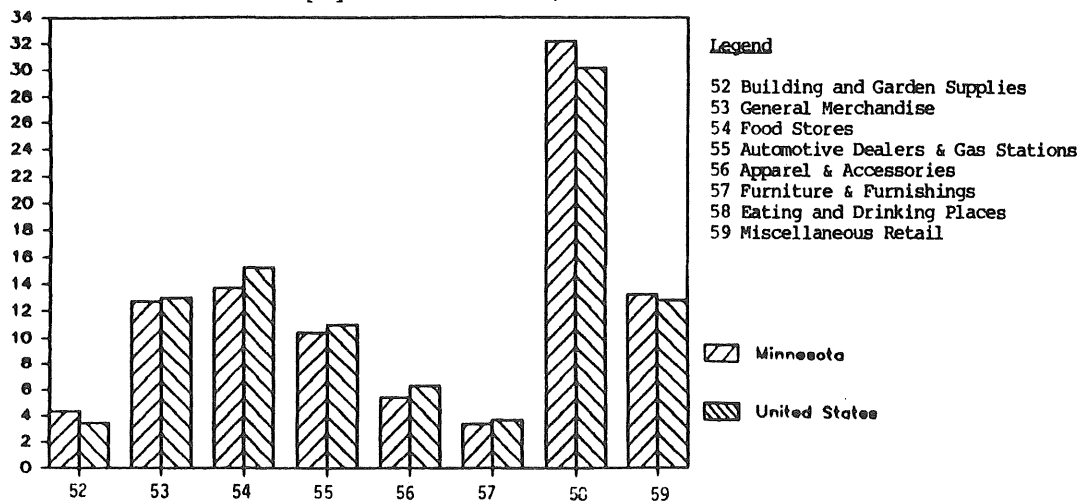
SOURCE: Average Covered Employment, 1983

Retail Trade

Employment in Minnesota's retail industry is characterized by low wages (50 percent of the state's average salary), a high concentration of part-time employees (more than 69 percent of all retail employees), and a high concentration of female employees (67 percent of all retail sales workers). While the national retail industry demonstrates the same characteristics, take-home salaries in Minnesota are lower, average weekly hours are shorter, and female employment is higher.

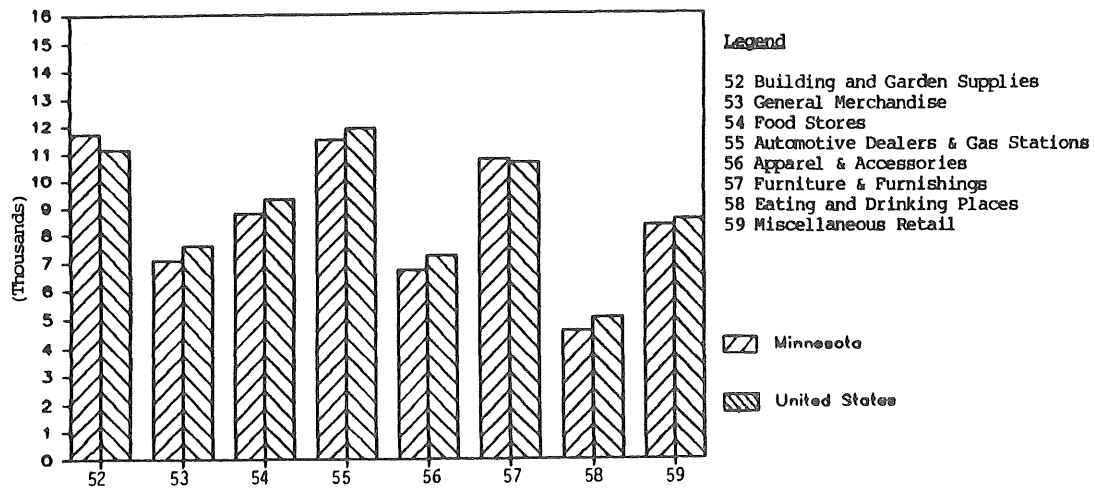
Minnesota has had a higher concentration of retail employment than the nation for more than 30 years, reflecting both a greater number of establishments per capita and a greater number of employees per establishment. Consequently, Minnesota's retail sector has lower sales per employee despite higher than national per-capita receipts.

TABLE 10: Distribution of Employment in Retail Trade, 1981



SOURCE: County Business Patterns, 1981

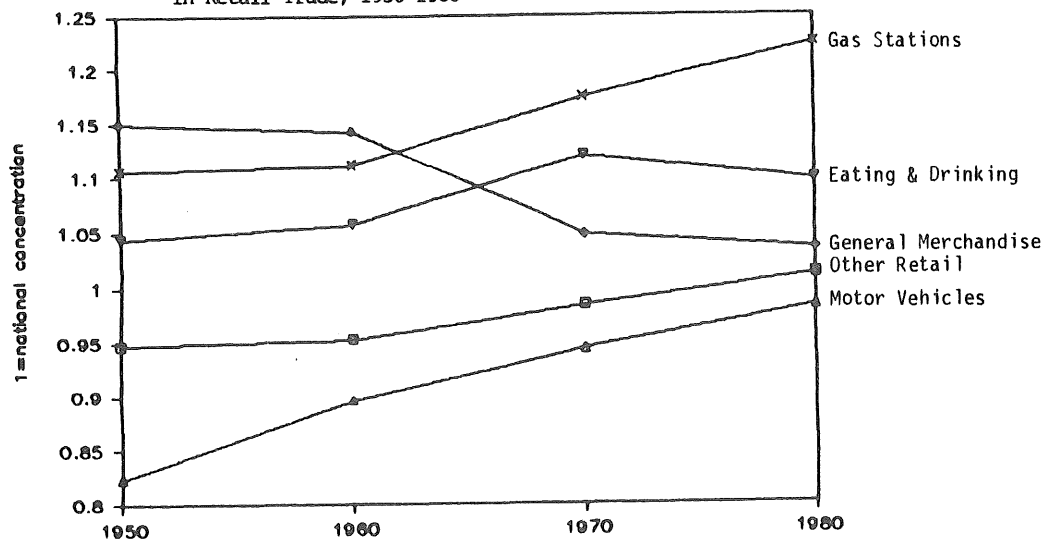
TABLE 11: Average Annual Salaries in Retail Trade, 1981



SOURCE: County Business Patterns, 1981

In part, Minnesota's high concentration of establishments may be attributed to its comparatively low population density. To the extent that retail establishments are tied to local demand, a greater number of establishments may be required to service a more dispersed population. Currently, Minnesota's population density is 20 percent lower than the national average and there are roughly 5 percent more establishments per capita.

TABLE 12: Minnesota's Changing Concentration of Employment in Retail Trade, 1950-1980

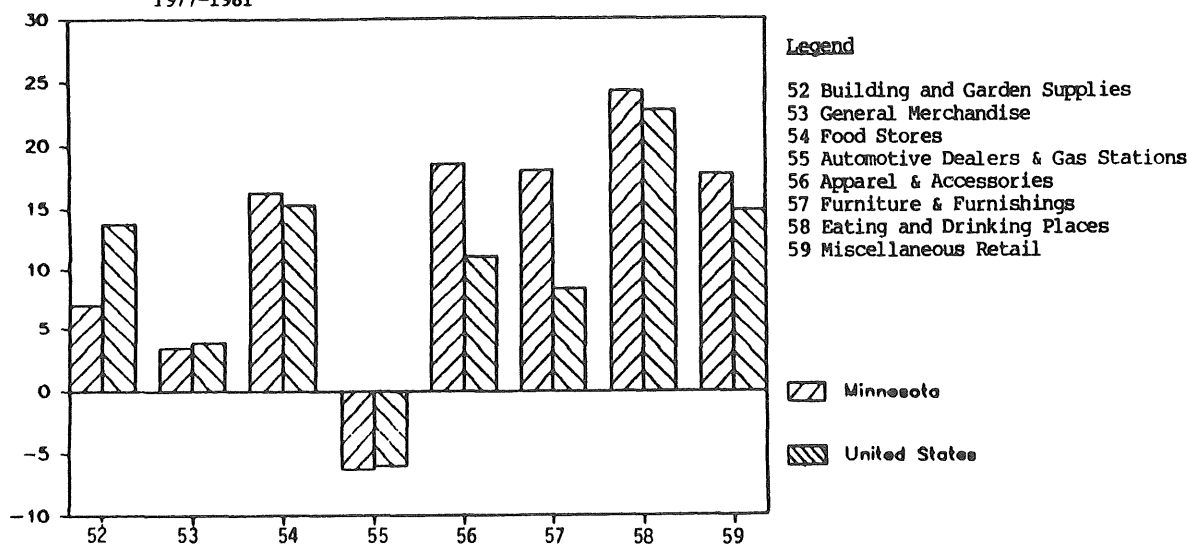


SOURCE: Census of Housing & Population — 1960, 1980

A second factor relating to Minnesota's higher concentration of retail employment is the high incidence of part-time workers. Both Minnesota and the U.S. have experienced a long-term decline in average weekly retail hours. Nationally, average weekly hours in the retail sector have declined from 40.4 in 1950 to a low of 29.2 in 1982. In Minnesota, where hourly data has been available only since 1972, average weekly hours have been roughly 8 percent lower than for the U.S. throughout this period.

Growth in retail employment and the trend toward shorter hours have been fueled foremost by the increase in the number of eating and drinking establishments, which now dominate retail employment, payroll and receipts. In Minnesota, this industry accounts for almost one-third of total retail employment and more than one-half of all new retail jobs. These establishments, however, maintain an average work week of only 21 hours and have among the lowest average salaries of all industries.

TABLE 13: Percent Change in Employment in Retail Trade, 1977-1981



SOURCE: County Business Patterns

When employment growth is considered on a full-time-equivalent basis, retail trade's share of new employment drops from roughly one out of every five new jobs to less than one of seven. In terms of output per person-hour, retail trade has made long-term productivity gains which are roughly one-third the average of all nonagricultural industries.

Slower productivity growth and the decline in average weekly hours have both contributed to this sector's declining importance as a source of income. Between 1974 and 1981, the retail-trade share of Minnesota's total payroll declined from 12.6 percent to 11.3 percent while its share of total employment remained constant. This decline is reinforced by the growing incidence of involuntary part-time employment. According to the decennial census of housing and population, the incidence of involuntary

part-time employment increased by 300 percent between 1970 and 1980. This increase, which includes all persons willing but unable to find full-time positions, is larger for retail trade than for all other industries.

Since 1982, however, the situation in retail trade has shown signs of improvement. During the past two years, average weekly hours for non-supervisory personnel have increased by 4.5 percent and average hourly wages have increased by nearly 2 percent after inflation. This has resulted in a 9 percent increase in weekly earnings, exceeding most other industries.

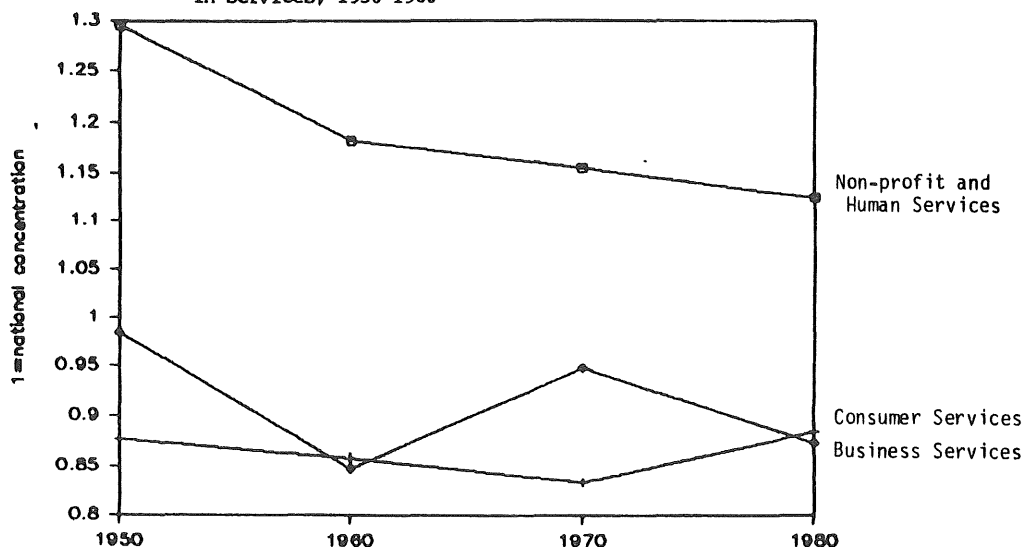
SERVICES

Services are Minnesota's second largest source of employment and the third largest source of income. As of 1983, services accounted for 23 percent of total nonagriculture employment and 17.5 percent of total nonagriculture payroll, about the same as for the nation. In aggregate, Minnesota's service industry has been growing at the national rate for three decades and currently represents more than one of every three new jobs. If this trend continues, services will be Minnesota's largest employer before 1990.

Services are characterized by a high concentration of female employment (63 percent of total employment), and high concentrations of both high-skill full-time and low-skill part-time jobs. However, the dominance of low-wage occupations results in an industry wage 25 percent below the state average. Nationally, female service employment is lower, weekly hours are longer and average income is higher than in Minnesota.

The 14 industries which make up the service sector serve one of three distinct markets: businesses, private households, and the community-at-large, through nonprofit and human service organizations. These broad markets provide a basis for grouping Minnesota's service industries, which, when compared with their national counterparts, reveal a number of distinctions.

TABLE 14: Minnesota's Changing Concentration of Employment in Services, 1950-1980



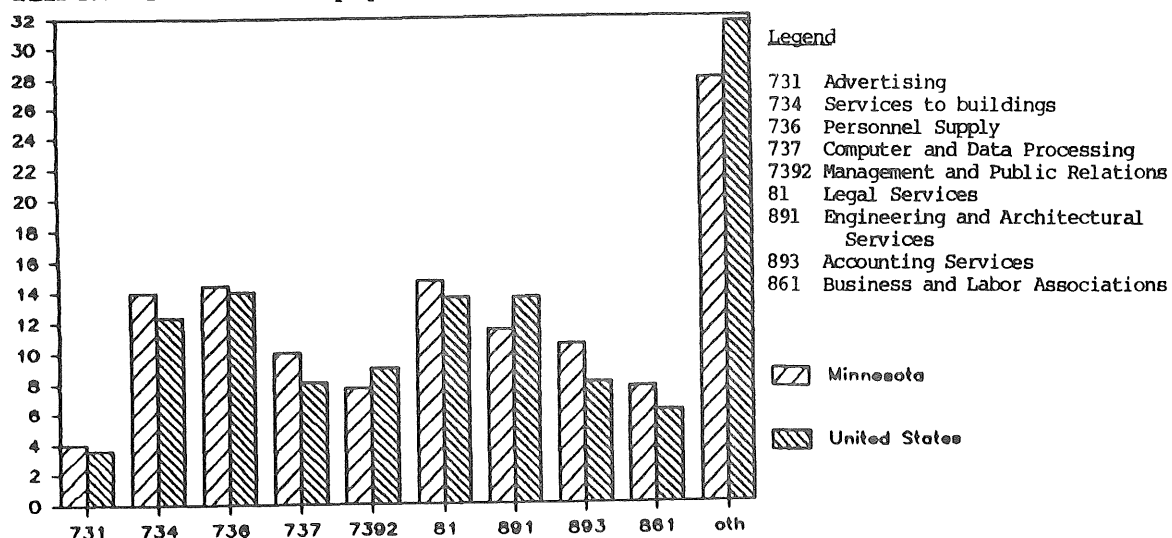
SOURCE: Census of Housing and Population, 1960 and 1980

Business Services

Business services include personnel supply agencies, data processing, building maintenance, advertising and public relations firms, legal services, business, labor, and trade associations, engineering, architecture, and accounting firms. Collectively, these industries represent 23 percent of service employment and 29 percent of service payroll, compared with 27 percent and 34 percent nationally. In terms of sales, less than 9 percent of total output goes to households while over

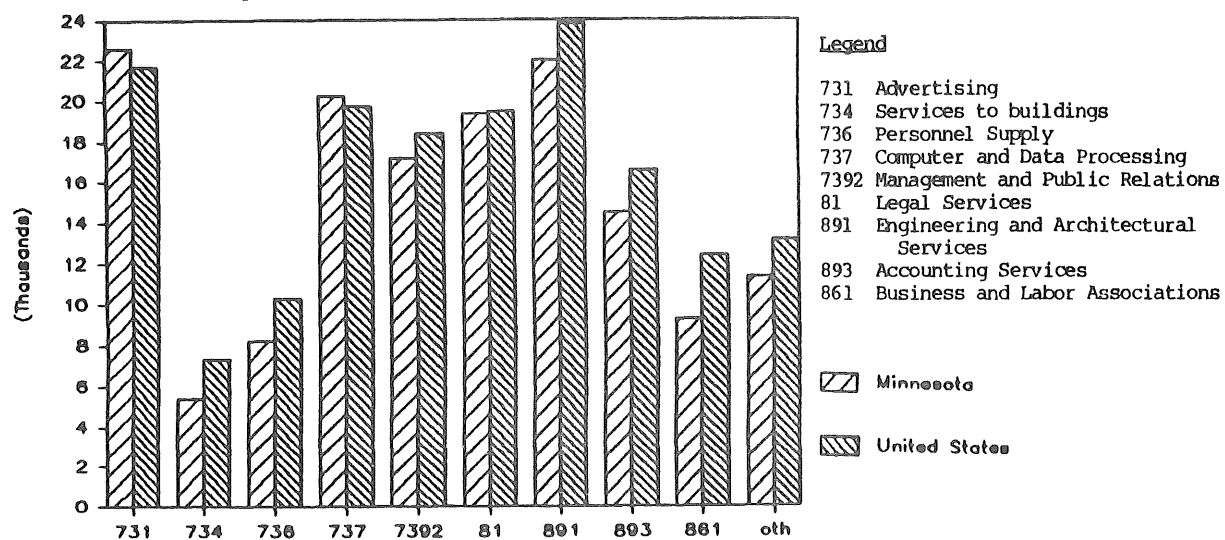
80 percent goes to industries outside of services, including, 23 percent to manufacturing, 18 percent to trade, and 10 percent to finance and real estate.

TABLE 15: Distribution of Employment in Business Services, 1981



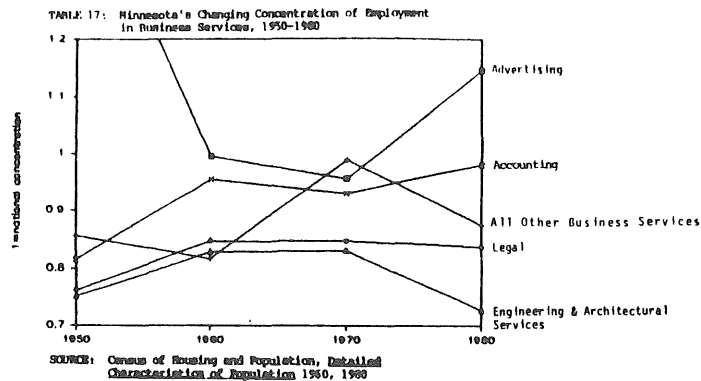
SOURCE: County Business Patterns, 1981

TABLE 16: Average Annual Salaries in Business Services, 1981



SOURCE: County Business Patterns, 1981

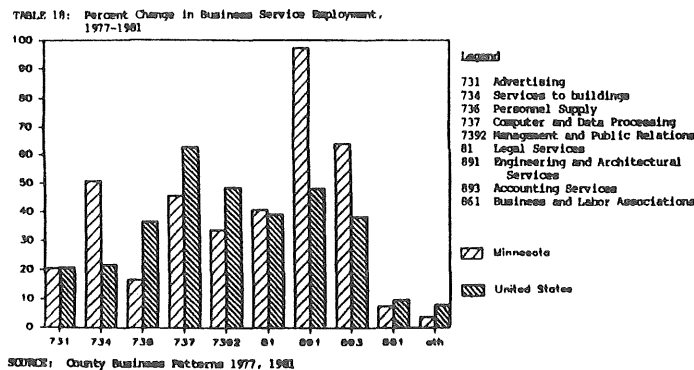
Business services are Minnesota's fastest growing service sector, gaining employment at nearly twice the state's average rate of growth. National growth, however, is occurring even faster. Currently, Minnesota's concentration of business service employment is about 10 percent below the national concentration and declining.



Minnesota's slower than national growth in business services may be related to its higher than national concentration of non-production workers in the manufacturing sector. As with wholesale trade, an increased share of non-production workers substitutes for employment which would otherwise be contracted out. For example, in 1980 Minnesota's concentration of computer programmers in the manufacturing sector was nearly three times greater than the national concentration while employment in data processing sectors was 25 percent lower.

Secondly, a number of specialized business services including legal, engineering and architecture services, and public relations and market research are highly concentrated in the nation's largest business centers. Many businesses in Minnesota may therefore rely on cities like New York and Chicago for certain more specialized functions. Under these circumstances, a substantially larger economic base may be required to support a range of more specialized business services in addition to the general services already provided.

Finally, because 90 percent of total output in business services goes to industry. Minnesota's slower than national growth may be partially related to the state's lagging employment growth in trade, construction, finance, utilities and real estate.

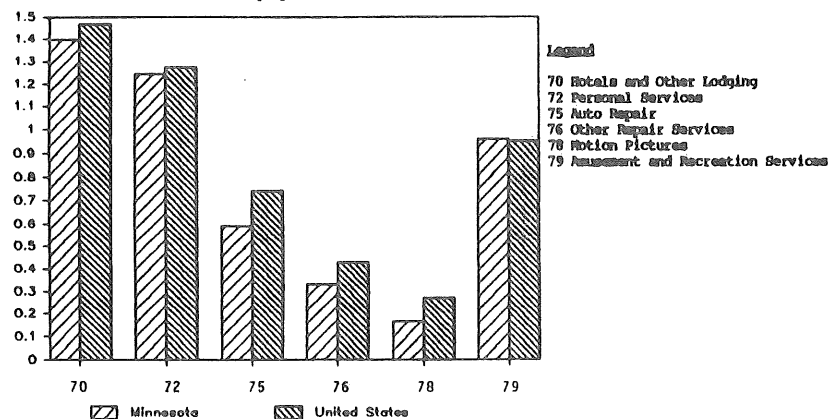


Consumer Services

Consumer services include hotels and other lodging places, personal services, such as barber shops, beauty parlors and furriers, automobile and other repair services, motion picture theatres and live entertainment. Collectively, these industries represent 19 percent of total employment and 15 percent of total payroll, compared with 22 percent and 17 percent nationally. In terms of sales, over 66 percent of total output is consumed by households.

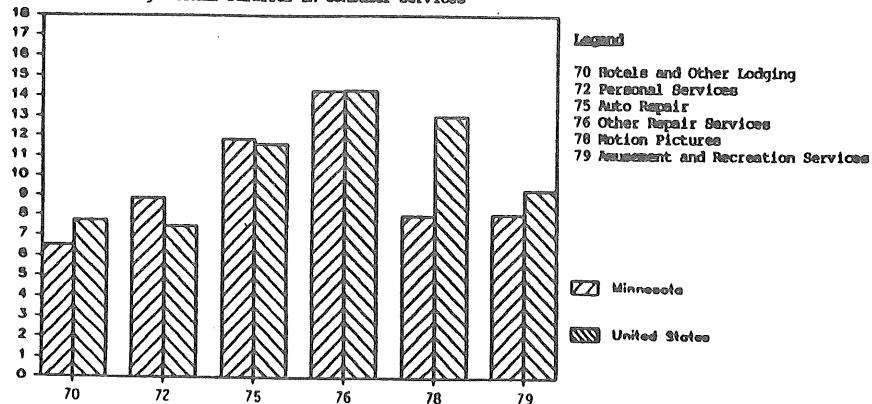
As with the retail sector, employment in consumer services is characterized by a high concentration of part-time employment (nearly 65 percent of total employment), low wages (less than 55 percent of the state average), and a moderately high concentration of female employees (53 percent of total employment).

TABLE 19: Distribution of Employment in Consumer Services, 1981



SOURCE: County Business Patterns

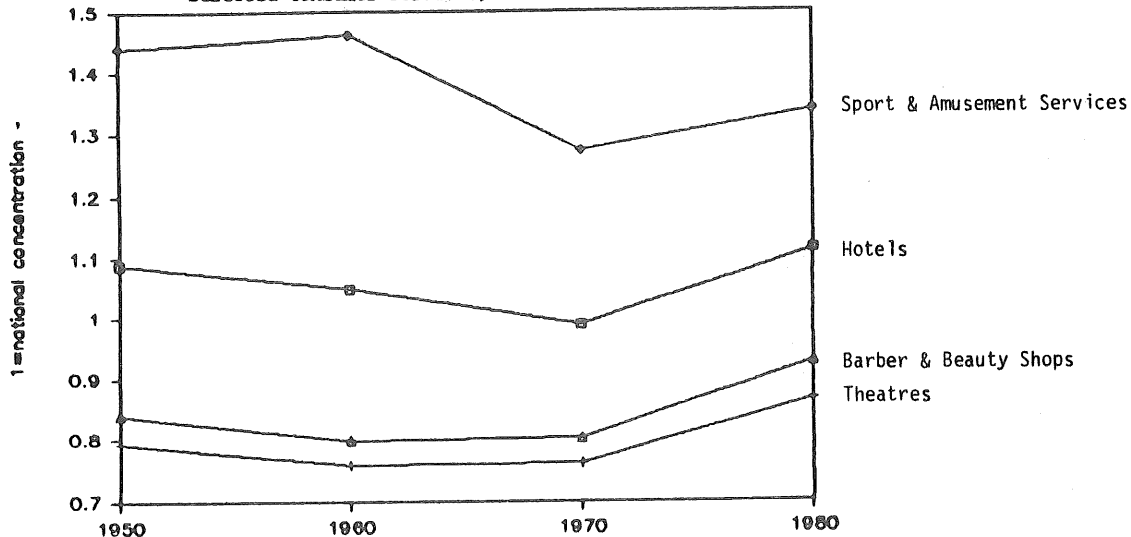
TABLE 20: Average Annual Salaries in Consumer Services



SOURCE: County Business Patterns, 1981

Since 1950, consumer services have gone from Minnesota's largest service sector to its smallest and continue to grow at a lower rate than other service industries. Despite its declining share of total service employment, the consumer service sector is gaining employment at a rate 25 percent faster than its national counterpart and 25 percent faster than the average rate of growth for all Minnesota industries. In fact, only one consumer service industry — personal services — is growing significantly slower than the state average. Minnesota's growing concentration can be attributed to three basic factors: metropolitan growth, shifts in aggregate demand, and growth in tourism.

TABLE 21: Minnesota's Changing Concentration of Employment in Selected Consumer Services, 1950-1980

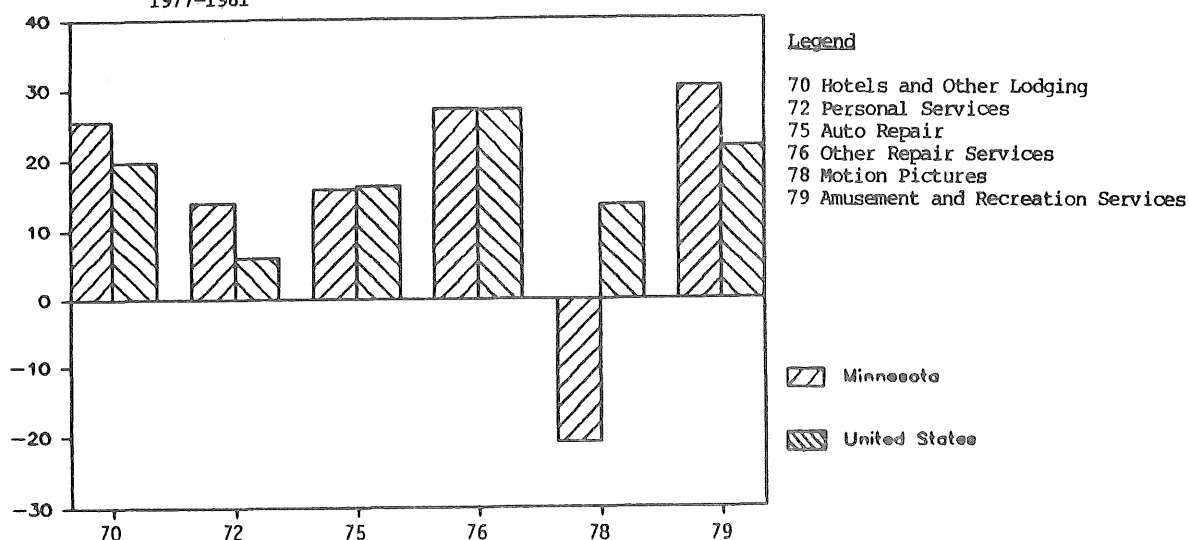


SOURCE: Census of Housing and Population, Detailed Characteristics of Population 1960, 1980

Minnesota's historically lower than national share of employment in consumer services is in part accounted for by an urban population 9 percent smaller than the national average. Many consumer services, including motion picture theatres, sporting complexes, performing art centers and zoos, require a sufficient mass of population to be economically feasible. The growth of Minnesota's metropolitan areas may therefore be supporting consumer services which were not economically feasible 10 years ago.

Minnesota per capita receipts for the consumer service sector have increased from 14 percent below the national average in 1977 to less than 1 percent below in 1982. Minnesota's historically lower than national demand for consumer services is characteristic of less urbanized populations. The recent surge of growth may therefore also be related to the maturing of Minnesota's metropolitan population. This trend is reflected not only by a larger number of households, but by smaller sized households and a steady rise in the percentage of dual-wage-earner households. Both of these factors contribute to larger disposable incomes and a stronger demand for consumer services.

TABLE 22: Percent Change in Employment in Consumer Services,
1977-1981



SOURCE: County Business Patterns

Because consumer service industries are mainly tied to local demand, Minnesota's concentration is not likely to greatly exceed the national share of employment. To the extent that it does, however, growth in consumer services may be reflecting growth in Minnesota's travel and tourism industries.

According to the U.S. Travel Data Center, between 1979 and 1983 travel expenditures grew 50 percent faster in Minnesota than they did for the U.S. as a whole. This growth has been stimulated by out-of-state travelers. With nearly 40 percent of all travel expenditures going to consumer services, tourism accounts for a significant share of growth in consumer service employment. If these three trends continue -- the increase in urbanization the increase in household disposable income and the increase in travel and tourism activity, Minnesota's growing concentration of employment in the consumer sector is likely to be sustained throughout the decade.

Nonprofit and Human Services

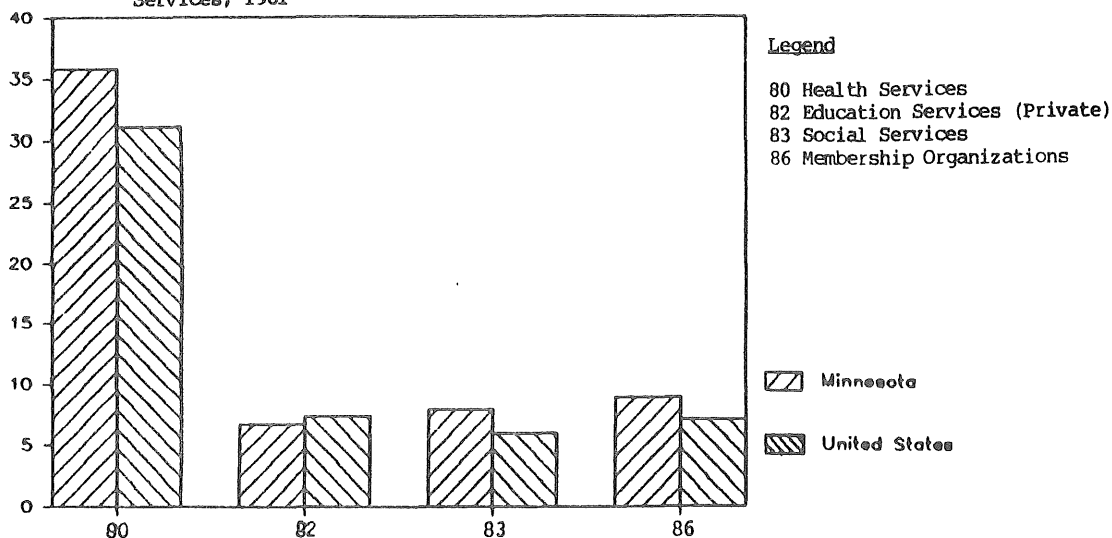
Nonprofit and human services is the largest of the three service sectors. The industries which make up this sector include health institutions, with nearly half of all health employment in nursing homes, private education including vo-tech schools, social service organizations such as the United Way and welfare offices, membership organizations such as the YMCA, and religious organizations which are at nearly twice the national concentration. Over 87 percent of total output from this sector is consumed by households, while less than 4 percent is consumed by private business. Virtually all of the activities performed by the nonprofit and human service industries provide care, training or information to the public.

Employment in nonprofit and human services is characterized by high concentrations of both professional and service occupations (roughly 35 percent of each), a moderately high share of part-time employment (roughly 45 percent of total), and an industry wage 10 percent below the state average. This very large share of professionals, roughly 40 percent higher than in other industries, is mostly due to the number of teachers in private education as well as a large number of professionals in the health and social service industries. The dominant share of low wage service workers is also accounted for by the health industry which staffs roughly four service workers for every professional. While wages in the nonprofit human service sector are lower than the state average, they are growing much more rapidly than consumer service or retail sector wages.

As of 1983, this sector accounted for 57 percent of total service employment and 54.5 percent of total service payroll, compared with 49.7 percent and 48 percent nationally. Minnesota has had a higher than national concentration in virtually all of the nonprofit human service industries since at least 1940. Currently, Minnesota's share of employment in this sector is 35 percent greater than the nation's but employment growth has slowed to the national rate.

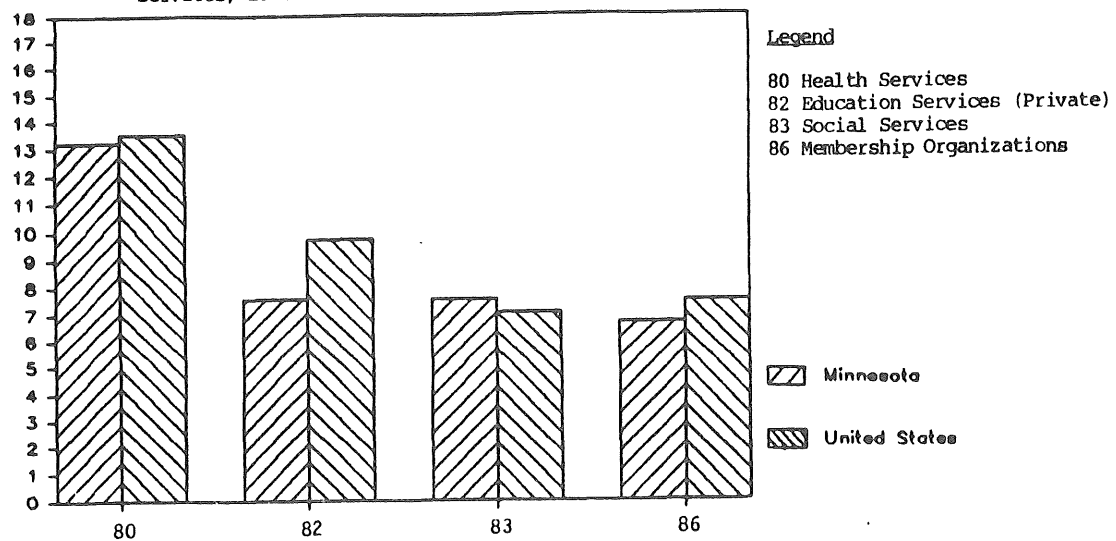
Nonprofit and human services account for one of every five new jobs and 60 percent of all new service employment. Among other factors contributing to Minnesota's higher than national concentration of employment in the nonprofit and human service industries is the state's high level of public expenditures. As of 1981, Minnesota ranked fifth among all states in per-capita expenditures. A significant proportion of these expenditures occur through the nonprofit and human service sector, which serves as a subcontractor to government. A second factor is Minnesota's very high rate of philanthropy among both foundations and households. On a per-capita basis, both of these major sources of nonprofit income have been consistently larger for Minnesota than the nation. Minnesota's higher rate of giving facilitates both a larger nonprofit sector and a wider base of support for nonprofit activities.

TABLE 23: Distribution of Employment in Human and Nonprofit Services, 1981



SOURCE: County Business Patterns

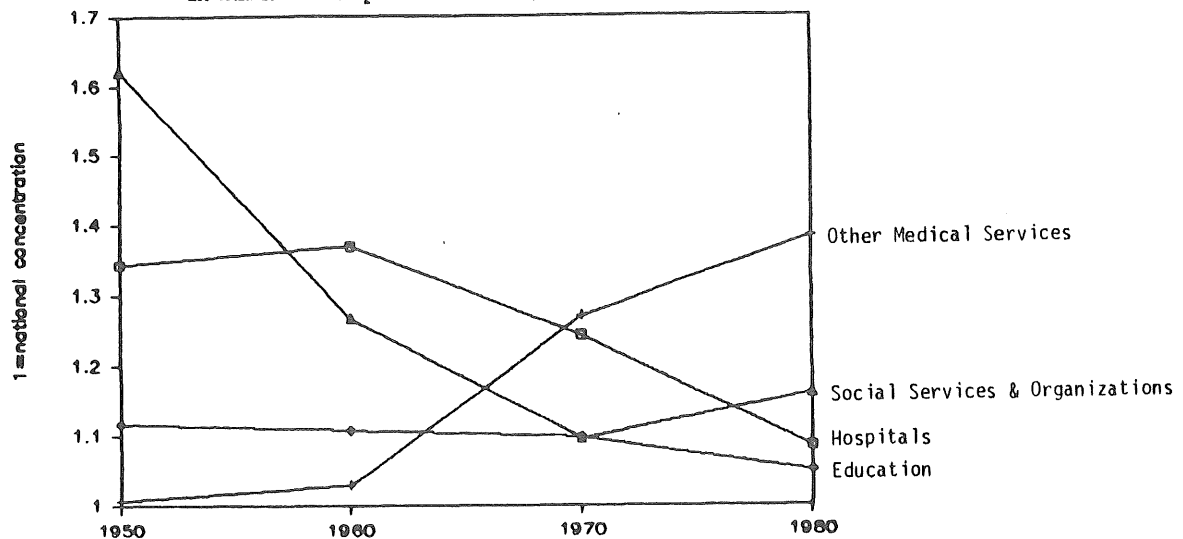
TABLE 24: Average Annual Salaries in Human and Nonprofit Services, 1981



SOURCE: County Business Patterns, 1981

From a geographical perspective, having the largest metropolitan population within 400 miles helps to support a number of more specialized services such as organ transplants. These specialized services also contribute to the state's export base income by attracting a substantial level of out-of-state clients.

