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The changing industrial employment structure of Iowa communities between 1960 and 1970

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The changing industrial employment structure of
Iowa communities between 1960 and 1970

by

Rory Edward Moehnke

A Thesis Submitted to the
Graduate Faculty in Partial Fulfillment of
The Requirements for the Degree of

MASTER OF SCIENCE

Major: Economics

Signatures have been redacted for privacy

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Ames, Iowa

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INTRODUCTION

Rural communities of past centuries tended to serve the economic and social needs of the agricultural regions surrounding them. With the number of people engaged in agriculture declining steadily, rural communities have experienced a drain in the demand of agrarian service centers. The labor released from agriculture duties have tended to leave the rural communities for larger urban places.

Throughout the past century, technological developments in agriculture have made farmers more productive. Given the farmers' ever increasing productivity, then, a constantly decreasing number of farmers are needed to produce a given output. A second basic reason for the decline in the ratio of farmers to nonfarmers is the low income elasticity of demand for farm products. At the same time that population has increased, incomes have increased, but only a small proportion of this increased income is spent on food items.

As a result of the decline in employment in agriculture, some local merchants in rural communities must close their places of business and join in the outmigration of the rural population. Therefore, a very high proportion of the rural communities in Iowa are actively seeking new industrial development and expansion. These communities must compete with larger urban places and metropolitan areas for the eventual location of these new businesses. Little information has been gathered in the past regarding the

competitive position of the Iowa rural community in attracting different types of industry.

The establishment of any comparative advantage in attracting additional employment in the rural communities may help to direct rural industrialization efforts at the firms that find the rural community relationship more attractive. As a step towards analyzing the comparative advantage, this study focuses on the differential employment changes that occurred in the industrial structure of rural communities relative to the overall employment changes in: 1) the United States; 2) Iowa; and, 3) larger urban places (population 10,000 and over) between 1960 and 1970. Information on differential changes in the industrial employment structure may provide clues as to the kinds of industry that have found rural community locations relatively attractive. Such information could be useful to agencies and groups trying to encourage Iowa's rural industrialization.

No previous investigations have focused directly on the differential changes in Iowa's industrial structure. Several years ago the Bureau of Business and Economic Research at the University of Iowa conducted a study which dealt with the kinds of industries that located in the state, classifying them into: 1) market oriented industries; 2) resource or raw material oriented industries; and 3) miscellaneous industries.

However, this study did not examine differences between industries locating in the larger cities and metropolitan areas and those locating in rural communities.

Objectives of the Study

While the ultimate goal of this study was to generate information that would be helpful to rural communities of Iowa in their efforts to develop through industrialization efforts, the more immediate objectives were as follows:

- 1) to identify and describe the differential changes in the industrial employment structure that occurred in the 1960's between rural counties and nonrural counties and between urban places with small population and those with large population.
- 2) to analyze the likely implications of these changes for future industrialization in rural communities.

THE DATA

The universe examined consisted of Iowa's 99 counties and urban places with 1960 and 1970 population 2,500 and over. It would have been desirable to have included urban places under 2,500 also, but data were not available for places of this size. The data came mainly from the 1960 and 1970 General Social and Economic Characteristics of Iowa (No's 3 and 4). Some information was also obtained from County Business Patterns of Iowa (No. 5).

The Nature of the Data

Changes in the Iowa employment structure were used to determine the degree of industrialization that occurred in the state during the 1960's. With employment data in the tabulations to follow coming from census reports, the census definition of employed persons holds:

employed persons comprise all civilians 16 years and over (14 years and over in the 1960 census report) who were either (a) "at work" - those who did any work at all as paid employees or in their own business or profession, or on their own farm, or who worked 15 hours or more as unpaid workers on a family farm or in a family business; or (b) were "with a job, but not at work" - those who did not work during the reference week but had jobs or businesses from which they were temporarily absent due to illness, bad weather, industrial dispute, vacation, or other personal reasons. Excluded from the employed are persons whose only activity consisted of work around

the house or volunteer work for religious, charitable, and similar organizations (No. 4, p. App. 15).

Data on industry classification were also derived from census reports. The industry classification system developed for the 1970 Census of Population consisted of 226 categories (only 150 categories in the 1960 Census of Population) classified into 12 major industry groups (No. 4 p. App. 22). However, while urban places 2,500 to 10,000 population had only 13 industry groups in the 1960 Census Reports and only 10 industry groups in the 1970 Census Reports, urban places 10,000 and over population had 40 industry groups in both the 1960 and 1970 Census Reports. For an employed person with two or more jobs, the job at which he or she worked the greatest number of hours during the reference week was reported.

Since data were available for only urban places classified as such by the Census Reports, the Census definition of urban place holds:

the urban population comprises all persons living in urbanized areas and in places of 2,500 inhabitants or more outside urbanized areas. More specifically, the urban population consists of all persons living in (a) places of 2,500 inhabitants or more incorporated as cities, villages, boroughs, and towns, but excluding those persons living in the rural portions of extended cities; (b) unincorporated places of 2,500 inhabitants or more; and (c) other territory, incorporated or unincorporated, included in urbanized areas. The population not classified as urban constitutes the rural population (No. 4, p. App. 1,2).

Rural-Urban Breakdown

Based on Census Reports data, change in the industrial employment structure were determined for the state, counties, and urban places of 2,500 population and over. Changes in the industrial employment structure were compared to determine similarities and differences associated with certain classifying criteria. Employment changes, either relative or absolute, were based on the 1960-1970 period.

County classifying criteria

To reach the objectives of this study, some methods of determining the degree of urbanization had to be set forth. The urban orientation of a county was measured by the number of people per square mile based on 1960 county population. Counties with lower population density were considered more rural (less urbanized) than counties with higher population density. Population density among Iowa counties in 1960 ranged from 14.0 for Ringgold County to 460.8 for Polk County.

For the purpose of determining similarities and differences in the changes in industrial structure, Iowa's 99 counties were divided into four groups according to the degree of urbanization (Figure 1). The following urbanization classes were used:

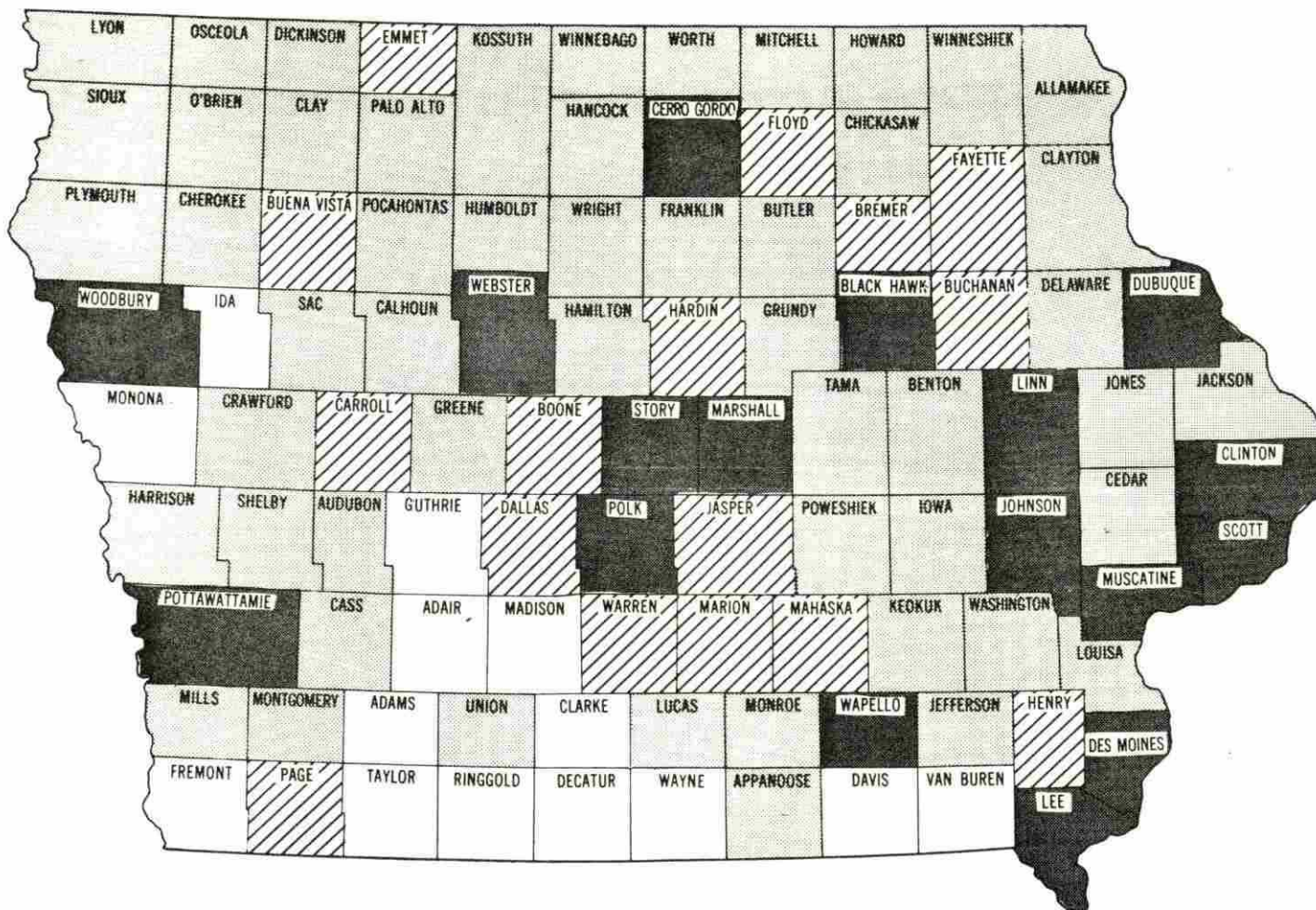


Figure 1. 1960 population density of Iowa counties

a) Class 1 counties included fourteen Iowa counties that had 14.0 to 23.9 people per square mile, i.e., the least urbanized counties; b) Class 2 represented fifty-two counties that had a population density of 24.0 to 36.9 people per square mile; c) Class 3 represented sixteen counties that had 37.0 to 64.9 people per square mile; and, d) Class 4 represented the most urbanized counties of the state that had a population density of 65.0 to 461.0 people per square mile.

In considering changes in employment structure over larger geographical areas, the county employment data were grouped together on basis of the Functional Economic Areas (FEA's) of the state. The Functional Economic Area is approximately coextensive with (1) a labor market or commuting area and (2) a retail trade area for certain types of major shopping goods and services that are seldom available in adequate variety in cities of less than 25,000. Each central city, population 50,000 or more, of a SMSA is regarded as the center of a functional economic area which includes the SMSA itself and also any additional area within a commuting radius of approximately sixty minutes from the central city (No. 2, p.1).

Past studies have shown that cities of 25,000 to 50,000 population which lie outside of the sixty minute commuting zones that surround the SMSA central cities have many of the attributes of central cities. In some cases, a town having as few as 7,400 people (e.g. Decorah) provided most of the goods and services in the commuting zone surrounding the city.

At the center of each FEA is the city or town which contains the largest cluster of economic activities and a large proportion of the highly educated professional and managerial personnel of the area (No. 2, p.3). The ninety-nine counties of Iowa have been differentiated into sixteen distinct FEA's. Figure 2 shows the location and representative city of each FEA in Iowa.

Urban place classifying criteria

In describing employment changes that occurred in Iowa's towns and cities, urban places over 2,500 population were classified according to 1960 population. Four class sizes were constructed to incorporate all 102 urban places over 2,500 population. Class 1 included thirty-six urban places with 1960 populations between 2,500 to 4,499. Class 2 represented thirty-eight urban places with 1960 populations of 4,500 to 8,499. Class 3 included fourteen urban places with 1960 populations of 8,500 to 24,999 while Class 4 represented fourteen urban places with 1960 populations over 25,000.

With a greater degree of refinement in industrial breakdown for larger urban places, additional classes were constructed for places with 1970 populations of 10,000 and over as follows: Class 1 included seven urban places with 1960 populations of 10,000 to 15,999; Class 2 included eleven urban places with 1960 population of 16,000 to 54,999; and Class 3 included seven urban places with 1960