TABLE 25: Minnesota's Changing Concentration of Employment in Human and Nonprofit Services, 1950-1980

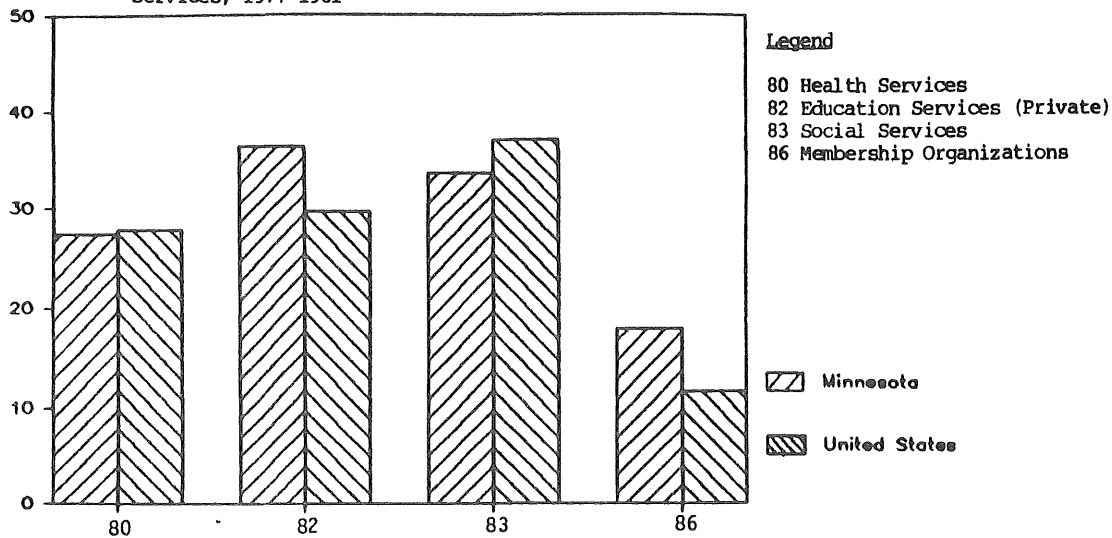


SOURCE: Census of Housing and Population 1960, 1980

Minnesota's recent slowdown in growth relative to the nation is the product of a number of factors. In part, the state's very high concentration of employment in several key human service industries may reflect a practical limitation on the continued expansion of markets. The slowdown may also be a response to federal budget cuts which have affected human services and the nonprofit sector disproportionately relative to other industries. Finally, Minnesota's slowdown may be a reflection of shifts in technology and tastes. Health maintenance organizations, for example, have dramatically substituted for hospital services, and corporations have assumed a progressively more important role in the delivery of human services to their employees including counseling and health services, day care, and training.

Despite these various factors, the growth of nonprofit and human services remains at nearly twice the state average. This growth rate coupled with its high concentration of employment and large size makes this sector Minnesota's largest source of new employment.

TABLE 26: Percent Change in Employment in Human and Nonprofit Services, 1977-1981



SOURCE: County Business Patterns

MANUFACTURING

Manufacturing is Minnesota's largest source of income and the third largest source of employment. During the past 25 years, the composition of Minnesota's manufacturing sector has shifted from a high concentration of employment in food processing with under-representation in most other industries, to a diversified producer with a specialization in the production of technology-intensive goods. Despite a contrary impression, Minnesota has emerged as a national manufacturing center for a broad range of commodities.

Since 1950, Minnesota has gained manufacturing employment at more than three times the national rate. During this period, manufacturing's share of total employment in Minnesota has gone from 26 percent below the national concentration to less than 1 percent below. If current growth trends continue, Minnesota will exceed the national concentration of manufacturing employment in 1985.

As of 1983, manufacturing accounted for 20.7 percent of total nonagricultural employment and 33 percent of payroll, compared with 20.9 percent and 34 percent nationally.

Employment in manufacturing is characterized by high wages (25 percent higher than the state average), full-time employment (less than 11 percent part-time employees), and a relatively low percentage of female employees (29 percent of total employment). Compared with the nation, Minnesota's manufacturing sector has slightly higher wages, shorter weekly hours, a larger share of female employment and a significantly higher concentration of white-collar employment.

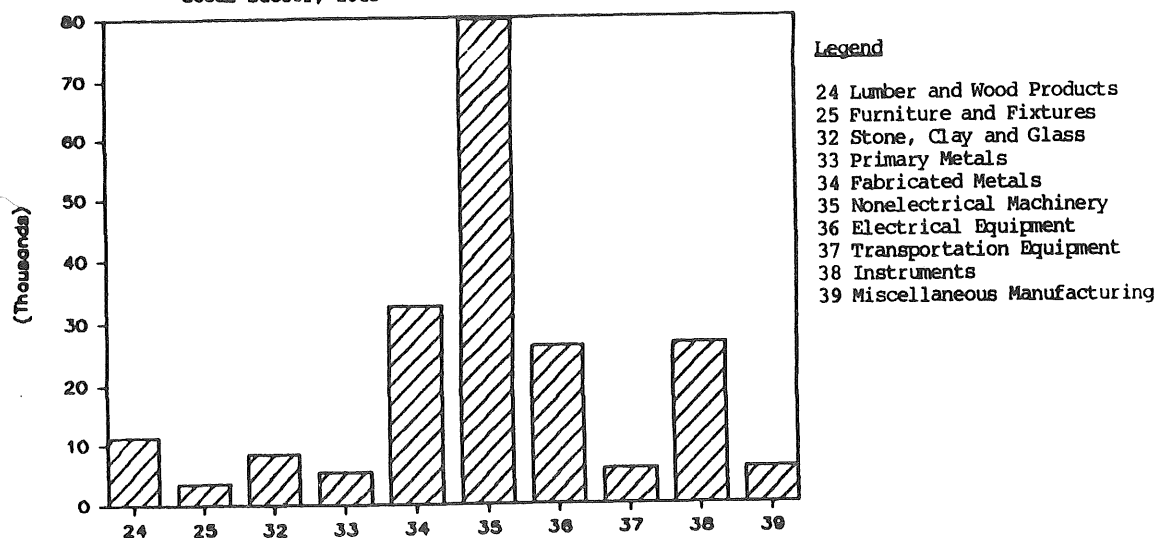
The industries which make up manufacturing are classified according to their principal commodity of production. The most general classification groups industries into sectors according to the average life or durability of their principal commodity. Durable goods include all commodities with an average life exceeding one year, including automobiles, industrial machinery and equipment, furniture, and construction materials. Nondurable goods include all commodities of an average life of less than one year, including food products, apparel and textiles, paper, plastic and rubber products, petroleum and chemicals.

Between 1960 and 1980, over 80 percent of Minnesota's employment growth in manufacturing employment has come from the durable goods sector. This gain is almost entirely accounted for by four industries: 1) fabricated metals, which produces defense-related products and various shaped metal products from doors to cutlery to plumbing; 2) electrical machinery, which produces communication equipment such as appliances and semiconductors; 3) nonelectrical machinery, which produces construction equipment, computers, and farm machinery; and 4) instruments, which produces medical devices, such as pacemakers, and measuring and control devices such as thermostats.

There are strong linkages between these 4 industries, and as major consumers of each other's output, they represent the heart of Minnesota's manufacturing sector. Most of their output, however, is ultimately distributed to national and international markets with over 70 percent of

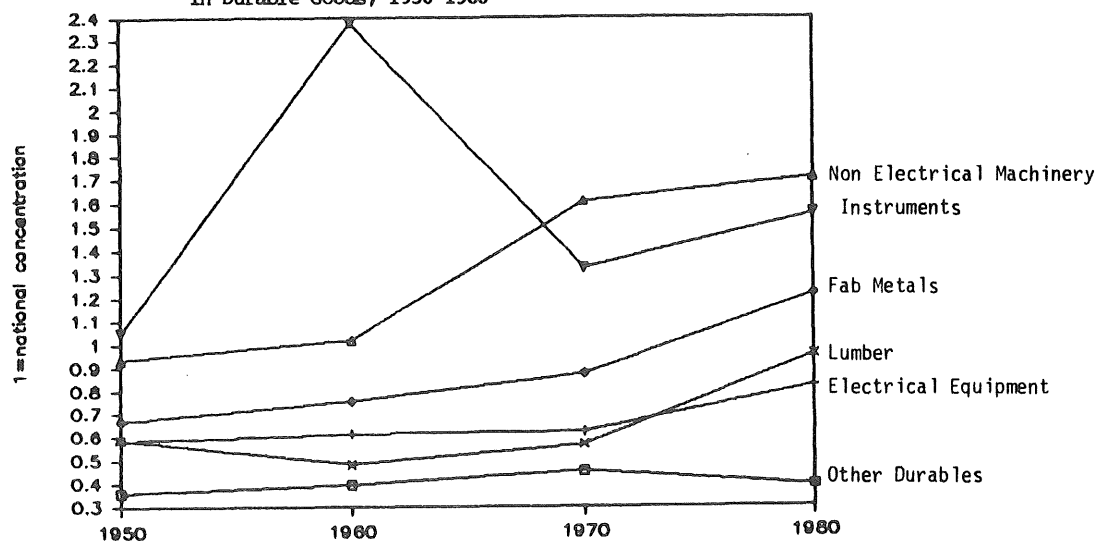
total shipments going outside the north central region, and over 20 percent to foreign export.

TABLE 27: Distribution of Employment in Minnesota's Durable Goods Sector, 1983



SOURCE: County Business Patterns, 1983

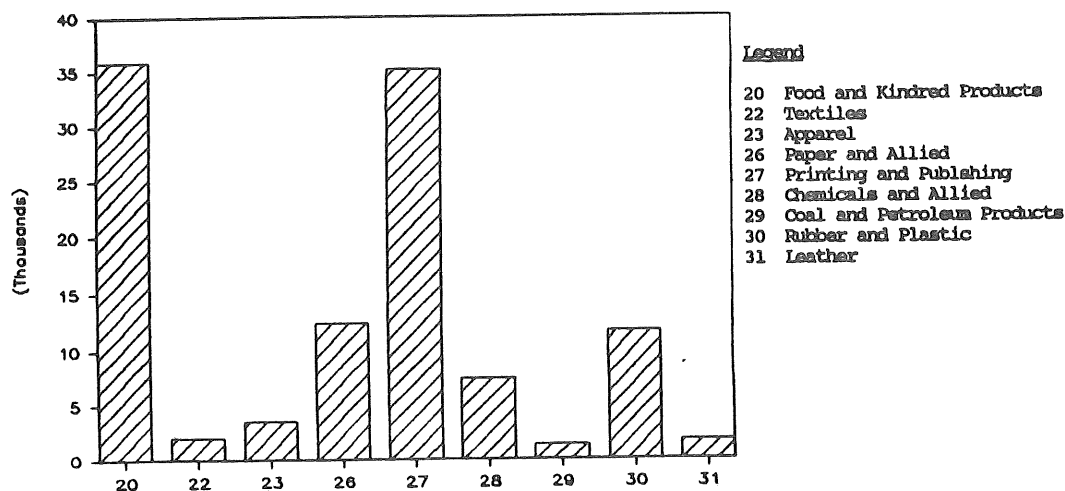
TABLE 28: Minnesota's Changing Concentration of Employment in Durable Goods, 1950-1980



SOURCE: Census of Housing and Population, Detailed Characteristics of Population 1960, 1980

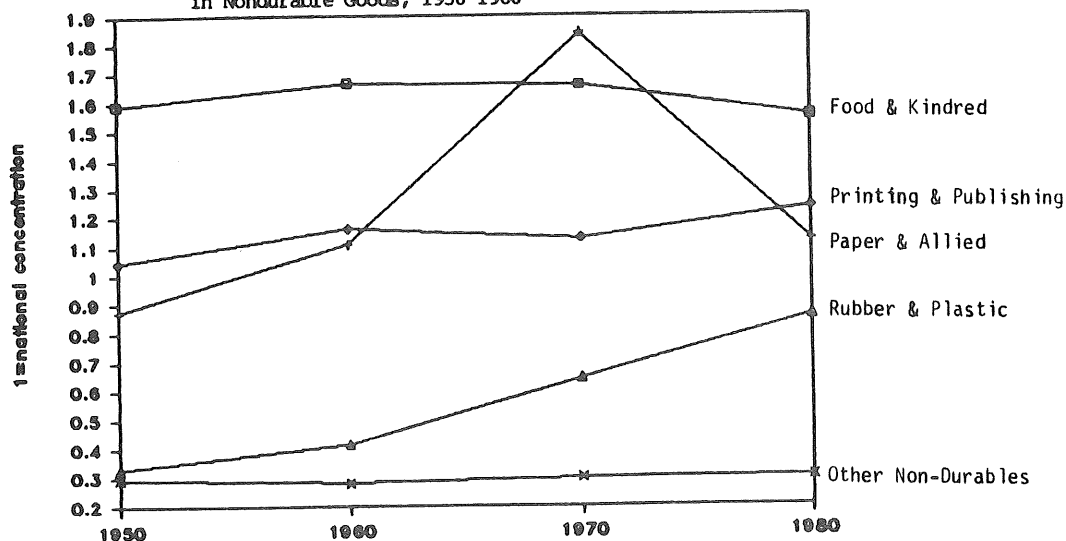
The one nondurable industry to demonstrate comparable growth during this period has been printing and publishing. This industry alone represents 70 percent of the output growth in nondurable goods since 1960. Growth in this industry has been driven largely by an expansion of the national market for published materials.

TABLE 29: Distribution of Employment in Minnesota's Nondurable Goods Sector, 1983



SOURCE: County Business Pattern 1983

TABLE 30: Minnesota's Changing Concentration of Employment in Nondurable Goods, 1950-1980



SOURCE: Census of Housing and Population, Detailed Characteristics of Population 1960, 1980

The performance of the industries which make up Minnesota's manufacturing sector have varied dramatically. Between 1980 and 1984 growth rates ranged from 8 percent increase in printing and publishing employment to a 40 percent decrease in apparel employment. Only a few industries, however, grew slower or declined faster than their national counterparts.

Given the number of factors which affect each industry in manufacturing, from foreign trade to availability of natural resources, major trends are discussed on an industry-by-industry basis. To help facilitate this discussion industries have been grouped into three categories: those industries which greatly exceed the national concentration of employment, those at the national concentration and those significantly below the national concentration. An industry's concentration of employment is particularly important in manufacturing because it provides a fairly reliable estimate of export base income and helps to identify industries which have a comparative advantage in Minnesota.

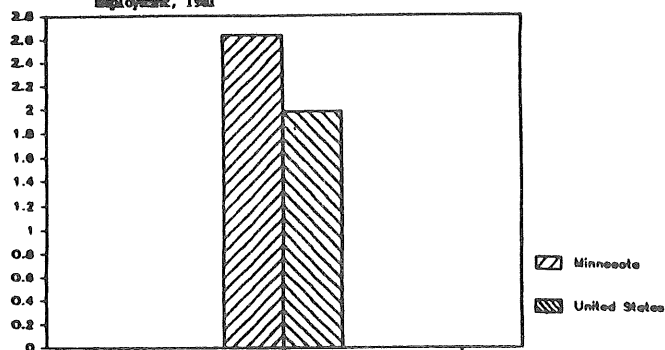
INDUSTRIES ABOVE THE NATIONAL CONCENTRATION

Food and Kindred Products

Food and kindred products include establishments manufacturing or processing foods and beverages for human consumption and certain related products such as ice, vegetable and animal fats and prepared feeds for animals.

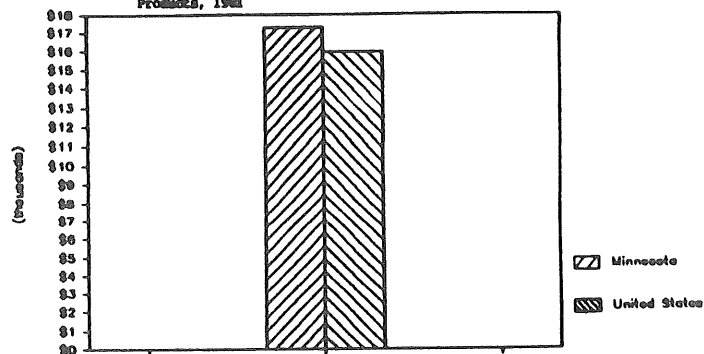
As of 1983 food and kindred products was Minnesota's second largest manufacturing industry with 46,000 people in 583 establishments. Wages in the food and kindred products industry are 13 percent below the state's average manufacturing wage and 1.4 percent above its national counterpart. Food and kindred products are the most important source of nonmetropolitan manufacturing employment with nearly 25 percent, which represents more than 60 percent of this industry's total employment.

TABLE 31: Food and Kindred Products as a Percent of Total Employment, 1983



SOURCE: County Business Patterns, 1983

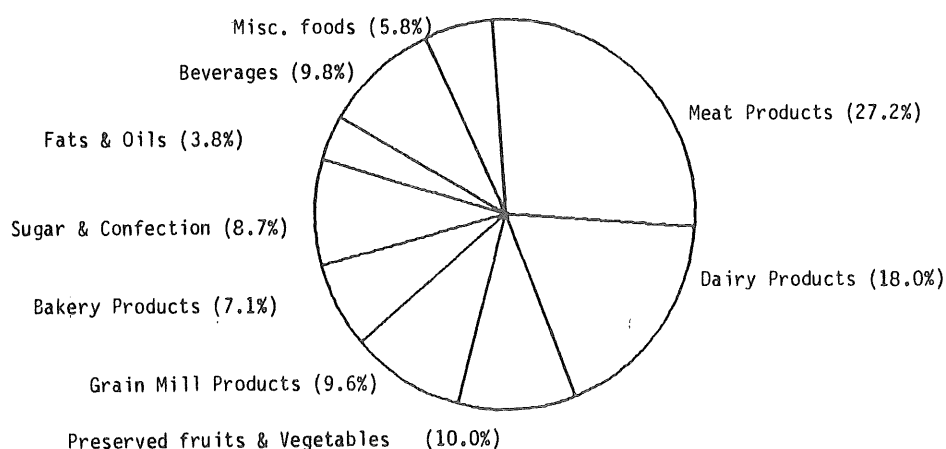
TABLE 32: Average Annual Salaries in Food and Kindred Products, 1983



SOURCE: County Business Patterns, 1983

Roughly 55 percent of food and kindred's employment is related to the production of meat, dairy or grain mill products. These 3 industries have dominated food and kindred employment for over 35 years.

TABLE 33: Distribution of Employment in Minnesota's Food and Kindred Products Industry, 1981



SOURCE: County Business Patterns 1981

Between 1960 and 1980, the food and kindred industry declined from Minnesota's largest manufacturer with one of every four manufacturing employees to the second largest with one of every eight employees. During this period over 13,000 jobs were lost, a 22 percent decline compared with 16 percent nationally.

The largest losses in food and kindred employment have occurred in the dairy and meat products industries. Twenty-five years ago, both of these industries had more than twice the national concentration of employment and accounted for well over half of food and kindred's 58,000 workers. Shifts in consumer demand, however, accompanied by a slowdown in regional population growth and obsolescence of plants and equipment, have reduced the number of workers by nearly 10,000 and the concentration of employment to less than 40 percent above the national share.

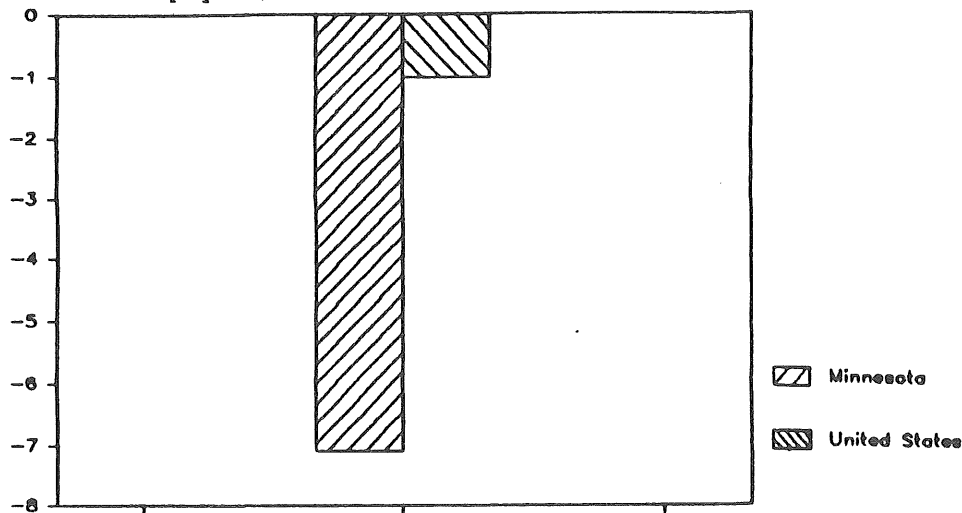
Since 1980 employment in meat products has stabilized, increasing by 1 percent, while dairy products has continued to decline.

Two other well established but less concentrated industries, grain products and fats and oils, have remained stable for over two decades, while two comparatively smaller and less established industries, confectionery and bakery products, recently experienced sharp declines after a 10-year period of expansion.

As a major consumer of agricultural products as well as commodities produced by the paper, printing and publishing and fabricated metals industries, food and kindred products is a major source of indirect manufacturing employment. Food and kindred products is a major supplier to agriculture, chemicals, leather, eating and drinking places, health, education, and households, with 63 percent of all output being shipped within the seven-state northwest region. Because this industry is primarily orientated toward serving a regional market, its growth relative

to the nation has been affected primarily by the growth of the northwest central region.

TABLE 34: Percent Change in Food and Kindred Products Employment, 1977-1981



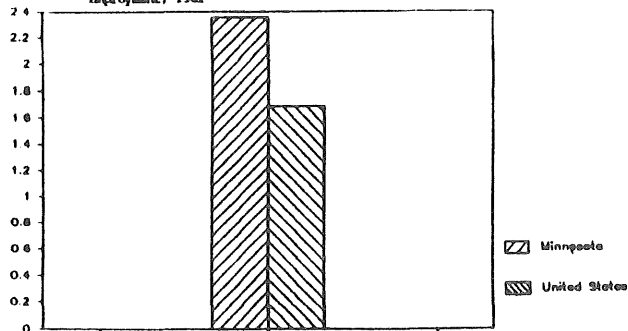
SOURCE: County Business Patterns, 1981

Printing and Publishing

Printing and publishing includes establishments engaged in printing by one or more of the common processes, such as letterpress, lithography, and screening, and those establishments which perform services for the printing trade, such as bookbinding, typesetting, and engraving. This major group also includes establishments engaged in publishing newspapers, books and periodicals regardless of whether they do their own printing.

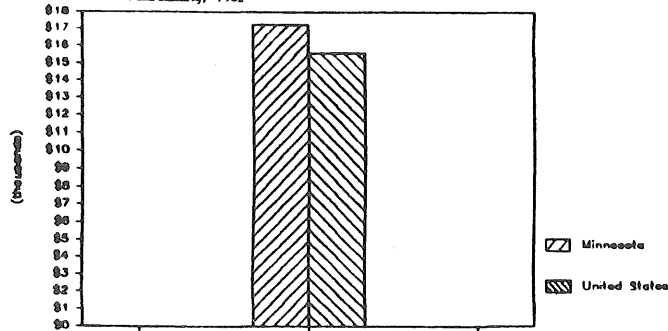
As of 1983, printing and publishing was Minnesota's third largest manufacturing industry with 36,340 employees in 1,500 establishments. Wages are 13 percent below Minnesota's average manufacturing wage but 3 percent above its national counterpart.

TABLE 15: Printing and Publishing as a Percent of Total Employment, 1981



SOURCE: County Business Patterns, 1981

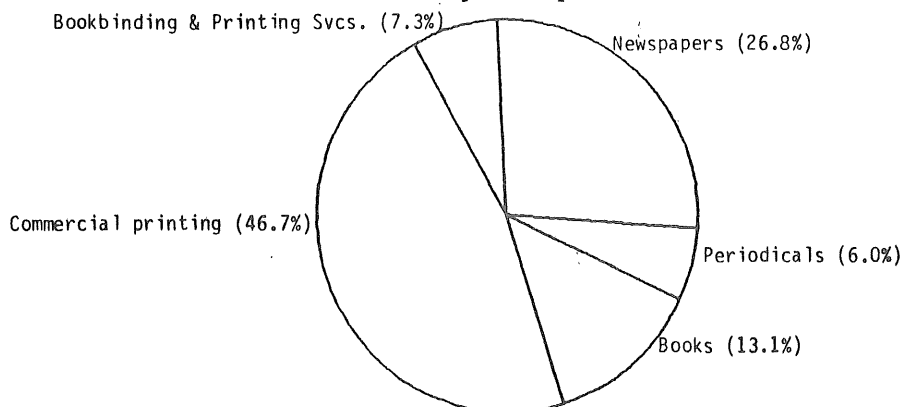
TABLE 16: Average Annual Salaries in Printing and Publishing, 1981



SOURCE: County Business Patterns, 1981

Roughly half the printing and publishing employment is in commercial printing operations, another third in newspapers and periodicals and the balance in book publishing and bookbinding. Roughly a third of this employment is in the nonmetropolitan area, where printing and publishing represents the third largest manufacturing industry and the fastest growing source of outstate manufacturing employment.

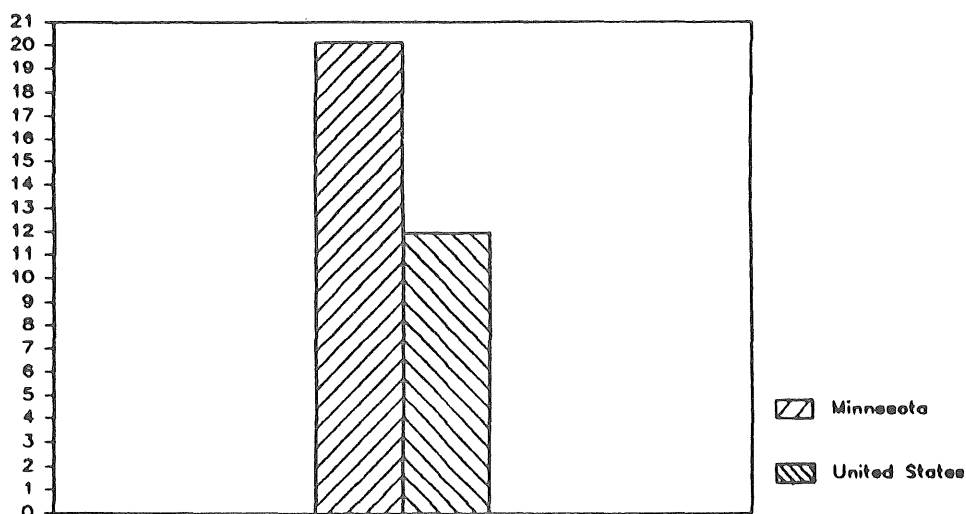
TABLE 37: Distribution of Employment in Minnesota's Printing and Publishing Industry, 1981



SOURCE: County Business Patterns 1981

Printing and publishing is unique from the other manufacturing industries in that nearly 9 percent of its 36,000 employees are writers and artists, while less than 42 percent are blue-collar workers. It is also unique in its high concentration of both large and small establishments. The enormous number of small establishments (more than 800 with fewer than 20 employees) suggests that a significant share of this industry's output is in the form of custom work.

TABLE 38: Percent Change in Printing and Publishing Employment, 1977-1981



SOURCE: County Business Patterns, 1981

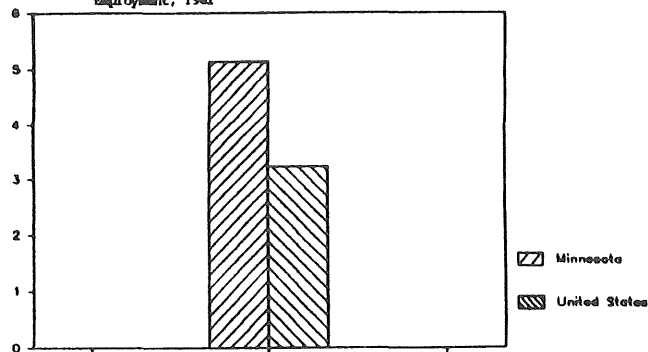
Excluding newspaper publishing, roughly 90 percent of total shipments are distributed outside the north central region, with about 60 percent of the demand coming from finance, insurance, business and human services, and the difference going to households and government. The extent to which printing and publishing serves a national market, coupled with substantial growth for over 20 consecutive years, indicates that Minnesota has a comparative strong advantage in this industry.

Nonelectrical Machinery

Nonelectrical machinery includes establishments engaged in manufacturing engines and turbines, farm and garden machinery, construction equipment, metal-working machinery, computers and office machinery.

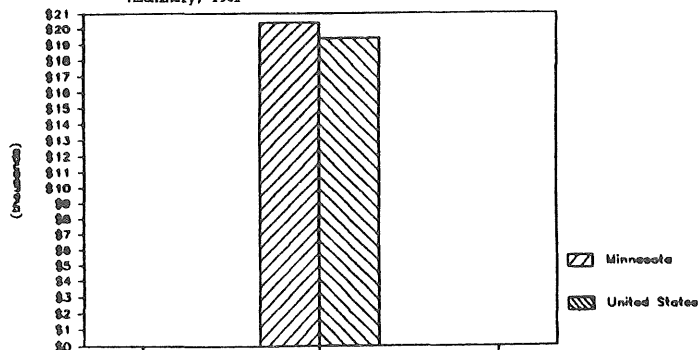
Nonelectrical machinery has been Minnesota's largest manufacturing industry since 1970. As of 1983, there were 80,000 employees in 1400 establishments representing 23 percent of total manufacturing employment. Wages are roughly 3 percent above Minnesota's average manufacturing wage and 2 percent below their national counterpart.

TABLE 39: Nonelectrical Machinery as a Percent of Total Employment, 1981



SOURCE: County Business Patterns, 1981

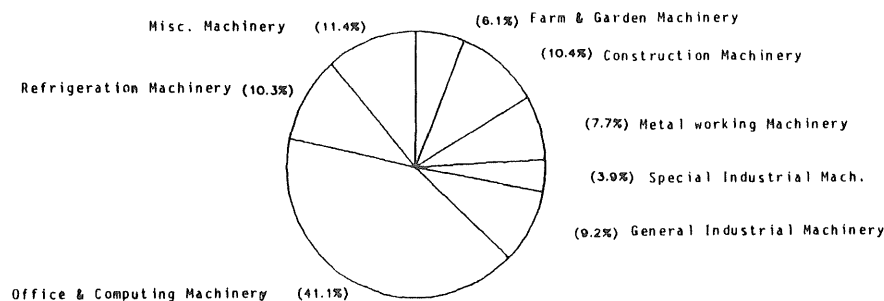
TABLE 40: Average Annual Salaries in Nonelectrical Machinery, 1981



SOURCE: County Business Patterns, 1981

Almost 50 percent of this industry's employment is in the production of office and computing machinery with another 8.8 percent in farm and garden machinery, 10.7 percent in construction and 6.5 percent in metal-working machinery. Nonelectrical machinery is the second largest out state manufacturing industry, representing nearly one of every five manufacturing jobs. Virtually none of this employment, however, is in office and computing machinery.

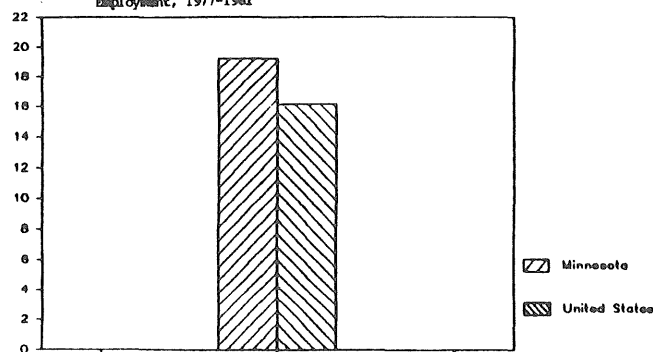
TABLE 41: Distribution of Employment in Minnesota's Nonelectrical Machinery Industry, 1981



SOURCE: County Business Pattern 1981

Between 1960 and 1980, Minnesota's concentration of employment in nonelectrical machinery increased from 11 percent above the national concentration to 60 percent above. This growth has come largely from the production of office and computing machinery, which alone gained 32,000 jobs during this period.

TABLE 42: Percent Change in Nonelectrical Machinery Employment, 1977-1981



SOURCE: County Business Patterns, 1981

Since the late 1970s, however, employment growth relative to the nation has slowed considerably. Outside of computer manufacturers, most of the industries in nonelectrical machinery have either lost employment or made comparatively small gains. Between 1980 and 1984, for example, the five largest industries after office and computing machinery collectively lost over 7,000 jobs. While all of these industries have gained since 1983, they are substantially below their levels of employment at any time in the past 8 years.

This decline is a reflection of Minnesota's high concentration in the production of industrial capital goods. While employment growth in office and computing machinery has offset these losses, it is Minnesota's most concentrated major industry. Because office and computing machinery is among the world's most competitive industries, Minnesota faces a major challenge to retain its current market share.

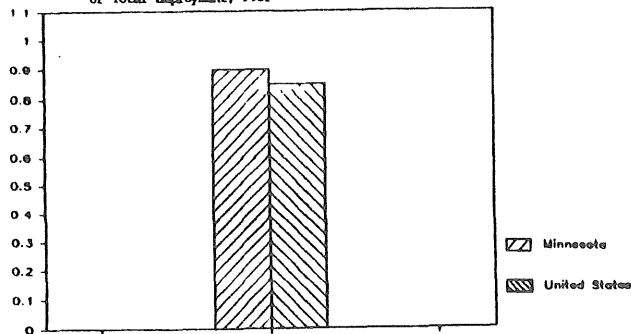
Paper and Allied Products

Paper and allied products includes the manufacture of pulps from wood and other fibers and from rags, the manufacture of paper and paperboard, and the manufacture of paper and paperboard into converted products such as paper bags, envelopes and boxes.

Depending on the statistical source, Minnesota's employment in the paper and allied products industry varies from roughly 14,000 to 33,000. For purposes of this analysis, a lower estimate of 13,200 from County Business Patterns has been adopted. This statistic was used because of its consistency with both the Census of Manufacturers, based on establishment data, and the Census of Housing and Population, based on household data.

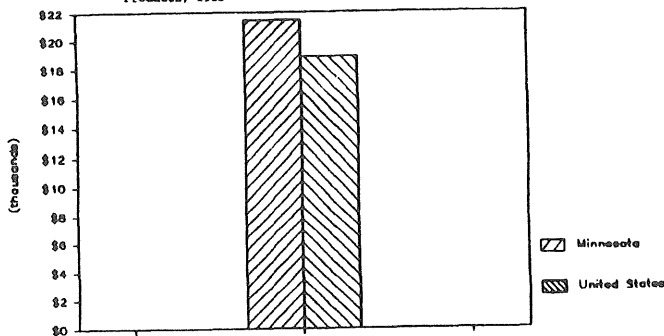
According to this estimate, paper and allied products is Minnesota's seventh largest manufacturing industry with 100 establishments and 3.5 percent of total manufacturing employment. Wages are nearly 9 percent above the average manufacturing wage for Minnesota and 6.7 percent above the national wage for this industry.

TABLE 43: Paper and Allied Products as a Percent Change of Total Employment, 1981



SOURCE: County Business Patterns, 1981

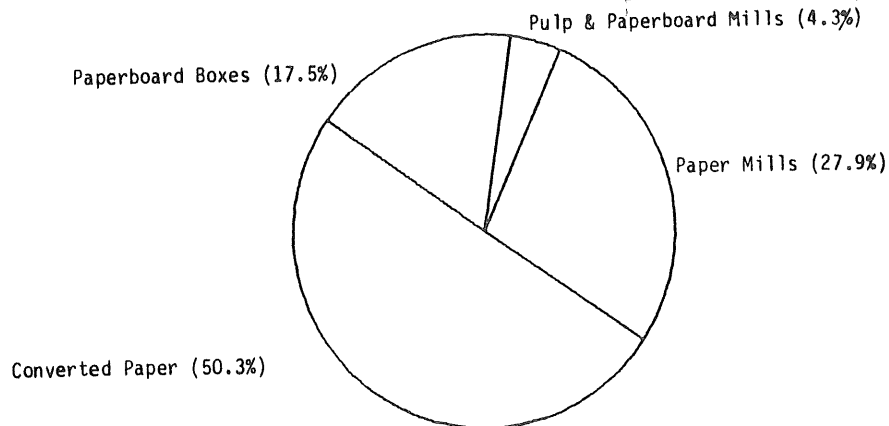
TABLE 44: Average Annual Salaries in Paper and Allied Products, 1981



SOURCE: County Business Patterns, 1981

Employment in Minnesota's paper and allied products industry is roughly distributed as follows: paper mills and converted paper products, each with 39 percent of total employment, and paperboard containers and boxes with 22 percent of total employment. Of the 10 paper mills in Minnesota, 9 are located outside the Twin Cities metropolitan area, making paper and allied products the fourth largest outstate manufacturing industry.

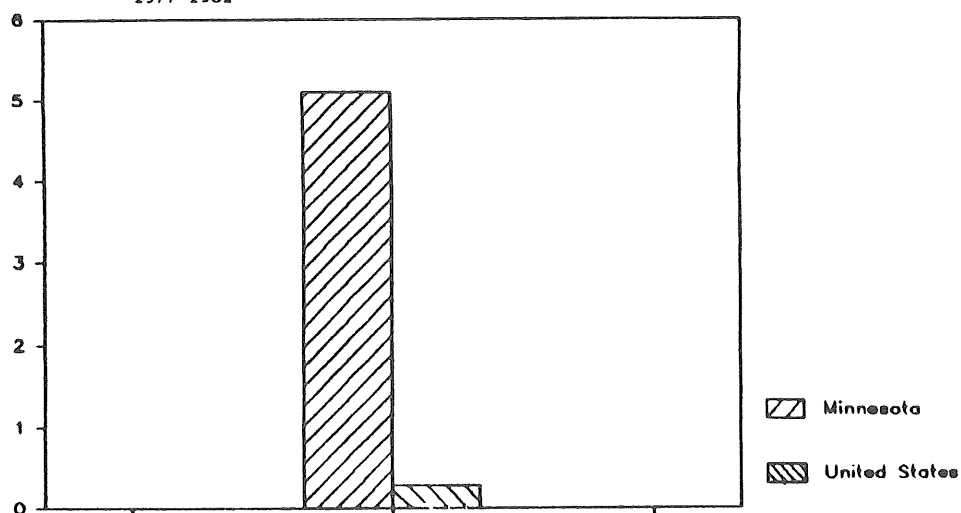
TABLE 45: Distribution of Employment in Minnesota's Paper and Allied Products Industry, 1981



SOURCE: County Business Patterns, 1981

Between 1950 and 1980, employment in paper and allied products increased from 1 percent below the national concentration to 16 percent above. Since 1980, Minnesota's paper and allied products industry has continued to grow above the national rate.

TABLE 46: Percent change in paper and allied products employment, 1977-1981



SOURCE: County Business Patterns, 1981

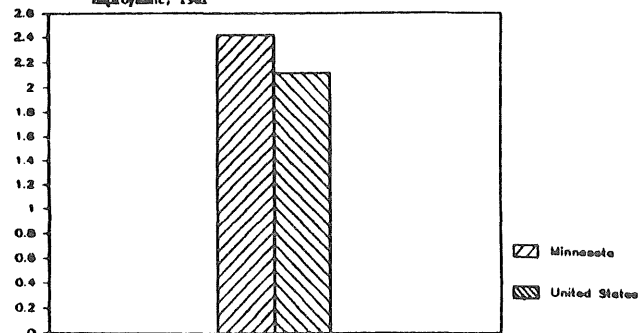
The growth of employment in paper and allied products has been tied primarily to regional as opposed to national or international demand. According to the Census of Transportation, over 80 percent of total industry shipments in pulp and paper products were within the north central region, with the largest single source of demand coming from the printing and publishing industry. Nationally, over 30 percent of pulp and paper sales to other industries are accounted for by the printing and publishing industry. Minnesota's high concentration and strong growth in the printing and publishing industry has therefore provided a strong local market for the paper and allied products industry.

Fabricated Metals

Fabricated metals includes establishments engaged in fabricating ferrous and non-ferrous metal products such as cans, cutlery, hardware, plumbing and nonelectric heating apparatus, structural metal products and ordnance.