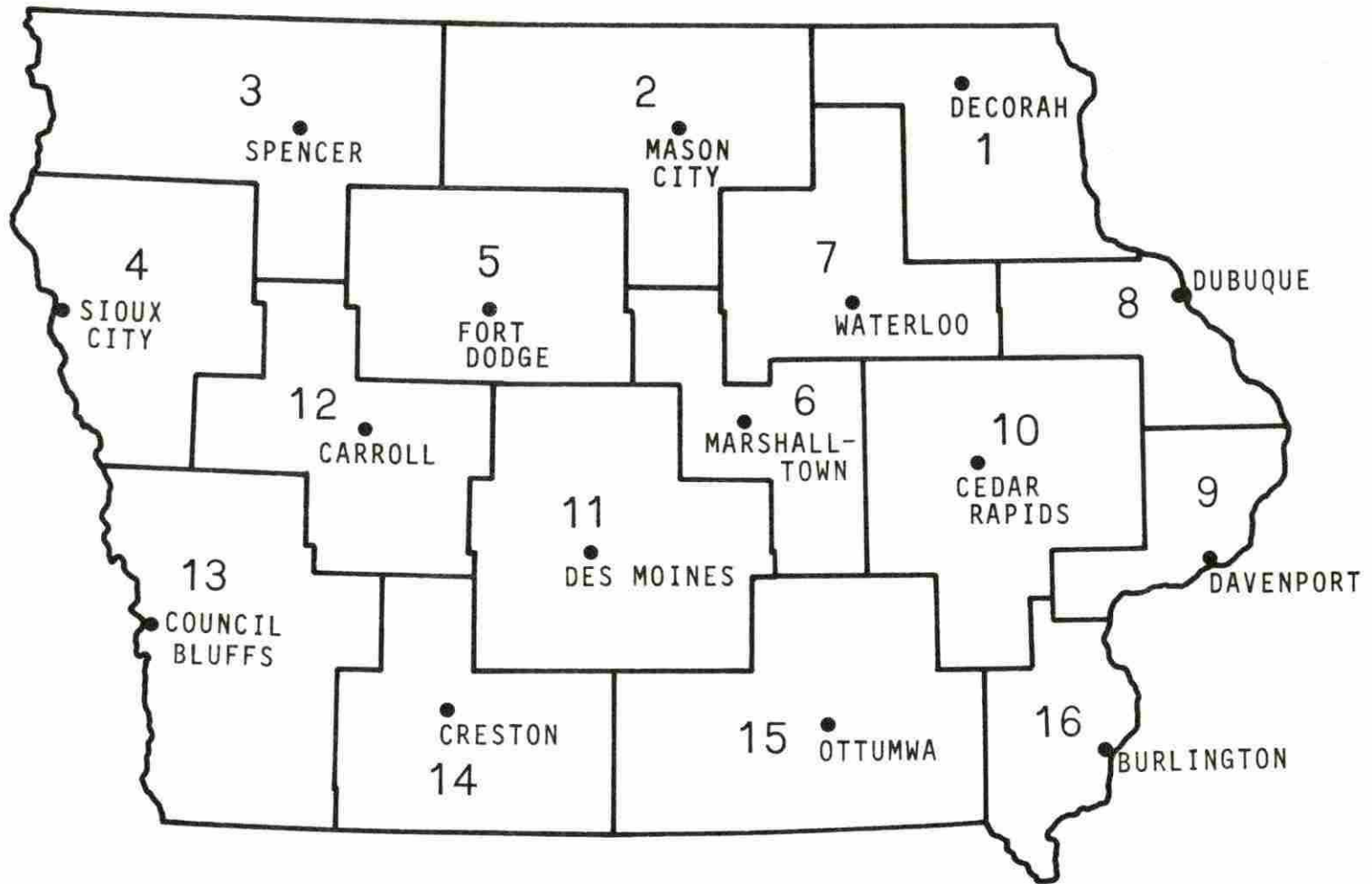


Figure 2. Central cities of Iowa's functional economic areas

population over 55,000. Although Spencer and Urbandale had populations over 10,000 in 1970, they are not included here since their 1960 populations were below 10,000; data for the industrial employment structure for those cities were not comparable between 1960 and 1970.

Market Orientation

Because of the important role played by export industries in the expansion of local job opportunities, the industrial employment data also were classified by the industry's market orientation. Three groupings were used: 1) industries primarily oriented to the export market (markets outside the local community), 2) industries primarily oriented to the local market (markets inside the community) and 3) industries oriented to a mixture of export and local markets.

The basis for this breakdown was a survey (Iowa Experiment Station Project 1873) that provided information on the market orientation of new and expanding business firms in Iowa's urban places of 1,600 to 8,499 population (No.1). Businesses selling the most of their output outside the community were defined as primarily export firms. Those firms where sales were about equally divided between outside and inside the community were defined as mixed firms. Finally, firms selling most of their output inside the community were termed primarily local firms. Based on the product orientation of the firms, each was placed in the census industrial classification to give a market orientation for census industrial classes. This is shown in Table 1.

Table 1. The market orientation of Iowa industries

Export	Market Orientation	
	Mixed	Local
Agriculture, Forestries and Fisheries	Mining	Retail trade
	Construction	Utility and sanitary service
Manufacturing	Transportation	Business and repair service
	Communication	Personal Service
	Wholesale trade	Entertainment and recreation
	Finance, insurance, real estate	Professional and related services
		Public administration

Limitations on the Data

Because comparable data were not available in 1960 and 1970, eleven urban places had to be excluded in computing employment changes. Two of these, Belmond and Toledo, were not used due to a decrease in their populations below 2,500 in 1970. The remaining nine urban places, Altoona, Camanche, Clive, Coralville, Grundy Center, Lamoni, LeClaire, Sioux Center, and Carter Lake, had populations above 2,500 in 1970, but had populations below 2,500 in 1960. Since data were not available for these urban places in 1960, they, too, were not included

in this study.

Definitions of employment in the 1970 Census Reports differed in some respects from those of the 1960 Census Reports. In 1970, the definition of employment and unemployment were revised to conform with the official government concepts instituted in 1967 (No.4, p. App. 15). One of the differences that would affect the results of this report was that in the 1970 census persons reported as being temporarily absent from a job during the reference week were classified as "with a job, but not at work" even if they were looking for work (No.4, p. App. 16). In 1960, such persons were classified as unemployed. A second major difference arose from the fact that employment status data in the 1970 Census Reports relate to persons 16 years old and over while in the 1960 Census Reports employment status was obtained on persons 14 years old and over. The third major difference between the two Census Reports related to an allocation procedure that was used in 1970 to distribute the class of workers that was classified under the 1960 heading "industry not reported". This procedure was accomplished by allocating a respondent to an industry based upon sex, age, farm or nonfarm residence, education, and weeks worked. If subcategories were included, the respondent was included in the "other" category for each major group (No. 4, p. App 24).

Table 2 shows the absolute and relative errors in industrial employment due to the differences in allocation procedures and

Table 2. Absolute and percentage errors in employment due to changes in employment classification

Industry	TOTAL EMPLOYMENT		
	1960 (14 years & over)	1970 (14 years & over)	1970 (16 years & over)
Agriculture, Fisheries, Forestry	210,503	141,548	142,473
Mining	2,382	2,516	2,569
Construction	52,979	54,342	57,173
Manufacturing			
Durable	97,957	122,816	127,337
Nondurable	91,703	90,144	90,484
Transportation, Communications, Public Utilities	64,375	61,154	63,324
Wholesale and Retail	198,587	227,339	234,447
Finance, Insurance, Real Estate	36,559	46,054	47,674
Business and Repair	20,723	24,198	25,235
Personal Services	48,889	47,032	46,964
Entertainment, Recreation	20,723	24,198	25,235
Professional and Related	129,655	196,789	204,506
Public Administration	32,810	38,669	39,258
Industry not reported	25,320	47,363	NA
TOTAL	1,019,002	1,106,815	1,088,340

Table 2. (Continued)

	Errors related to Employment Classification Changes	
	Absolute	Relative
Agriculture, Fisheries, Forestry	925	0.7
Mining	53	2.1
Construction	2,831	5.2
Manufacturing	4,861	2.3
Durable	4,521	3.7
Nondurable	340	0.4
Transportation, Communications, Public Utilities	2,170	3.5
Wholesale and Retail	7,108	3.1
Finance, Insurance, Real Estate	1,629	3.5
Business and Repair	1,037	4.3
Personal Services	-68	-0.1
Entertainment, Recreation	36	0.5
Professional and related	7,717	3.9
Public Administration	589	1.5
Industry not reported	NA	NA
TOTAL	-18,475	-1.7

exclusion of 14 and 15 year olds in 1970. The total error due to the exclusion of 14 and 15 year olds in the 1970 census was 1.7 percent or 18,475 employees. The largest absolute error (7,717) associated with both employment classification changes between the 1960 and 1970 Census Reports was in professional and related services. The smallest percentage errors occurred in the personal services (-0.1 percent), nondurable manufacturing (0.4 percent), entertainment and recreation (0.5 percent) and agriculture, forestry and fisheries (0.7 percent) industrial categories. The relative error in personal services (-0.1 percent) indicates that the exclusion of 14 and 15 year olds in 1970 was greater than the "industry not reported" employment "allocated" to this industry category. Only two errors (5.2 percent in construction and 4.3 percent in business and repair services) are significant in dealing with total employment. However, when describing the differential employment changes that occurred in Iowa counties and urban places, these errors are reduced for each class of counties or urban places.

One final note must be made before the data can be presented. In the county tables it was not possible to compare the components of educational services without some degree of error. This was due to a new separate 1970 category listed as "other education and kindred services". While employment in this category was allocated between private and governmental educational services in 1960, this was not done in 1970. However, the other educational and

kindred services component was small, permitting some comparisons to be made without great inaccuracy.

One final difference may arise between census data and employment data obtained elsewhere. The Census Report states:

because the 1970 census employment data were obtained from respondents in households, they differ from statistics based on reports from individual business establishments, farm enterprises, and certain government programs. Persons employed at more than one job are counted only once in the census and are classified according to the job at which they worked the greatest number of hours during the reference week. In statistics based on reports from business and farm establishments, persons who work for more than one establishment may be counted more than once. Moreover, other series, unlike those presented here, may exclude private household workers, unpaid family workers, and self-employed persons, but may include workers less than 16 years of age.