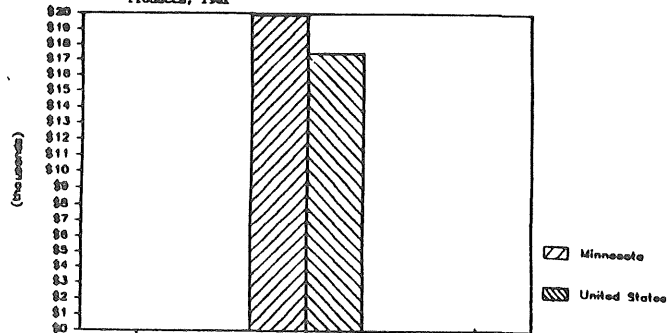
In Minnesota, fabricated metals is the fourth largest manufacturing industry, with 640 establishments and 32,000 employees. Wages in fabricated metals are just slightly above the average Minnesota manufacturing wage but nearly 7 percent above its national counterpart.

TABLE 47: Fabricated Metal Products as a Percent of Total Employment, 1981



SOURCE: County Business Patterns, 1981

TABLE 48: Average Annual Salaries in Fabricated Metal Products, 1981

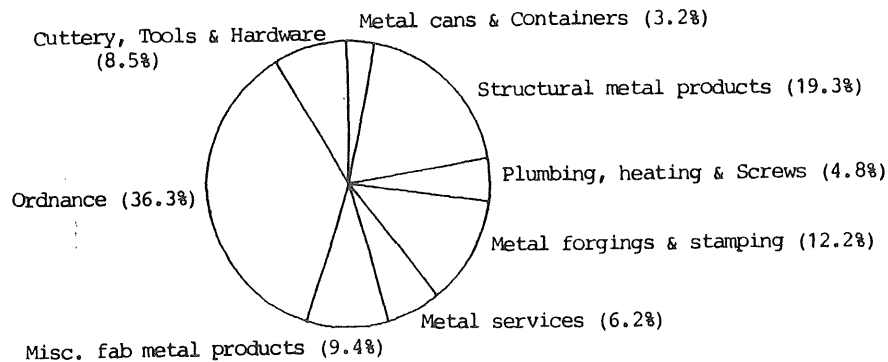


SOURCE: County Business Patterns, 1981

Between 1960 and 1980 fabricated metals grew from the national share of employment to 24 percent above. The largest share of this growth has come from the production of defense-related products, which has increased from 21 percent of fabricated metals employment in 1960 to 28 percent in 1980. During the same period, the national share declined from 11 to 6 percent.

Despite Minnesota's growing concentration of defense-related employment, the fabricated metals industry has diversified considerably, with substantial shares of employment in the manufacturing of screws, bolts, and related products, hand tools, plumbing parts, and sheet metal products.

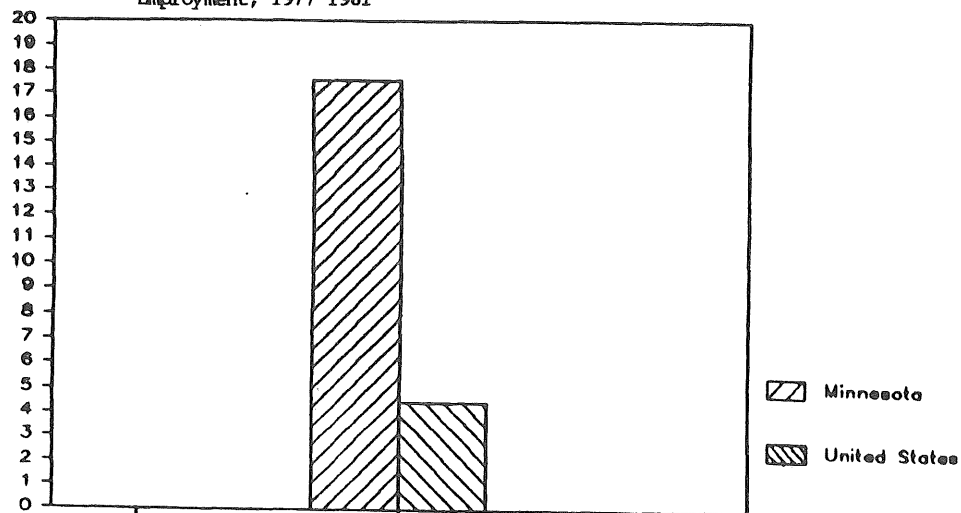
TABLE 49: Distribution of Employment in Minnesota's Fabricated Metals Industry, 1981



SOURCE: County Business Patterns, 1981

With the exception of structural metal products virtually all of these industries have outperformed their national counterparts over the past decade, growing more rapidly during periods of expansion and declining less during periods of recession. In part, Minnesota's stability in fabricated metals is the result of its strong links to industries outside of manufacturing including retail trade, business services, consumer services, and government.

TABLE 50: Percent Change in Fabricated Metal Products Employment, 1977-1981



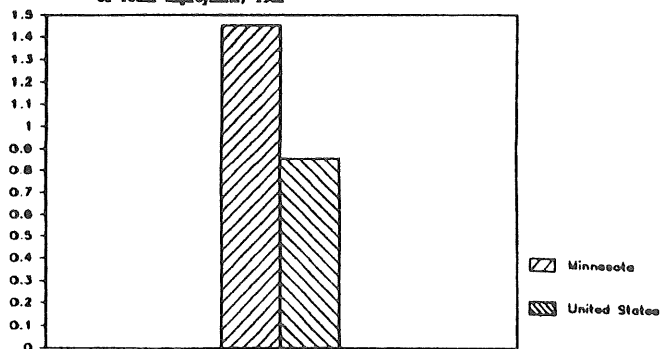
SOURCE: County Business Patterns 1977, 1981

Instruments

Instruments include establishments engaged in manufacturing devices for measuring, testing, analyzing and controlling. Its also includes establishments which manufacture sensors and related accessories such as lenses, medical instruments, photographic equipment, watches and clocks.

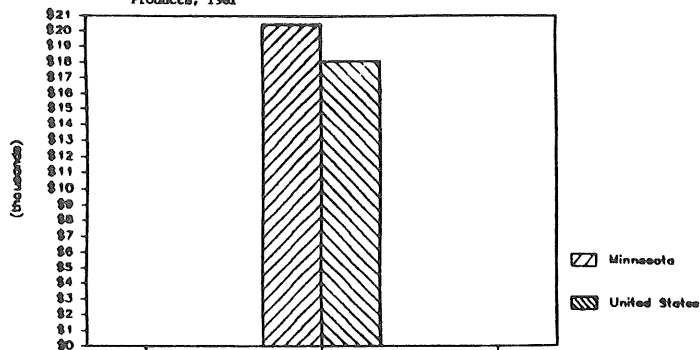
Instruments is Minnesota's fifth largest manufacturing industry with more than 26,000 employees and 240 establishments. Wages are 3 percent above the average manufacturing wage and nearly 6 percent above its national counterpart. Minnesota's share of employment in instruments is roughly 60 percent above the nation's, with nearly half its employment in measuring and controlling devices such as thermostats, another fourth in medical-related instruments and supplies, and the balance in photographic equipment, scientific and engineering instruments. Collectively, these industries represent 15 percent of Minnesota's high-tech employment.

TABLE 51: Instrument and related Products as a Percent of Total Employment, 1981



SOURCE: County Business Patterns, 1981

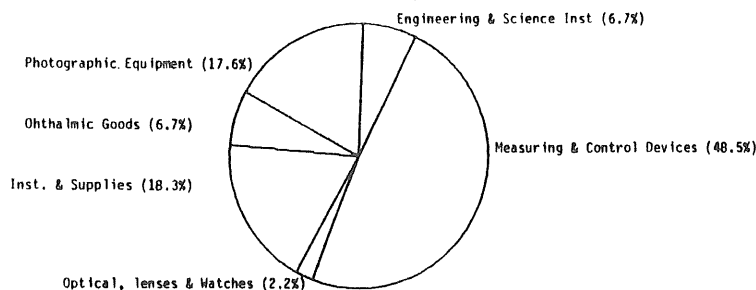
TABLE 52: Average Annual Salaries in Instruments and Related Products, 1981



SOURCE: County Business Patterns, 1981

The instrument industry is unique in Minnesota for several reasons. It is the only major industry group to fall completely within the most common definitions of high-tech employment. It has the highest concentration of white-collar employment among all the durable goods industries. It is made up of establishments significantly larger than the average sized manufacturing establishment, and until 1980, it was Minnesota's fastest growing durable goods manufacturer.

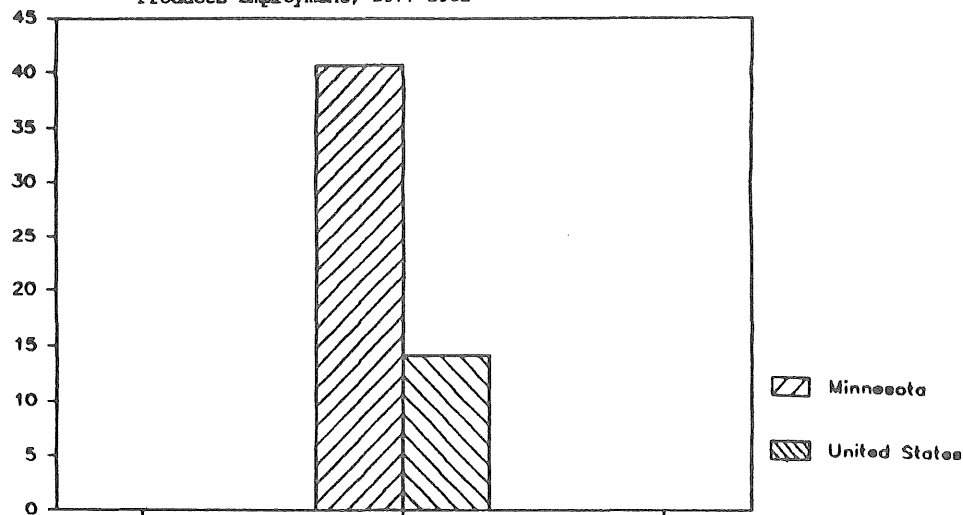
TABLE 53: Distribution of Employment in Minnesota's Instruments Industry, 1981



SOURCE: County Business Patterns, 1981

Over the past 25 years, instruments has followed an uneven course of development. Between 1960 and 1970, the industry in Minnesota lost 5,000 employees while nationally gaining over 63,000. In the following decade, Minnesota employment in instruments increased by 63 percent compared with 32 percent nationally. Since 1980, however, Minnesota has had nearly a 1 percent loss in employment compared with a 2 percent gain nationally. This slowdown has been quite unexpected given the strong performance of instruments in the previous decade and is in part a reflection of this industry's cyclical sensitivity. It is also a source of concern because instruments is so characteristic of high-tech industries with strong growth in domestic and foreign markets, a high rate of innovation and a very high level of competition.

TABLE 54: Percent Change in Instruments and Related Products Employment, 1977-1981



SOURCE: County Business Patterns 1977, 1981

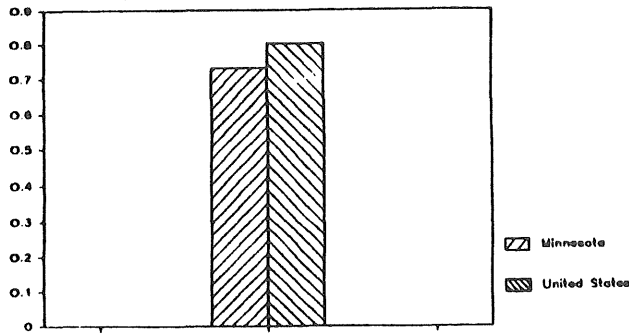
MANUFACTURING INDUSTRIES AT THE NATIONAL CONCENTRATION

Stone, Clay, and Glass

Stone, clay and glass includes establishments engaged in manufacturing flat glass and other glass products, such as cement, structural clay products, pottery, cut stone or from other materials taken principally from the earth.

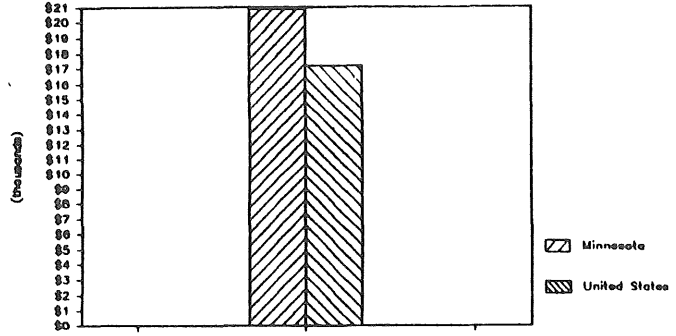
Stone, clay and glass is Minnesota's tenth largest manufacturing industry with 8,500 employees in 440 establishments. Wages are 5 percent above Minnesota's average manufacturing wage and nearly 14 percent above their national counterpart. This industry has less than half the average number of employees per manufacturing establishment in Minnesota and roughly half as many per establishment as its national counterpart.

TABLE 55: Stone, Clay and Glass as a Percent of Total Employment, 1981



SOURCE: County Business Patterns, 1981

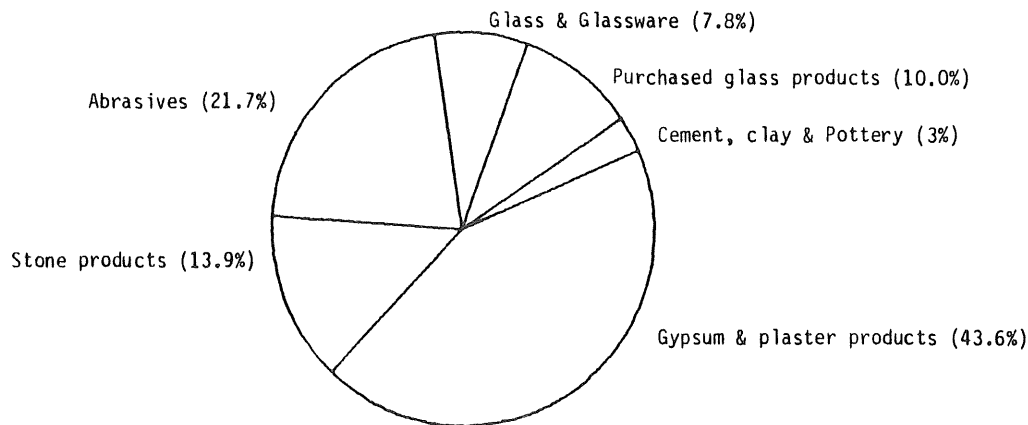
TABLE 56: Average Annual Salaries in Stone, Clay and Glass, 1981



SOURCE: County Business Patterns, 1981

Employment in the stone, clay and glass industry has gone from 20 percent above the national concentration in 1960 to 24 percent below in 1970 to just slightly below the national concentration in 1983. For more than a decade, this industry has been growing faster than its national counterpart, with particularly strong concentrations in the production of construction products, including cut stone, plaster and gypsum products and non-metallic products such as gaskets and abrasives.

TABLE 57: Distribution of Employment in Minnesota's Stone Clay and Glass Industry, 1981



SOURCE: County Business Patterns 1981

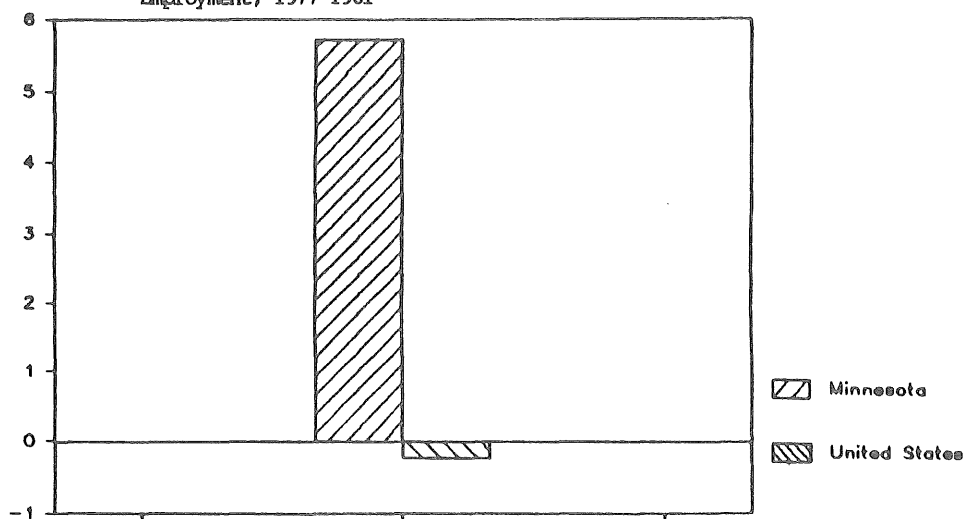
Stone, clay and glass is a particularly important source of nonmetropolitan employment, representing 5 percent of non-metro

manufacturing employment with over 64 percent of the industry's total employment located outside the Twin Cities metro area.

During the past decade, over 50 percent of this industry growth has been accounted for by the production of abrasives, consumed primarily by the machinery and fabricated metals industries.

There has also been strong growth in the production of products made from purchased glass, including mirrors, stained glass and test tubes. Concurrent with this growth there has been a slight decline in the production of construction materials. This decline can be traced to Minnesota's slower than national growth in the construction sector, coupled with a comparatively low value-to-weight ratio which makes long-distance hauling expensive.

TABLE 58: Percent Change in Stone, Clay and Glass Products Employment, 1977-1981



SOURCE: County Business Patterns 1977, 1981

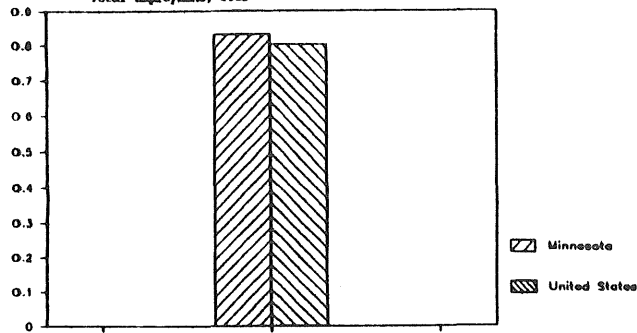
Rubber and Plastic Products

Rubber and plastic products includes establishments using natural, synthetic or reclaimed rubber to manufacture various products such as tires, rubber footwear, mechanical rubber goods, flooring and sundries. This group also includes establishments engaged in molding primary plastics for the trade and manufacturing miscellaneous finished plastics products.

In Minnesota, this industry is almost entirely based on the production of miscellaneous plastic products, including polyethylene film, tubing, plastic sheets and sponges.

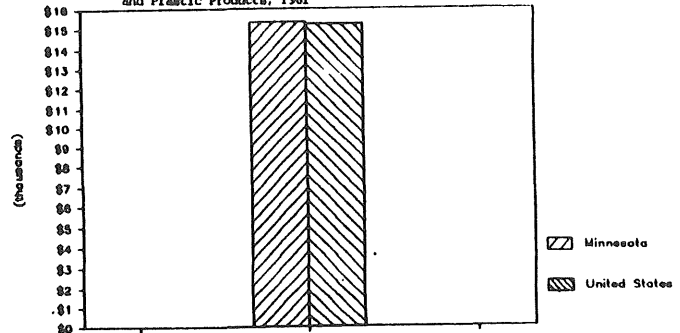
There are more than 10,000 people employed in Minnesota's rubber and plastic industry, making it the state's 9th largest industry. Wages are nearly 23 percent below Minnesota's average manufacturing wage and 6 percent below their national counterpart.

TABLE 59: Rubber and Plastic Products as a Percent of Total Employment, 1981



SOURCE: County Business Patterns, 1981

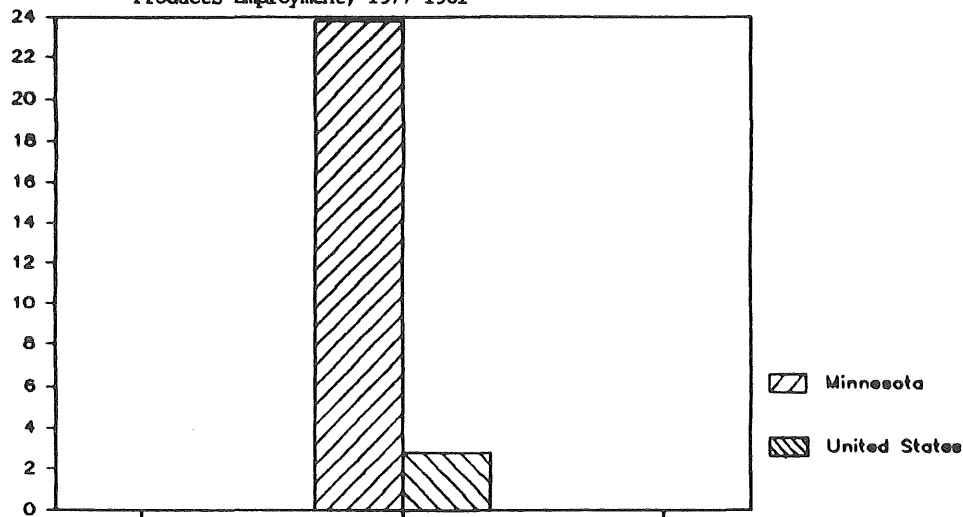
TABLE 60: Average Annual Salaries in Rubber and Plastic Products, 1981



SOURCE: County Business Patterns, 1981

Between 1960 and 1980, rubber and plastic products' share of employment increased from 55 percent below the national concentration to less than 13 percent below, growing at nearly 10 times the national rate during this period.

TABLE 61: Percent Change in Rubber and Plastic Products Employment, 1977-1981



SOURCE: County Business Patterns 1977, 1981

Since 1980, however, Minnesota's employment growth in rubber and plastics has slowed to just slightly above the national rate.

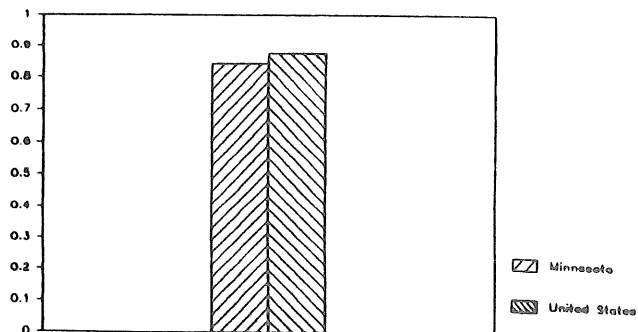
As with stone, clay and glass, a large share of this industry's output is consumed by the machinery, fabricated metals and instruments industries.

Lumber and Wood Products

Lumber and wood products includes logging camps engaged in cutting timber, pulpwood merchant sawmills, lathe mills, planing mills, plywood mills and establishments engaged in manufacturing finished articles made entirely or mainly from wood or wood substitutes. Minnesota's concentration of lumber employment is just slightly below the national concentration.

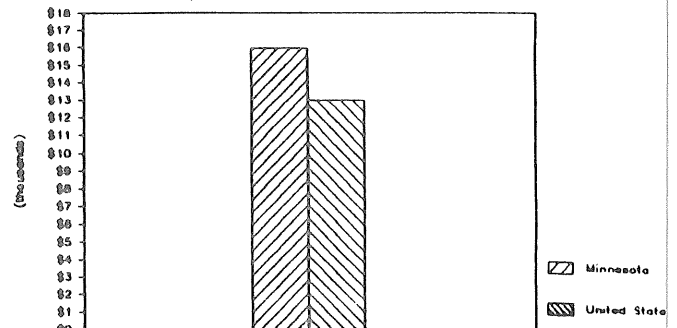
Minnesota's lumber industry employs more than 11,000 people in 570 establishments, making it the State's 8th largest manufacturing industry. Wages are roughly 14 percent below Minnesota's average manufacturing wage, but 15 percent above its national counterpart. As of 1983, more than 58.5 percent of the lumber industry's employment was outside the Twin Cities area, making it the third largest outstate manufacturing industry with 69 percent.

TABLE 62: Lumber and Wood Products as a Percent of Total Employment, 1981



SOURCE: County Business Patterns, 1981

TABLE 63: Average Annual Salaries in Lumber and Wood Products, 1981



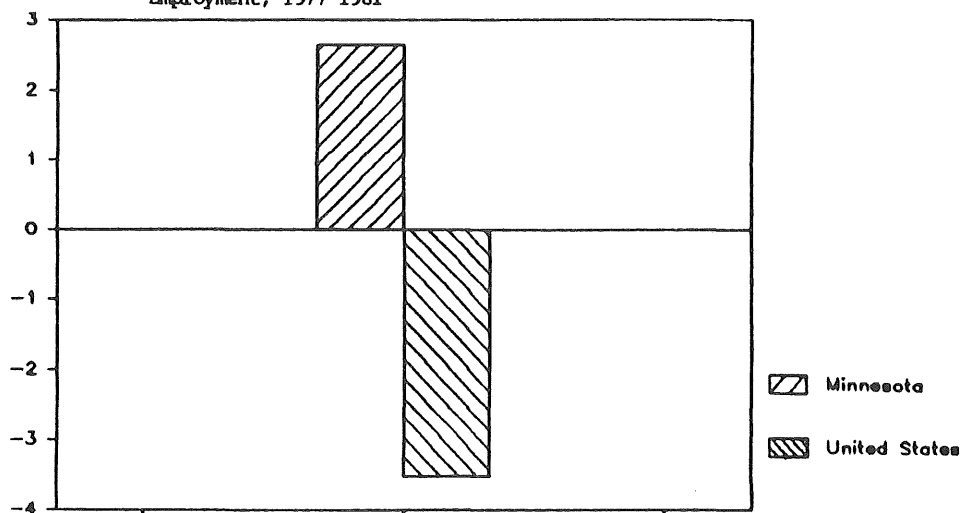
SOURCE: County Business Patterns, 1981

Since 1940, the national lumber industry has had comparatively slower growth in each successive decade. This slowdown has come principally from the substitution of metals, plastics and aggregates for lumber products in both the construction and manufacturing sectors, as opposed to increases in productivity or growth from foreign competition.

In contrast to this national trend, employment in Minnesota's lumber industry has gained dramatically. Between 1960 and 1980, employment in Minnesota's lumber industry increased by 37 percent compared with 1 percent national growth. Since 1980, employment in the lumber industry has increased by a phenomenal 14.3 percent compared with a 2.7 percent increase nationally. This makes it the second fastest growing

manufacturing industry behind printing and publishing during this period, and the second largest source of new manufacturing employment.

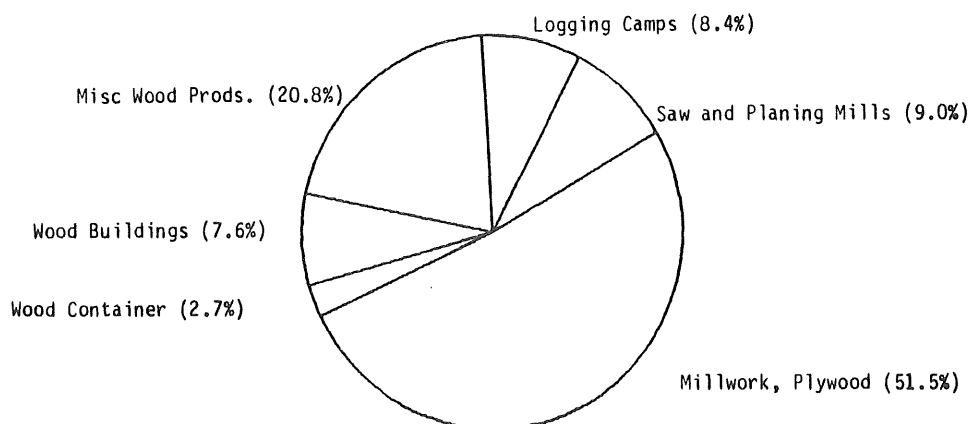
TABLE 64: Percent Change in Lumber and Wood Products Employment, 1977-1981



SOURCE: County Business Patterns 1977, 1981

More than 80 percent of all new lumber employment is in plywood, millwork and structural lumber products. This subgroup's share of Minnesota's total employment is twice that of the nation's and growing at an average annual rate of nearly 2.5 percent, compared with an average annual decline for the nation of .25 percent. This subgroup accounts for over 55 percent of the industry's employment and is most closely linked to output in the construction sector.

TABLE 65: Distribution of Employment in Minnesota's Lumber and Wood Products Industry, 1981



SOURCE: County Business Patterns 1981

Only one other lumber industry -- miscellaneous wood products, has increased at a comparable rate. Concurrent with this industry's growth, there has been a slight increase in Minnesota's concentration of furniture

production. While Minnesota's furniture industry remains quite small, consuming less than 4 percent of the lumber industry's total output, it may represent a growing local market for various lumber products.

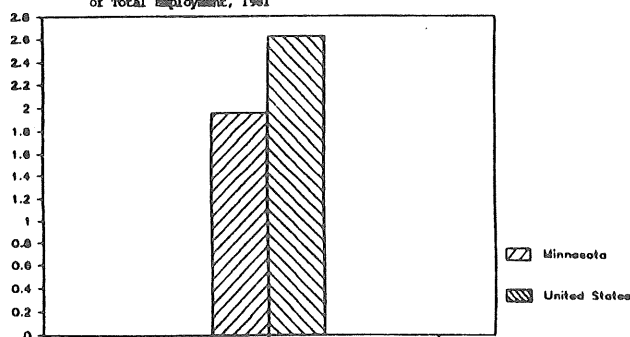
Electrical Machinery

Electrical machinery includes establishments engaged in manufacturing machinery, apparatus and supplies related to the storage, transmission, transformation and utilization of electrical energy. Household appliances are included in this group, but industrial machinery and equipment powered by built-in or detachable electrical motors are classified in nonelectrical machinery.

In 1984, electrical machinery became the nation's largest manufacturing industry, with over 2.7 million employees, surpassing nonelectrical machinery, which had been the largest industry for more than 15 years.

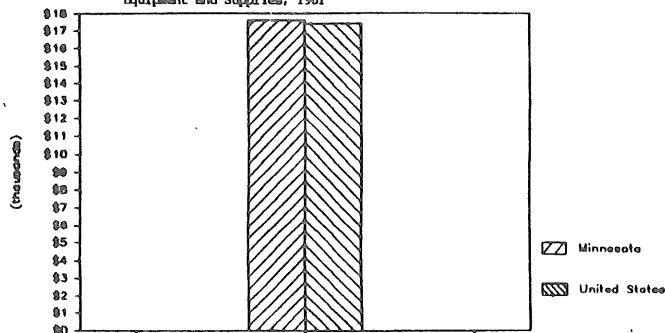
In Minnesota, electrical machinery is the state's 7th largest manufacturing industry with 26,300 employees in 360 establishments. Wages are 11 percent below Minnesota's average manufacturing wage and 5 percent below its national counterpart.

TABLE 66: Electrical Equipment and Supplies as a Percent of Total Employment, 1981



SOURCE: County Business Patterns, 1981

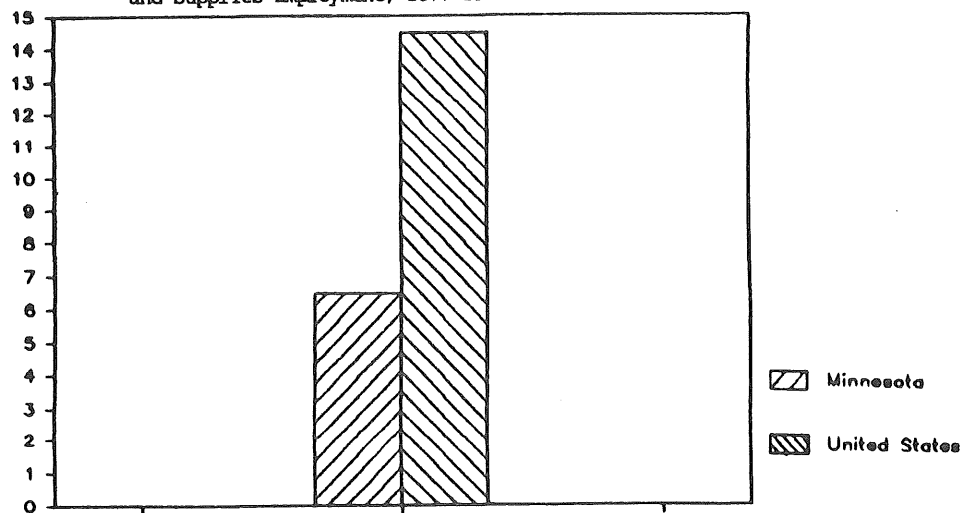
TABLE 67: Average Annual Salaries in Electrical Equipment and Supplies, 1981



SOURCE: County Business Patterns, 1981

Between 1960 and 1979, employment in Minnesota's electrical machinery doubled and its share of total employment increased from 50 percent of the national share to nearly 85 percent.

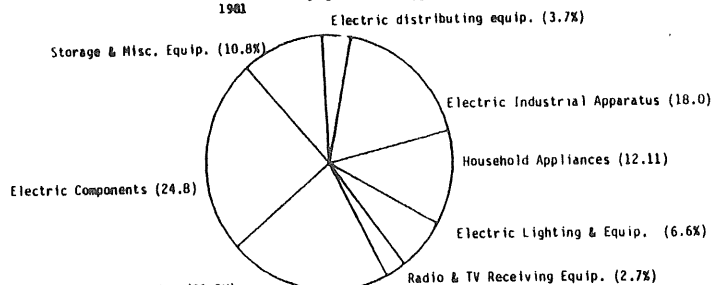
TABLE 68: Percent Change in Electrical Equipment and Supplies Employment, 1977-1981



SOURCE: County Business Patterns 1977, 1981

Since 1979, however, Minnesota has been growing at about half the national rate. This slowdown is largely accounted for by a sharp decline in employment among the industry's largest establishments, including several plant relocations. In contrast, the state's smaller establishments, those with fewer than 20 employees, have maintained very strong growth throughout the decade, creating 20 percent of all jobs while representing only 10 percent of the industry's employment.

TABLE 69: Distribution of Employment in Minnesota's Electrical Equipment and Supplies Industry, 1981



SOURCE: County Business Patterns 1981

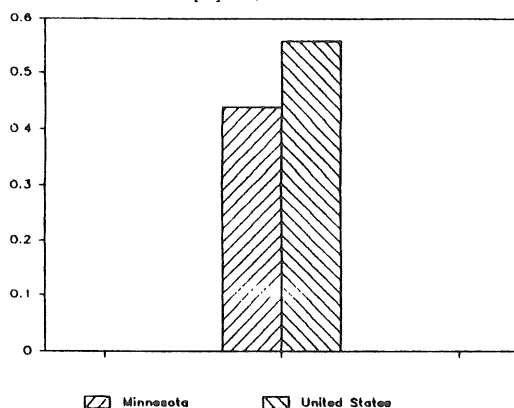
Since 1974, there has been an increase of 160 establishments in the electrical machinery industry. Most of these are newly formed companies with fewer than 20 employees. Despite the strong performance of Minnesota's small establishments, the larger firms dominate industry employment and are growing slower than their national counterparts. This slower growth should be a source of concern to Minnesota because over two-thirds of this industry's employment is considered high-tech, representing one of the nation's fastest growing markets and one of the world's most competitive and innovative industries.

Miscellaneous Manufacturing

Miscellaneous manufacturing includes establishments engaged in manufacturing products not classified in any other manufacturing group. Included in this group are jewelry, silverware, musical instruments, toys, sporting goods, pens, pencils, artists' materials, costume novelties, brooms and caskets.

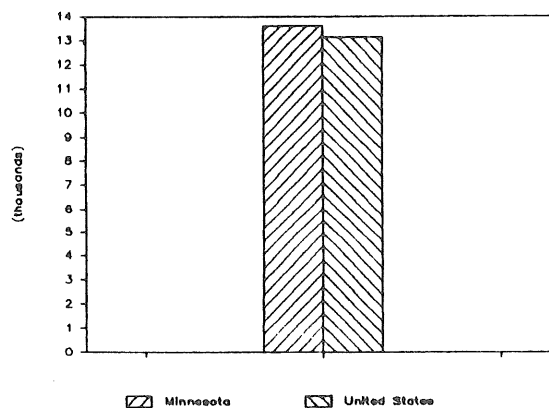
Currently, miscellaneous manufacturing employs 5,900 people in 290 establishments, making it Minnesota's 12th largest industry. Wages are 31 percent below Minnesota's average manufacturing wages and 4 percent below its national counterpart.

TABLE 70: Miscellaneous Manufacturing as a Percent of Total Employment, 1981



SOURCE: County Business Pattern 1981

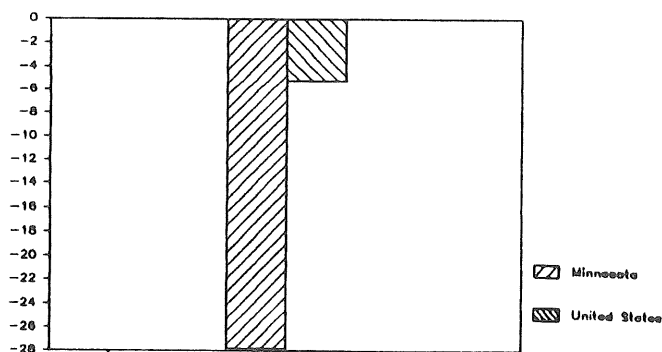
TABLE 71: Average Annual Salaries in Miscellaneous Manufacturing



SOURCE: County Business Pattern 1981

Employment in Minnesota's miscellaneous manufacturing industry has been declining for more than a decade. As recently as 1977, however, Minnesota's share of miscellaneous manufacturing employment exceeded the national share. Currently, it is nearly 20 percent below the national share and declining rapidly. Since 1980, employment has dropped by 27 percent compared with 7 percent nationally. This was the only major industry group in manufacturing to lose employment in the 1983-84 period.

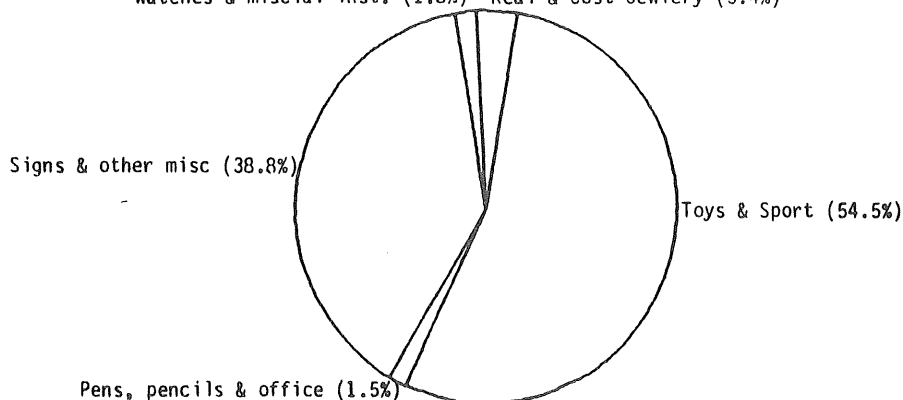
TABLE 72: Percent Change in Miscellaneous Manufacturing Employment, 1977-1981



SOURCE: County Business Patterns 1977, 1981

Over half the employment in miscellaneous manufacturing is in the production of toys, which accounts for most of this industry's decline since 1975. The second largest share of employment is accounted for by the production of signs and displays. This subgroup has actually gained employment since 1977, but at a fraction of the national rate.