"An additional difference in the data arises from the fact that persons who had a job but were not at work are included with the employed in the statistics shown here whereas many of these persons are likely to be excluded from employment figures based on establishment payroll reports. Furthermore, the data in this report include persons on the basis of their place of residence regardless of where they work whereas establishments data report persons at their place or work regardless of where they live. This latter consideration is particularly significant when data are being compared for areas where workers commute between areas." (No. 4, p. App. 16)

OVERVIEW OF THE CHANGING INDUSTRIAL EMPLOYMENT
STRUCTURE OF IOWA

Attention is focused first on the overall changes in the industrial employment structure of the state during the 1960's. Two comparisons are made. First, 1970 employment is compared with 1960 employment to determine Iowa's growth and nongrowth industries (employment changes being the criterion of growth). Secondly, changes in Iowa's industrial employment structure are compared with those in the United States employment structure. Before considering the results of these comparisons, it is perhaps appropriate to look at Iowa's 1960 structure of employment.

Iowa's Structure of Employment in 1960

Table 3 shows the distribution of Iowa's total 1960 employment by industrial classes and market orientation. Employment in primary export and primary local industries was nearly the same (400,163 jobs to 413,629 jobs). Export industries accounted for 39.3 percent of all 1960 jobs while local industries accounted for 40.6 percent. Aside from 25,320 jobs (2.5 percent of 1960 total employment) accounted for in "industry not reported", the other 179,890 jobs (17.7 percent of 1960 total employment) were in mixed market oriented industries.

Viewing the export industries, it was seen that 1960 employment in agriculture, forestries and fisheries accounted for the highest proportion of 1960 Iowa employment (20.7 percent). The other export

Table 3 Percent distribution of 1960 total Iowa employment located within an industrial category

Industry	1960 Iowa Employment	Percent of 1960/category
<u>Primary export</u>		
Ag., Forest., Fish.	210,503	20.7
Manufacturing	189,660	18.6
TOTAL	400,163	39.3
<u>Mixed export & local</u>		
Mining	2,382	0.2
Construction	52,979	5.2
Transportation	39,449	3.9
Communication	12,430	1.2
Wholesale trade	36,091	3.5
Finance, Insurance, Real Estate	36,559	3.6
TOTAL	179,890	17.7
<u>Primary local</u>		
Retail trade	162,496	15.9
Util. & san. service	12,496	1.2
Bus. & rep. service	20,723	1.0
Personal service	48,889	4.8
Ent. & recreation	6,560	0.6
Prof. & related	129,655	12.7
Public admin.	32,810	3.2
TOTAL	413,629	40.6
Nonreporting industries	25,320	2.5
TOTAL	1,019,002	100.0

industry, manufacturing, had the second highest proportion of 1960 Iowa employment (18.6 percent). Only two other industries (both being local industries) accounted for over 10 percent of the 1960 Iowa employment: retail trade (15.9 percent) and professional and related services (12.7 percent). The lowest proportions (under 4 percent) had a tendency to be associated with mixed market oriented industries.

Changes in the Iowa Employment Structure, 1960-1970

Total employment in Iowa increased 6.8 percent during the 1960's (Table 4). Most of the increase (117,700 additional jobs) represented expansion of employment in local industries when the number of jobs increased 28.5 percent. Mixed industries also increased by 9.4 percent (16,827 additional jobs). However, employment fell in the total export category by 10.0 percent (a loss of 39,869 jobs) offsetting much of the increase experienced in mixed and local industries.

Primarily export industries

To see why employment decreased 10 percent in total export industries, one needed only to see how employment changed in agriculture, forestries and fisheries. Employment in this category had the largest relative and absolute decrease (-32.3 percent and 68,030 jobs) for any industry in the Census Reports. On the other hand, manufacturing employment increased across the state during the 1960's by 14.8 percent (28,161 additional jobs). While this increase exceeded the national

Table 4. Employment changes in the Iowa industrial employment structure between 1960 and 1970

Industry	EMPLOYMENT		Absolute Change	Percentage Change
	1960 (14 years & over)	1970 (16 years & over)		
<u>Primarily Export</u>				
Agriculture, Fisheries, Forestry	210,503	142,473	-68,030	-32.3
Manufacturing	189,660	217,821	28,161	14.8
Durable	97,957	127,337	29,380	30.0
Furniture, Lumber, Wood	7,303	7,064	-239	-3.3
Metals	20,371	27,970	7,599	37.3
Machinery, except elec.	34,801	44,815	10,014	28.8
Electrical machinery, equip.	19,997	22,528	2,531	12.7
Motor vehicles	2,264	6,455	4,191	185.1
Other durable	13,221	18,505	5,284	40.0
Nondurable	91,703	90,484	-1,207	-1.3
Food and kindred	55,624	44,661	-10,963	-19.7
Textile and mill	4,612	4,443	-157	-3.7
Printing, publishing, allied	5,037	7,554	2,517	50.0
Other nondurable	8,918	16,780	7,862	88.2
TOTAL EXPORT	400,163	360,294	-39,869	-10.0

Table 4. (Continued)

Industry	EMPLOYMENT			
	1960 (14 years & over)	1970 (16 years & over)	Absolute Change	Percentage Change
<u>Mixed Export & Local</u>				
Mining	2,382	2,569	187	7.9
Construction	52,979	57,173	4,194	7.9
Transportation	39,449	35,507	-3,942	-10.0
Communication	12,430	12,067	-363	-2.9
Wholesale trade	36,091	41,727	5,636	15.6
Finance, Insurance, Real Estate	36,559	47,674	11,115	30.4
TOTAL MIXED	179,890	196,717	16,827	9.4
<u>Primarily Local</u>				
Retail trade	162,496	192,720	30,224	18.6
Food & Dairy Stores	24,684	26,843	2,159	8.8
Eating & Drinking	30,891	39,263	8,372	27.1
Other retail	106,921	126,614	19,693	18.4
Sanitary services	12,496	15,750	3,254	26.0
Business and repair	20,723	25,235	4,512	21.8
Personal services	48,889	46,964	-1,925	-3.9
Entertainment, Recreation	6,560	6,896	336	5.1
Professional and related	129,655	204,506	74,851	57.7
Hospitals	27,201	39,226	12,025	44.2
Educational Services	63,431	101,178	37,747	59.5
Private	14,472	26,279	11,807	81.5
Government	48,959	69,958	20,999	42.9

Table 4. (Continued)

Industry	EMPLOYMENT		Absolute Change	Percentage Change
	1960 (14 years & over)	1970 (16 years & over)		
Welfare, Religious, Nonprofit	15,915	17,065	1,150	7.2
Other professional	23,108	47,037	23,929	103.6
Public Administration	32,810	39,258	6,448	19.7
TOTAL LOCAL	413,629	531,329	117,700	28.5
Non-reporting industries	25,320	-----	-----	-----
TOTAL	1,019,002	1,088,340	69,338	6.8

gain in manufacturing employment, it offset only about 41 percent of the loss in agriculture, forestry and fisheries.

Most of the manufacturing employment increase was associated with durable manufacturing. In fact, more jobs were created in durable manufacturing than in total manufacturing during the 1960's. The highest relative gains in durable manufacturing occurred in motor vehicles and other transportation equipment (185.1 percent), stone, clay, glass and concrete products and professional, photographic, and time keeping equipment, i.e., other durable goods (40.0 percent), metals (37.3 percent), and machinery, except electrical (28.8 percent). Machinery, except electrical, industries also accounted for the largest absolute employment increase (10,014 additional jobs) for a component of manufacturing. The only employment decrease experienced by a component of durable manufacturing was furniture, lumber and wood products (-3.3 percent or 239 jobs).

Nondurable manufacturing employment decreased 1.3 percent (1,207 jobs) in the state during the 1960-1970 period. The largest relative and absolute decrease in nondurable manufacturing employment occurred in food and kindred products (-19.7 percent or 10,963 jobs). This loss may appear somewhat surprising because of the relative abundance of agricultural products for processing in Iowa. But nationally, employment in food and kindred products manufacturing declined a substantial 23.7 percent so that Iowa's share increased over the decade. While employment also decreased in textile mills and

other fabricated products (-3.7 percent) and printing, publishing and allied industries (-2.7 percent), the absolute losses were less than 470 jobs. However, employment was on the rise in chemical and allied industries (50.0 percent or 2,517 additional jobs) and in tobacco, paper, petroleum refining, rubber, plastics and leather products, i.e., other nondurable manufacturing (88.2 percent or 7,862 additional jobs).

Mixed export and local industries

Most of the employment gain in total mixed industries was concentrated in finance, insurance and real estate. The addition of 11,115 jobs during the 1960's represented a 30.4 percent employment gain in finance, insurance and real estate. Additional employment opportunities were realized in wholesale trade (5,636 additional jobs), construction (4,194 additional jobs) and mining (187 additional jobs). The only employment losses occurring in the mixed industry took place in transportation (-10.0 percent or 3,947 jobs) and communications (-2.9 percent of 363 jobs).

Primarily local industries

Most of the new jobs created in the state during the 1960's were in industries oriented to local markets. In fact, more jobs were added in professional and related services during the 1960's than were added to total employment in the state. Most of the new jobs in professional and related services occurred in educational

services accounting for over 54 percent of the total employment increase experienced in the state. In relative terms, employment increased 81.5 percent in private educational services and 42.9 percent in government educational services. Other substantial relative employment gains in professional and related services occurred in legal, engineering and miscellaneous professional services (103.6 percent) and hospitals (44.2 percent).

The second highest absolute increase in employment for a major industrial category was in retail trade (30,224 additional jobs). Most of this increase was associated with employment gains in department stores, variety stores, mail order houses, vending machines, door to door sales, motor vehicle retailing, service stations and other retail trade (19,693 additional jobs). Employment was also on the rise in eating and drinking places and in food and dairy product stores.

Rounding out the other local oriented industries, substantial relative employment gains were seen in utility and sanitary services (26.0 percent), business and repair services (21.8 percent) and public administration (19.7 percent). An employment gain was also realized in entertainment and recreation services, but the 5.1 percent increase represented only 336 additional jobs. The only local industry that experienced an employment decrease was personal services where employment dropped by 3.9 percent or 1,925 jobs.

Table 5. Components of employment change in the United States between 1960 and 1970

Industry	1960 Employment	Percent Change
Agri., Forest., Fish.	4,349,884	-34.7
Mining	654,006	-3.6
Construction	3,815,937	19.8
Manufacturing	17,513,937	13.3
Durable	9,828,689	19.4
Furniture, Lumber, Mill	1,067,252	-8.3
Metal	2,516,631	6.3
Machinery, except elec.	1,568,035	27.0
Motor vehicle & other transportation	1,818,698	17.6
Other durable	1,370,661	49.7
Nondurable	7,684,418	5.4
Food & kindred	1,822,477	-23.7
Textile mill, & Fabr. products	2,113,199	3.3
Print., Publish., & allied industries	1,141,192	4.4
Chemical & allied prod.	864,542	14.2
Other nondurable	1,743,008	34.4
Transportation	2,739,913	3.2
Railways & railway exp.	941,214	-32.4
Trucking service & warehouse	911,454	18.8
Other transportation	887,245	25.0
Communications	819,649	31.0
Utility & sanitary service	898,585	42.9
Wholesale trade	2,212,984	41.6
Retail trade	9,579,651	27.8
Food, dairy prod. stores	1,689,688	13.2
Eating & drinking places	1,801,667	27.6
Other retail	6,088,296	31.8
Finance, Insurance, Real Estate	2,694,630	38.7
Business & repair service	2,694,630	38.7
Private households	1,916,964	-41.2
Other personal services	1,941,530	24.2

Table 5. (Continued)

Industry	1960 Employment	Percent Change
Entertainment & recreation	502,879	25.5
Hospitals	1,683,892	59.7
Educational services	3,393,933	71.3
Private	856,545	74.1
Government	2,537,388	70.4
Welfare, Religious & Nonprofit organizations	854,528	36.1
Other professional	1,645,493	133.6
Public administration	3,202,890	31.2
Other industry	4,341,466	
TOTAL EMPLOYMENT	66,372,649	15.3

Iowa Employment Change in Relation to
U.S. Employment Change

In comparing Iowa and national employment changes, the components of growth approach (No. 6) was used since it is one of the simplest analytical approaches available to study employment growth patterns. This technique rests on the assumption that it is necessary to know two facts concerning the industrial growth rate of an area: first, does the state have a rapid or slow growth industrial mix or distribution of industries; and second, does the state have an increasing or decreasing regional share of this industry mix. An industry can be regarded as having a rapid or slow rate of growth if it exceeded or fell short of the growth rate of all U.S. industries combined over the same time period. As for the second point, the rate of employment growth in Iowa within a particular industry was rapid if it exceeded or slow if it fell short of the growth rate of the particular industry in the U.S.

Industrial mix and regional share factors work together simultaneously. Therefore, they may re-enforce each other or they may offset each other. In some of Iowa's industries both factors were positive; in others, both were negative. Other industries, however, had one factor positive and the other factor negative. This approach is largely descriptive rather than analytical. It provides no information about the underlying factors that determine the changing pattern of industrial employment or the differential rates of industrial growth.

Table 6. Components of change in the industrial employment structure of Iowa, 1960-1970

Industry	1960	Employment In	
		1970	Percent Change
Agri., Forest., Fish.	210,503	142,473	-32.3
Mining	2,382	2,569	7.9
Construction	52,979	57,173	7.9
Manufacturing	189,660	217,821	14.8
Durable	97,957	127,337	30.0
Furn., Lumber, Mill	7,303	7,064	-3.3
Metal	20,371	27,970	37.3
Mach., except elec.	34,801	44,815	28.8
Elec. Mach., equip. supply	19,997	22,528	12.7
Motor Vehicle & Other Trans.	2,264	6,455	185.1
Other Durable	13,221	18,505	40.0
Nondurable	91,703	90,484	-1.3
Food & Kindred	55,624	44,661	-19.7
Textile Mill & Fabric	4,612	4,443	-3.7
Printing, Publishing & Allied	17,512	17,046	-2.7
Chemical & Allied	5,037	7,554	50.0
Other Nondurable	8,918	16,780	88.2
Transportation	39,449	35,507	-10.0
Railway & Railway Express	16,452	11,303	-31.3
Trucking Service & Warehouse	17,476	18,003	3.0
Other Transportation	5,521	6,201	12.3
Communications	12,430	12,067	-2.9
Utility & Sanitary Service	12,496	15,750	18.6
Wholesale Trade	36,091	41,727	15.6
Retail Trade	162,496	192,720	18.6
Food & Dairy Pro. Store	24,684	26,843	8.8
Eating & Drinking	30,891	39,263	27.1
Other Retail	106,921	126,614	18.4
Finance, Insurance, Real Estate	36,559	47,674	30.4

Table 6. (Continued)