TABLE 73: Distribution of Employment in Minnesota's
Miscellaneous Manufacturing Industry, 1981
Watches & miscial inst. (1.8%) Real & Cost Jewlery (3.4%)



SOURCE: County Business Pattern 1981

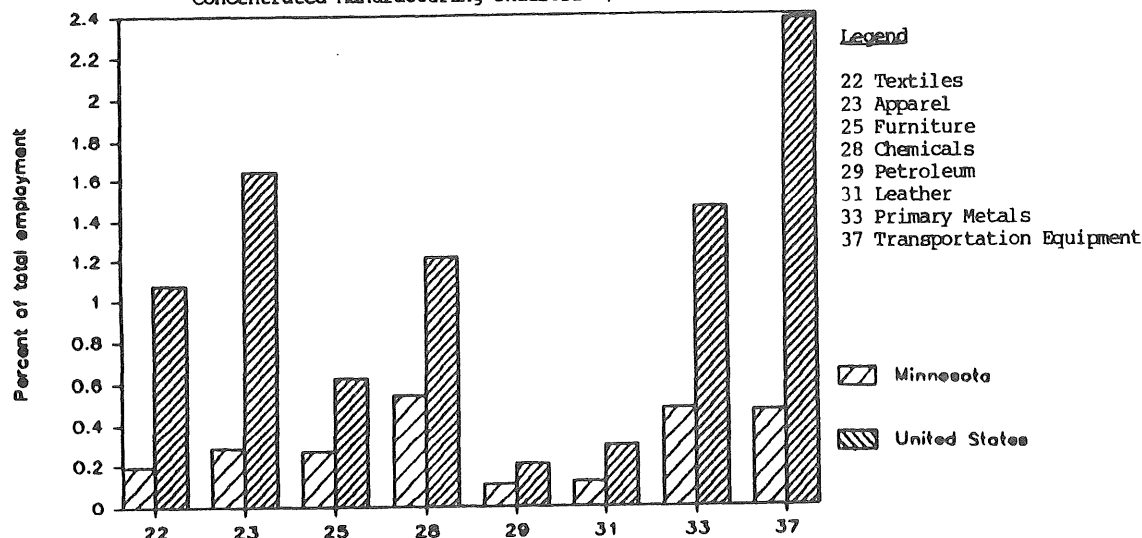
MANUFACTURING INDUSTRIES SIGNIFICANTLY BELOW THE NATIONAL CONCENTRATION

Historically, most of the industries in this group have concentrated their employment in regions which offer a comparative advantage for producing each particular commodity. That advantage may have come from one or more of the following factors: natural endowments, proximity to markets, (agglomeration effects) or proximity to low-wage labor, energy or some other factor of production. Consequently, with the exception of a limited number of production centers, the share of employment accounted for by these industries in all other states is quite small. Examples of some key by producing states include South Carolina, with 34 percent of U.S. textile employment; North Carolina, with 20 percent of U.S. furniture employment and 36 percent of U.S. tobacco employment; Texas, with 22 percent of U.S. coal and petroleum products employment; New Jersey, with 12 percent of U.S. chemical employment; New York, with 13 percent of U.S. apparel employment; Pennsylvania, with 21 percent of U.S. primary metals employment; and Michigan, with 31 percent of U.S. transportation equipment employment.

Collectively, the eight industries in this group including textiles, apparel, furniture, chemicals, petroleum, leather, primary metals and transportation equipment account for less than 2.3 percent of total private nonagricultural employment in Minnesota, compared with 9.6 percent nationally. Until quite recently, most of these industries had shown little or no propensity to concentrate in Minnesota. In fact, over the past 20 years, only 2 of these industries — chemicals and furniture, have registered any significant gains in employment concentration. The remaining industries — coal and petroleum products, primary metals, apparel, textiles, leather and transportation equipment, have remained quite stable, ranging from roughly 20 percent to 40 percent of the national share of employment. It is noteworthy that until quite recently

all of these industries could be characterized either as labor intensive, resource intensive or capital intensive, but none as high skilled or human capital intensive.

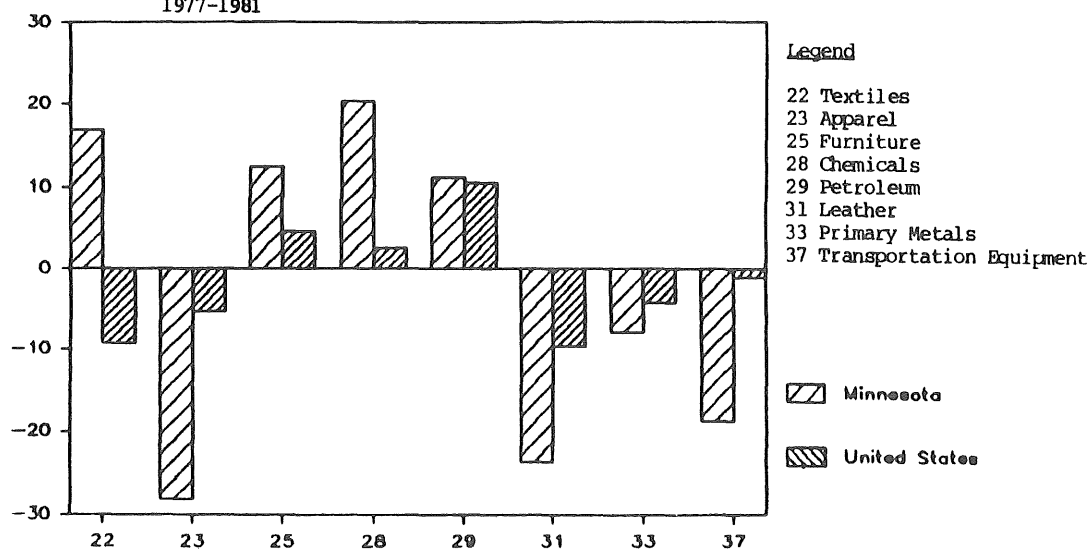
TABLE 74: Employment Shares among Minnesota's Least Concentrated Manufacturing Industries, 1981



SOURCE: County Business Patterns, 1981

While the aggregate employment shares of these industries remain small, there is growing evidence that certain historical barriers or cost disadvantages may be of declining importance. For example, several under-represented industries including office furniture, drugs and synthetics have recently gained employment in Minnesota at more than twice the national rate. Future employment related to administration, research, product development, marketing and production may come from such diverse and currently under-represented industries as synthetic textiles and speciality steels and transportation equipment.

TABLE 75: Percent Change in Employment Among Minnesota's Least Concentrated Manufacturing Industries, 1977-1981



SOURCE: County Business Patterns 1977, 1981

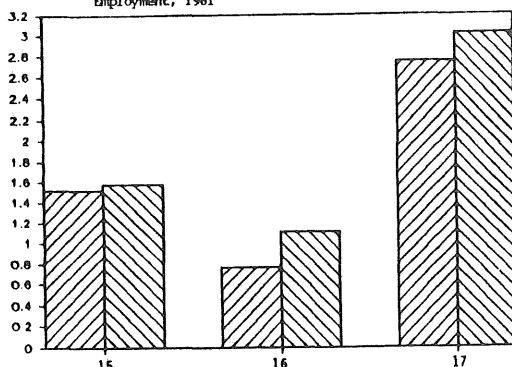
As Minnesota continues to gain employment among its "core" highly concentrated manufacturing industries, it will become progressively more important to take measures against over capacity and insufficient diversity. Some of the strongest opportunities in this regard will most likely come from what are currently Minnesota's least concentrated industries.

CONSTRUCTION

Construction is Minnesota's second smallest source of employment and income. As of 1983, construction represented 3.6 percent of total nonagricultural employment and 4.7 percent of total payroll, compared with 5.3 percent and 6.6 percent nationally. Minnesota has consistently had a smaller share of employment in construction than the nation. Since 1970, however, this gap has widened.

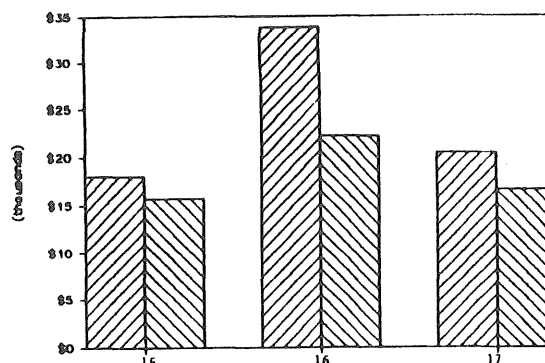
Employment in construction is characterized by high wages (31 percent above the state average), very few female workers (less than 12 percent), and a high percentage of part-time workers (nearly 18 percent). Nationally, wages are substantially lower, especially among heavy-construction workers, hours are longer, and there is roughly the same percentage of female employees.

TABLE 76: Contract Construction as a Percent of Total Employment, 1981



SOURCE: County Business Patterns, 1981

TABLE 77: Average Annual Salaries in Contract Construction



SOURCE: County Business Patterns, 1981

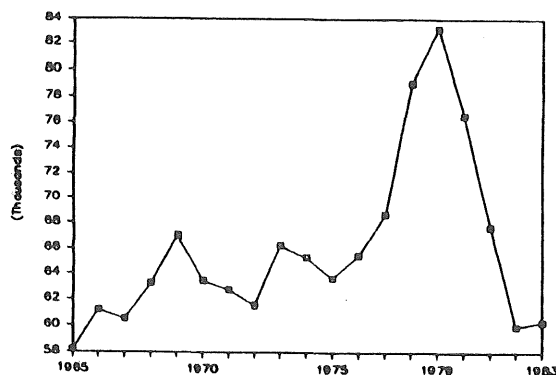
Legend

- 15 General Building Construction
- 16 Heavy Construction
- 17 Special Trade Contractors

- Minnesota
- United States

Employment growth in this sector has not demonstrated any particular secular trend, but rather has shifted dramatically from one year to the next. The construction sector is the most cyclically sensitive of all

TABLE 78: Construction Employment in Minnesota, 1965-1983

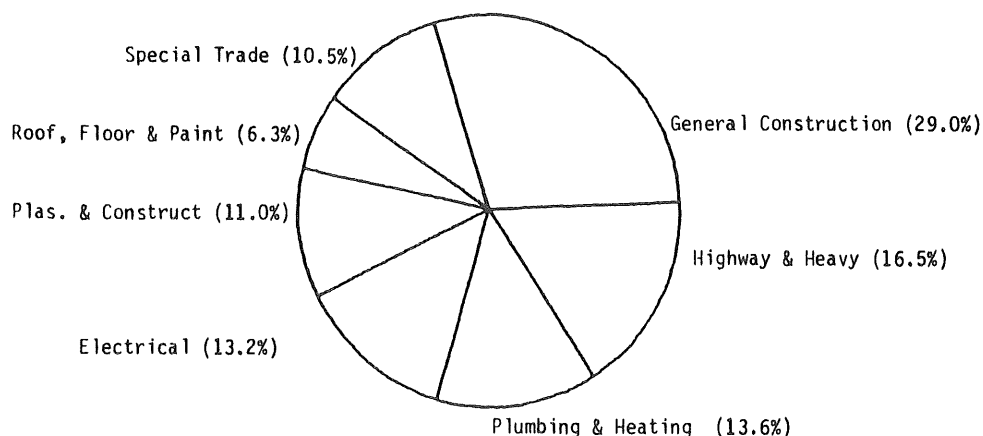


SOURCE: Minnesota Department of Economic Security, Employment Hours and Earnings, 1960-1983

industries, with annual gains and losses of as many as 10,000 employees. These fluctuations occur not only in response to changes in the prime interest rate, but also to a myriad of federal, state, and local initiatives as well. Overall, however, growth in construction is regulated by aggregate changes in population. Currently, Minnesota's population is growing at half the national rate, and this is reflected in a 45 percent lower ratio of building permits per capita than the nation.

Employment in this sector serves as a measure of new fixed capital formation, so employment statistics can be used as a crude measure of aggregate investment in building stock and infrastructure. Minnesota's lower than national employment concentration in building construction, however, does not imply that total building stock is growing proportionately slower. In fact, demolition rates indicate that existing building stock in Minnesota is being replaced at a slower rate than nationally. This slower "filtering" of building stock is partially accounted for by a higher concentration of maintenance construction employment, and a strong resurgence in rehabilitation.

TABLE 79: Distribution of Employment in Minnesota's Contract Construction Industry, 1981



SOURCE: County Business Patterns, 1981

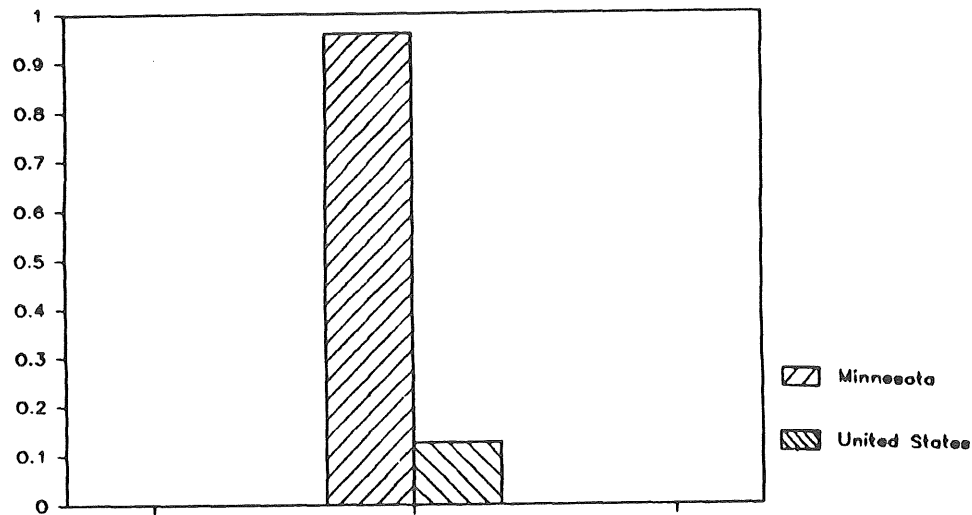
For nearly a decade, Minnesota has had a substantially lower concentration in heavy construction, suggesting that the state is no longer making major expansions to its infrastructure system. This interpretation is consistent with a recent study of infrastructure systems made by the Federal Reserve Bank of Cleveland, which suggested that Minnesota's current system can support a substantially larger base of population. This differential between heavy and other types of construction is common among maturing regions of the nation and points to an increase in the state's metropolitan population density, where most new construction is occurring.

This finding, taken in conjunction with current population growth projections, suggests that Minnesota's concentration in construction employment -- particularly that which is related to residential construction -- will probably stay below the nation's well into the next decade.

MINING

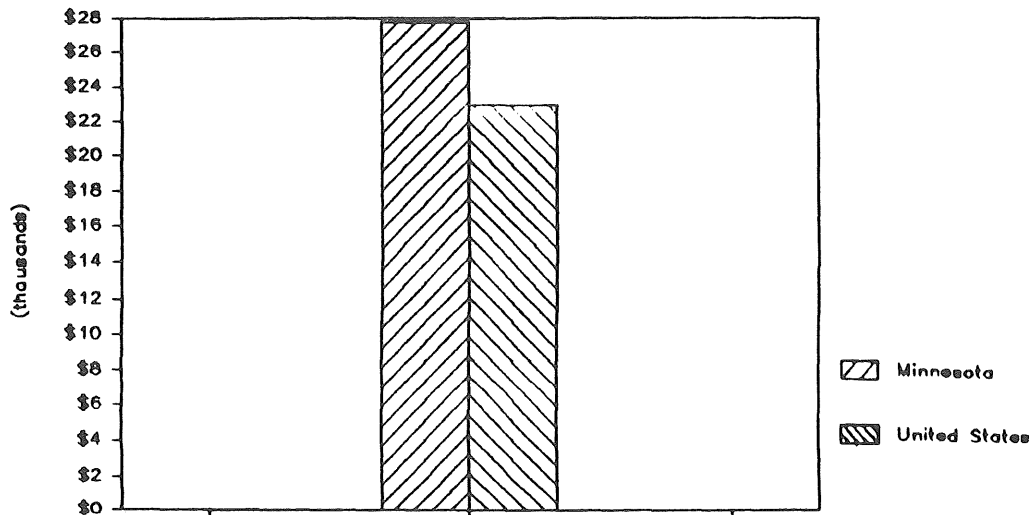
Until 1982 Minnesota's metal mining industry had seven times the national concentration of employment, reflecting the fact that Minnesota has been the nation's largest producer of iron ore for nearly 40 years. While metal mining still accounts for over 90 percent of the state's mining employment, it has undergone a dramatic structural decline. As of 1983, mining, which also includes non-metallic minerals, coal and petroleum extraction, represented 0.5 percent of total nonagricultural employment and 0.8 percent of nonagricultural payroll, compared with 1.3 percent and 2.0 percent nationally and 1.2 and 1.7 percent for Minnesota in 1972.

TABLE 80: Metal Mining as a Percent of Total Employment, 1981



SOURCE: County Business Patterns, 1981

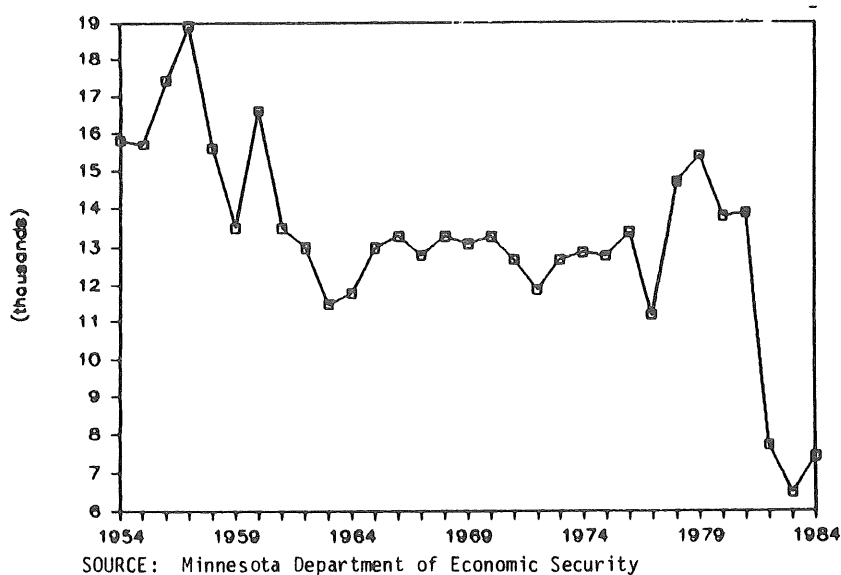
TABLE 81: Average Annual Salaries in Metal Mining, 1981



SOURCE: County Business Patterns, 1981

Employment in metal mining peaked in 1957 with 21,400 workers and slowly declined over the next 20 years, averaging 16,000 workers in the 1960s and 14,000 in the 1970s. In the 1980s, however, employment plummeted by 7,000, bringing the industry to a 40 year low of 8,400 workers. This recent decline has been particularly dramatic because it was entirely concentrated in the northeast region. The dependence on mining of other industries in the region has resulted in a loss of 21,000 employees out of a total regional labor force of 121,000 during the past five years.

TABLE 82: Minnesota Employment in Metal Mining, 1954-1984



Despite recent rehiring and certain prospects for growth, including voluntary import constraints from several steel-exporting nations, Minnesota's mining industry will continue to face declining quality of ore deposits which will greatly reduce its long-run competitive position.

The loss of mining employment is severe to Minnesota in at least two respects. One is the loss of export base income. Even at its 40 year low in production, value added from iron mining was nearly equivalent to one-third of the value added from all manufacturing industries combined.

Secondly, the Iron Range, with a population in excess of 185,000 people, has to date demonstrated a limited capacity to attract or sustain other types of industries which are not linked to extraction and concentration of virgin ore.

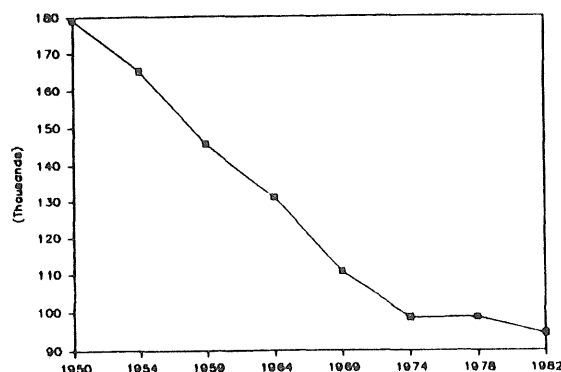
AGRICULTURE

Agriculture constitutes the basis not only of most of Minnesota's nonmetropolitan economy, but a significant share of the metropolitan economy as well. Industries linked to the state's agriculture sector include employment in food and kindred products, farm machinery,

fabricated metals, wholesale trade, trucking and warehousing, finance, and services. In aggregate, over 350,000 jobs of the state's 1.9 million jobs are linked to Minnesota's agriculture sector. Moreover, the total income generated by agriculture exceeds any other economic activity in the state.

As of 1982, agriculture directly accounted for 6.2 percent of total employment in Minnesota, a decline of over 40 percent from its 1960 share. Because farm employment is dominated by proprietors, payroll shares are not a good indicator of total income generated. On average, per-employee income matches Minnesota's average annual wage. A large share of this income, however, is accounted for by farmers working part-time in the retail and service sectors.

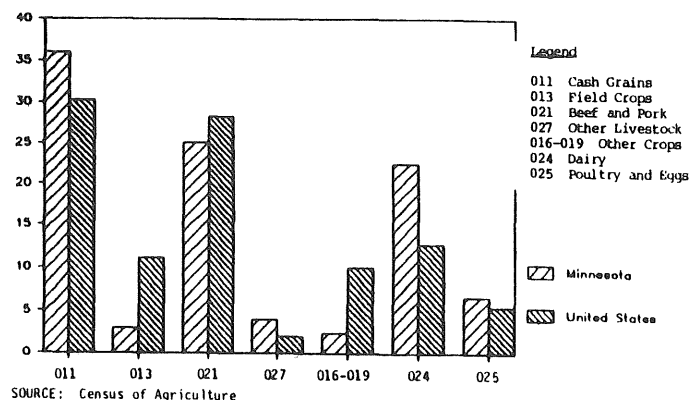
TABLE 83: Total Number Farms in Minnesota, 1950-1982



Source: Census of Agriculture, 1982

Agricultural output is roughly distributed as follows: 39 percent cash grains, 20 percent dairy, 14 percent beef and cattle, 13.5 percent hogs and pigs, and 7 percent poultry. These shares of output reflect a change in product mix, with cash grains becoming more important as beef and cattle production has declined as a percent of total output.

TABLE 84: Distribution of Agricultural Receipts by Major Commodity, 1982

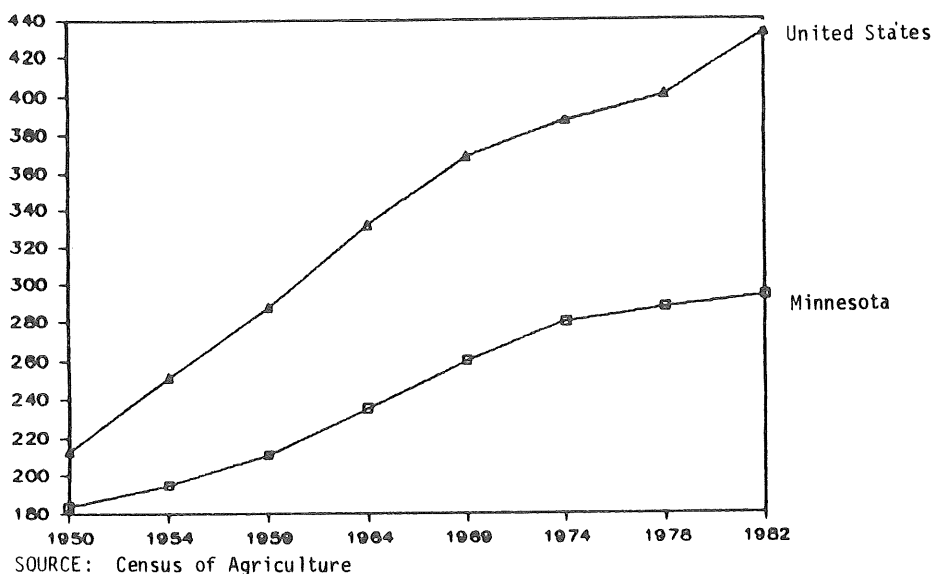


SOURCE: Census of Agriculture

While Minnesota's concentration of employment in agriculture remains at twice the national concentration, over 30,000 agriculture jobs have been lost since 1960. Since 1970 this decline has been proportionately larger for Minnesota than the U.S., indicating a reduction in Minnesota's specialization as a producer of agricultural commodities.

Minnesota's loss of agricultural employment is entirely accounted for by family farms, which represent 88 percent of all farms in the state, compared with 67 percent nationally. Because this class of farms has been most negatively and directly affected by recent trends in national farm policy, foreign trade, and rising interest rates, Minnesota has experienced a disproportionate decline relative to the industry as a whole.

TABLE 85: Average Number of Acres Per Farm, 1950-1982



This loss is exacerbated by the following factors:

- 1) Agriculture has strong direct linkages with several other major Minnesota industries, resulting in nearly a proportionate decline in employment among linked industries for each job lost in agriculture.
- 2) As with the northeast, the regions where agriculture is currently based have demonstrated little or no propensity to attract other types of industries, thus creating a void where agriculture production is lost.
- 3) The losses in employment have occurred primarily among middle-sized farms, which represent the principal stock of farming expertise, the basis of most conservation practices, and a primary seedbed for future generations of farmers.
- 4) The conversion of agricultural land for large scale mono-crop farming or for nonagricultural purposes may limit future agricultural production opportunities including certain high value added bio-medical and industrial applications.

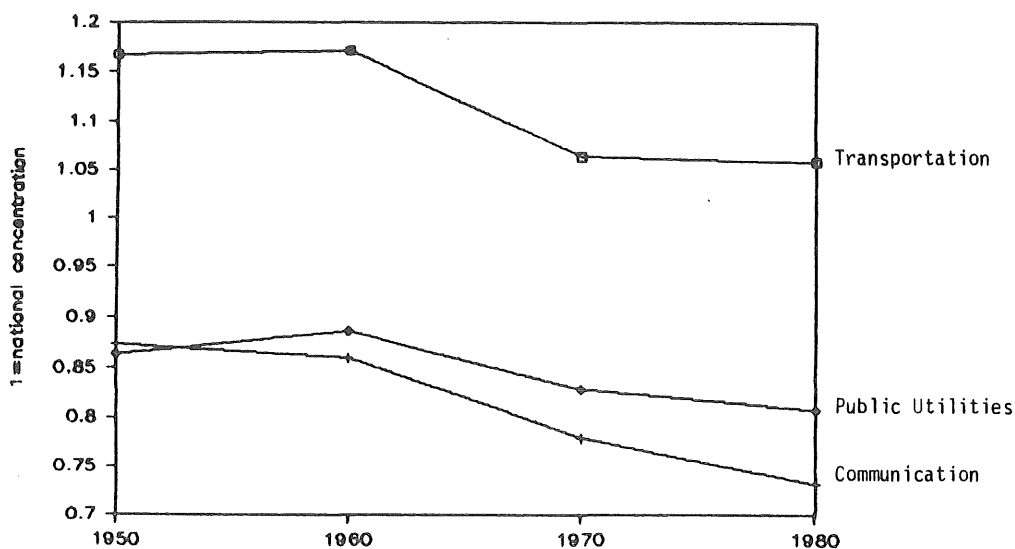
Given this sector's existing linkages with other industries including health, education, manufacturing and wholesale trade, agriculture is crucial to Minnesota's economy, as both a direct and indirect source of income. As with the nation, however, Minnesota's agriculture sector remains in decline with long-run viability ultimately depending on a number of substantial reforms.

TRANSPORTATION, COMMUNICATIONS, AND UTILITIES

Transportation, communications, and utilities make up what is referred to as the distributive services. As of 1983, they represented 4.9 percent of total nonagricultural employment and 6.8 percent of total payroll, compared with 6.7 percent and 9.3 percent nationally. These shares, both for the state and nation, are roughly 30 percent lower than they were in 1960, due primarily to increases in productivity in the case of communications and utilities, and a shift from goods-producing to service-producing activities as well as productivity in the transportation sector.

Nationally, about 42 percent of total output from this sector goes to final demand and 58 percent to intermediate demand. In Minnesota, final demand is larger, but declining due to a much faster rate of growth in intermediate markets.

TABLE 86: Minnesota's Changing Concentration of Employment in Transportation Communication and Public Utilities, 1950-1980



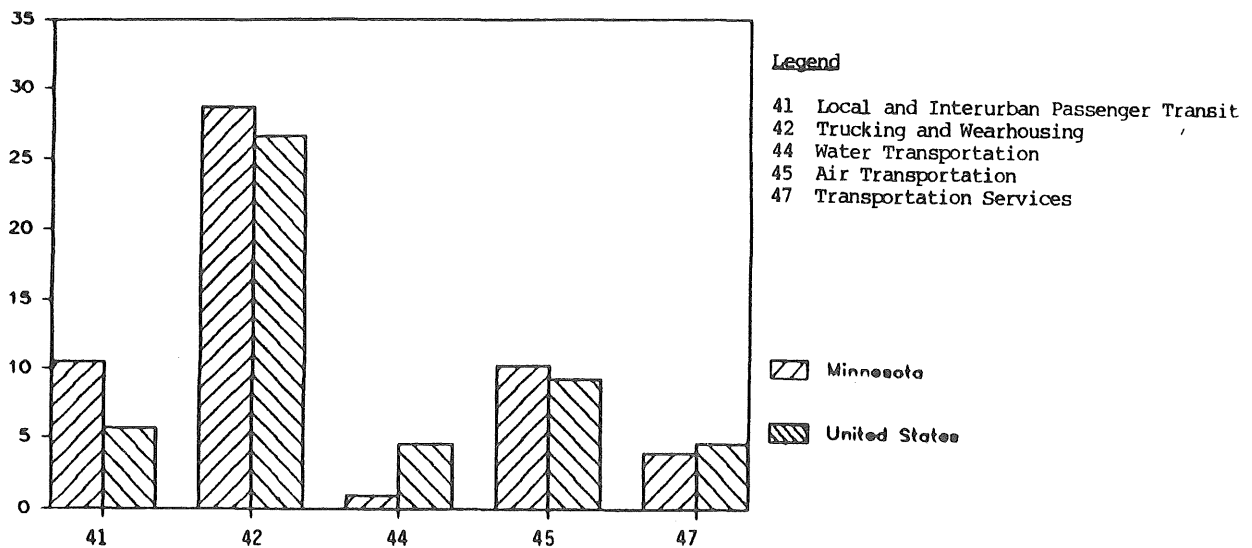
SOURCE: Census of Housing and Population, 1960 and 1980

Transportation

Transportation services account for roughly 61 percent of employment in this sector, compared with 54 percent nationally. Minnesota's high concentration is accounted for by three distinct industries, trucking and warehousing, interurban transit and air travel.

Between 1977 and 1981, trucking and warehousing has gone from 7.1 percent above the national concentration in employment to 6.8 percent above. This shift is accounted for by strong linkages with wholesale and retail trade and agriculture, all of which have declined in concentration. Transportation's decline, however, has been somewhat offset by faster than national growth in the manufacturing sector.

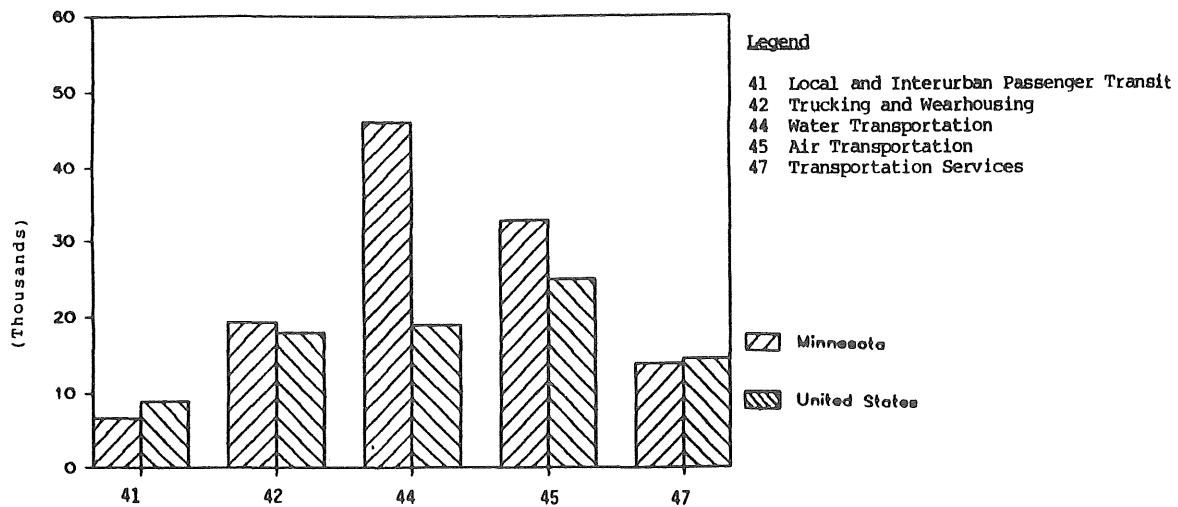
TABLE 87: Distribution of Employment in Transportation, 1981



SOURCE: County Business Patterns, 1981

Minnesota's unusually high concentration of employment in interurban transportation (over 70 percent above the nation's), is almost entirely accounted for by the school bus industry, which has more than three times the national concentration of employment.

TABLE 88: Average Annual Salaries in Transportation, 1981



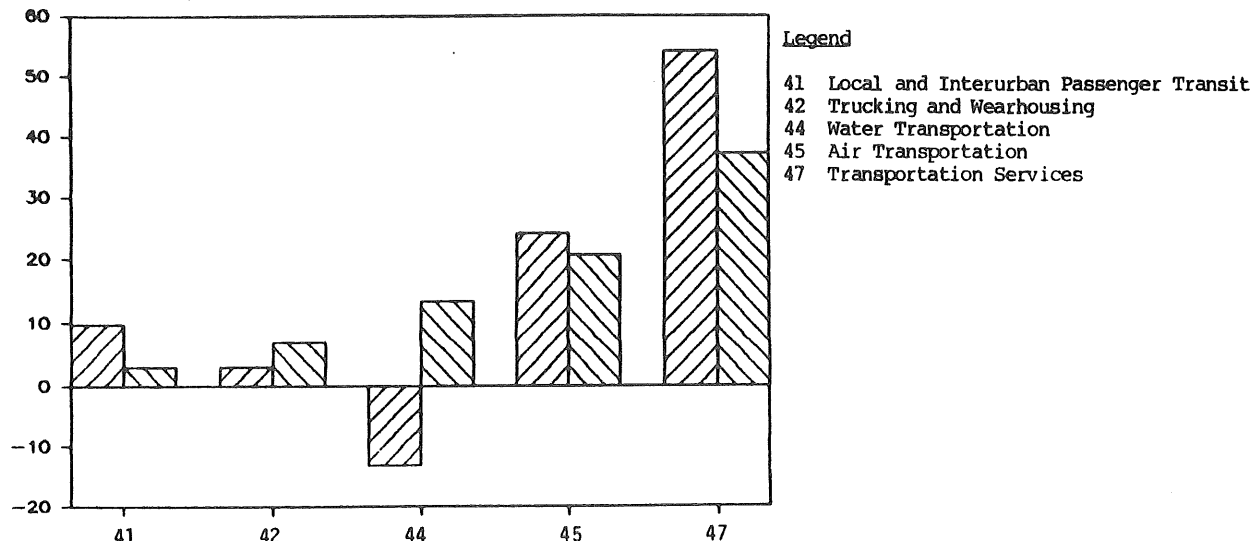
SOURCE: County Business Patterns, 1981

Employment in Minnesota's air travel industry is dominated by the St. Paul/Minneapolis International Airport. In general, air transportation employment is concentrated among the major cities, with little activity occurring elsewhere. While the Twin Cities are not among the nation's 15 largest hubs, Minnesota's concentration in air travel employment has

exceeded the nation's by serving as a regional hub and by offering certain locational advantages for particular routes. Several other metropolitan areas have recently opened airports, however, reducing Minnesota's employment concentration from slightly above the nation's in 1979 to below the nation's by 1981.

Two other sectors in transportation -- water transport and pipelines -- have had substantially lower than national concentrations for over 25 years. Under-representation in these industries is primarily due to a lack of natural endowments sufficient to support these industries or the industries which would rely on these modes of transportation. While Minnesota does have access to Lake Superior, the capacity of existing locks limits utilization to relatively smaller ships.

TABLE 89: Percent Change in Transportation Employment, 1977-1981

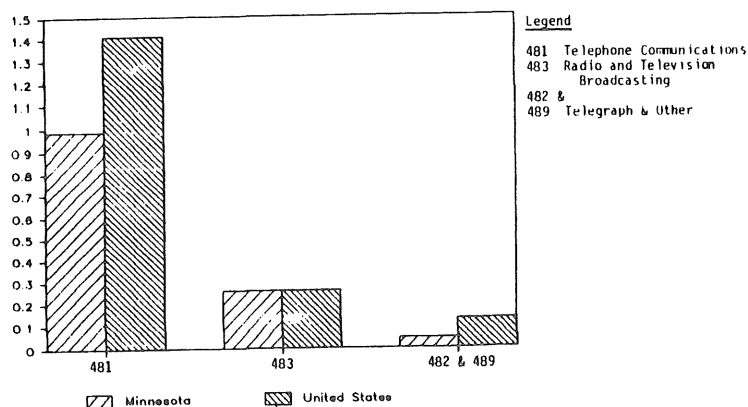


SOURCE: County Business Patterns, 1977-1981

Communications

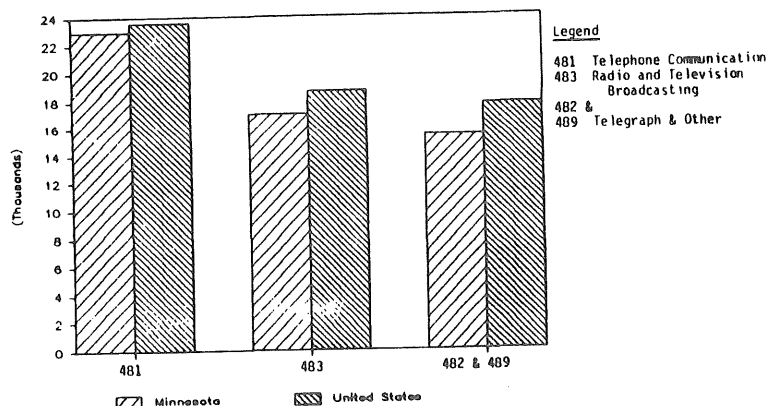
Communications is primarily composed of radio and television broadcasting and telephone service. While these industries have assumed a progressively more critical role in the economy over the past 25 years, their share of total employment has actually declined due to automation, which has resulted in a fourfold increase in output per employee hour since 1960. As of 1983, the communications industry represented 1.2 percent of Minnesota's nonagricultural labor force, compared with 1.8 percent nationally.

TABLE 90: Distribution of Employment in Communication, 1981



SOURCE: County Business Pattern 1981

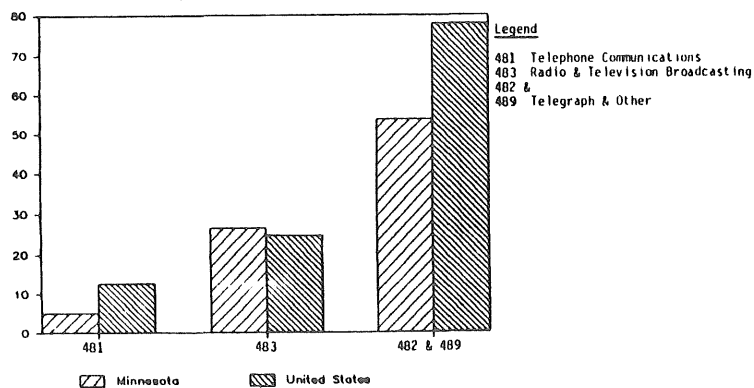
TABLE 91: Average Annual Salaries in Communication, 1981



SOURCE: County Business Patterns 1981

This smaller than national concentration has been a characteristic of Minnesota's communication sector for over 25 years. Minnesota's lower concentration is largely accounted for by a smaller ratio of administrative-related telephone employees to telephones because most of this work is handled by the region's central headquarters in Nebraska.

TABLE 92: Percent Change in Employment in Communication, 1977-1981



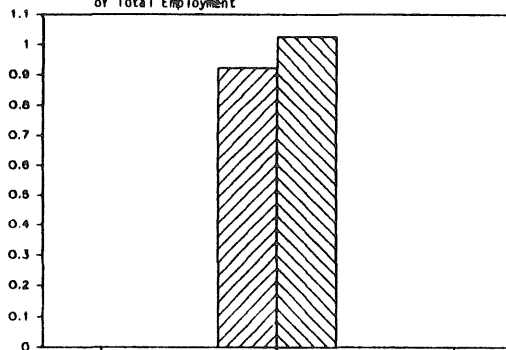
SOURCE: County Business Patterns 1977, 1981

This factor, coupled with slower than national population growth and slower than national growth among certain communication intensive industries such as finance, suggests that Minnesota's concentration in communications employment will not rise significantly in the near future.

Utilities

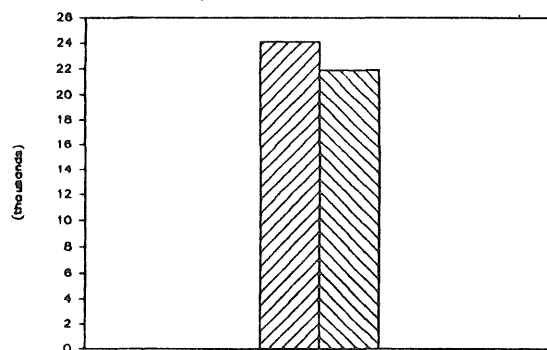
Utilities are made up of natural gas, electricity, water, and sanitation services. Collectively, these industries account for 16.7 percent of total transportation, communication and public utility employment in Minnesota. Concentration of utilities employment remains below the nation's, with a 33 percent lower than national concentration in electrical services and 23 percent lower employment concentration in sanitation services.

TABLE 93: Electric, Gas and Sanitary Services as a Percent of Total Employment



SOURCE: County Business Pattern 1981

TABLE 94: Average Annual Salaries in Electric, Gas and Sanitary Services

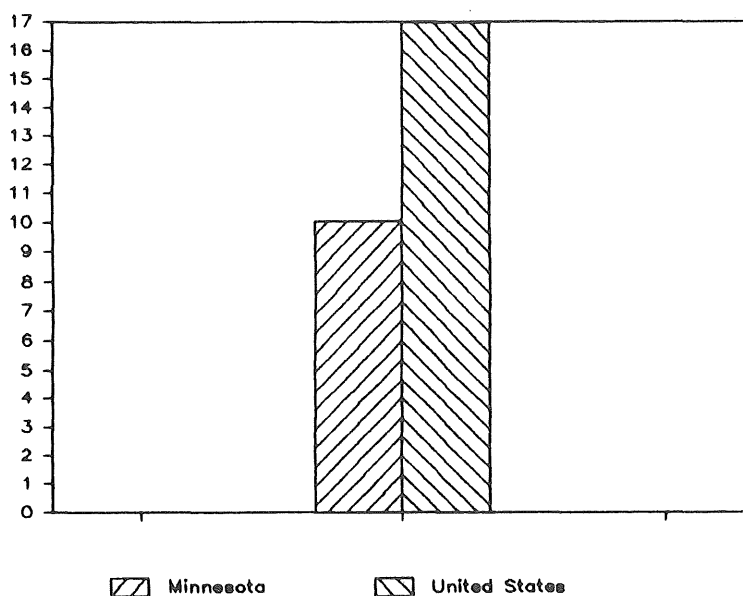


SOURCE: County Business Pattern 1981

Minnesota's lower concentration in electrical services is accounted for largely by three factors: lower per capita consumption, due to differences in household characteristics and industrial mix; greater reliance on electricity purchased from out-of-state sources; and greater efficiency in electrical production, due to less new construction and differences in electrical generation technology.

As Minnesota's concentration of manufacturing employment rises, however, per capita electrical consumption will increase. However, electrical service's share of employment may still remain lower than the national share.

TABLE 95: Percent Change in Electric, Gas and Sanitary Services Employment, 1977-1981

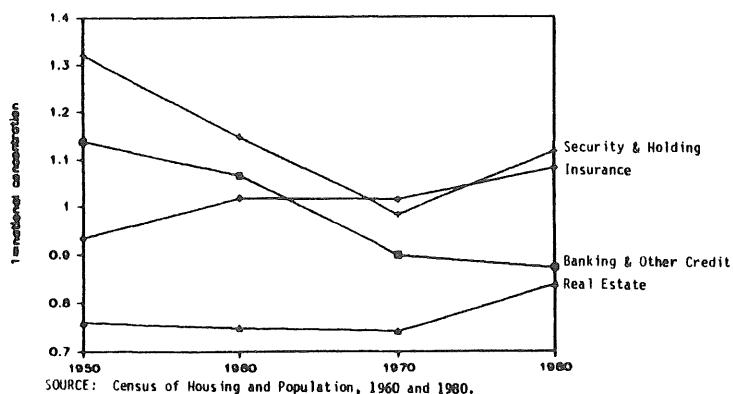


SOURCE: County Business Patterns 1977, 1981

FINANCE, INSURANCE AND REAL ESTATE (FIRE)

Since 1960 FIRE's share of total state employment has increased by nearly 50 percent, a net gain of over 50,000 jobs. As of 1983, the eight industries making up this group accounted for 5.9 percent of total nonagricultural employment and 6.6 percent of total nonagricultural payroll, compared with 7.3 percent and 8.0 percent nationally. During the past decade, FIRE accounted for nearly 12 percent of all new jobs, making it the fastest growing sector with higher than average wages.

TABLE 96: Minnesota's Changing Concentration of Employment in Finance, Insurance and Real Estate, 1950-1980



Employment in FIRE is characterized by moderately high wages (12 percent above the state average), which result from high concentrations of sales, managerial and administrative support occupations, a moderately high concentration of part-time workers (18 percent of total employment), and a high concentration of female employees (58 percent of total employment).

TABLE 97: Distribution of Employment in Finance, Insurance and Real Estate, 1981

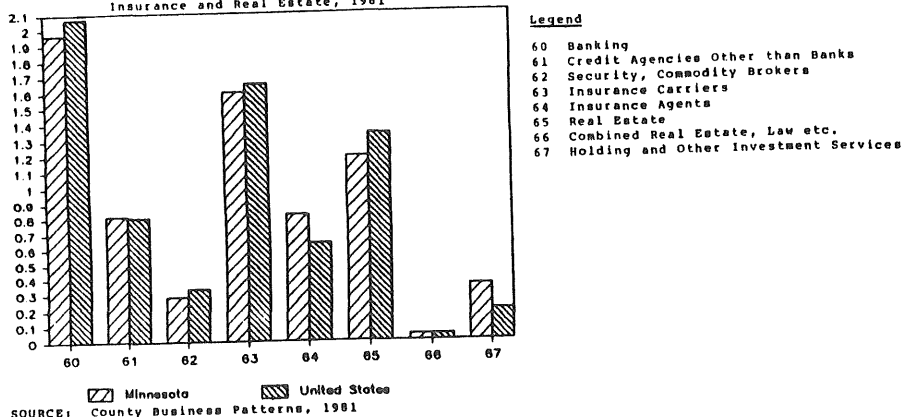
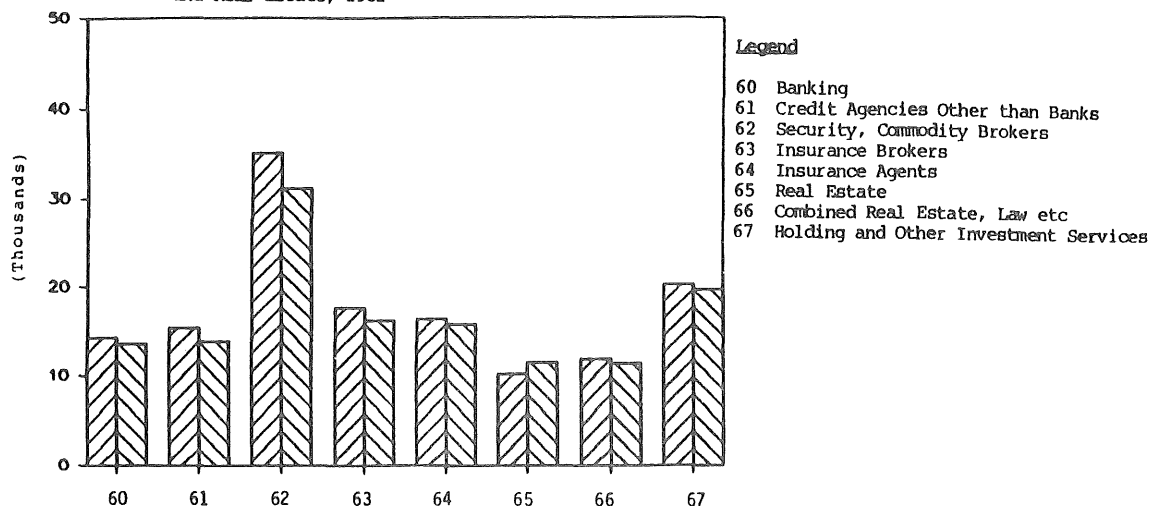


TABLE 9A: Average Annual Salaries in Finance, Insurance and Real Estate, 1981

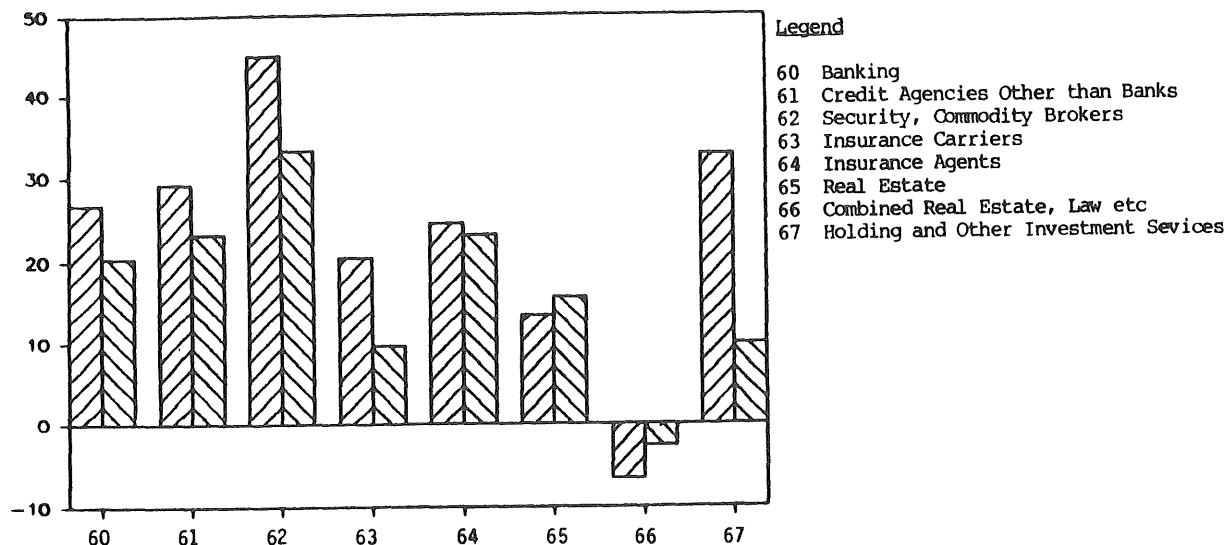


SOURCE: County Business Patterns, 1981

While FIRE is a comparatively fast growing industry, Minnesota has consistently maintained a lower than national concentration of employment. In fact, since 1981 Minnesota has been growing at one-third of the national rate. Minnesota's slower growth is largely accounted for by those firms which are oriented to the provision of services for large corporations. These companies, which account for about half of all finance and insurance sales, have demonstrated an increasing tendency to concentrate in the nation's major financial centers. Consequently, five states, Connecticut, Massachusetts, New York, California, and Illinois, account for over 85 percent of all insurance and commercial bank assets and nearly 50 percent of all insurance and finance employment.

Most of Minnesota's employment growth in finance, insurance and real estate is therefore tied to servicing local as opposed to national or international markets, or providing "back-office" information processing services to regional branches of financial centers headquartered elsewhere. Of the eight industries in this group, Minnesota has higher than national concentrations in four: credit agencies other than banks; insurance carriers; insurance agents, brokers or services; and holding and other investment offices. With the exception of holding and other investment offices, these industries have either maintained their existing concentrations or started to decline over the past decade. In contrast, holding and other investments has gone from below the national concentration in 1970 to 70 percent above today. While this industry remains small (less than 5,000 employees), its phenomenal growth and nature of service demonstrates Minnesota's ability to compete nationally in the provision of financial services.

TABLE 99: Percent Change in employment in Finance,
Insurance and Real Estate, 1977-1981



SOURCE: County Business Patterns, 1977-1981

The continued expansion of Minnesota's financial sector will rely foremost on the scale, assets and market orientation of its other industries and the degree of metropolitan growth and income. The high concentration of financial institutions within the nation's major business centers suggest that Minnesota's current metropolitan population and concentration of corporate activities is not sufficient to support a major financial sector which is national or international in scope. There are some exceptions, most notably in insurance, where Minnesota is the nation's leading underwriter for, among other things, medical malpractice insurance coverage. Overall, however, Minnesota's financial sector is primarily oriented toward serving households and regionally based businesses.

In the long run, Minnesota's prospects for expansion as a corporate financial center may be quite strong, given the characteristics of its labor force, with a high concentration of professional occupations, its central location to a yet unexploited enormous outlying region, and a metropolitan base which continues to grow and diversify.

REGIONAL DISTRIBUTION OF EMPLOYMENT GROWTH

Slightly less than 50 percent of Minnesota's population is located outside the Minneapolis/St. Paul, and Rochester metropolitan areas. In terms of employment, however, the Twin Cities and Rochester metropolitan areas account for over 60 percent of total employment and virtually all Minnesota's employment growth during the past five years. In the following section, this emerging duality between Minnesota's metropolitan and nonmetropolitan economies is briefly discussed.

Between 1970 and 1980, employment in Minnesota grew faster than it did for the nation, but relatively slower than in the previous decade. This slowdown is in part accounted for by the nonmetropolitan portion of the state failing to grow as fast as the other non-metro portions of the nation.

Between 1960 and 1970, the nonurban parts of Minnesota showed a 2.6 percent gain in employment, compared with 31 percent for the urban parts and 9.7 percent growth for all rural places in the nation. In the following decade, Minnesota's rural labor force grew by 25 percent, but failed to keep pace with urban Minnesota, which increased its labor force by 29 percent. Nationally, the rural labor force grew significantly faster than the urban labor force, reflecting a trend towards exurban growth and a more diversified base for the nation's rural economy.

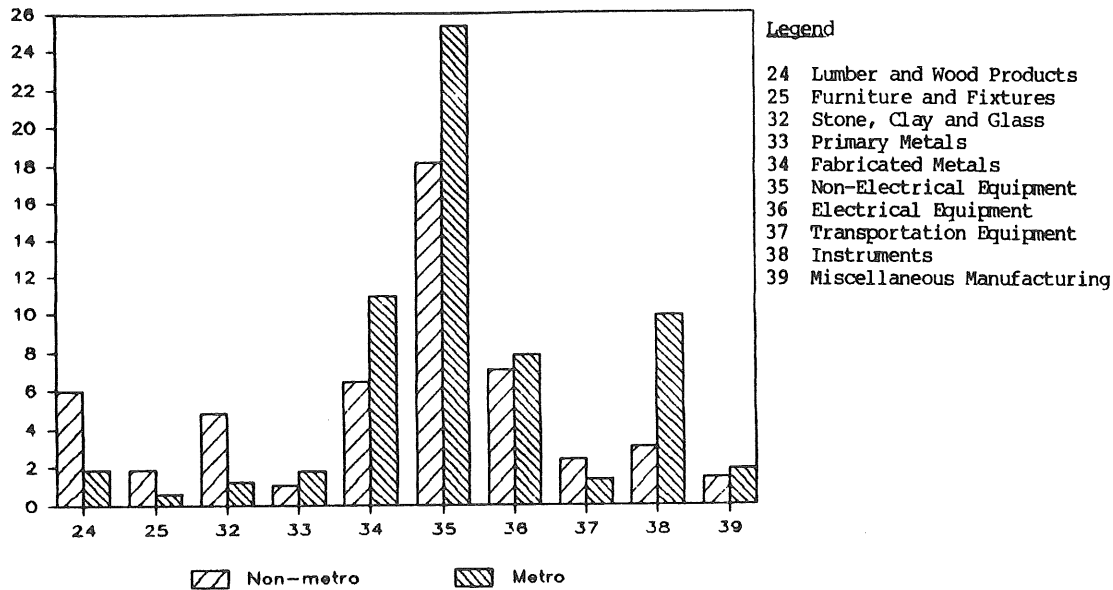
Minnesota's divergence from the national trend in rural economic growth is principally accounted for by a decline in employment related to agriculture and mining, which are substantially larger industries for Minnesota than for the nation as a whole.

In addition, however, slower growth in rural Minnesota has been exacerbated by two factors:

1. Competition with the Twin Cities and Rochester for industrial employment. Unlike the older, more densely settled metropolitan parts of the country where diseconomies have begun to set in, the Twin Cities and Rochester still offer certain economic advantages and a comparatively young infrastructure capable of accommodating a substantially larger economic base.
2. A distribution of employment which is substantially more concentrated in declining industries.

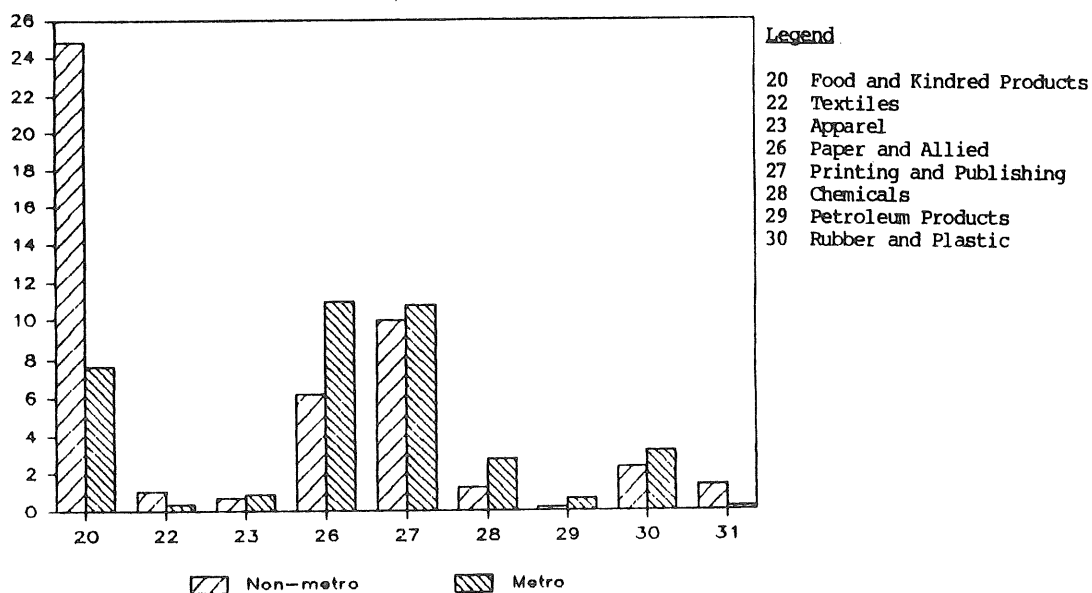
Tables 100 and 101 show the 1983 distribution of manufacturing employment by major industry for the metropolitan and non-metropolitan parts of Minnesota. This table indicates that almost all of the nation's declining or slower growing industries have higher concentrations of employment in the outstate areas and comparatively smaller shares of the nation's high growth industries with the exception of electrical machinery.

TABLE 100: Distribution of Manufacturing Employment
in Durable Goods for the Metro and Non-Metro
Parts of Minnesota, 1983



SOURCE: Minnesota Department of Economic Security
Average Covered Employment 1977, 1981

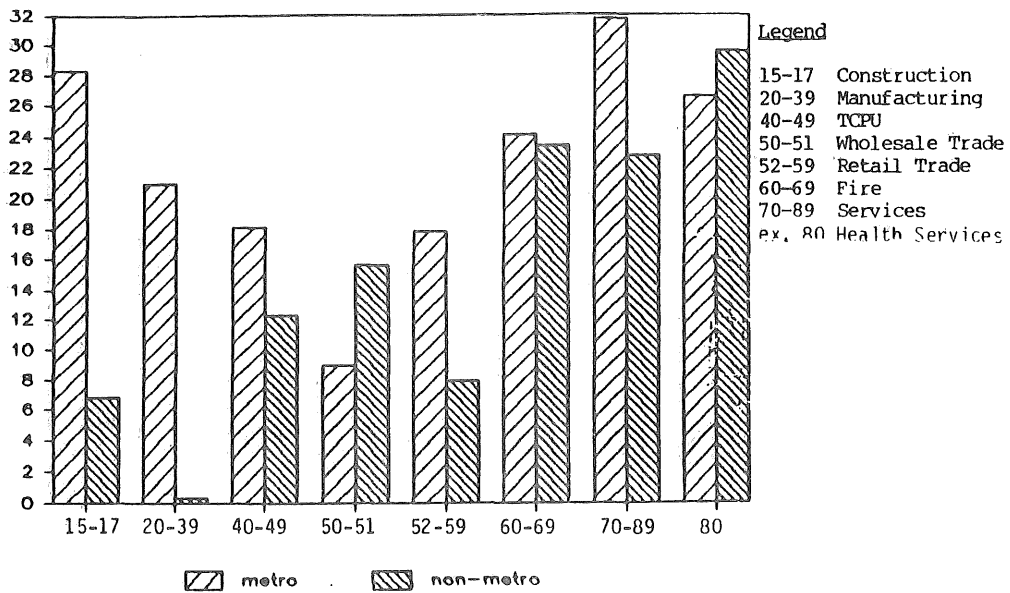
TABLE 101: Distribution of Manufacturing Employment
in Non-Durable Goods for the Metro and
Non-Metro Parts of Minnesota, 1983



SOURCE: Minnesota Department of Economic Security
Average Covered Employment 1977, 1981

Table 102 shows employment growth by major industry between 1977 and 1981 for the Twin Cities seven-county metropolitan area and Rochester, versus the rest of the state. This table reveals that the rural economy has been essentially unable to diversify its base from the extractive industries to manufacturing. Of the 46,896 manufacturing jobs gained during this period, all but 290 occurred in the metropolitan area.

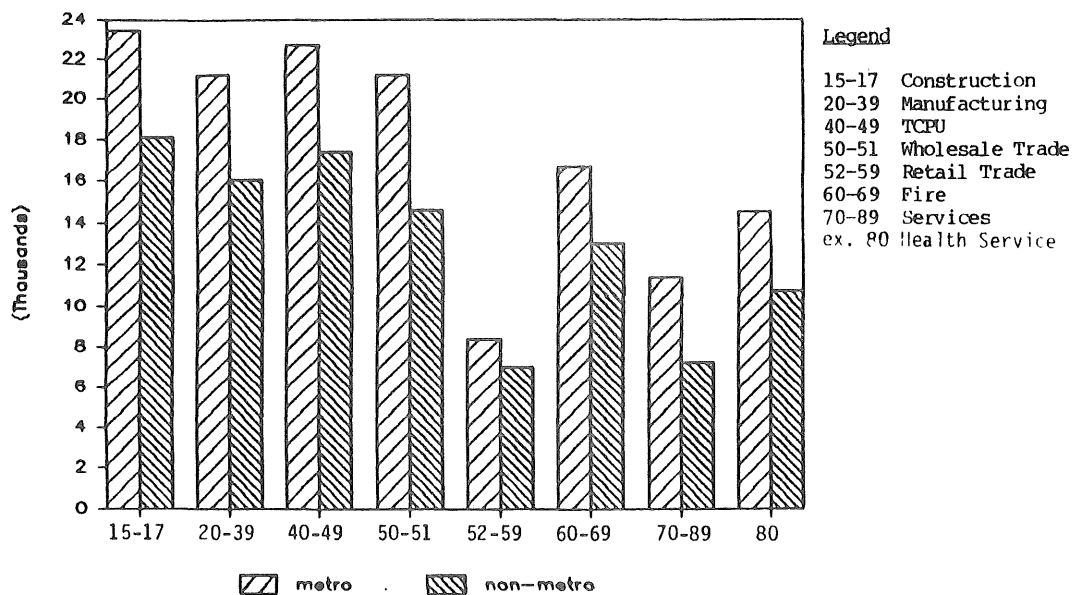
TABLE 102: Percent Change in Employment for the Metro and Non-Metro Areas by Major Sector, 1977-1981



SOURCE: Minnesota Department of Economic Security, Average Covered Employment 1977, 1981

There has been employment growth in industries outside of manufacturing, it has been primarily in such low wage industries as retail trade and consumer services. Moreover, the average salaries of these industries have been well below their metropolitan counterparts.

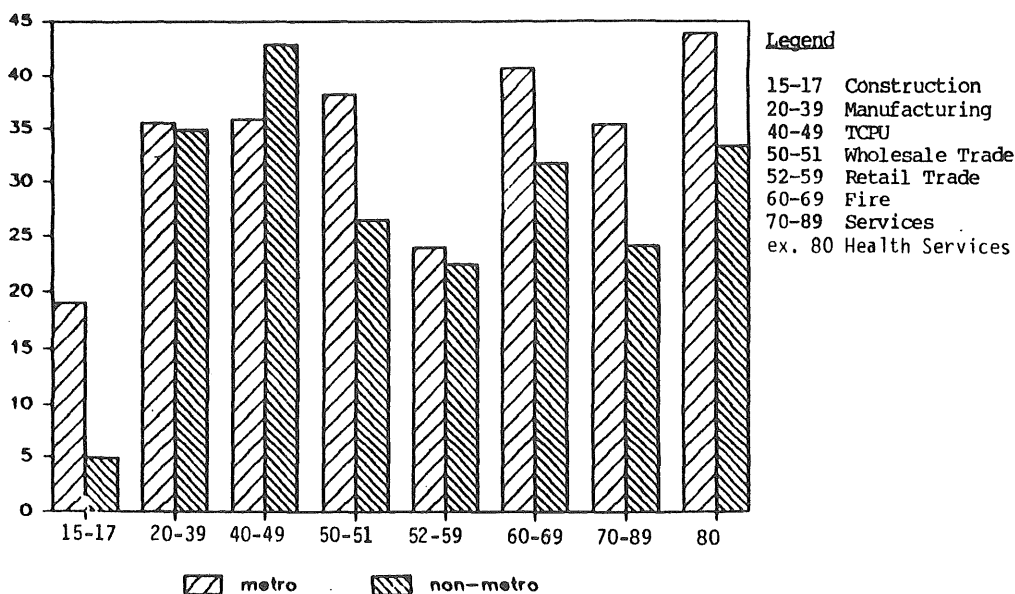
TABLE 103: Average Annual Salaries by Major Sector for the Metro and Non-Metro Parts of Minnesota, 1981



SOURCE: County Business Patterns, 1981

This suggests that most of the jobs created in the rural economy are being filled by part-time or low-wage occupations. In addition, the average change in income per employee was roughly 30 percent lower than in the metropolitan areas.

TABLE 104: Percent Change in Average Annual Salaries
by Major Sector for the Metro and Non-Metro
Areas, 1977-1981



SOURCE: County Business Patterns, 1977-1981

While part of these changes are accounted for by the decline of industries which are linked to agriculture and mining. If a large share of Minnesota's rural economy has failed to grow due to the competitive advantages of operating within the metropolitan areas of the state, policy makers are faced with the challenge of providing reform which runs against the natural tendency for firms to locate where the marginal product of a dollar invested will be higher.

SECTION II: TRENDS IN OCCUPATIONAL EMPLOYMENT

In the previous sections, employment trends were discussed in terms of industries. In the following section, employment trends are discussed in terms of occupations.

The relationship between occupations and industries can be regarded as a layer cake with slices of the cake representing each industry's share of total employment and the layers representing the various occupation groups. This type of illustration is referred to as the occupation industry matrix.

The most basic classification of occupations distinguishes between jobs which are white collar and jobs which are blue-collar. In general, blue-collar workers are those in craft, operative (machine operating) and laborer jobs. White-collar workers are those in professional and technical, clerical, sales and managerial jobs. In the manufacturing sector, blue-collar and white-collar workers correspond closely with definitions of production and non-production workers, respectively.

Over the past 35 years, there has been a very strong national trend from blue-collar to white-collar employment. This trend has been driven both by a shift away from goods-producing to service-producing industries, and by a shift in staffing patterns, which determine what people actually do in each industry.

Nearly two-thirds of the shift to white-collar employment is accounted for by changes in staffing patterns within industries, as opposed to changes in industry mix. Had national staffing patterns remained as they were in 1950, blue-collar workers would today account for 44 percent of total employment instead of 29 percent. However, changes in technology and industrial organization have altered the occupational requirements of virtually all industries, placing a much greater emphasis on professional and technical as opposed to manual skills.

OCCUPATIONAL TRENDS IN MANUFACTURING

The shift towards white-collar employment has been strongest in the manufacturing sector, where blue-collar, or production worker, occupations have declined from 83 percent of all manufacturing employment in 1950 to less than 66 percent today. Concurrent with this shift, manufacturing's share of total national employment has gone from 34 percent to less than 21 percent.

The national shift to non-production employment has been driven primarily by four factors: 1) Increased worker productivity due to greater mechanization; 2) An increasing reliance on foreign imports for labor, capital and resource intensive commodities; 3) A growing tendency to locate U.S. production facilities offshore; and 4) Expansion in the scope of corporate activities requiring a greater concentration of personnel with expertise in such field as finance, law, management and the sciences.

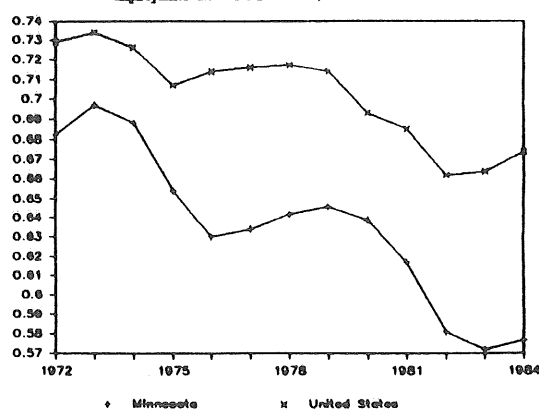
Observing changes in production worker employment in Minnesota is important because it helps to identify whether Minnesota's industrial comparative advantage lies with goods producing or with related producer

services, which are activities performed by non-production workers. It is also important for explaining variations in gross state product and for explaining variations in unemployment rates.

Recent Occupational Trends among the Durable and Nondurable Sectors

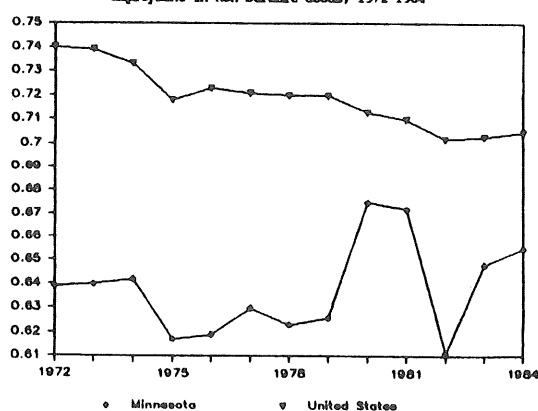
Tables 105 and 106 show the percentage of production workers in durable and nondurable manufacturing for Minnesota and the United States from 1972 to 1984. Minnesota's key durable goods include computers, products for defense, and instruments such as thermostats and medical devices. Key nondurables include food products, publications and paper products and chemicals.

TABLE 105: Ratio of Production Workers to Total Employment in Durable Goods, 1972-1984



SOURCE: Minnesota Department of Economic Security
BLS Handbook of Labor Statistics

TABLE 106: Ratio of Production Workers to Total Employment in Non-Durable Goods, 1972-1984



SOURCE: Minnesota Department of Economic Security
BLS Handbook of Labor Statistics

This table indicates that between 1972 and 1984, Minnesota has consistently maintained lower concentrations of production employment in its durable and nondurable sectors. Both sectors, however, are not following the same trend. While durable goods have demonstrated a strong trend away from production employment, moving from 4.7 percent below the national concentration in 1972 to 14.6 percent below in 1984, nondurable goods production has fluctuated widely in its concentration of production employment.

Between 1972 and 1979, which was a period of strong manufacturing employment growth, 54 percent of all new durable-goods manufacturing jobs were among production workers, compared with 62 percent nationally. In nondurable manufacturing, 48 percent of all new jobs were accounted for by production workers, while nationally production worker employment declined by 0.6 percent and non-production employment increased by 10 percent. In the following period, 1979 to 1983, both sectors laid off employees, but virtually all layoffs in Minnesota's durable-goods sector occurred among production workers, while 80 percent of the layoffs in the nondurable sector were among non-production workers.

Between 1972 and 1982, non-production manufacturing employment in Minnesota grew by 87 percent, compared with 18.7 percent nationally. Minnesota's durable goods industry, however, has been gaining non-production employment at a rate five times greater than nondurable goods. Nationally, durables have been growing at only about two and a half times the rate of nondurables.

While part of this divergence is tied to the 1980 and 1982 recessions and subsequent layoffs of production workers, a number of trends reveal themselves: 1) Minnesota is gaining non-production workers at a faster rate than the nation; 2) While Minnesota's manufacturing sector is growing much faster than the nation's, over 80 percent of this growth has occurred in non-production employment; 3) There is an emerging divergence between the durable and nondurable goods sectors, with durables gaining non-production employment at a significantly faster rate.

The divergence between durable and nondurable production employment suggests differences in comparative advantage. Clearly, a growing share of employment in Minnesota's durable sector is not related directly to actual goods production, but rather to other tasks, including research and development, finance, marketing, administration, etc. With the exception of a few industries, durable goods manufacturing in Minnesota is technology intensive, oriented more toward research and development and toward competing in national and international markets than nondurable goods.

Data from the Census of Transportation shows that the proportion of goods shipped outside the northwest central region was nearly 25 percent higher for durables than nondurables, while the share of sales to foreign nations from durables was 10 times greater. Because proximity to markets is less critical, however, the durable goods industries remain vulnerable to offshore expansions and foreign competition, especially as competing nations continue to upgrade the skills of their labor force and advanced technologies continue to diffuse throughout the world. These factors suggest that non-productive employment will continue to dominate employment growth in Minnesota's durable goods sector.

In contrast, a substantially larger portion of Minnesota's nondurable sector is tied to regional markets including food and kindred products, paper and newspaper publishing. Because Minnesota's nondurable sector is substantially under-represented in non-durable industries with national market orientation, such as petroleum refining, chemicals and textiles, this sector has a much stronger orientation to production employment.

Recent Occupational Trends among Manufacturing the Major Industries

Tables 107 and 108 show Minnesota's concentration of production workers relative to the United States' concentration for each manufacturing industry in 1975, 1979, and 1983. A value of zero implies that Minnesota is utilizing the same proportion of production workers as the nation. A value of less than zero implies that Minnesota is utilizing a higher proportion of white-collar workers.

TABLE 107: Minnesota's Concentration of Production Worker Employment in Durable Goods by Major Industry, 1975, 1979 and 1983

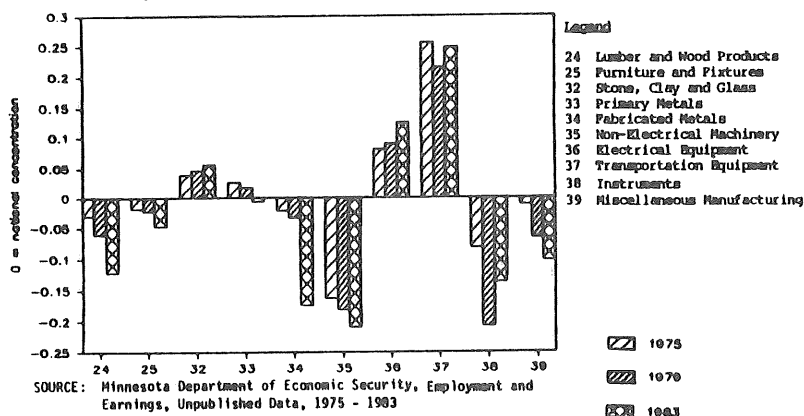
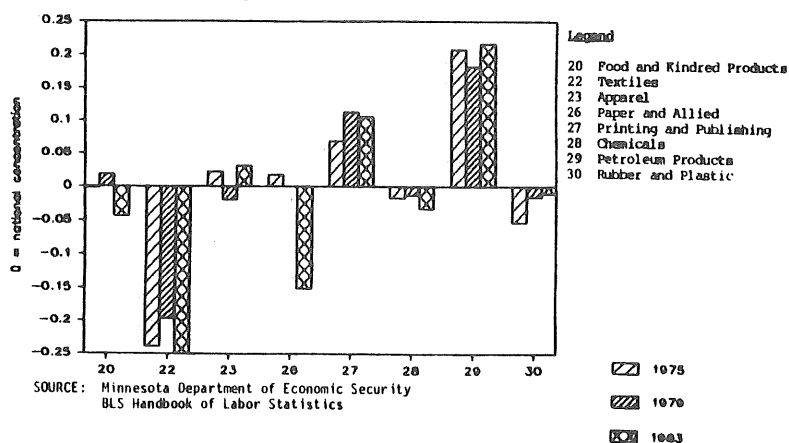


TABLE 108: Minnesota's Concentration of Production Worker Employment in Non-Durable Goods by Major Industry, 1975, 1979 and 1983



In general, industries showing the highest concentration of production workers tend to have smaller shares of total employment than their national counterparts. They also tend to operate out of smaller to medium-sized establishments of 150 or fewer employees. In contrast, the highest incidence of non-production employment is found among Minnesota's largest and most concentrated industries, which frequently have corporate headquarters located in Minnesota. These establishments typically have 500 or more employees, operate several facilities and have branch plants located in other states or nations. The growth of these establishments has been a driving force behind Minnesota's gain in non-production employment.

Between 1977 and 1981, Minnesota's concentration of employment in manufacturing administrative and auxiliaries (defined as offices concerned with the general management of multi-establishment companies including responsibility for program planning, purchasing, financial policy, general engineering, personnel, legal, etc.) has gone from 70 percent above the national share to 98 percent above. Currently, about 15 percent of total manufacturing employment is accounted for by administratives and auxiliaries, which represents roughly 42 percent of total non-production employment.

Certain exceptions to this trend, however, make it difficult to assess Minnesota's future growth in non-production employment. For example, two key growth industries, printing and publishing and instruments have made their employment gains principally among production workers during the past few years, suggesting that the expansion of some of Minnesota's most vibrant industries may rely necessarily on production-type activities. It is also possible that certain non-production activities may have become saturated or less competitive in Minnesota. 3M's relocation and expansion of semi-conductor research to Texas is just one example that Minnesota may be facing increased competition in its non-production activities.

TRENDS IN SPECIFIC OCCUPATIONS

Minnesota's shift towards greater non-production manufacturing employment reflects a distinct staffing pattern. It remains uncertain, however, whether this trend is dominated by growth in clerical, sales and service jobs, or by growth among professional, technical and managerial positions which require more advanced training and have higher wages. In many respects, identifying the occupations which make up not only manufacturing but all industries, reveals a region's economic functions and areas of specialization in a context substantially different from industry statistics.