Industry	Changes Related to:			Total Change
	Nat'l. Growth	Indus. Mix	State Share	
Agri., Forest., Fish.	32,207	-105,252	5,052	
Mining	384	-450	274	188
Construction	8,106	2,384	6,304	4,196
Manufacturing	29,018	-3,035	2,086	28,080
Durable	14,987	4,016	10,383	29,386
Furn., Lumber, Mill	1,117	-1,724	365	-242
Metal	3,117	-1,833	6,315	7,599
Mach.except elec.	5,325	4,072	626	10,023
Elec. mach., equipment supply	3,060	2,560	-3,080	2,540
Motor vehicle & other trans.	346	52	3,792	4,190
Other durable	2,023	4,548	-1,282	5,289
Nondurable	14,031	-9,079	-6,144	-1,192
Food & Kindred	8,510	-21,693	2,225	-10,958
Textile Mill & Fabric	706	-553	-323	-170
Printing, Publishing & allied	2,679	-1,909	-1,243	-473
Chemical & Allied	771	-55	1,803	2,519
Other Nondurable	1,364	1,703	4,798	7,865
Transportation	6,036	-4,773	-5,207	-3,944
Railway & Railway Express	2,517	-7,848	181	-5,150
Trucking Service & Warehouse	2,674	612	-2,761	525
Other Transportation	845	536	-701	680
Communications	1,902	1,952	-4,214	-360
Utility & Sanitary Service	1,912	3,449	-2,112	3,249
Wholesale Trade	5,522	9,492	-9,384	5,630
Retail Trade	24,862	20,312	-14,950	30,224
Food & Dairy Pro. Store	3,777	-518	-1,086	2,173
Eating & Drinking	4,726	3,800	-154	8,372
Other Retail	16,359	17,642	-14,327	19,674
Finance, Insurance, Real Estate	5,594	8,555	-3,034	11,115

Table 6. (Continued)

Industry	1960	Employment In	
		1970	Percent Change
Business Repair	20,723	25,235	21.8
Private Households	23,540	16,589	-29.5
Other Personal	25,349	30,375	19.8
Entertainment & Recreation	6,560	6,896	5.1
Hospitals	27,201	39,226	44.2
Educational Services	63,431	101,178	59.5
Private	14,472	26,279	81.5
Government	48,959	69,958	42.9
Welfare, Religious & Nonprofit.	15,915	17,065	7.2
Other Professional	23,108	47,037	103.6
Public Administration	32,810	39,258	19.7
Other Industry	25,320		
Total Employment	1,019,002	1,088,340	6.8

Table 6. (Continued)

Industry	Changes Related to:			Total Change
	Nat'l. Growth	Indus. Mix	State Share	
Business Repair	5,594	8,555	-3,034	11,115
Private Households	3,602	-13,300	2,754	-6,944
Other Personal	3,878	2,256	-1,115	5,019
Entertainment & Recreation	1,004	669	-1,338	335
Hospitals	4,162	12,077	-4,216	12,023
Educational Services	9,705	35,521	-7,485	37,471
Private	2,214	8,510	1,071	11,795
Government	7,491	26,976	-13,464	21,003
Welfare, Religious & Nonprofit.	2,435	3,310	-4,599	1,146
Other Professional	3,536	27,337	-6,932	23,941
Public Administration	5,020	5,217	-3,773	6,464
Other Industry	--	--	--	--
Total Employment	152,036	11,924	-69,302	94,658

Components of employment change

In Table 6, two types of information are given. First, actual employment in 1960 and 1970 and second, components of employment change in the 1960-1970 period. The second item consists of three parts for any single industry or for the summation across all industries in Iowa over the 1960-1970 period. The first of these parts is the change that would have occurred if Iowa industries had grown at the national rate (15.3 percent, Table 5); the second is the employment change related to industry mix; and the third is the change related to any alteration in the state share. The three parts sum to the actual change, within rounding error.

The basic computations are illustrated here in terms of the data for the manufacturing industry of Iowa. Only the information in Table 7 is required to compute the components of change.

Table 7. Data required to compute components of Iowa manufacturing change

	Employment 1960	Percent Change 1960-1970
United States, total employment	66,372,649	15.3
United States, manufacturing employment	17,513,107	13.3
Iowa, manufacturing employment	189,660	14.8

In Table 6, manufacturing shows 29,018 employees. This number represents the employment increase from 1960 to 1970 that would have occurred in Iowa in manufacturing if the industry in Iowa had increased at the national rate for all industries combined in the same period.

It was computed by multiplying manufacturing employment in Iowa in 1960 (189,660) by the national all industry growth rate (.153).

The figure in the column headed "Industrial Mix" represents an adjustment for the fact that, in the decade of the 1960's manufacturing was a slow growth industry; that is, its national employment expansion rate was less than that of all national industries combined. To calculate this adjustment, subtract the national all-industry rate from the national manufacturing rate and multiply the result by the 1960 manufacturing employment base in Iowa. Thus, multiply 189,660 by $(0.133 - 0.153) = -0.02$. The resulting adjustment is -3,793 employees.

The final element of change, shown in the column labeled "State Share", reflected a further adjustment for the fact that manufacturing employment expanded more rapidly in Iowa than in the nation as a whole. From Iowa's manufacturing rate subtract the national manufacturing rate and multiply the result by the Iowa manufacturing employment base in 1960. Thus, multiply 189,660 by $(0.148 - 0.133) = 0.015$. The resulting adjustment was 2,855 employees.

In summary, the employment change in manufacturing in Iowa would have been 29,018 had it grown at the national rate for all industries combined. But after making adjustments for the fact that manufacturing was a relatively slow growth industry of the nation and the fact that Iowa did slightly better than the average state in this industry, it was found that the actual employment change (within rounding error) in Iowa manufacturing was 28,080.

Although national employment increased substantially over the 1960 decade, not all of the nation's industries were in the rapid-growth category. Some experienced little or no growth. The employment change entries for these industries which lagged behind the national growth rate are preceded by minus signs in the column headed "Industrial Mix". Likewise, the minus signs in the "State Share" column indicated that employment in these particular industries grew less rapidly in Iowa than in the nation as a whole.

The entries in the "Total Employment" column in Table 6, gave a representation of the employment growth situation that occurred during the 1960's. The entries here are the simple algebraic sums of the corresponding entries for the separate industries. These entries are: (1) change related to national growth -- 152,036, (2) change related to industrial mix -- 11,924, (3) change related to state share -- -69,302, and (4) total change (sum of above) -- 94,658.

These figures show that Iowa fell short of meeting the national employment growth standard by 57,378 (changes related industrial mix plus state share). From the detail in Table 6, it was seen that twenty-two industries made negative state share contributions while the share of the other twelve industries was positive.

Due to the allocation process of "nonreporting industry" employment in 1970 and not in 1960, the change in total employment as recorded in Tables 5 and 6 is not the absolute change between 1960 and 1970 total employment. However, to make the two figures compatible, subtract the

1960 employment in "nonreporting industry" from the figure obtained in the tables for total change. This will give the "real" total absolute change between 1960 and 1970 total employment, within rounding error.

Growth industries of Iowa

Two different, but related, approaches were used in identifying growth industries of Iowa. First, employment changes in Iowa's industries were compared to total employment changes in these categories across the nation. The rate of growth of Iowa within a particular industry was characterized as rapid if it exceeded and slow if it fell short of the growth rate of that industry nationally. Second, employment changes in Iowa's industries were compared with the 6.8 percent increase in Iowa's total industrial employment. Industries experiencing an increase in employment that exceeded the state total employment increase were defined as growth industries in the state context.