In the following section, Minnesota's distribution of employment by occupation is compared with the nation's and differences between the two are discussed in terms of industrial concentration, unique staffing patterns and industrial growth trends. Table 109 shows the concentration of employment by occupation for Minnesota and the nation from 1977 to 1982. This table also shows Minnesota's rank among all states in terms of each of its major occupations.

TABLE 109

National and State Employment Concentration
of Major Occupational Groups
1977-1982

	1977	1978	1979	1980	1981	1982
Professional and Technical						
National %	15.1	15.1	15.5	16.1	16.4	17.0
State %	15.8	15.9	15.4	15.8	17.4	18.3
State Rank	15	15	21	21	18	15
Managerial and Administrative						
National %	10.7	10.7	10.8	11.2	11.5	11.5
State %	10.9	11.0	10.0	10.7	10.9	10.9
State Rank	24	22	38	33	28	29
Sales						
National %	6.3	6.3	6.4	6.3	6.4	6.6
State %	6.5	7.3	7.0	6.3	7.3	7.1
State Rank	15	3	7	18	3	9
Clerical						
National %	17.8	17.9	18.2	18.6	18.5	18.5
State %	16.3	16.5	17.6	17.8	17.6	17.5
State Rank	29	30	24	22	26	26
Craft and Kindred Workers						
National %	13.1	13.1	13.3	12.9	12.6	12.3
State %	12.1	11.5	11.9	11.5	10.8	11.4
State Rank	39	45	46	43	44	39
Operatives except Transport						
National %	11.4	11.3	11.3	10.6	10.5	9.5
State %	7.8	8.7	8.9	7.9	8.3	7.1
State Rank	36	37	35	36	34	34
Transport Equipment Operatives						
National %	3.8	3.8	3.7	3.6	3.5	3.4
State %	3.9	3.9	4.2	3.4	3.0	3.2
State Rank	23	19	10	33	39	31
Nonfarm Laborers						
National %	5.0	5.0	4.8	4.6	4.6	4.5
State %	4.4	4.4	4.1	3.6	3.9	3.7
State Rank	36	38	46	48	41	46
Service Workers						
National %	13.7	13.6	13.2	13.3	13.4	13.8
State %	15.9	15.4	15.0	16.1	15.1	15.1
State Rank	4	3	6	3	7	13
Farm Workers						
National %	3.0	3.0	2.8	2.8	2.7	2.7
State %	6.3	5.5	5.9	6.9	5.6	5.6
State Rank	11	11	12	8	10	11

Minnesota's Unique Mix of Occupations

To identify what Minnesota's occupational mix would have been if it had staffed each industry as the nation does, Minnesota's share of employment in each sector was weighted by the national distribution of occupations for that sector. The "expected" occupation concentration of employment in each occupational group is that which would have occurred if Minnesota staffed each industry as the nation does. These estimates were then compared with the "observed" occupational concentration, the actual share of employment accounted for by each occupational group based on survey data from the Bureau of Labor Statistics geographical profile of employment.

Tables 110 and 111 shows Minnesota's "expected" and "observed" occupational concentrations for the years 1976 and 1982. By making this comparison for two points in time, it is possible to observe in aggregate whether Minnesota has been moving toward or away from the national staffing norms.

TABLE 110: Observed Versus Expected Employment Shares by Major Occupational Group for Minnesota, 1976

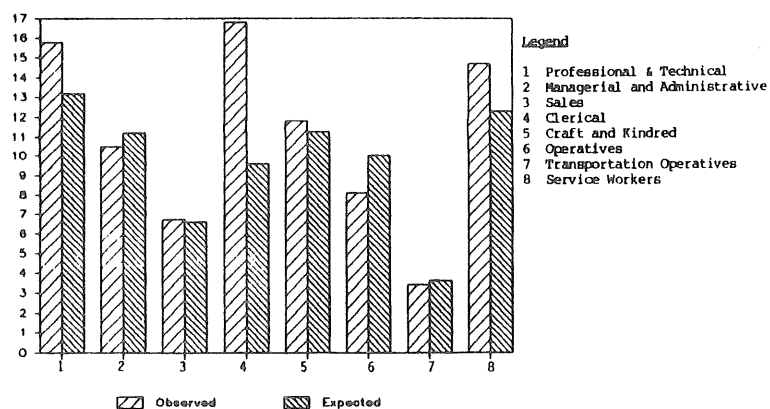
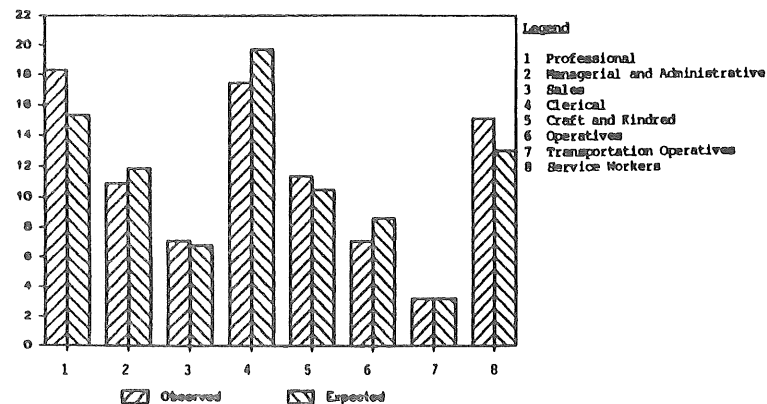


TABLE 111: Observed Versus Expected Employment Shares by Major Occupational Group for Minnesota, 1982



SOURCE: Handbook of Labor Statistics, Bulletin #2175

Table 112 given in the appendix simply compares Minnesota's distribution of occupations by industry with the U.S. distribution, using data from the 1980 Census of Population and Housing. This table was used to identify the industries which account for the dominant share of Minnesota's unexpected concentrations for each major occupation group.

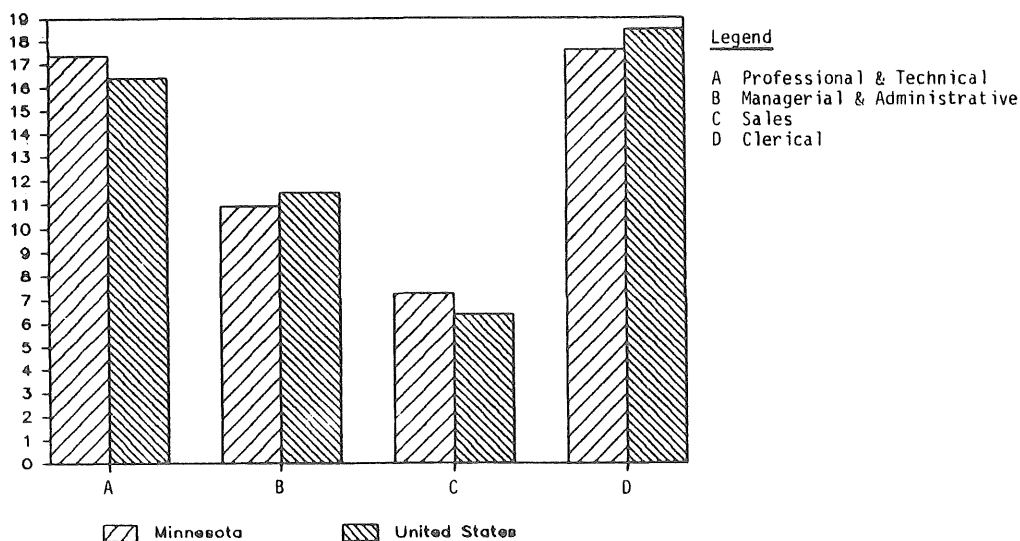
These occupational trends are discussed below by major group. The purpose of this discussion is to identify how Minnesota's share of employment and recent growth in each occupation compares with the nation, and to provide a clearer understanding of the sources of occupational growth. Identifying Minnesota's unique staffing patterns and their sources will help to assess Minnesota's competitive position in various industries, and will also help to explain why average wages in a given industry may differ from their national counterpart.

This information also helps to identify which occupational groups show strong growth potential and which occupational groups may face declining opportunities.

White Collar Occupations

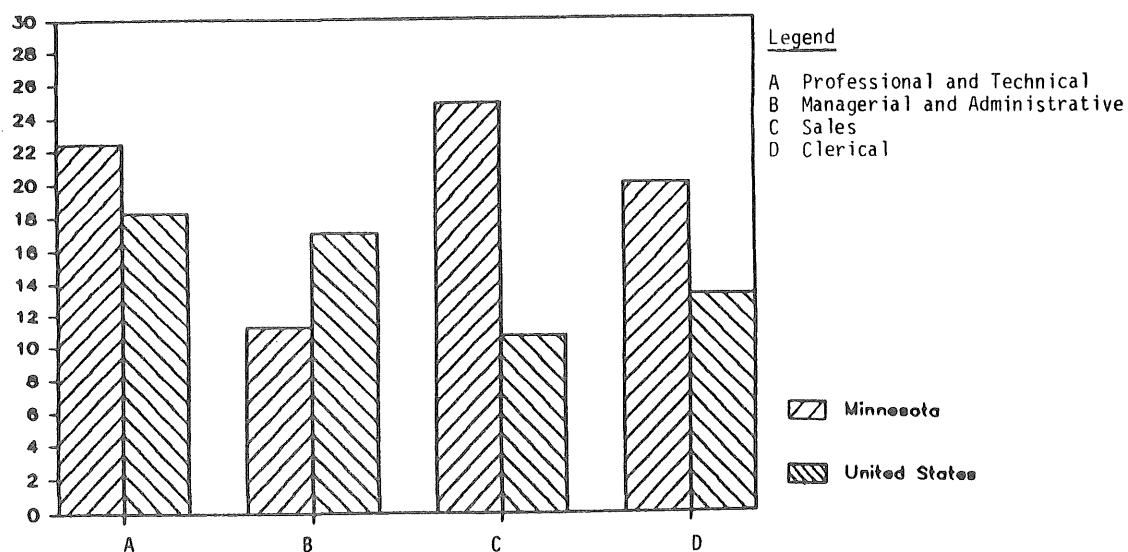
Minnesota is gaining white-collar employment at a rate 20 percent faster than the nation. Since 1977, Minnesota has gone from 1 percent below the national concentration to 4 percent above. The sources of Minnesota's white-collar growth, however, differ sharply from the nation's.

TABLE 113: Distribution of White Collar Occupations
For Minnesota and The United States, 1981



SOURCE: Geographic Profile of Employment, 1976-1983

TABLE 114: Percent Change in White Collar Employment
for Minnesota and the United States, 1977-1981



SOURCE: Geographic Profile of Employment, 1976-1983

Professional and Technical Workers: Professional and technical occupations are Minnesota's fastest growing source of new employment, accounting for one of every five new occupations. Between 1977 and 1981, professional and technical occupations grew by 21.5 percent, compared with 18.5 percent nationally. This growth is an important indicator for Minnesota's economy, because professional and technical workers are among the highest paid and most skill-intensive of all occupations.

As of 1980, nearly 89 percent of all professional employees and 66 percent of all technical employees in Minnesota had completed one or more years of college, reflecting a higher level of educational attainment than all other occupations. While educational attainment is a crude indicator of skills actually employed, it is highly correlated with income and reflects an ability to learn new skills.

Given Minnesota's industrial mix, the concentration of professional and technical employment is 20 percent higher than expected. This higher concentration is accounted for primarily by unique staffing among two major sectors, human services -- and hospitals in particular, and manufacturing. A higher than national concentration is also found in the insurance industry.

Within manufacturing, a higher concentration of professional and technical workers is found in fabricated metals, instruments, and nonelectrical machinery among durables, and in food and kindred products and paper among nondurables. These higher concentrations support the contention that a significant share of Minnesota's non-production employment is related to such skill-intensive activities as research and product development.

The gap between Minnesota's and the national share of professional and technical employment has increased since 1976. In part, this increase is related to a change in industry mix, but even after controlling for changes in the composition of Minnesota's industries, the concentration of professional and technical employment is substantially higher than would be expected. This suggests that unique staffing is a driving force behind the growth in professional and technical employment.

Sales Workers: Since 1977, sales occupations in Minnesota have been growing at just slightly less than twice the national rate of 2.7 percent annual growth. In Minnesota, sales are the second fastest growing occupation group, increasing at a rate just slightly below professional and technical occupations.

Nearly two-thirds of all sales occupations are in the retail and consumer services industries, where fewer than 30 percent of all employees have had one or more years of college and wages are among the lowest paid. The remaining third is composed of high-wage sales representative positions found mainly in manufacturing, wholesale trade, finance, insurance and real estate.

Between 1976 and 1982, Minnesota's concentration of employment in sales occupations increased from 3 percent above the national concentration to 7.6 percent above. This rise in concentration is the product of both a unique industry mix and unique staffing.

In terms of industry mix, Minnesota's higher than national growth in eating and drinking places and consumer services has contributed to a growing concentration of retail sales positions, while higher growth in the manufacturing and insurance industries has contributed to a growing concentration of sales representative positions.

In terms of unique staffing, a proportionately large share of national sales positions is found in nearly half of all manufacturing industries as well as in the communications, insurance and business services industries.

Despite slower than national growth in several retail industries, a major employer of sales workers, Minnesota is likely to retain a higher than national concentration of sales occupations due to the comparatively large number of part-time positions in Minnesota and faster than national growth in the manufacturing and insurance industries.

Managerial and Administrative Workers: Minnesota's growing concentration of white-collar employment has come only marginally from the managerial and administrative occupations.

Since 1977, Minnesota has been gaining managerial employment at just slightly more than half the national rate, making management the slowest growing of all white-collar occupations in Minnesota. Throughout this period, managerial and administrative positions have accounted for 10.9 percent of total employment, while the U.S. concentration has steadily risen from 10.7 percent in 1977 to 11.5 percent today.

Although managerial occupations are, on average, the highest paid, they rank third among occupational categories in terms of educational attainment, with less than 64 percent of all managers having one or more

years of college. With a few exceptions, managers and administrators are uniformly distributed across all nonagricultural industries. The two sectors with slightly higher than average concentrations are public administration and FIRE.

Minnesota's slower growth and lower concentration in managerial employment is largely the product of unique industry staffing. According to Census of Housing and Population data, significantly lower than national concentrations of managers are found in virtually all sectors but manufacturing and public administration.

Minnesota's slow growth in managerial employment represents a strong divergence from the national pattern, where managers and administrators are the second fastest growing occupation group. It is particularly unusual given Minnesota's higher than national concentration of headquarters offices in all but the retail sector.

Clerical Workers

Since 1977, Minnesota has been gaining clerical employment at a rate 37 percent faster than the nation. Clerical occupations are now the third fastest growing occupational group and second largest source of all new employment. If this growth trend continues, Minnesota will exceed the national concentration of clerical employment by 1990.

Clerical occupations account for 17.5 percent of total employment, and range in concentration from a low of 8 percent in the consumer services industry to a high of 48 percent in the insurance industry.

They are the largest occupational group, representing more than 315,000 employees of which more than 280,000 positions are held by female workers.

Clerical workers rank comparatively high in terms of skill requirements and earnings, with 37 percent of all clerical workers having one or more years of college and median earnings above those found in retail sales, operatives, laborers and services occupations.

Minnesota's lower concentration of clerical positions is partially accounted for by smaller finance, public administration and real estate sectors, and partially by having smaller than national shares of clerical workers in communications, utilities, insurance, finance, hospitals and health. Its faster than national growth is partially accounted for by changes in industrial mix and by a shift towards the national staffing norm, which is reflected in the declining gap between observed and expected concentrations.

Blue-Collar Employment

While blue-collar employment as a proportion of all jobs is declining in both Minnesota and the United States, there is still blue-collar job growth. Minnesota, however, is gaining blue-collar employment at half the national rate, .44 percent annually compared with .88 percent. This difference is not surprising, since over 80 percent of all manufacturing employment growth has been among non-production workers, as discussed earlier.

Minnesota has consistently maintained a lower than national concentration of employment among three of the four major blue-collar occupation groups, craft and kindred workers, operatives and laborers. The fourth occupational group, transport operatives, had a substantially higher than national concentration of employment until 1974. Since then, Minnesota's share of employment accounted for by transport operatives has fallen below the national share.

Minnesota's lower concentration of craft and kindred workers, operatives and laborers is principally accounted for by its historically smaller concentration of manufacturing employment. Several other sectors, however, play an important role in determining Minnesota's total share of blue-collar occupations. The growth rates of the various blue-collar occupations and factors affecting their concentration are discussed below.

TABLE 115: Distribution of Blue Collar and Service Occupations for Minnesota and the United States, 1981

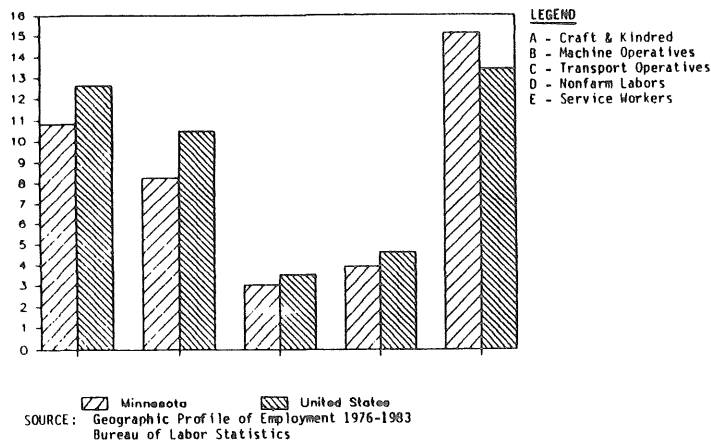
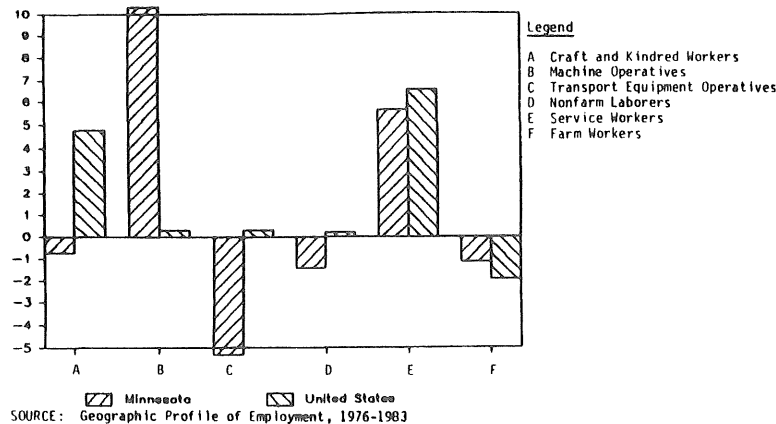


TABLE 116: Percent Change in Blue Collar and Service Employment for Minnesota and the United States, 1977-1981



Craft and Kindred Workers: Craft and kindred occupations are the highest paying and most skill demanding of the blue-collar occupations. Twenty-eight percent of all craft and kindred workers are found in manufacturing, where they are primarily concentrated in food and kindred products, fabricated metals, nonelectrical machinery, and instruments. Outside manufacturing, craft workers are concentrated in construction (28 percent), retail trade (14 percent) and transportation and public utilities (7 percent).

Despite a smaller than national share of total employment, Minnesota's concentration of craft and kindred workers is actually higher than expected given the state's mix of industries. Higher than national shares of craft and kindred workers are found in several sectors, including construction, transportation, communication and utilities, wholesale and retail trade, business services, and health, but not in manufacturing.

Between 1977 and 1981, Minnesota's concentration of craft and kindred workers declined more rapidly than in the nation. Since 1981, this trend has reversed itself. If it continues, Minnesota will reach the national concentration in craft and kindred workers by the end of the decade, but by that time, craft and kindred's share of total employment will have fallen to less than 9 percent.

Operatives: Operatives generally have lower salaries and require less skills than craft and kindred workers. Their median income, however, is well above the state average. In terms of educational attainment, only 57 percent have graduated from high school, while fewer than 15 percent have had one or more years of college. Nearly 81 percent of all operative occupations are in manufacturing, with particularly high concentrations in paper and allied products, printing and publishing, and fabricated metals. Outside manufacturing, operatives represent a significant share of total employment in public utilities, repair services, and wholesale trade.

Between 1977 and 1981, operatives' share of total employment in Minnesota increased from 7.3 percent to 8.3 percent. This increase occurred at nearly 10 times the national growth rate, making it not only the fastest growing blue-collar occupation during this period, but also one of the fastest growing of all occupations.

This phenomenal increase has been driven mostly by two industries, printing and publishing and fabricated metals, which includes defense-related products. While operatives remain below the national concentration, they will exceed it if this trend continues. This growth, however, should be viewed with caution. Operatives are among the most cyclically sensitive of all occupations, more subject to layoffs during economic downturns than most occupations. They are also among the most likely to be affected by foreign competition or regions offering competitive wages. Because operatives' educational attainment is among the lowest of all occupations, retraining them for jobs with comparable pay may prove exceedingly difficult.

Non-farm Laborers: Non-farm laborers are the lowest skilled and lowest wage blue-collar occupations. Non-farm laborers are persons primarily engaged in handling, lifting, conveying or other manual labor. As of 1980, only 52 percent of all non-farm laborers were high school graduates

and median earnings were only 60 percent of the state average. In terms of employment, the total number of non-farm laborers in Minnesota declined by 7 percent between 1977 and 1981, compared with no change nationally.

The largest share of non-farm labor, 32 percent, is in retail trade, followed by manufacturing, 26 percent, and construction, 12 percent. With the exception of retail trade, which has a higher share of non-farm labor than the nation, most of Minnesota's industries have lower than national shares, including a 10 percent smaller share in manufacturing and a 20 percent smaller share in construction.

The largest source of decline has come from manufacturing and construction, followed by services. The decline of non-farm labor, from 9.4 percent of the labor force in 1940 to 6.6 percent in 1950 to roughly 3 percent today, reflects a basic long-term substitution of capital for labor in tasks which are basically physical with low-skill requirements.

Service Occupations

Included in this group are the following: cleaning workers, such as janitors and maids; food service workers, such as waiters, busboys, cooks and dishwashers; health service workers, such as dental assistants and nurses' aids; and personal service workers, such as attendants, hairdressers and barbers, and housekeepers. Between 1977 and 1981, Minnesota gained service occupations at roughly two-thirds the national rate, making service occupations among the slowest growing of all the occupational groups. This slower growth is reflected in the share of total employment accounted for by service occupations, which has declined from 15.9 percent in 1977 to 15.1 percent in 1982, while the national share has gained from 13.7 percent to 13.8 percent during the same period.

About 85 percent of all service occupations offer moderate to low wages and require moderate to low skills. In terms of educational attainment, about 58 percent from this group have completed high school with another 22.3 percent having one or more years of college. As of 1980, their median income was the lowest of all occupations, roughly one-third of the state average.

The remaining 15 percent of all service occupations are in the protective services, including firefighters, guards, police and sheriffs. In contrast to other service occupations, 81 percent from this group have completed high school and their median income is above the state average.

Minnesota's high concentration of service workers is the product of both a unique industry mix and unique staffing patterns. One industry in particular, health, which represents 23 percent of all service workers, has twice the national employment concentration and a 50 percent higher share of service workers than its national counterpart. Other major employers of service workers include retail trade with 30 percent, consumer services 15.3 percent, education 10.9 percent, and public administration 5.3 percent. The latter is dominated by protective service occupations.

Minnesota's slower than national growth in service employment is accounted for primarily by a shift towards the national staffing norm. In fact, between 1977 and 1981 several major employers of service-employing industries, such as health and education, grew well above the national rate. This trend toward the national staffing norm is also reflected in Minnesota's tightening gap between observed and expected concentrations of service employment.

In 1976, Minnesota's concentration of service employment was 20 percent higher than expected given the state's industry mix. In 1982, Minnesota's concentration of service employment declined to only 16 percent higher than expected.

Despite slower than 1 percent annual growth in service employment, Minnesota's concentration will continue to account for a significant share of total employment well into the 21st Century, both because its existing concentration is so large and because many of the principal employing industries are among the state's fastest growing.

SUMMARY

Minnesota's higher than national concentration in professional, technical and sales representative occupations, along with higher than national growth in clerical positions, indicates a strong movement toward a service-based economy. As previously stated, a large share of this employment is accounted for by the manufacturing sector reflecting Minnesota's growth in producer services. The one strong exception to this trend has been the phenomenal growth among machine operative occupations, which has come primarily from the growth of Minnesota's printing and publishing and fabricated metals industries.

Despite Minnesota's movement away from blue-collar and low-skill occupations, there remains a substantial share of employment, roughly 23 percent, in low wage, low-skill occupations, including retail sales, service workers and non-farm laborers.

Moreover, a large share of higher wage blue-collar positions, including those related to the extractive industries and machine operatives, remains vulnerable to foreign competition and other sources of structural decline. Wages paid to these occupations will either be bid down by competition or made obsolete through technical changes.

These trends suggest that Minnesota's labor force is becoming increasingly concentrated in two basic groups: those which can be characterized as moderate-to high-wage and moderate - to high-skill jobs with strong growth opportunities, and those which can be characterized as low-wage, low-skill jobs with minimal opportunities for advancement, or medium-wage jobs which are highly vulnerable to structural changes.

TRENDS IN PERSONAL INCOME

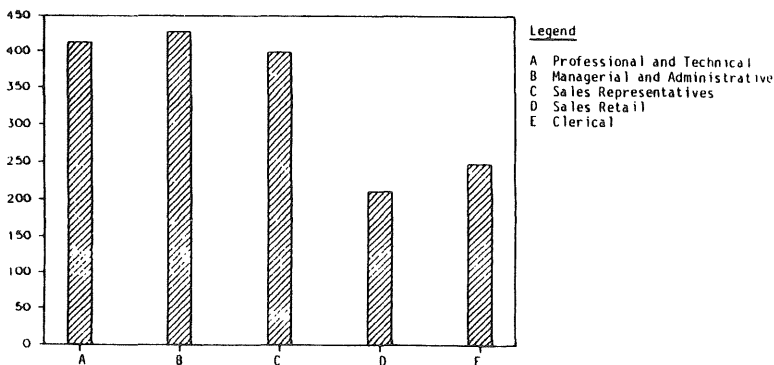
The previous section concluded by stating that employment in Minnesota is becoming increasingly concentrated at the low and high ends of the wage scale. In the following section, Minnesota's recent trends in occupational and industry employment are discussed in terms of their effects on personal income. This discussion is presented in two parts: 1) Growth in salary income by occupation and industry; and 2) Differences in average salaries for Minnesota and the U.S. which are accounted for by Minnesota's unique mix of occupations, Minnesota's unique mix of industries and unique labor market characteristics including differences in hourly wages and average weekly hours.

Growth in Salary Income

The emergence of a dual economy is reflected not only by a growing concentration of employment in high- and low-wage occupations, but by sharp differences in the rate of income growth for each occupational group as well.

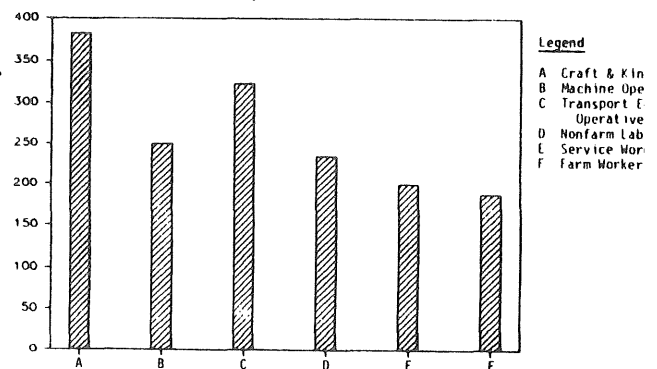
Table 117 shows national median weekly salaries for eleven major occupation groups for 1982. Table 118 shows the percent change in median weekly salaries between 1976 and 1982 for nine of these occupations and for all sales occupations grouped together.

TABLE 117A: Median Weekly Salaries in White Collar Occupations, 1982



SOURCE: Handbook of Labor Statistics, Bulletin #2175

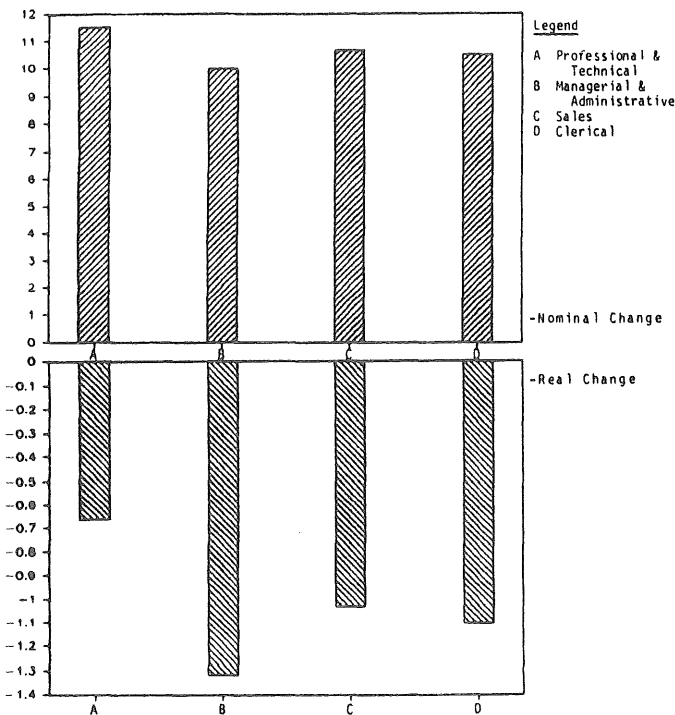
TABLE 117B: Median weekly Salaries in Blue Collar and Service Occupations, 1982



SOURCE: Handbook of Labor Statistics, Bulletin #2175

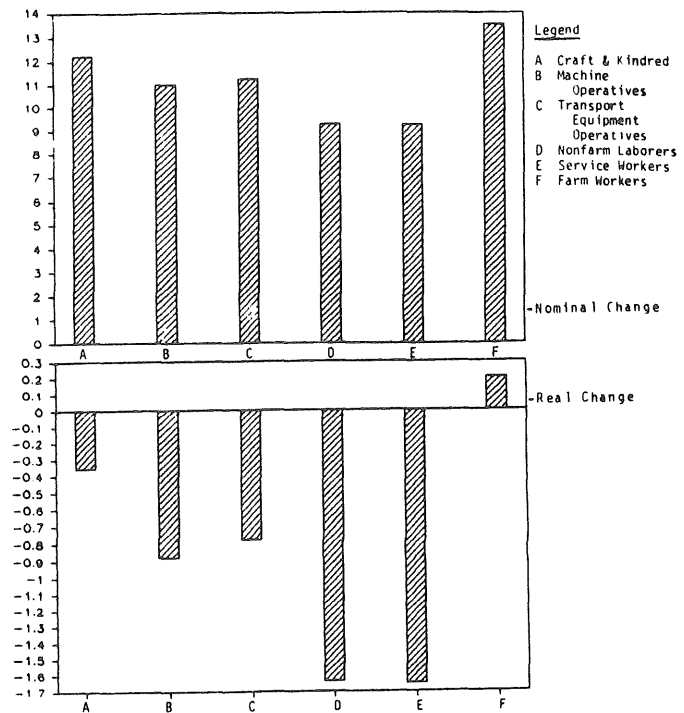
In terms of real income, only the lowest paid occupational group, farm workers, registered growth between 1976 and 1982. All other occupational groups showed declines in median weekly salaries. The highest wage occupations, however, were among the smallest losers. For example, professional and technical and craft and kindred workers, representing two of three occupational groups with median weekly salaries above \$350.00, showed average annual declines of .65 and .35 percent respectively. Managerial and administrative, sales, clerical and operatives, with median weekly salaries ranging from \$450.00 to \$250.00, showed average annual declines ranging from 1.3 to .8 percent. In contrast, nonfarm laborers and service workers, with median weekly salaries of less than \$250.00, showed average salary declines in excess of 1.5 percent annually.

TABLE 118A: Average Annual Percent Change in Median Weekly Salaries in White Collar Occupations



SOURCE: Handbook of Labor Statistics, Bulletin #2175

TABLE 118B: Average Annual Percent Change in Median Weekly Salaries in Blue Collar and Service Occupations



SOURCE: Handbook of Labor Statistics, Bulletin #2175

When a comparison of high and low wage employment is made on the basis of average industry wages, the disparity in income growth appears even stronger. Between 1977 and 1981, industries paying below the state average wage, showed a 10.7 percent decrease in real earnings, while those industries paying above the state average wage showed a real increase in excess of 2.5 percent.

Because a larger share of total employment growth in Minnesota is accounted for by low wage industries, average salaries in Minnesota are growing below the national rate. The sources of this slower growth are discussed below.

AGGREGATE EFFECTS ON PERSONAL INCOME

The Impact of Unique Staffing

In terms of average income for all occupations, Minnesota's comparatively higher concentration of high-wage occupations has raised average salaries. Minnesota has a 3 percent higher weekly income per employee than would be generated if it had the national mix of occupations in each of its sectors. This higher income is attributed primarily to a

higher concentration of professional, technical and sales representative occupations. This estimate, however, should be viewed with caution because it is based on median national salaries, which have been aggregated from some several hundred occupations. Secondly, the distribution of industries which make up each major sector differs from the national distribution. The expected concentrations given in Tables 110 and 111 are therefore a reflection of aggregation bias as well as unique staffing patterns.

Despite these shortcomings, it remains evident that Minnesota's unique staffing patterns influence average income, and on the basis of this analysis appear to have a positive effect. Using annual payroll data, it was estimated that average annual salaries in manufacturing are nearly 12 percent higher than they would be due to Minnesota's high concentration of non-production employment. While similar data is not available on other sectors, this finding further supports the contention that Minnesota's unique mix of occupations has a positive effect on average incomes. In conjunction with industry growth trends, it is possible to observe whether, in aggregate, Minnesota is moving toward a lower or higher average income than the nation as a whole.

The Impact of Unique Industry Mix

Minnesota's fastest growing industries tend to be clustered at opposite ends of the wage scale. Fast-growing industries with below-average wages include retail trade and such service industries as health care and consumer services. This group accounts for 60 percent of total employment and the dominant share of total employment growth. In effect, these industries are reducing average income. Countering this negative effect, however, are several rapidly growing high-wage industries, including instruments, printing and publishing, plastics, fabricated metals, computers, and electrical machinery in manufacturing, and finance and certain business services.

To determine whether Minnesota's current industrial growth patterns are having a positive or negative effect on average income, a hypothetical average wage was computed using the 1977 distribution of employment with 1981 average industry wages. This resulted in an average income 2 percent greater than Minnesota's actual income for 1981. This difference suggests that, holding all other factors constant, Minnesota's industry mix is reducing average income.

Other Factors Affecting Personal Income

To observe whether Minnesota's unique wage structure, reflecting differences in occupational mix, productivity, regional labor market characteristics and hours, has had a positive or negative effect, a second hypothetical wage was computed.

Using U.S. average salaries and Minnesota's distribution of employment for 1981, it was estimated that the average wage would have been 6 percent below Minnesota's actual wage. Therefore, while Minnesota's industry mix is having a negative effect, its wage structure is having a positive effect.

Only a small part of this higher income, however, is accounted for by purely higher wages. Using employment and earnings data from the Bureau of Labor Statistics 790 program, it was estimated that Minnesota's labor force works a 2 percent shorter workweek than the nation. Shorter hours, therefore, account for roughly one-third of the difference in Minnesota and U.S. annual salaries. If the previously cited 3 percent income effect due to Minnesota's unique occupational staffing pattern is applied, only a 1 percent difference in average income remains. In theory, this difference reflects higher productivity, unionization, and labor market characteristics unique in the nation. These various factors, however, have not been examined.

Conclusion

In aggregate, these findings are consistent with recent trends in payroll income as reported by County Business Patterns. Between 1977 and 1981, the U.S. payroll per employee grew slightly faster than Minnesota's payroll per employee. As of 1981 the U.S. payroll per employee was 0.7 percent higher. Minnesota's rapid growth in low-wage industries in conjunction with shorter average weekly hours is not being offset by its higher concentration of high-wage occupations and comparatively higher wages.

It is important to note, however, that this trend is reflecting a divergence between the Minnesota and national economies only in terms of average, not total income. In terms of total income, Minnesota is actually growing faster than the nation, due to substantially higher participation rates and faster than national employment growth.

The issue of a dual labor market, with increasing concentrations in high and low-wage occupations, however, remains. This will be a critical issue facing Minnesota policy makers in the years ahead. To more fully understand the implications of a dual labor market, it will be necessary to examine household income and the share of total employment in low-wage industries which is accounted for by primary wage earners. It will also be necessary to identify the occupations which are most threatened in terms of foreign competition and technological advances.