In the national context, Iowa had only seven growth industries: mining, metals, machinery, except electrical, motor vehicles and other transportation, chemical and allied products, other nondurable manufacturing and private educational services. In the state context, several Iowa industries could be defined as growth industries. Employment increases in these growth industries ranged from 7.2 percent in welfare, religious and nonprofit organizations to 103.6 percent in other professional services and 185.1 percent in motor vehicles and other transportation equipment. The only two Iowa industries

that experienced increased employment but less than the all-Iowa industry rate (6.8 percent) were trucking services and warehousing (3.0 percent) and entertainment recreation services (5.1 percent). All other Iowa industries are defined as nongrowth industries in the state context.

VARIABILITY IN COUNTY EMPLOYMENT CHANGES
ASSOCIATED WITH DEGREE OF URBANIZATION

Given an indication of the differential changes that occurred in the Iowa industrial employment structure during the 1960's, attention can be focused on the variability of these changes that were associated with the degree of county urbanization. Of interest was how employment changed with respect to the degree of ruralization or urbanization of Iowa counties.

Change in overall employment was directly associated with the degree of urbanization. The least urbanized counties (population density 14.0 to 23.9, Table 8) experienced a substantial loss in total employment (8.0 percent or 2,151 jobs) while counties with population density 24.0 to 36.9 experienced a slight loss of total employment (1.7 percent or 5,082 jobs). The most urbanized counties of the state realized gains in total employment during the 1960's. Counties with population density 37.0 to 64.9 experienced total employment gains of 5.1 percent or 6,758 additional jobs. The most urbanized counties (population density 65.0 to 461.0) realized the largest total employment gains during the 1960's (14.0 percent or 71,403 additional jobs).

Primarily Export Industries

All county urbanization classes experienced a loss of export employment. The more ruralized a county was, the greater was the chance it experienced a substantial percentage loss in total export oriented industrial

Table 8. Components of change in county employment between 1960-1970 by market orientation, industry and number of people per square mile

Market Orientation & Industry	(People per square mile)					
	(1)		(2)		(3)	
	14.0 to 23.9 n = 13		24.0 to 36.9 n = 53		37.0 to 64.9 n = 16	
	<u>Employment Change</u>		<u>Employment Change</u>		<u>Employment Change</u>	
	Absolute	Percent	Absolute	Percent	Absolute	Percent
<u>Primarily Export</u>						
Agri., Forest., Fish.	-6,046	-30.5	-37,247	-32.3	-11,699	-33.8
Manufacturing	-1,121	36.7	12,081	39.4	4,477	22.2
Total Export	-4,925	-21.5	-25,166	-17.1	-7,222	-13.2
<u>Mixed Export & Local</u>						
Mining	109	45.0	-23	-2.8	-174	-30.7
Construction	76	3.1	547	3.3	349	5.0
Transportation	-98	-8.0	-859	-9.3	-404	-8.3
Communications	-160	-36.0	-732	-23.9	-188	-11.9
Wholesale	-227	-19.9	226	2.5	158	3.3
Finance, Insur., R. Est.	257	25.6	2,060	30.5	1,300	33.8
Total Mixed	-43	-0.7	1,219	2.7	1,041	4.6
<u>Primarily Local</u>						
Retail Trade	85	1.2	6,158	12.7	5,113	24.2
Util., & Sanit. Service	211	51.5	982	28.8	103	5.6
Business & Repair	-104	-12.3	149	2.9	195	7.6
Personal Service	-227	-11.5	-853	-6.3	-295	-4.4
Entertainment & Recreation	-106	-40.0	-127	-8.0	-21	-2.6
Prof. & Rec.	2,050	39.5	17,732	55.1	9,210	53.1
Public Administration	113	7.6	638	7.5	1,134	30.5
Total Local	2,022	11.7	24,679	21.9	15,439	28.5
<u>Nonreporting Industries</u>						
	-795		-5,814		-2,500	
Total Change	-2,151	-8.0	-5,082	-1.7	6,758	5.1

Table 8. (Continued)

	(People per square mile)			
	(4)		(5)	
	65.0 to 461.0		Total	
	n = 17		n = 99	
	<u>Employment Change</u>		<u>Employment Change</u>	
	Absolute	Percent	Absolute	Percent
<u>Primarily Export</u>				
Agri., Forest., Fish.	-13,038	-32.1	-68,030	-32.3
Manufacturing	10,482	7.7	28,161	14.8
Total Export	-2,556	-1.4	-39,689	-10.0
<u>Mixed Export & Local</u>				
Mining	275	36.3	187	7.8
Construction	3,222	11.9	4,194	7.9
Transportation	-2,581	-10.7	-3,942	-10.0
Communications	717	9.6	-363	-2.9
Wholesale	5,479	25.7	5,636	15.6
Finance, Ins., Real Estate	7,498	30.0	11,115	30.4
Total Mixed	14,610	13.8	16,827	9.4
<u>Primarily Local</u>				
Retail Trade	18,868	22.0	30,224	18.6
Util., & Sanit. Service	1,958	28.7	3,254	26.0
Business & Repair	4,272	35.4	4,512	21.8
Personal Service	-550	-2.1	-1,925	-3.9
Entertainment & Recreation	590	15.1	336	5.1
Prof. & Rec.	45,859	61.2	74,851	57.7
Public Administration	4,563	23.9	6,448	19.7
Total Local	75,560	33.0	117,700	28.5
<u>Non-reporting Industries</u>				
	-16,211		-25,320	
Total Change	71,403	14.0	69,338	6.8

employment. While the most ruralized counties (population density 14.0 to 23.9) realized a loss in total export employment of 21.5 percent, the most urbanized counties (population density 65.0 to 461.0) experienced an employment loss in the total export market of only 1.4 percent.

Expansion of manufacturing employment in Iowa did not create enough new jobs in any urbanization class to offset the loss of jobs in agriculture, forestries and fisheries. The total loss of jobs in the export category in the state was 39,869 jobs. However, the most urbanized counties had a loss of only 150 export jobs on the average in the 1960's while the less urbanized counties of classes 1,2, and 3 had an average loss of 379 jobs, 475 jobs and 451 jobs respectively.

Agriculture, forestries and fisheries represented an interesting category. As seen in Table 8, this category had a state wide decrease in employment of 32.3 percent of 68,030 jobs. It might be expected that the largest decline would be in the most rural counties, but this was not the case, neither in percentage nor absolute terms.

The least urbanized counties of the state had a 30.5 percent decrease in agriculture, forestries and fisheries employment. This averaged 465 jobs per county during the 1960-1970 period. In the most urbanized areas of the state, the decline was 32.1 percent with the counties in this group experiencing an average drop of 767 jobs per county in agriculture, forestries and fisheries. Counties with population density 24.0 to 36.9 lost an average 703 jobs per county while counties with population density 37.0 to 64.9 had an average decrease of 731 jobs in this category during the 1960's.

During the 1960's, manufacturing became the major export industry of the state. Iowa manufacturing employment increased 14.8 percent or 28,161 jobs. The more rural counties, counties in urbanization Classes 1 and 2, had a higher percentage gain in manufacturing employment than did the more urbanized counties of Classes 3 and 4.

In absolute terms, however, the most urbanized counties had the highest average increase in manufacturing employment. During the 1960-1970 period, the most urbanized counties had an average gain of 617 jobs per county while the least urbanized counties had an average increase of only 86 jobs per county.

Mixed Industries

A high degree of association existed between the degree of urbanization and percentage change in total mixed employment. The most ruralized counties had the only loss of employment in the total mixed industry category (0.7 percent). With increased urbanization, the percentage employment gain in total mixed industries rose. Counties with population density 24.0 to 36.9 had a mixed employment increase of 2.7 percent and Class 3 counties had a mixed employment increase of 4.6 percent. The most urbanized counties had a mixed employment increase of 13.8 percent in the 1960-1970 period.