APPENDIX

Employment and Payroll by 2 digit Industry, Minnesota and the United States 1977-1981

Industry	SIC	MINNESOTA			UNITED STATES		
		1977 employment	1981 employment	1981 payroll	1977 employment	1981 employment	1981 payroll
Agricultural services	7	3381	3945	52673	216869	271918	2905335
Metal Mining	10	13613	14065	390661	93433	93772	2152100
Nonmetallic mineral mining	14	697	682	19753	104424	112550	2152100
CONSTRUCTION							
General contractors	15	18630	22245	401635	971245	1183054	18615663
Heavy construction	16	9989	11200	377493	730400	832047	18500050
Special trade contractors	17	33127	40241	823022	1862720	2253313	37330930
MANUFACTURING							
Food and kindred products	20	41626	38680	669391	1500366	1405310	23673097
Textile mill products	22	2409	2020	35116	883427	801397	9254029
Apparel	23	5830	4201	43894	1297079	1229009	11513733
Lumber and wood products	24	12040	12367	197525	678385	654627	8500794
Furniture and fixtures	25	3500	3935	61452	444549	465402	5810669
Paper and allied products	26	15226	13200	283120	632761	634571	11944153
Printing and publishing	27	20006	34602	596965	1127384	1262000	19691712
Chemicals and allied products	28	6501	7925	155025	886001	910325	19046003
Petroleum and coal products	29	1435	1595	43894	139325	154178	3873779
Rubber and Plastic products	30	9844	12186	186552	701706	721311	10975709
Leather and leather products	31	2200	1750		242525	220104	2425192
Stone, clay and glass products	32	7503	10733	223062	602072	600670	10330079
Primary metal industries	33	7559	6970	130260	1130461	1092500	24103517
Fabricated metal products	34	30167	35469	706701	1516983	1504226	27654401
Machinery, except electrical	35	63210	75354	1536307	2004671	2420050	46915774
Electric and electronic equipment	36	26923	20664	504787	1712062	1960337	34110781
Transportation equipment	37	8274	6723	125099	1795309	1777491	39921450
Instruments and related products	38	12046	21259	434556	563377	642072	11621330
Miscellaneous manufacturing	39	8932	6450	87789	440711	417804	5487854
Local and interurban transit	41	7987	8766	59250	255002	263012	2367310
Trucking and warehousing	42	23346	24046	465282	1149236	1227679	22059022
Water transportation	44	806	769	35116	104390	209274	3981304
Air transportation	45	6927	8590	283120	353517	426506	10652094
Transportation services	47	2152	3310	46009	156000	213960	3120545
Communication	48	17244	18981	400219	1150004	1340294	28300111
Electric, gas and sanitary services	49	12306	13543	327014	656004	767224	16706378
TRADE							
Wholesale trade-durable goods	50	50016	60893	1202709	2497496	2964023	53264460
Wholesale trade-non-durable goods	51	40969	45000	803269	1815047	2024492	32927126
Building materials & garden supplies	52	12930	13044	162410	450320	521673	5810669
General merchandise stores	53	30836	40178	285314	1878552	1950063	14049408
Food stores	54	37332	43405	301002	1908605	2293627	21413392
Automotive dealers & service stations	55	35109	32909	379607	1764070	1660540	19799317
Apparel and accessory stores	56	14322	16979	114126	847990	942071	6779114
Furniture and home furnishing stores	57	8907	10602	114126	503507	545039	5810669
Eating and drinking places	58	81731	101525	465282	3699104	4541772	22919062
Miscellaneous retail	59	35411	41682	346767	1669655	1919439	16355958
FIRE							
Banking	60	22767	28877	400219	1280011	1550786	20875367
Credit agencies other than banks	61	9232	11927	102162	400363	602374	8205504
Security, commodity brokers & services	62	2002	4175	147047	100250	251010	7055164
Insurance carriers	63	19427	23406	410414	1121100	1229375	19799317
Insurance agents, brokers & service	64	9626	11996	195331	383789	473094	7424744
Real estate	65	15360	17436	177773	862900	999111	11406129
Combined real estate, insurance, etc.	66	596	557	6504	29335	20575	322015
Holding and other investment offices	67	3035	5096	103152	129725	142557	2797730
SERVICES							
Hotels and other lodging places	70	16372	20530	133070	916130	1097920	8500794
Personal services	72	16039	18276	162410	899497	953112	7101929
Business services	73	30953	49313	575010	2317132	3092626	38737795
Auto repair, services and garages	75	7526	8722	103152	477245	555352	6456299
Miscellaneous repair services	76	3850	4907	70231	254130	322097	4627014
Motion pictures	78	3113	2464	19753	100933	206657	2690125
Amusement & recreation services	79	10020	14107	114126	506323	714903	6671509
Health services	80	104039	132570	1753505	4332207	5538149	75000675
Legal services	81	6945	9762	180746	392401	545157	9099659
Educational services	82	18173	24796	180746	1005131	1303522	12697308
Social services	83	21712	29022	219472	765205	1040099	7424744
Museums, botanical, zoological gardens	84	109	506	4309	22492	20057	322015
Membership organizations	86	27560	32144	219472	1102206	1227539	9469239
Miscellaneous services	89	11333	16440	291090	667729	1004093	19261292

Source: County Business Patterns, 1977, 1981

Employment, Employment Growth and Average Annual Salaries by
2 digit industry, Distribution, Minnesota and the U.S., 1977-1981

Industry	SIC	MINNESOTA			UNITED STATES		
		Percent of total employment	Average annual salaries	Percent change in employment 77-81	Percent of total employment	Average annual salaries	Percent change in employment 77-81
Agricultural services	7	0.27	13351.93	16.68	0.36	10684.59	25.38
Metal Mining	10	0.96	27775.40	3.32	0.13	22950.34	0.36
Nonmetallic mineral mining	14	0.05	28962.64	-2.15	0.15	19121.27	7.78
CONSTRUCTION							
General contractors	15	1.52	10055.05	19.40	1.50	15735.26	21.01
Heavy construction	16	0.76	33704.70	12.12	1.11	22222.63	14.03
Special trade contractors	17	2.74	20452.32	21.47	3.01	16570.68	20.97
MANUFACTURING							
Food and kindred products	20	2.64	17305.87	-7.00	1.98	15938.15	-1.00
Textile mill products	22	0.19	12452.33	17.06	1.07	11547.37	-9.29
Apparel	23	0.29	10448.58	-28.04	1.64	9368.386	-5.25
Lumber and wood products	24	0.84	15971.36	2.65	0.87	12985.70	-3.50
Furniture and fixtures	25	0.27	15616.84	12.43	0.62	12485.26	4.69
Paper and allied products	26	0.90	21448.44	5.10	0.85	18822.40	0.29
Printing and publishing	27	2.36	17252.33	20.12	1.69	15603.57	11.94
Chemicals and allied products	28	0.54	19662.51	20.42	1.22	20922.28	2.64
Petroleum and coal products	29	0.11	27520.06	11.15	0.21	25125.37	10.66
Rubber and Plastic products	30	0.83	15308.68	23.79	0.96	15216.33	2.79
Leather and leather products	31	0.12		-23.51	0.29	11018.39	-9.24
Stone, clay and glass products	32	0.73	20857.35	5.70	0.80	17197.59	-0.23
Primary metal industries	33	0.40	19837.54	-7.79	1.46	22060.93	-4.03
Fabricated metal products	34	2.42	19924.48	17.58	2.12	17456.14	4.44
Machinery, except electrical	35	5.14	20387.86	19.21	3.23	19379.81	16.13
Electric and electronic equipment	36	1.95	17610.47	6.47	2.62	17400.46	14.45
Transportation equipment	37	0.46	18607.66	-18.75	2.37	22459.43	-0.99
Instruments and related products	38	1.45	20441.01	40.79	0.86	18077.21	14.11
Miscellaneous manufacturing	39	0.44	13610.69	-27.79	0.56	13132.40	-5.18
Local and interurban transit	41	0.60	6759.932	9.75	0.35	9000.766	3.11
Trucking and warehousing	42	1.64	19349.64	3.00	1.64	17968.06	6.83
Water transportation	44	0.05	45663.97	-13.21	0.28	19024.74	13.49
Air transportation	45	0.59	32959.19	24.01	0.57	24977.12	20.65
Transportation services	47	0.23	13890.66	54.18	0.29	14584.71	37.15
Communication	48	1.29	21506.70	10.07	1.80	20989.56	17.15
Electric, gas and sanitary services	49	0.92	24146.34	10.05	1.03	21079.37	16.94
TRADE							
Wholesale trade-durable goods	50	4.15	19751.19	21.75	3.96	17970.32	18.68
Wholesale trade-non-durable goods	51	3.07	17818.75	10.03	2.70	16264.38	11.54
Building materials & garden supplies	52	0.94	11731.41	7.00	0.70	11138.52	13.82
General merchandise stores	53	2.74	7101.255	3.46	2.61	7614.876	3.81
Food stores	54	2.96	8798.113	16.27	3.06	9336.039	15.34
Automotive dealers & service stations	55	2.25	11509.51	-6.25	2.22	11923.42	-5.91
Apparel and accessory stores	56	1.16	6721.579	18.55	1.26	7195.969	11.09
Furniture and home furnishing stores	57	0.72	10764.54	17.97	0.73	10645.39	8.41
Eating and drinking places	58	6.32	4582.927	24.22	6.07	5046.458	22.78
Miscellaneous retail	59	2.84	8319.335	17.71	2.56	8521.217	14.96
FIRE							
Banking	60	1.97	14136.46	26.84	2.07	13461.15	20.40
Credit agencies other than banks	61	0.81	15273.09	29.19	0.80	13754.88	23.35
Security, commodity brokers & services	62	0.28	35220.73	44.86	0.34	31294.22	33.34
Insurance carriers	63	1.60	17534.54	20.40	1.64	16105.18	3.66
Insurance agents, brokers & service	64	0.82	16282.97	24.62	0.63	15694.01	23.27
Real estate	65	1.19	10195.72	13.46	1.33	11416.27	15.79
Combined real estate, insurance, etc.	66	0.04	11820.78	-6.54	0.04	11297.11	-2.59
Holding and other investment offices	67	0.35	20241.77	32.88	0.19	19625.34	9.89
SERVICES		25.25					
Hotels and other lodging places	70	1.40	6521.101	25.40	1.47	7742.635	19.84
Personal services	72	1.25	8886.498	13.95	1.27	7451.305	5.96
Business services	73	3.36	11660.57	26.60	4.13	12525.85	33.47
Auto repair, services and garages	75	0.59	11826.65	15.89	0.74	11625.59	16.37
Miscellaneous repair services	76	0.33	14312.45	27.19	0.43	14329.69	27.06
Motion pictures	78	0.17	8016.446	-20.85	0.27	13080.63	13.66
Amusement & recreation services	79	0.96	9090.004	30.38	0.96	9332.048	21.33
Health services	80	3.03	13227.61	27.42	7.40	13542.55	27.92
Legal services	81	0.67	19334.80	40.56	0.73	18159.28	38.90
Educational services	82	1.69	7611.967	36.44	1.74	9740.831	29.69
Social services	83	1.98	7562.279	33.67	1.40	7078.607	37.07
Museums, botanical, zoological gardens	84	0.04	7490.528	210.05	0.04	11186.71	28.30
Membership organizations	86	2.19	6227.790	16.63	1.64	7713.876	11.26
Miscellaneous services	89	1.12	17746.74	45.13	1.34	19182.77	50.57

Source: County Business Patterns 1977, 1981

Employment by Industry, Minnesota and the U.S.
1950-1980

	United States				Minnesota			
	1980	1970	1960	1950	1980	1970	1960	1950
AGRICULTURE	2530055	2592406	4256734	6908647	143050	216868	177394	259437
metal mining	123313	95370	96127	93706	13812	12387	16300	14412
other mining	904865	508283	557879	837262	1409	1567	1249	1385
CONSTRUCTION	5739598	4572226	3815942	3457980	99380	82760	68048	63205
MANUF NON-DURABLE	8435543	7990580	7623867	6802897	131666	129789	118233	98193
Other non-durables	4049230	3992525	3693042	3692660	23773	23144	19731	22005
food and kindred	1533548	1473765	1822477	1481280	45969	47333	57899	47699
textile	946423	1021277	954036	1227525	2733	2563	2416	3619
apparel	1300361	1308003	1159163	1066511	5892	8246	8461	10150
paper	679921	687868	579844	464490	14738	24497	12260	8230
print	1531029	1270844	1141192	862936	36515	27759	25271	18246
chemicals and allied	1272484	1065757	864542	637349	11762	8207	5597	5542
petroleum and coal	214195	223217	282027	279203	1654	2059	1673	1004
rubber and plastic	641815	565578	387312	301531	10671	7056	3072	2013
leather	245907	300973	347194	387914	1669	1996	1480	1576
MANUF DURABLE	13218236	11743048	9828689	7764478	238110	177047	128858	87402
Other durables	5467563	5142348	4438994	3734044	41497	45381	33486	27237
lumber and wood	699250	617484	690558	866612	11146	7484	8126	10315
furniture	530144	449065	376694	329504	4778	3967	2541	2785
stone, clay and glass	650733	620983	600360	470340	8198	8572	12720	5657
primary metals	1307768	1227461	1224922	1184975	9184	7538	6143	7563
fabricated metals	1424362	1469244	1291709	847209	33403	24942	18675	11525
non-electrical machinery	2766615	2103689	1568035	1253533	91479	65607	30504	23731
electrical equipment	2198833	1934421	1487412	861307	40662	21397	13748	10300
transportation equipment	2428452	2352604	1818698	1343157	10031	16328	6626	4691
instruments	661613	475862	359981	201773	19923	12236	16319	4294
miscellaneous manufacturing	550466	492235	410320	406068	9306	8976	5656	8002
MANUFACTURING	21653779	19733628	17452556	14567375	369776	306836	239091	185595
TRANSPORTATION	4273961	3739990	2739913	2953979	87335	77073	61208	69847
interurban transit	1045129	1151714	1357934	1881559	25515	26490	35052	48661
trucking	1355962	1010707	797032	600276	28294	20281	15711	12722
warehousing	190524	134171	114422	97884	3591	2878	2528	2906
air transport	527992	407839	198139	101175	12341	9976	5970	3638
water and pipeline	212949	185542	212969	232233	1045	1039	1287	1251
COMMUNICATION	1440868	1136458	819649	710525	20368	17160	13447	12580
radio tv	215853	138693	90858	62379	3496	2372	1738	989
telephone	1225015	997765	728791	648146	16872	14788	11709	11591
UTILITIES	1372626	1054378	898585	785357	21408	16932	15192	13743
elec & gas	782275	555386	636747	571363	13177	11946	11826	10737
other util	590351	498992	261838	213994	8231	4986	4639	3006
TCPU	7087455	5930826	4458147	4449861	129111	111165	89847	96170

Source: Census of Housing and Population, 1960, 1980

Employment by Industry, Minnesota and the U.S.
1950-1980, continued

	United States				Minnesota			
	1980	1970	1960	1950	1980	1970	1960	1950
WHALESALE TRADE	4217232	3389995	2212984	1965036	92232	79397	52207	49507
Other durables	2071943	1443840	1099362	931277	42222	34302	22164	19892
Motor veh	287535	237276	120943	58261	5315	5198	3301	1827
ugs & chem	160897	148174	101461	86623	2402	2714	1857	1721
Food & related	745237	652753	449397	568725	14552	13180	10289	13855
Non products	98902	91811	112473	103283	5658	4817	5958	5754
Electrical goods	480861	182881	218169	161629	10302	8816	5508	5386
Machinery	837220	781590	258015	141191	21406	17509	5674	3222
Petroleum	176395	182717	172794	162299	3079	4391	4821	4957
Other non-durables	1430185	1112793	779732	683025	29518	22772	14799	12785
WHALESALE TRADE	15716694	11986328	9579651	8542295	321167	243254	189013	177237
Other retail	7849686	6056023	5057458	4842164	157555	119047	97457	98523
Wholesale	398632	298283	384646	344163	9516	7120	8970	8189
Hardware	194747	127589	245980	230813	7965	5853	9961	10012
Non merch	2091598	1880838	1291667	1022526	41801	38212	28167	23839
Motor vehicle	966898	812302	795380	528084	18368	14876	13595	8814
Gas stations	627240	771475	633479	458138	14835	17566	13438	10272
Apparel & shoes	895516	810945	649495	621178	15284	13956	9933	10993
Furniture	500879	368477	294049	273699	9004	6394	4576	4838
Alcohol & drink	4181272	2465690	1801667	1691383	88608	53553	36356	35789
Food stores	2503595	2042683	1689688	1665830	45175	37984	29819	30773
Alcohol & liquor	635489	544006	460863	375276	13246	13272	10140	8465
RE	5898059	3847030	2694630	1919610	107669	68153	50349	37305
Banking and credit	2221438	1371530	868675	530940	37468	23892	17630	12249
Security and commodity	337904	284131	149371	89842	7285	5407	3271	2482
Insurance	1904554	1400948	1077469	761379	39720	27497	20896	14396
Real estate	1434163	790421	599115	537449	23196	11357	8552	8278
SERVICES	27976330	19929696	13549947	10112646	559782	404319	263702	206036
Advertising	207638	155688	130805	112526	4601	2892	2488	3441
Other bus	3234182	1924059	1068099	592348	54617	36971	16640	10264
Auto repair	901500	595191	517893	671537	16035	11772	10483	17173
Other repair	455581	406455	331405	278006	7915	7018	6190	5964
Hotels and lodging	1051809	737600	588577	526305	22631	14141	11789	11612
Rooms private	701460	1251445	1916964	1601270	8067	16674	28781	19382
Furber & beauty shops	665578	713367	495851	384000	11913	11068	7543	6528
Other personal services	656917	764594	857102	953416	10303	11587	12406	14165
Theatres	331860	223155	189200	262208	5541	3291	2737	4211
Golfing etc	82576	76008	75294	68550	2133	1874	2098	2000
Other entertainment	592634	332626	238385	162675	8521	5431	4046	2689
Other consumer services	2135287	2359223	3092870	3062150	32236	36414	48459	47445
Hospitals	4424547	2851438	1683892	989968	92813	68657	43986	26929
Other medical	2825918	1579524	894322	679433	75467	38882	17585	13855
Legal	751790	410822	283836	233937	12157	6750	4589	3614
Education	8377213	6354430	3393933	2078749	170055	135336	71788	47038
Nonprofit organizations	2178324	1339819	854528	587764	48843	28474	20648	19306
Engineering & related svc	560264	346099	203218	84974	7877	5573	3211	1294
Accounting svc	432120	273831	158048	102986	8208	4946	2884	1698
Other professional svc	261643	178178	106069	68742	2775	2032	1067	837

Source: Census of Housing and Population, 1960, 1980

Location Quotients by Major Industry*
1950-1980

	1950	1960	1970	1980
AGRICULTURE	1.85	2.18	4.32	2.93
metal mining	7.59	8.89	6.70	5.80
other mining	0.08	0.12	0.16	0.08
CONSTRUCTION	0.90	0.93	0.93	0.90
MANUF NON-DURABLE	0.71	0.81	0.84	0.81
Other non-durables	0.29	0.28	0.30	0.30
food and kindred	1.59	1.66	1.66	1.55
textile	0.15	0.13	0.13	0.15
apparel	0.47	0.38	0.33	0.23
paper	0.87	1.11	1.84	1.12
print	1.04	1.16	1.13	1.24
chemicals and allied	0.43	0.34	0.40	0.48
petroleum and coal	0.18	0.31	0.48	0.40
rubber and plastic	0.33	0.42	0.64	0.86
leather	0.20	0.22	0.34	0.35
MANUF DURABLE	0.56	0.64	0.78	0.93
Other durables	0.36	0.40	0.46	0.39
lumber and wood	0.59	0.62	0.63	0.83
furniture	0.42	0.35	0.46	0.47
stone, clay and glass	0.59	1.11	0.71	0.65
primary metals	0.32	0.26	0.32	0.36
fabricated metals	0.67	0.76	0.88	1.21
non-electrical machinery	0.93	1.02	1.61	1.71
electrical equipment	0.59	0.48	0.57	0.96
transportation equipment	0.17	0.19	0.36	0.21
instruments	1.05	2.38	1.33	1.56
miscellaneous manufacturing	0.97	0.72	0.94	0.88
MANUFACTURING	0.63	0.72	0.80	0.88
TRANSPORTATION	1.17	1.17	1.06	1.06
interurban transit	1.28	1.35	1.19	1.26
trucking	1.05	1.03	1.04	1.08
warehousing	1.47	1.16	1.11	0.98
air transport	1.77	1.58	1.25	1.21
water and pipeline	0.27	0.32	0.29	0.25
COMMUNICATION	0.87	0.86	0.78	0.73
radio tv	0.78	1.00	0.88	0.84
telephone	0.88	0.84	0.76	0.71
UTILITIES	0.86	0.89	0.83	0.81
elec & gas	0.93	0.97	1.11	0.87
other util	0.69	0.93	0.52	0.72
TOTPU	1.07	1.06	0.97	0.94

Source: Census of Housing and Population, 1960, 1980

$$* \text{ LQ} = \frac{\% \text{ of Minnesota employment in Industry } i}{\% \text{ of U.S. employment in Industry } i}$$

Location Quotients by Major Industry
1950-1980

	1950	1960	1970	1980
WHOLESALE TRADE	1.24	1.24	1.21	1.13
Other durables	1.05	1.06	1.23	1.06
motor veh	1.55	1.43	1.13	0.96
drugs & chem	0.98	0.96	0.95	0.77
food & related	1.20	1.20	1.04	1.01
farm products	2.75	2.78	2.71	2.96
electrical goods	1.64	1.32	2.49	1.11
machinery	1.13	1.15	1.16	1.32
petroleum	1.51	1.46	1.24	0.90
other non-durables	0.92	0.99	1.06	1.07
RETAIL TRADE	1.02	1.03	1.05	1.06
Other retail	1.00	1.01	1.01	1.04
lumber	1.17	1.22	1.23	1.24
hardware	2.14	2.12	2.37	2.12
gen merch	1.15	1.14	1.05	1.03
motor vehicle	0.82	0.90	0.94	0.98
gas stations	1.11	1.11	1.17	1.22
apparel & shoes	0.87	0.88	0.89	0.88
furniture	0.87	0.82	0.90	0.93
eat&drink	1.04	1.06	1.12	1.10
food stores	0.91	0.92	0.96	0.93
drug&liquor	1.11	1.15	1.26	1.08
FIRE	0.96	0.98	0.91	0.95
banking and credit	1.14	1.06	0.90	0.87
security and commodity	1.32	1.15	0.98	1.12
insurance	0.93	1.02	1.01	1.08
real estate	0.76	0.75	0.74	0.84
SERVICES	1.01	1.02	1.05	1.04
advertising	1.51	1.00	0.96	1.15
other bus	0.86	0.82	0.99	0.87
auto repair	1.26	1.06	1.02	0.92
other repair	1.06	0.98	0.89	0.90
hotels and lodging	1.09	1.05	0.99	1.11
maids private	0.60	0.79	0.69	0.60
barber & beauty shops	0.84	0.80	0.80	0.93
other personal services	0.73	0.76	0.78	0.81
theatres	0.79	0.76	0.76	0.86
bowling etc	1.44	1.46	1.27	1.34
other entertainment	0.82	0.89	0.84	0.74
other consumer services	0.76	0.82	0.80	0.78
hospitals	1.34	1.37	1.24	1.09
other medical	1.01	1.03	1.27	1.38
legal	0.76	0.85	0.85	0.84
education	1.12	1.11	1.10	1.05
nonprofit organizations	1.62	1.27	1.10	1.16
engineering & related svc	0.75	0.83	0.83	0.73
accounting svc	0.81	0.96	0.93	0.98
misc professional svc	0.60	0.53	0.59	0.55

Source: Census of Housing and Population

Employment and Payroll by 3 digit Industry
Minnesota and the U.S. 1981

	SIC	EMPLOYMENT		AVERAGE SALARY	
		MN	U.S.	MN	U.S.
CROP SERVICES	72	188	38250	12042.56	11312.38
VETERINARY SERVICES	74	1400	64512	12405.01	11201.49
ANIMAL SERVICES, EXC VET	75	636	27114	11333.34	8618.21
FARM LABOR AND MGT SERV	76	30	9261	16666.67	10931.31
LANDSCAPE AND HORTICULTURE	78	1335	117290	15774.54	12259.41
CRUSHED AND BROKEN STONE	142	241	36231	28336.11	19177.79
GENERAL BUILDING CONTRAC	151	17843	926178	19191.63	7174.45
OPERATIVE BUILDERS	153	1858	122525	17879.45	16249.44
HEAVY CONSTR EXC HIGHWAY	162	7987	636000	30757.37	8312.88
PLUMBING, HEAT, AIR COND	171	9224	510622	21531.99	18999.57
PAINTING, PAPER, DECOR	172	1832	125153	18785.49	15135.00
ELECTRICAL WORK	173	8970	425413	21835.0	21014.39
MASONRY, STONEMWORK AND PLAS	174	5496	342289	18330.4	15363.16
CARPETING AND FLOORING	175	2485	134317	14068.02	13380.58
ROOFING AND SHEET METAL	176	2845	172332	22568.73	16629.43
CONCRETE WORK	177	1966	110639	21139.89	15666.29
WATER WELL DRILLING	178	525	19381	15222.07	14067.77
MISC. SPECIAL TRADE CONT	179	6617	387889	22134.66	18225.85
MEAT PRODUCTS	201	10529	319655	16510.98	15321.09
DAIRY PRODUCTS	202	6955	151133	16446.6	17203.31
PRESERVED FRUITS AND VEG	203	3868	195869	18270.95	15928.89
GRAIN MILL PRODUCTS	204	3717	116321	18412.71	19082.46
BAKERY PRODUCTS	205	2753	215104	17680.8	17465.7
SUGAR AND CONFECTIONARY	206	3366	97102	15135.19	16742.59
FATS AND OILS	207	1476	48372	17743.23	18609.1
BEVERAGES	208	3774	200622	20952.05	20342.6
MISC. FOODS AND KINDRED	209	2237	149867	16336.17	14841.21
MISC TEXTILE GOODS	229	444	63578	17765.78	14609.86
MENS AND BOYS SUITS AND COAT	231	535	84000	12583.19	11105.32
MENS AND BOYS FURNISHINGS	232	1075	333843	9814.89	9197.62
WOMENS AND MISSES OUTER	233	523	393863	10361.39	9654.98
HATS, CAPS AND MILLINERY	235	160	17860	12775.01	9996.65
MISC FABRIC TEXTILE PRODS	239	1371	179920	10865.8	12196.89
LOGGING CAMPS AND LOG CONT	241	1041	90130	11226.72	14356.91
SAWMILLS AND PLANING MILLS	242	1106	186611	12248.65	13861.36
MILLWORK, PLYWOOD AND STRUC	243	6363	186646	17882.15	14754.28
WOOD CONTAINERS	244	334	48589	12589.83	10527.28
WOOD BUILD AND MOBILE HOME	245	936	64705	14445.52	14511.33
MISC WOOD PRODUCTS	249	2573	84329	16236.7	13884.93
HOUSEHOLD FURNITURE	251	1132	297613	11961.14	11529.19
OFFICE FURNITURE	252	186	53262	15618.29	17374.57
PUBLIC BUILD AND REL FURN	253	743	18656	18875.38	15328.05
PARTITIONS AND FIXTURES	254	1380	60461	19352.91	16872.13
MISC FURN AND FIXTURES	259	441	32639	12299.33	14695.71
PAPER MILLS EXC BUILD	262	4442	129696	25484.48	24769.22
MISC CONVERTED PAPER	264	8009	219214	20337.88	17586.28
NEWSPAPERS	271	8818	485271	15550.47	15375.79
PERIODICALS	272	1978	86366	18784.14	20093.06
BOOKS	273	4298	114428	20380.88	17234.48
COMMERCIAL PRINTING	275	15367	417976	16944.96	17264.12
BLANKBOOKS AND BOOKBIND	278	1380	63216	13987.7	14034.91
PRINTING TRADE SERVICES	279	1116	55160	22948.04	19298.6
INDUSTRIAL INORG CHEM	281	77	113510	22753.26	23706.01
PLASTIC AND SYNTHETICS	282	983	147180	15811.81	22505.62
DRUGS	283	516	171057	17779.00	22285.26
SOAP, CLEANERS AND TOILET	284	3140	123983	18767.21	18916.56
PAINTS AND ALLIED PRODS	285	663	59430	20067.00	19843.1
INDUSTRIAL ORG CHEMICAL	286	141	152524	16980.72	26662.54
AGRICULTURAL CHEMICALS	287	488	58622	17159.85	20708.94
MISC CHEMICAL PRODS	289	1910	83389	23813.1	19990.86
PETROLEUM REFINING	291	933	110345	31120.05	29039.83
PAVING AND ROOFING WATER	295	480	38568	24310.43	21720.86
MISC. PETROL AND COAL PRO	299	182	13189	22848.67	21117.23
MISC PLASTICS PRODUCTS	307	10784	493456	14939.55	15132.77
PRODS OF PURCHASE GLASS	323	797	43452	15463	16097.34

Source: County Business Patterns, 1981

Employment and Payroll by 3 digit Industry Minnesota and the U.S. 1981

CONCRETE, GYPSUM, PLASTER	327	3457	180026	23337.88	18038.52
CUT STONE AND STONE PRODS	328	1105	12263	17384.63	14089.38
MISC NONMETAL MINERAL	329	1724	124961	16545.83	18040.7
BLAST FUR AND STEEL PRODS	331	1519	495525	24282.43	7316.85
IRON AND STEEL FOUNDRIES	332	1963	210934	18338.78	19579.94
MISC PRIMARY METAL PRODS	339	527	36189	17842.51	18895.81
METAL CANS AND SHIP CONT	341	1220	64063	25547.55	24389.56
CUTLERY, HANDTOOLS, HDW	342	3280	167278	16888.55	17361.85
PLUMBING, HEAT EXC ELEC	343	495	55228	12777.79	16214.61
FABRIC STRUC METAL PRDT	344	7465	451482	19993.85	18168.42
SCREW MACHINE PRDT, BOLT	345	1363	188792	21272.94	18136.53
METAL FORGINGS, STAMPING	346	4701	260518	16848.88	20859.53
METAL SERVICES, NEC	347	2405	99738	15659.89	15399.45
MISC FABRIC METAL PRODS	349	3636	298547	18134.77	18175.4
FARM AND GARDEN MACHINERY	352	4577	138968	15892.3	18611.1
CONSTRUCTION AND REL MACH	353	7809	385674	19289.26	22993.94
METALWORKING MACHINERY	354	5780	348417	19558.18	20833.67
GENERAL INDUSTRIAL MACH	356	6925	332799	19555.24	20017.21
OFFICE AND COMPUTING MACH	357	38996	397269	22364.7	21912.24
REFRIG AND SERVICE MACH	358	7738	288953	20437.98	18176.6
ELECTRIC DISTRIB EQUIP	361	1167	119432	16623.83	17368.62
ELECTRIC INDUS APPARAT	362	5614	216634	19917	18381.86
HOUSEHOLD APPLIANCES	363	3775	153241	18744.65	15415.29
ELEC LIGHT AND WIRING	364	2867	170478	17884.56	16124.41
RADIO AND TV RECEIV EQUIP	365	842	82449	8683.34	17118.67
COMMUNICATION EQUIPMENT	366	6685	565853	13163.67	3966.29
ELECTRONIC COMP AND ACCES	367	7723	582885	15749.87	17598.98
MISC ELEC EQUIP, SUPPLY	369	3357	149213	20578.5	18384.35
MOTOR VEHICLES AND EQUIP	371	4341	789286	19314.22	9853.86
AIRCRAFT AND PARTS	372	482	583670	24945.28	8521.89
RAILROAD EQUIPMENT	374	141	54591	15461	28989.15
ENGINEER, SCIENTIFIC INST	381	1139	67365	19188.77	18799.19
MEDICAL INSTRUMENTS, SUPL	384	3122	138995	16889.86	16543.97
OPTALMIC GOODS	385	1142	38233	11798.61	14766.39
MUSICAL INSTRUMENTS	393	49	22376	8979.6	13791.71
TOYS AND SPORTING GOODS	394	3543	185371	13784.89	13488.82
PENS, PENCILS, OFFICE, ART	395	95	32917	13621.86	14644.11
MISC MANUFACTURES	399	2525	154344	12993.28	14854.28
LOCAL AND SUBURB TRANS	411	1894	69812	8866.55	11287.58
TAXICABS	412	1420	49856	5391.56	7824.94
INTERCITY HIGHWAY	413	486	38999	22815.28	19348.28
SCHOOL BUSES	415	5622	91875	5438.11	6876.24
TRUCKING, LOCAL, LONG	421	22270	117474	19468.58	14113.23
PUBLIC WAREHOUSING	422	1388	79839	17548.36	15318.69
TRUCKING TERMINALS	423	299	26781	21565.23	22928.14
TRANS ON RIVERS, CAN	444	290	16339	24744.84	23353.95
WATER TRANSP SERVICES	446	333	123869	73231.24	17437.84
AIR TRANSPORTATION	451	8118	372946	34282.11	1485.83
AIR TRANSP SERVICE	458	447	58970	12391.51	15893.34
FREIGHT FORWARDING	471	564	42474	19445.85	19845.89
ARRANGEMENT OF TRANSP	472	2494	144598	12931.85	14298.88
TELEPHONE COMMUNICAT	481	14516	54392	22984.18	89873.18
ELECTRIC SERVICES	491	5227	381922	24555.4	23992.72
SANITARY SERVICES	495	763	52938	16184.86	17733.74
MOTOR VEH AND AUTO	501	9156	437782	16833.45	16637.79
FURNITURE, HOME FURN	502	2175	122537	18765.87	17612.11
LUMBER, CONSTR WATER	503	3538	288879	21211.99	18173.97
SPORTING GOODS, TOYS	504	1566	86872	17584.94	18171.96
METALS, MINERALS	505	2388	153398	22343.92	23442.51
ELECTRICAL GOODS	586	6221	345856	28581.38	19979.42

Source: County Business Patterns, 1981

Employment and Payroll by 3 digit Industry Minnesota and the U.S. 1981

HARDWARE, PLUMB, HEAT	507	3648	217773	19451.22	18225.79
MACH, EQUIP, SUPPLIES	508	28571	206704	20806.6	22484.59
MISC DURABLE GOODS	509	3660	188040	16226.79	16151.43
PAPEP AND PAPER PRDTS	511	2789	173304	21404.81	19851.23
DRUGS, PROP, SUNDRIES	512	1209	99190	19503.73	17510.02
APPAREL, PIECE, NOTION	513	1326	142199	14352.2	18770.95
GROCERIES AND REL PRDTS	514	11755	652000	18754.92	1676.06
FARM PRDT RAW MATERIA	515	6584	134010	16309.09	13388.88
CHEMICALS, ALLIED PRDTS	516	2522	112317	29733.16	22860.69
PETROL, PETROL PRDTS	517	4610	189255	13525.61	1772.47
BEER, WINE, DISTILLED	518	2283	141400	20593.97	20536.54
MISC NONDURABLE GOODS	519	11979	379858	15654.15	14775.17
PAINT, GLASS, WALLPAPER	523	848	43781	11283.03	11950.35
HARDWARE STORES	525	5209	128534	7830.3	9451.62
RETAIL NURSERIES, GARDEN	526	813	45152	11348.1	9872.4
MOBILE HOME DEALERS	527	310	25951	15809.69	13840.94
DEPARTMENT STORES	531	32828	586768	7224.36	5163.61
VARIETY	533	3456	183650	5426.23	6369.83
MISC. GENERAL MERCH	539	3837	177294	7443.33	9202.66
GROCERY STORES	541	36678	982884	9281.27	629.47
MEAT MARKETS, FREEZER	542	1100	57011	9146.37	9059.3
FRUIT STORES, VEGETABLES	543	189	15767	12269.85	18987.96
CANDY, NUT, CONFED STORES	544	567	23252	3730.16	5378.64
DAIRY PRODUCT STORES	545	657	34116	5103.51	5526.24
RETAIL BAKERIES	546	3703	146130	5442.89	6394.21
MISC FOOD STORES	549	372	27571	5814.53	7387.99
NEW AND USED CAR DEALERS	551	13467	714168	15581.58	2735.27
USED CAR DEALERS	552	556	39522	13138.5	12101.93
AUTO AND HOME SUPPLY STORES	553	2901	223417	11832.83	12852.99
GASOLINE SERVICE STATIONS	554	14229	601961	7373.89	7919.15
BOAT DEALERS	555	581	22333	13347.69	13120.37
RECREAT, UTILITY TRAILER	556	262	14462	14538.54	13855.84
MOTORCYCLE DEALERS	557	696	28346	11492.83	11496.41
AUTOMOTIVE DEALERS, NEC	559	114	8184	11614.05	13242.56
MENS, BOYS CLOTH AND FURN	561	2574	131130	8753.7	9654.22
WOMENS READY TO WEAR	562	6231	344336	6038.37	7013.83
WOMENS ACCESSORY, SPECIAL	563	515	26191	5767	6598.92
CHILDRENS, INFANTS WEAR	564	519	26482	4849.72	6081.23
FAMILY CLOTHING STORES	565	3528	179834	6700.12	7605.95
SHOE STORES	566	2762	186976	7424.7	7853.64
FURRIERS AND FUR SHOPS	568	48	5175	8770.84	14437.3
MISC APPAREL AND ACCESS	569	588	28190	6586.74	7690.08
FURNITURE, HOME FURNISH	571	6134	343059	10862.58	11710.09
HOUSEHOLD APPLIANCE STORE	572	1259	61196	10969.03	11536.6
RADIO, TV, MUSIC STORES	573	3125	138434	10284.17	18839.58
DRUG STORES, PROPRIETARY	591	10547	492142	7040.12	8766.74
LIQUOR STORES	592	3234	137392	6588.45	7435.41
USED MERCHANDISE STORES	593	767	70289	8588.02	9117.8
MISC SHOPPING GOODS	594	11904	548000	7291.42	8128.65
NONSTORE RETAILERS	596	7975	286136	11274.24	11023.46
FUEL AND ICE DEALERS	598	1457	98634	14072.76	13878.95
RETAIL STORES, NEC	599	5234	258624	8522.75	8789.7
SAVINGS AND LOAN ASS	612	4245	253749	13513.32	13667.6
PERSONAL CREDIT INST	614	3632	213367	12349.13	13622.38
BUSINESS CREDIT INST	615	1690	51571	20283.44	18812.75
MORTGAGE BANK, BROKER	616	1215	62247	18280.67	17719.9
SECURITY, COMM SERV	628	317	28524	22921.15	27976.07
MEDICAL, HEALTH INS	632	1799	117041	16181.78	15910.46
TITLE INSURANCE	636	927	48349	13666.68	15663.89
PENSION, HEALTH, FUNDS	637	270	25795	11892.6	15037.89

Source: County Business Patterns, 1981

Employment and Payroll by 3 digit Industry
Minnesota and the U.S. 1981

REAL ESTATE OPERATORS	651	8590	465694	8075.45	10166
REAL ESTATE AGENTS	653	6604	376308	12151.58	13806
TITLE ABSTRACT OFFICES	654	431	19206	12018.57	12476
SUBDIVIDERS, DEVELOPERS	655	1209	111975	12376.35	15275
HOLDING OFFICES	671	2550	69026	19046.68	26183
TRUSTS	673	674	38282	15351.64	13940
HOTELS, MOTELS, TOURIST	701	19003	1045451	6524.19	8290
ROOMING, BOARDING HOUSE	702	454	12573	5233.49	6418
CAMPS, TRAILERING PARKS	703	357	16704	11154.07	11219
MEMBERSHIP-BASIS HOTELS	704	652	20016	5800.62	5984
LAUNDRY, CLEAN, GARM SERV	721	5489	352747	8796.33	8842
PHOTOGRAPHIC STUDIOS	722	1873	43639	10743.74	8285
BEAUTY SHOPS	723	5346	279640	7434.54	7249
BARBER SHOPS	724	607	24307	11278.03	8594
SHOE REPAIR, HAT CLEAN	725	124	7249	6983.24	7615
FUNERAL SERVICE	726	1133	72477	13315.1	12125
MISC PERSONAL SERVICES	729	3542	167220	4067.76	5115
ADVERTISING	731	2643	144710	22572.47	21737
MAILING, REPRO, COLLECT	733	2551	138679	12357.91	14293
SERVICES TO BUILDINGS	734	9271	496039	5373.76	7330
PERSONAL SUPPLY SERV	736	9616	562091	8226.92	10282
COMPUTER, DATA SERVICES	737	6663	323964	20265.06	19755
MISC BUSINESS SERVICES	739	18114	328771	12851.84	27568
AUTOMOTIVE RENTALS	751	1304	103036	14293.72	13933
AUTOMOBILE PARKING	752	551	35369	9651.55	8725
AUTOMOTIVE REPAIR SHOP	753	5456	352400	13160.38	13809
AUTO SERVICE EXC REPAIR	754	1326	59315	5472.06	7642
ELECTRICAL REPAIR SHOPS	762	1203	95180	15029.94	15540
WATCH, CLOCK JEWEL REPAIR	763	110	6156	14300.01	10724
REUPHOLSTERY, FURN REPAIR	764	316	19906	9500.01	9500
MISC REPAIR SHOPS	769	3210	196584	14684.12	15925
MOTION PICTURE, SERVICES	781	430	83250	16872.1	22289
MOTION PICTURE THEATERS	783	1874	106406	4061.26	5591
DANCE HALLS, STUDIOS, SCH	791	430	17258	2502.33	5307
PRODUCERS, ORCH, ENTERTAIN	792	1722	97607	11383.29	13289
BOWLING, BILLIARD ESTAB	793	3408	112971	4493.84	5733
COMMERCIAL SPORTS	794	414	60434	45198.08	17352
MISC AMUS, RECREAT SERV	799	7970	410202	7291.98	9434
OFFICES OF PHYSICIANS	801	13438	781985	26580.23	1154
OFFICES OF DENTISTS	802	8757	369669	12041.74	13800
OFFICES, OTHER HEALTH	804	2713	104687	10760.42	12105
NURSING, PERS CARE FACIL	805	39458	1033092	7713.48	7605
HOSPITALS	806	53385	805292	12411.96	10900
MEDICAL, DENTAL LAB	807	1620	102264	15241.41	15014
OUTPATIENT CARE FACIL	808	11667	100605	21158.23	15153
HEALTH, ALLIED SERV, NEC	809	1454	132776	10519.95	9119
ELEMENTARY, SECON SCHOOLS	821	5915	311986	7959.1	8760
COLLEGES, UNIVERSITIES	822	17118	864746	6921.26	9850
SOCIAL SERVICES, NEC	831	21028	822483	7100.07	7366
RESIDENTIAL CARE	836	7994	226454	8607.03	8222
MUSEUM AND ART GALLERIES	841	586	26722	9167.25	10834
BUSINESS ASSOCIATIONS	861	1200	80075	13500.01	16409
PROFESSIONAL ORG	862	623	40422	17640.46	16550
LABOR ORGANIZATIONS	863	3901	163570	7961.81	10409
CIVIC AND SOCIAL ASSOC	864	9726	282003	5036.1	6894
POLITICAL ASSOCIATIONS	865	64	4441	18109.38	10798
RELIGIOUS ORGANIZATIONS	866	14804	590345	5990.15	6885
NONCOMMER RESEARCH ORG	892	1053	75516	12771.14	18156
ACCOUNTING, AUDIT, BOOKKEEP	893	7033	321988	14489.7	16632
SERVICES, NEC	899	726	59828	10188.71	13936

Source: County Business Patterns, 1981

1981 Location Quotients and Percent Change
in Employment by 3 digit Industry-Minnesota
and the U.S. 1977-1981

	SIC	LQ	MN	U.S.
CROP SERVICES	72	0.26	-10.26	-11.04
VETERINARY SERVICES	74	1.11	56.96	50.63
ANIMAL SERVICES, EXC VET	75	1.2	-5.49	11.19
FARM LABOR AND MGT SERV	76	0.17	-59.45	23.53
LANDSCAPE AND HORTICULTURE	78	0.59	19.52	48.43
CRUSHED AND BROKEN STONE	142	0.34	-24.21	1.18
GENERAL BUILDING CONTRAC	151	0.99	19.42	23.55
OPERATIVE BUILDERS	153	0.78	-6.44	12
HEAVY CONSTR EXC HIGHWAY	162	0.64	11.77	17.41
PLUMBING, HEAT, AIR COND	171	0.93	19.04	21.53
PAINTING, PAPER, DECOR	172	0.75	33.34	16.41
ELECTRICAL WORK	173	1.08	11.8	28.53
MASONRY, STONEMWORK AND PLAS	174	0.02	24.15	13.46
CARPETING AND FLOORING	175	0.95	15.21	-5.76
ROOFING AND SHEET METAL	176	0.85	18.94	21.19
CONCRETE WORK	177	0.91	26.44	10.31
WATER WELL DRILLING	178	1.39	-14.63	2.73
MISC. SPECIAL TRADE CONT	179	0.07	38.12	30.99
MEAT PRODUCTS	201	1.68	-24.3	3.04
DAIRY PRODUCTS	202	2.35	-5.65	-6.06
PRESERVED FRUITS AND VEG	203	1.02	-6.18	-2.14
GRAIN MILL PRODUCTS	204	1.63	11.09	0.62
BAKERY PRODUCTS	205	0.66	-0.64	-6.11
SUGAR AND CONFECTIONARY	206	1.77	76.51	-4.99
FATS AND OILS	207	1.07	16.07	-3.5
BEVERAGES	208	0.96	-1.1	1.4
MISC. FOODS AND KINDRED	209	0.77	20.15	7.76
MISC TEXTILE GOODS	229	0.36	4.97	-9.94
MENS AND BOYS SUITS AND COAT	231	0.33	-45.24	-15.16
MENS AND BOYS FURNISHINGS	232	0.17	-33.22	-3.19
WOMENS AND MISSES OUTER	233	0.07	-48.87	-3.43
HATS, CAPS AND MILLINERY	235	0.46	-4.76	17.24
MISC FABRIC TEXTILE PRDS	239	0.39	0.52	-0.06
LOGGING CAMPS AND LOG CONT	241	0.59	6.56	6.28
SAWMILLS AND PLANING MILLS	242	0.31	1.75	-11.59
MILLWORK, PLYWOOD AND STRUC	243	1.74	11.38	-0.98
WOOD CONTAINERS	244	0.43	-6.96	10.43
WOOD BUILD AND MOBILE HOME	245	0.74	-28.98	-5.2
MISC WOOD PRODUCTS	249	1.56	-0.8	-2.58
HOUSEHOLD FURNITURE	251	0.2	-23.61	1.25
OFFICE FURNITURE	252	0.18	181.82	24.34
PUBLIC BUILD AND REL FURN	253	2.04	47.13	-13.05
PARTITIONS AND FIXTURES	254	1.17	15.49	8.91
MISC FURN AND FIXTURES	259	0.69	94.28	13.92
PAPER MILLS EXC BUILD	262	1.75	2.9	2.55
MISC CONVERTED PAPER	264	1.07	12.33	6.51
NEWSPAPERS	271	1.11	17.44	10.99
PERIODICALS	272	1.17	11.63	9.55
BOOKS	273	1.92	34.99	10.02
COMMERCIAL PRINTING	275	1.08	23.21	12.02
BLANKBOOKS AND BOOKBIND	278	1.05	1.89	26.14
PRINTING TRADE SERVICES	279	1.04	-12.33	20.29
INDUSTRIAL INORG CHEM	281	0.04	-14.44	3.11
PLASTIC AND SYNTHETICS	282	0.35	30.55	-6.3
DRUGS	283	0.16	43.34	7
SOAP, CLEANERS AND TOILET	284	1.3	29.54	7.92
PAINTS AND ALLIED PRDTS	285	0.57	48.99	-4.26
INDUSTRIAL ORG CHEMICAL	286	0.05	11.03	6.75
AGRICULTURAL CHEMICALS	287	0.43	22.62	-3.6
MISC CHEMICAL PRDTS	289	1.17	-1.64	7.7
PETROLEUM REFINING	291	0.44	13.23	10.05
PAVING AND ROOFING WATER	295	0.81	2.35	8.66
MISC. PETROL AND COAL PRD	299	0.71	28.17	25.56
MISC PLASTICS PRODUCTS	307	1.12	31.42	13.75
PRDTS OF PURCHASE GLASS	323	0.94	41.57	15.92

Source: County Business Patterns 1977,1981

1981 Location Quotients and Percent Change in Employment
by 3 digit Industry - Minnesota and the U.S. 1977-1981

CONCRETE, GYPSUM, PLASTER	327	0.98	6.24	3.78
CUT SONE AND STONE PRODS	328	4.6	12.65	-3.29
MISC NONMETAL MINERAL	329	0.71	18.49	-0.06
BLAST FUR AND STEEL PRODS	331	0.16	-27.38	-8.73
IRON AND STEEL FOUNDRIES	332	0.48	-19.05	-6.08
MISC PRIMARY METAL PRODS	339	0.75	-7.38	22.98
METAL CANS AND SHIP CONT	341	0.98	-7.78	-13.06
CUTLERY, HANDTOOLS, HRDW	342	1	-8.78	1.55
PLUMBING, HEAT EXC ELEC	343	0.46	22.53	4.87
FABRIC STRUC METAL PRDT	344	0.85	15.76	9.46
SCREW MACHINE PRDT, BOLT	345	0.64	-2.15	4.15
METAL FORGINGS, STAMPING	346	0.93	38.05	-6.48
METAL SERVICES, NEC	347	1.23	14.2	6.25
MISC FABRIC METAL PRODS	349	0.64	4.79	10.91
FARM AND GARDEN MACHINERY	352	1.68	-18.51	-12.53
CONSTRUCTION AND REL MACH	353	1.04	5.72	18.99
METALWORKING MACHINERY	354	0.85	26.07	16.98
GENERAL INDUSTRIAL MACH	356	1.07	16.33	11.65
OFFICE AND COMPUTING MACH	357	3.98	38.45	59.17
REFRIG AND SERVICE MACH	358	1.97	-2.81	6.21
ELECTRIC DISTRIB EQUIP	361	0.5	175.09	9.59
ELECTRIC INDUS APPARAT	362	1.33	-1.1	5.85
HOUSEHOLD APPLIANCES	363	1.26	10.84	-4.02
ELEC LIGHT AND WIRING	364	0.62	-18.97	-1.14
RADIO AND TV RECEIV EQUIP	365	0.53	25.68	-18.47
COMMUNICATION EQUIPMENT	366	0.6	51.98	25.99
ELECTRONIC COMP AND ACCES	367	0.79	8.19	38.16
MISC ELEC EQUIP, SUPPLY	369	1.15	33.06	11.07
MOTOR VEHICLES AND EQUIP	371	0.32	-4.57	-18.6
AIRCRAFT AND PARTS	372	0.04	-11.64	36.12
RAILROAD EQUIPMENT	374	0.14	6.82	-9.63
ENGINEER, SCIENTIFIC INST	381	0.87	36.58	42.85
MEDICAL INSTRUMENTS, SUPL	384	1.15	35.57	12.57
OPTALMIC GOODS	385	1.93	-1.46	3.91
MUSICAL INSTRUMENTS	393	0.12	-12.49	-11.6
TOYS AND SPORTING GOODS	394	1.72	-26.07	-9.03
PENS, PENCILS, OFFICE, ART	395	0.15	-68.85	0.6
MISC MANUFACTURES	399	0.84	-13.79	0.07
LOCAL AND SUBURB TRANS	411	0.8	41.17	13.17
TAXICABS	412	1.48	-18.99	-32.67
INTERCITY HIGHWAY	413	0.54	-38.95	8.88
SCHOOL BUSES	415	3.15	23.54	15.18
TRUCKING, LOCAL, LONG	421	9.67	3.28	282.58
PUBLIC WAREHOUSING	422	0.9	28.88	9.39
TRUCKING TERMINALS	423	0.58	-53.49	-18.44
TRANS ON RIVERS, CAN	444	0.91	-22.45	31.93
WATER TRANSP SERVICES	446	0.14	-11.19	14.75
AIR TRANSPORTATION	451	1.11	23.37	28.97
AIR TRANSP SERVICE	458	0.45	37.54	22.99
FREIGHT FORWARDING	471	0.68	57.11	19.94
ARRANGEMENT OF TRANSP	472	0.88	68.29	42.32
TELEPHONE COMMUNICAT	481	13.61	5.13	-94.18
ELECTRIC SERVICES	491	0.7	15.95	18.12
SANITARY SERVICES	495	0.74	-3.17	31.51
MOTOR VEH AND AUTO	501	1.07	2.79	4.24
FURNITURE, HOME FURN	502	0.91	41.24	23.62
LUMBER, CONSTR MATER	503	0.9	14.1	11.5
SPORTING GOODS, TOYS	504	0.93	6.32	12.44
METALS, MINERALS	505	0.77	1.73	28.12
ELECTRICAL GOODS	506	0.92	28.78	28.05

Source: County Business Patterns 1977, 1981

1981 Location Quotients and Percent Change in Employment
by 3 digit Industry - Minnesota and the U.S. 1977-1981

HAREWARE, PLUMB, HEAT	507	0.86	-12.81	13.81
MACH, EQUIP, SUPPLIES	508	7.05	25.33	-78.57
MISC DURABLE GOODS	509	1	10.01	15.2
PAPER AND PAPER PRDTS	511	0.83	15.78	18.26
DRUGS, PROP, SUNDRIES	512	0.63	-37.87	15.37
APPAREL, PIECE, NOTION	513	0.48	-1.63	7.87
GROCERIES AND REL PRDTS	514	0.92	11.03	11.04
FARM PRDT RAW MATERIA	515	2.51	22.07	6.94
CHEMICALS, ALLIED PRDTS	516	1.15	121.23	25.44
PETROL, PETROL PRDTS	517	1.25	-0.53	5.64
BEER, WINE, DISTILLED	518	0.83	7.39	18.36
MISC NONDURABLE GOODS	519	1.61	4.47	7.23
PAINT, GLASS, WALLPAPER	523	0.99	-3.00	6.52
HARDWARE STORES	525	2.07	17.96	10.89
RETAIL NURSERIES, GARDEN	526	0.92	16.40	35.43
MOBILE HOME DEALERS	527	0.61	-48.16	-5.13
DEPARTMENT STORES	531	2.86	7.01	30.89
VARIETY	533	0.96	-15.87	-18.93
MISC. GENERAL MERCH	539	1.11	-5.09	-12.04
GROCERY STORES	541	1.91	17.76	41.51
MEAT MARKETS, FREEZER	542	0.99	18.92	1.27
FRUIT STORES, VEGETABLES	543	0.62	5.01	8.37
CANDY, NUT, CONFEC STORES	544	1.25	39.66	5.61
DAIRY PRODUCT STORES	545	0.99	-26.17	-26.12
RETAIL BAKERIES	546	1.3	7.74	11.01
MISC FOOD STORES	549	0.69	9.1	37.31
NEW AND USED CAR DEALERS	551	0.97	-9.04	-8.28
USED CAR DEALERS	552	0.72	-10.46	-18.06
AUTO AND HOME SUPPLY STORES	553	0.67	13.15	11.72
GASOLINE SERVICE STATIONS	554	1.21	-7.1	-0.57
BOAT DEALERS	555	1.33	-6.89	-9.65
RECREAT, UTILITY TRAILER	556	0.93	-34.33	-14.02
MOTORCYCLE DEALERS	557	1.26	55.71	21.38
AUTOMOTIVE DEALERS, NEC	559	0.72	-56.40	-27.21
MENS, BOYS CLOTH AND FURN	561	1.01	-4.84	-8.11
WOMENS READY TO WEAR	562	0.93	9.49	9.56
WOMENS ACCESSORY, SPECIAL	563	1.01	12.45	-12.78
CHILDRENS, INFANTS WEAR	564	1	114.47	33.04
FAMILY CLOTHING STORES	565	1.01	36.17	10.31
SHOE STORES	566	0.76	36.94	26.04
FURRIERS AND FUR SHOPS	568	0.48	-69.23	4.87
MISC APPAREL AND ACCESS	569	1.07	70.94	51.68
FURNITURE, HOME FURNISH	571	0.92	26.58	10.12
HOUSEHOLD APPLIANCE STORE	572	1.05	-10.07	-9.59
RADIO, TV, MUSIC STORES	573	1.16	14.22	12
DRUG STORES, PROPRIETARY	591	1.1	8.79	7.9
LIQUOR STORES	592	1.21	22.78	13.47
USED MERCHANDISE STORES	593	0.56	14.31	17.52
MISC SHOPPING GOODS	594	1.11	31.76	24.04
NONSTORE RETAILERS	596	1.43	7.08	6.19
FUEL AND ICE DEALERS	598	0.76	3.34	1.31
RETAIL STORES, NEC	599	1.04	21.3	22.04
SAVINGS AND LOAN ASS	612	0.86	19.65	35.21
PERSONAL CREDIT INST	614	0.87	31.17	11.24
BUSINESS CREDIT INST	615	1.68	30.21	28.68
MORTGAGE BANK, BROKER	616	1	43.12	20.59
SECURITY, COMM SERV	620	0.57	53.89	30.11
MEDICAL, HEALTH INS	632	0.79	8.71	8.38
TITLE INSURANCE	636	0.98	60.11	22.29
PENSION, HEALTH, FUNDS	637	0.54	-81.01	-46.33

Source: County Business Patterns 1977, 1981

1981 Location Quotients and Percent Change in Employment
by 3 digit Industry - Minnesota and the U.S. 1977-1981

REAL ESTATE OPERATORS	651	0.95	0.52	7.56
REAL ESTATE AGENTS	653	0.9	18.68	25.48
TITLE ABSTRACT OFFICES	654	1.15	13.73	1.22
SUBDIVIDERS, DEVELOPERS	655	0.56	58.67	16.82
HOLDING OFFICES	671	1.89	87.09	15.06
TRUSTS	673	0.9	29.87	3.93
HOTELS, MOTELS, TOURIST	701	0.94	30	21.71
ROOMING, BOARDING HOUSE	702	1.85	-59.75	-58.32
CAMPS, TRAILERING PARKS	703	1.09	-16.78	7.78
MEMBERSHIP-BASIS HOTELS	704	1.67	256.29	122.36
LAUNDRY, CLEAN, GARM SERV	721	0.8	3.42	-1.21
PHOTOGRAPHIC STUDIOS	722	2.19	47.95	36.1
BEAUTY SHOPS	723	0.98	1.43	-0.35
BARBER SHOPS	724	1.44	82.72	-11.7
SHOE REPAIR, HAT CLEAN	725	0.88	58.98	3.65
FUNERAL SERVICE	726	0.8	3.86	1.79
MISC PERSONAL SERVICES	729	1.09	37.13	35.34
ADVERTISING	731	0.94	20.36	20.57
MAILING, REPRO, COLLECT	733	0.94	35.48	45.88
SERVICES TO BUILDINGS	734	0.96	58.93	21.54
PERSONAL SUPPLY SERV	736	0.88	16.46	36.54
COMPUTER, DATA SERVICES	737	1.05	45.64	62.66
MISC BUSINESS SERVICES	739	2.81	17.33	-66.94
AUTOMOTIVE RENTALS	751	0.65	31.99	33.98
AUTOMOBILE PARKING	752	0.8	-23.25	4.93
AUTOMOTIVE REPAIR SHOP	753	0.79	20.18	15.38
AUTO SERVICE EXC REPAIR	754	1.14	1.93	-0.26
ELECTRICAL REPAIR SHOPS	762	0.65	17.37	16.38
WATCH, CLOCK JEWEL REPAIR	763	0.92	0.01	13.04
REUPHOLSTERY, FURN REPAIR	764	0.81	46.98	-3.16
MISC REPAIR SHOPS	769	0.84	28.92	36.31
MOTION PICTURE, SERVICES	781	0.27	-9.28	50.02
MOTION PICTURE THEATERS	783	0.9	-21.68	-2.25
DANCE HALLS, STUDIOS, SCH	791	1.28	21.82	21.24
PRODUCERS, ORCH, ENTERTAIN	792	0.9	-5.53	44.61
BOWLING, BILLIARD ESTAB	793	1.54	25.3	6.11
COMMERCIAL SPORTS	794	0.35	26.61	11.38
MISC AMUS, RECREAT SERV	799	0.98	45.55	23.62
OFFICES OF PHYSICIANS	801	0.88	33.82	38.04
OFFICES OF DENTISTS	802	1.21	44.04	34.93
OFFICES, OTHER HEALTH	804	1.33	85.95	67.02
NURSING, PERS CARE FACIL	805	1.97	41.5	38.15
HOSPITALS	806	3.38	3.93	183.72
MEDICAL, DENTAL LAB	807	0.82	28.19	13.59
OUTPATIENT CARE FACIL	808	3.3	228.47	42.55
HEALTH, ALLIED SERV, NEC	809	0.56	-34.35	58.51
ELEMENTARY, SECON SCHOOLS	821	0.97	-8.87	5.61
COLLEGES, UNIVERSITIES	822	1.01	117.32	50.88
SOCIAL SERVICES, NEC	831	1.31	31.14	38.89
RESIDENTIAL CARE	836	1.8	42.3	31.59
MUSEUM AND ART GALLERIES	841	1.12	210.06	42.59
BUSINESS ASSOCIATIONS	861	0.77	7.34	9.5
PROFESSIONAL ORG	862	0.79	-0.95	11.02
LABOR ORGANIZATIONS	863	1.22	28.79	-3.83
CIVIC AND SOCIAL ASSOC	864	1.76	6.67	5.99
POLITICAL ASSOCIATIONS	865	0.74	-70.5	6.76
RELIGIOUS ORGANIZATIONS	866	1.28	24.69	22.44
NONCOMMER RESEARCH ORG	892	0.72	97.2	44.83
ACCOUNTING, AUDIT, BOOKKEEP	893	1.12	63.98	37.91
SERVICES, NEC	899	0.62	176.05	384.88

Source: County Business Patterns 1977, 1981

FARM STATISTICS MINNESOTA AND THE U.S.

<u>YEAR</u>	<u>NUMBER OF FARMS</u>		<u>AVERAGE NUMBER OF ACRES PER FARM</u>		<u>MINNESOTA FARMS 1,000 OR MORE ACRES</u>
	<u>MN</u>	<u>U.S.</u>	<u>MN</u>	<u>U.S.</u>	
1945	188952	5967000			
1950	179101	5648000	184	213	593
1954	165225	4798000	195	251	725
1959	145662	4105000	211	288	837
1964	131163	3457000	235	332	1264
1969	110747	3000000	260	369	1935
1974	98537	2795000	280	388	2603
1978	98671	2672000	288	401	3095
1982	94382	2400000	294	433	3617

SOURCE: Census of Agriculture, 1974, 1978, 1982

EMPLOYMENT STATISTICS FOR METRO* AND NON-METRO MINNESOTA

	METROPOLITAN AREA				REST OF THE STATE			
	NUMBER OF EMPLOYEES	PERCENT Δ FROM 1977	PAYROLL/ EMPLOYEE	PERCENT Δ FROM 1977	NUMBER OF EMPLOYEES	PERCENT Δ FROM 1977	PAYROLL/ EMPLOYEES	PERCENT Δ FROM 1977
TOTAL	1,006,229	22.3%	16,200	33.5%	462,446	12.0%	12,224	30.0%
AGRICULTURE SERVICES	-	-	-	-	-	-	-	-
CONTRACT CONSTRUCTION	49,979	28.3%	23,465	19.0%	23,908	6.8%	18,147	4.9%
MANUFACTURING*	269,770	20.9%	21,211	35.6%	106,554	0.3%	16,040	34.9%
TRANSPORTATION, PUBLIC UTILITIES AND COMMUNICATION	58,835	18.1%	22,674	35.9%	24,887	12.3%	17,413	42.8%
WHOLESALE TRADE	77,969	8.9%	21,202	38.3%	35,052	15.6%	14,639	26.4%
RETAIL TRADE	198,458	17.8%	8,442	23.9%	115,341	7.9%	7,065	22.4%
FINANCE, INSURANCE, REAL ESTATE	83,722	24.1%	16,733	40.7%	22,865	23.4%	13,027	31.7%
SERVICES (excluding health)	172,802	31.7%	11,415	35.4%	66,858	22.7%	7,274	24.1%
HEALTH SERVICES	86,453	26.5%	14,552	43.8%	46,117	29.6%	10,760	33.3%

* Metro Area includes: Anoka, Hennepin, Ramsey, Washington, Carver, Scott and Dakota counties

Source: Minnesota Department of Economic Security Average Covered Employment, 1977,1981

NON-METROPOLITAN MANUFACTURING EMPLOYMENT
1983

SIC	EMPLOYMENT	PERCENT OF MANUFACTURING EMPLOYMENT	NON-METRO SHARE OF STATE TOTAL	METRO* SHARE OF STATE TOTAL
20	28375	24.8	0.616	0.384
22	1190	1.0	0.599	0.401
23	814	0.7	0.278	0.722
26	6997	6.1	0.216	0.784
27	11411	10.0	0.314	0.686
28	1396	1.2	0.183	0.817
29	231	0.2	0.134	0.866
30	2659	2.3	0.267	0.733
31	1539	1.3	0.765	0.235
24	6809	6.0	0.612	0.388
25	2108	1.8	0.584	0.416
32	5545	4.8	0.653	0.347
33	1292	1.1	0.235	0.765
34	7295	6.4	0.223	0.777
35	20785	18.2	0.261	0.739
36	8074	7.1	0.307	0.693
37	2728	2.4	0.469	0.531
38	3478	3.0	0.131	0.869
39	1632	1.4	0.275	0.725

*Metropolitan Counties Includes Anoka, Carver, Dakota, Hennepin, Ramsey, Scott, Washington.

SOURCE: Minnesota Department of Economic Security Average Covered Employment and Wages, 1983.

PRODUCTION WORKERS AS A PERCENT OF TOTAL
MANUFACTURING EMPLOYMENT, MINNESOTA AND THE U.S.
1972-1984

<u>Durable Goods</u>			<u>Non-Durable Goods</u>		
<u>YEAR</u>	<u>MN</u>	<u>U.S.</u>	<u>YEAR</u>	<u>MN</u>	<u>U.S.</u>
1972	0.682	0.729	1972	0.639	0.74
1973	0.697	0.734	1973	0.64	0.739
1974	0.688	0.726	1974	0.642	0.733
1975	0.654	0.707	1975	0.617	0.718
1976	0.63	0.714	1976	0.619	0.723
1977	0.634	0.716	1977	0.63	0.721
1978	0.642	0.717	1978	0.623	0.72
1979	0.646	0.714	1979	0.626	0.72
1980	0.639	0.693	1980	0.675	0.713
1981	0.617	0.685	1981	0.672	0.71
1982	0.581	0.662	1982	0.611	0.702
1983	0.572	0.664	1983	0.648	0.703
1984	0.577	0.674	1984	0.655	0.705

SOURCE: Minnesota Department of Economic Security, unpublished data
790 Program, BLS Employment and Earnings

RATIO OF MINNESOTA TO U.S. PRODUCTION
WORKER SHARES BY MAJOR INDUSTRY
FOR SELECTED YEARS

<u>SIC</u>	<u>1975</u>	<u>1977</u>	<u>1979</u>	<u>1981</u>	<u>1983</u>
20	0.999	1.033	1.019	1.01	0.956
22	0.761	0.803	0.804	0.804	0.75
23	1.022	1.015	0.981	0.846	1.031
26	1.017	0.981		0.905	0.849
27	1.069	1.134	1.113	1.09	1.106
28	0.984	0.987	0.988	0.971	0.968
29	1.207	1.159	1.182	1.205	1.216
30	0.947	0.95	0.985	1.009	0.991
24	0.970	0.921	0.940	0.959	0.878
25	0.983	0.924	0.978	0.922	0.953
32	1.038	1.003	1.046	1.07	1.055
33	1.026	1.012	1.017	1.022	0.994
34	0.979	0.96	0.967	0.935	0.827
35	0.837	0.787	0.819	0.786	0.791
36	1.081	1.054	1.090	1.18	1.125
37	1.256	1.226	1.215	1.279	1.248
38	0.919	0.788	0.792	0.886	0.864
39	0.988	0.861	0.934	0.993	0.898

SOURCE: Minnesota Department of Economic Security, unpublished data,
790 Program, BLS Employment and Earnings

OBSERVED VS. EXPECTED CONCENTRATIONS IN MAJOR OCCUPATIONS
IN MINNESOTA

<u>YEAR</u>	<u>OCCUPATION</u>							
	<u>TECHNICAL & PROFESSIONAL</u>	<u>MANAGERS</u>	<u>SALES</u>	<u>CLERICAL</u>	<u>CRAFT</u>	<u>OPERATIVE</u>	<u>TRANSPORT OPERATIVES</u>	<u>SERVICE WORKERS</u>
1976								
Observed	15.8	10.5	6.7	16.8	11.8	8.1	3.4	14.7
Expected	13.2	11.2	6.6	19.6	11.3	10.0	3.6	12.3
% Difference	16.5	-6.7	1.5	-16.7	4.2	-23.5	-5.9	16.3
1982								
Observed	18.3	10.9	7.1	17.5	11.4	7.1	3.2	15.1
Expected	15.3	11.8	6.8	19.7	10.5	8.6	3.2	13.0
% Difference	16.4	-8.3	4.2	-12.6	7.9	-21.1	0.0	13.9

SOURCE: BLS Handbook of Labor Statistics, Bulletin 2175
BLS Geographic Profile of Employment, 1976 & 1982

MINNESOTA 1980
PERCENT EMPLOYMENT IN INDUSTRY BY OCCUPATION

	TOTAL	FOOD & KILLED	PAPER	PRINTING & PUBLISHING	CERAMIC	MISCELLANEOUS MANUFACTURING	STONE, CLAY & GLASS	FABRICATED METALS	NONMETALLIC MINERALS	ELECTRICAL MACHINES	TRANSPORTATION	COMMUNICATION	UTILITIES	MEDICINE	RETAIL SALES	ADMINISTRATION	INSURANCE	FINANCE & REAL ESTATE	BUSINESS SERVICES	REPAIR SERVICE	CONSUMER SERVICES	HOSPITAL	HEALTH	EDUCATION	SOCIAL SERVICES
Executive Management	8.42	8.81	6.79	9.42	13.24	8.56	9.45	5.60	9.73	9.16	6.60	8.04	7.41	13.08	9.02	12.32	9.05	15.63	11.71	6.72	10.18	3.18	3.80	5.06	10.37
Related Management	2.85	3.26	1.94	1.25	6.27	1.71	2.01	1.87	3.32	2.92	1.52	1.63	2.89	3.72	1.46	10.20	4.19	10.12	6.65	1.21	9.91	0.91	0.51	0.68	2.69
Engineers and Scientists	2.05	1.88	3.01	0.49	7.36	1.50	1.05	5.06	8.80	7.95	0.70	3.77	4.64	1.09	0.17	3.43	1.67	0.52	3.25	0.14	0.14	0.54	0.17	0.54	0.33
Health and Social Scientists	11.15	1.17	0.59	8.85	1.73	0.26	1.00	0.93	2.03	1.85	0.59	0.36	1.46	0.81	1.69	8.42	1.87	0.88	7.84	0.29	7.20	33.26	22.02	53.62	35.32
Technician	3.70	2.29	2.70	1.65	6.10	1.90	2.37	3.72	9.93	6.79	2.51	4.81	4.21	1.42	0.27	5.51	2.02	0.80	4.95	1.01	0.65	15.40	9.36	2.02	0.63
Sales Representatives	3.54	2.29	2.78	5.86	0.93	2.72	2.96	1.81	2.06	2.04	2.20	4.99	1.00	18.69	0.04	0.41	30.33	19.67	6.18	5.79	1.05	0.47	-	-	-
Retail Sales	5.56	0.14	-	4.05	0.15	0.06	-	0.04	0.09	0.11	0.27	0.53	0.78	2.29	0.04	0.38	0.23	1.11	0.50	2.30	3.66	0.41	0.23	0.50	0.76
Other Sales	1.44	0.41	0.08	0.35	0.17	0.13	0.07	0.13	0.24	0.24	0.11	0.19	0.17	3.03	6.18	0.04	0.56	0.52	0.89	0.87	0.29	0.03	0.04	0.01	0.11
Administrative Support	17.73	12.70	11.92	20.78	17.29	10.98	9.97	13.64	14.81	15.97	26.83	40.00	19.23	22.13	10.25	30.38	47.94	42.99	26.57	9.75	7.87	15.94	13.26	16.06	20.54
Service	14.90	4.49	2.80	1.44	2.47	1.52	1.90	2.30	1.29	1.08	5.19	1.40	4.19	1.41	24.72	20.43	1.06	5.62	14.01	0.70	58.50	0.25	0.13	0.45	0.19
Mechanics	3.79	3.70	4.94	0.99	2.95	3.95	4.35	2.86	3.17	2.69	7.32	23.06	0.73	14.84	1.24	0.74	1.24	0.04	0.31	1.06	0.71	0.48	0.50	0.22	0.54
Construction	4.08	0.68	2.20	0.29	0.52	0.77	2.85	1.95	0.79	1.18	1.03	0.73	14.84	1.24	0.74	2.03	0.05	0.31	2.10	53.68	0.70	0.86	1.73	0.51	0.50
Precision Production	4.04	13.73	8.89	6.35	5.78	11.96	11.21	14.27	13.01	10.43	2.27	0.78	13.08	2.72	0.57	0.66	0.27	0.53	1.20	5.37	1.70	0.86	1.45	0.51	0.61
Machine Operators	4.77	15.15	29.79	30.73	14.69	15.86	16.53	21.13	10.83	11.15	0.79	0.27	3.24	1.57	0.34	0.19	0.04	0.58	4.00	3.16	4.62	1.19	1.45	0.76	0.60
Fabricator	2.78	2.42	3.77	1.86	4.82	8.34	7.73	14.09	13.64	17.48	0.67	0.52	1.32	1.57	0.34	0.19	0.04	0.58	4.00	3.16	4.62	1.19	1.45	0.76	0.60
Inspector	0.63	1.92	1.91	1.01	1.09	3.93	2.21	2.40	2.80	3.52	0.28	0.07	0.40	0.63	0.09	0.16	0.05	0.05	1.77	5.10	0.13	0.02	0.01	-	0.03
Transportation Operators	3.87	6.88	1.68	1.54	2.77	0.52	8.72	0.81	0.51	0.46	33.46	0.45	3.81	7.23	1.94	0.64	0.04	0.53	0.26	0.03	0.16	0.01	-	-	0.04
Material Operators	0.84	2.49	4.04	0.33	1.64	1.81	3.81	1.78	0.88	0.86	1.10	0.10	1.40	1.17	0.24	0.20	0.01	0.05	0.16	0.07	0.05	0.16	0.21	0.23	0.94
Labors	4.32	15.26	9.89	2.77	5.43	6.21	10.95	4.08	1.99	3.02	6.51	0.70	7.95	7.70	7.75	0.97	0.10	0.29	1.80	5.39	0.90	0.16	0.21	0.23	0.94

SOURCE: 1980 Census of Housing and Population
 Detail Characteristics of Population,
 Minnesota and the U.S.

UNITED STATES 1980
PERCENT EMPLOYMENT IN INDUSTRY BY OCCUPATION

	TOTAL	FOOD & KITCHEN	PAPER	PRINTING & PUBLISHING	CERAMIC	METALWARE MANUFACTURING	STONE, CLAY & GLASS	FABRICATED METALS	NONMETALLIC MINERALS	ELECTRICAL ELECTRONICS	TRANSPORTATION	CONSTRUCTION	UTILITIES	RETAIL SALES	PUBLIC ACCOMMODATION	INSURANCE	FINANCE & REAL ESTATE	REPAIR SERVICES	REPAIR SERVICES	CONSUMER SERVICES	HOSPITAL	HEALTH	EDUCATION	SOCIAL SERVICES	
Executive Management	8.02	7.34	5.91	10.04	9.05	6.83	7.26	7.37	7.68	6.91	6.47	8.90	5.30	12.77	2.94	7.42	9.52	15.44	8.43	5.99	8.41	4.72	4.06	5.13	8.94
Related Management	2.70	1.95	1.90	1.25	2.85	1.72	1.54	2.00	2.36	2.47	1.27	2.07	2.73	2.90	1.36	6.29	4.59	8.28	5.70	0.42	0.85	1.33	0.58	0.64	1.47
Engineers and Scientists	2.89	1.29	2.25	0.48	7.64	2.81	2.20	2.69	6.06	7.93	0.81	4.58	9.57	0.93	0.13	6.22	1.62	0.57	2.56	0.15	0.14	0.85	0.33	0.51	0.75
Health and Social Scientists	10.44	0.50	0.72	11.98	1.42	0.57	1.32	0.51	1.77	5.41	0.52	7.25	1.08	0.74	2.03	3.26	1.41	1.02	5.73	0.14	0.81	11.57	22.24	45.94	30.23
Technicians	3.15	1.55	2.27	1.31	6.79	2.39	2.05	2.60	4.69	6.18	2.13	5.08	3.91	1.09	0.26	28.07	1.93	1.07	29.46	10.59	11.73	13.26	22.40	16.08	18.62
Sales Representatives	3.25	2.05	2.81	5.85	4.51	1.70	2.28	2.06	2.25	1.64	2.36	3.20	6.84	18.89	8.05	0.12	28.28	15.12	3.53	0.85	0.46	0.02	0.01	0.01	0.02
Retail Sales	5.43	0.27	0.05	0.43	0.28	0.21	0.29	0.17	0.31	0.21	0.18	0.20	0.14	3.95	0.90	0.05	0.51	0.46	0.56	0.88	2.23	0.83	0.02	0.04	0.07
Other Sales	3.66	0.44	0.15	0.43	0.28	0.21	0.29	0.17	0.31	0.21	0.18	0.20	0.14	3.95	0.90	0.05	0.51	0.46	0.56	0.88	2.23	0.83	0.02	0.04	0.07
Administrative Support	17.83	11.16	11.64	20.31	15.36	11.20	10.26	12.27	13.75	13.86	27.94	41.09	20.42	20.94	10.40	23.70	48.62	43.40	19.77	6.42	7.11	23.45	14.70	13.73	17.12
Services	13.36	4.62	7.37	1.32	6.43	4.53	5.04	3.68	4.72	3.93	6.06	21.91	7.29	5.17	4.20	1.90	0.89	0.42	1.59	46.73	0.87	0.44	0.12	0.49	0.21
Mechanics	4.02	4.21	5.84	0.84	6.43	1.47	2.94	2.82	1.44	1.28	1.15	0.81	13.05	1.13	0.78	1.05	0.10	0.96	0.79	0.83	0.61	1.07	0.14	0.56	0.63
Construction	4.69	0.93	2.46	0.34	2.74	1.47	2.94	2.82	1.44	1.28	1.15	0.81	13.05	1.13	0.78	1.05	0.10	0.96	0.79	0.83	0.61	1.07	0.14	0.56	0.63
Precision Production	4.50	14.98	6.80	6.97	9.40	10.92	19.16	23.79	16.22	13.16	1.87	6.97	4.90	4.44	1.01	1.01	0.42	0.37	2.74	7.41	4.84	1.82	0.84	0.43	1.02
Machine Operators	6.31	15.61	23.03	24.44	18.36	32.16	4.70	12.96	11.88	16.68	0.67	0.26	1.41	1.12	0.28	0.22	0.02	0.04	0.68	4.44	0.09	0.05	0.05	0.05	0.39
Fabricator	2.43	2.13	2.71	0.98	2.11	5.74	4.70	3.09	3.09	4.67	0.43	0.23	0.84	0.83	0.08	0.14	0.04	0.04	0.21	0.07	0.15	0.02	0.01	0.02	0.11
Inspectors	0.87	2.37	2.14	0.78	1.52	4.28	6.50	1.48	0.81	0.48	32.03	0.31	4.63	9.03	2.18	0.84	0.06	0.24	0.88	3.77	1.11	0.38	0.25	1.92	0.71
Transportation Operators	3.48	7.89	2.55	1.68	1.73	1.27	6.50	1.48	0.81	0.48	1.31	0.10	1.77	1.45	0.23	0.29	0.01	0.07	9.19	0.13	0.06	0.05	0.01	0.02	0.05
Material Operators	1.16	2.90	4.15	0.68	2.00	2.35	4.32	2.52	1.55	1.38	1.31	0.10	1.77	1.45	0.23	0.29	0.01	0.07	9.19	0.13	0.06	0.05	0.01	0.02	0.05
Labors	4.44	16.80	9.26	2.76	5.78	7.24	10.97	5.32	2.64	3.07	7.26	0.64	9.34	7.27	7.07	1.18	0.10	0.50	1.28	4.74	1.00	0.36	0.16	0.26	0.82

SOURCE: 1980 Census of Housing and Population
Detail Characteristics of Population,
Minnesota and the U.S.

U.S. MEDIAN WEEKLY SALARIES BY MAJOR
OCCUPATIONAL GROUP FOR SELECTED YEARS

				NOMINAL AVERAGE ANNUAL PERCENT CHANGE <u>72-82</u>	REAL AVERAGE ANNUAL PERCENT CHANGE <u>72-82</u>	REAL PERCENT CHANGE Δ <u>72-76</u>	REAL PERCENT CHANGE Δ <u>76-82</u>
	<u>1972</u>	<u>1976</u>	<u>1982</u>				
Professional/Technical	192	277	413	11.5	-0.7	-0.40	-6.23
Managerial/Administrative	214	302	428	10.0	-1.3	-2.58	-10.87
Sales	151	225	312	10.7	-1.0	2.87	-12.79
Clerical	121	167	248	10.5	-1.1	-4.72	-6.61
Craft & Kindred	172	259	382	12.2	-0.4	3.96	-7.24
Machine Operative	119	171	250	11.0	-0.9	-0.80	-8.06
Transport Operatives	152	231	323	11.3	-0.8	4.92	-12.06
Non-farm Laborers	122	181	235	9.3	-1.6	2.42	-18.35
Service Workers	104	142	200	9.2	-1.7	-5.74	-11.42
Farm Laborers	80	127	188	13.5	0.2	9.59	-6.90

SOURCE: Handbook of Labor Statistics
BLS, Bulletin #2175