The construction industry represented the largest mixed industry employer. As county population density increased, the relative gain in construction employment increased. The most urbanized counties had the only relative increase (11.9 percent) that was higher than the overall

state increase (7.9 percent) for this category. The other urbanization classes had an employment increase in the construction industry also, but averaging less than 5 percent per class.

Of all major industry categories, the transportation industry had the second largest loss of jobs (-10.0 percent of 3,942 jobs) in the state. This loss was reflected in all urbanization classes. The percentage loss ranged from 8.0 percent in the most ruralized counties to 10.7 percent in the most urbanized counties. There was a tendency for the more urbanized counties to have a higher relative loss of transportation jobs than the less urbanized counties.

As Table 9 shows, the least urbanized counties had increased employment in trucking services and warehousing while experiencing decreased employment in all other components of transportation. The most urbanized counties had increased employment in trucking services and warehousing and other transportation and a major loss of employment in the railway and railway express category. Urbanization classes 2 and 3 experienced a decrease in employment in both railways and railway express and trucking services and warehousing but an increase in employment in other transportation. The only association between the degree of urbanization and the percentage change in employment was in the railway and railway express industry category. No consistent relationship was found for other components of the transportation industry.

The association between the degree of urbanization and percentage change in communication employment was very high during the 1960's. The most ruralized counties had an overall decrease of 36.0 percent in

Table 9. Components of change in county transportation employment by population density

	(People per square mile)					
	(1) 14.0 to 23.9 n = 13		(2) 24.0 to 36.9 n = 53		(3) 37.0 to 64.9 n = 16	
	<u>Employment Change</u>		<u>Employment Change</u>		<u>Employment Change</u>	
	Absolute	Percent	Absolute	Percent	Absolute	Percent
Railways & Railway Express	-169	-49.4	-1,040	-33.9	-653	-31.9
Trucking Services & Warehousing	143	21.2	-34	-0.7	-50	-2.2
Other Transportation	-72	-34.4	215	18.8	299	59.1
Transportation	-98	-8.0	-859	-9.3	-404	-8.3

Table 9. (Continued)

	(People per square mile)			
	(4) 65.0 to 461.0 n = 17		(5) Total n = 99	
	<u>Employment Change</u>		<u>Employment Change</u>	
	Absolute	Percent	Absolute	Percent
Railways & Railway Express	-3,285	-29.9	-5,147	-31.3
Trucking Services & Warehousing	468	4.9	527	3.0
Other Transportation	238	6.5	680	12.3
Transportation	-2,581	-10.7	-3,940	-10.0

communication employment. The more urbanized the area, the smaller the relative loss of communication jobs. On the other hand, the most urbanized counties had an employment increase of 9.6 percent in this industry category.

Wholesale trade employment increased 15.6 percent in the state. As with the communication industry, the highest percentage employment gain (25.7 percent) in wholesale trade was in counties with population density of 65.0 to 461.0. There was a direct association between the degree of urbanization and employment change in wholesale trade. Only the most ruralized counties showed an employment loss in this industry. This loss (19.9 percent) represented an average loss of 18 jobs per county.

The last industry with a mixed market orientation to be considered is finance, insurance and real estate. This category showed one of the largest absolute increases (11,115) in employment for a major industrial category in the state during the 1960's. However, the distribution of these jobs was not evenly divided among the urbanization classes. The least urbanized counties had an employment increase of 25.6 percent, but this averages out to an increase of only 20 new jobs per county in the 1960's. The most urbanized counties, however, had an increase of 30.0 percent, or an average of 441 jobs per county. Urbanization Classes 2 and 3 had employment gains in this industry averaging 39 jobs and 81 jobs per county respectively.

Table 10. Components of change in county retail trade employment by population density

	(People per square mile)					
	(1) 14.0 to 23.9 n = 13		(2) 24.0 to 36.9 n = 53		(3) 37.0 to 64.9 n = 16	
	<u>Employment Change</u>		<u>Employment Change</u>		<u>Employment Change</u>	
	Absolute	Percent	Absolute	Percent	Absolute	Percent
Food & Dairy Product Stores	-142	-12.1	-177	-2.3	530	16.4
Eating & Drinking Places	211	17.3	1,326	13.4	1,250	32.5
Other Retail	16	0.3	5,009	16.1	3,333	23.7
Retail Trade	85	1.2	6,158	12.7	5,113	24.2

Table 10. (Continued)

	(People per square mile)			
	(4) 65.0 to 461.0 n = 17		(5) Total n = 99	
	<u>Employment Change</u>		<u>Employment Change</u>	
	Absolute	Percent	Absolute	Percent
Food & Dairy Product Stores	1,948	15.4	2,159	8.7
Eating & Drinking Places	5,585	35.1	8,372	27.1
Other Retail	11,335	19.8	19,693	18.4
Retail Trade	18,868	22.0	30,224	18.6

Primarily Local Industries

With the exception of personal services, all of Iowa's primarily local industries had employment increases during the 1960's. However, not all urbanization classes shared equally in the gains. The most urbanized counties experienced more rapid increases in all subcategories of local market oriented industries except utility and sanitary services. As employment increased 28.5 percent in the total local industry category across the state, the most urbanized counties had the highest relative gains (33.0 percent). The more urbanized a county, the higher was the relative employment gain in the total local industry category.

All urbanization classes experienced increased employment in the retail trade area. But there was a tendency for the more urbanized counties to have a higher percentage gain in employment than the less urbanized counties. While employment increased 24.2 percent and 22.0 percent in the more urbanized counties of Classes 3 and 4, the counties of Classes 1 and 2 had increases of only 1.2 percent and 12.7 percent respectively.

Table 10 shows the components of employment change in the retail trade area with respect to the degree of urbanization. The most ruralized counties of Iowa had a major loss of jobs in food and dairy product stores while experiencing employment increases in eating and drinking places and other retail trade. As population density increased, employment in food and dairy product stores increased. Eating and drinking places along with other retail trade showed increased employment as population density increased. However, no direct association existed

between population density and employment change in any component of retail trade.

Utility and sanitary services had the third largest percentage increase in employment among all major industries. The least urbanized counties had the largest percentage gain (51.5 percent). The slightly more urbanized counties of Class 2 (population density 37.0 to 64.9) had an employment gain of 28.8 percent. The more urbanized counties of Class 3 had the smallest employment increase (5.6 percent). The most urbanized counties of the state (class 4), however, had an employment gain of 28.7 percent in utility and sanitary services.

Although employment increased 21.8 percent in business and repair service industries in the state, no large increase was shown outside the heavily urbanized counties. In fact, the least urbanized counties had an actual decrease in employment in this category (-12.3 percent). Urbanization Class 2 counties had a small employment increase (2.9 percent) while the counties of urbanization Class 3 had an employment gain in business and repair service industries of 7.6 percent.

Personal services was one of four major industrial categories that experienced a loss in employment for the state in the 1960's. There did exist a high degree of association between the degree of urbanization and total relative employment change in personal services. All urbanization classes experienced an employment loss with the most urbanized counties experiencing the smallest relative loss (2.1 percent). The least urbanized counties had the largest relative decrease (11.5 percent) but the average county lost only 17 jobs during the 1960-1970 period.

Table 11. Components of change in county personal service employment by population density

	(People per square mile)					
	(1)		(2)		(3)	
	14.0 to 23.9 n = 13		24.0 to 36.9 n = 53		37.0 to 64.9 n = 16	
	<u>Employment Change</u>		<u>Employment Change</u>		<u>Employment Change</u>	
	Absolute	Percent	Absolute	Percent	Absolute	Percent
Private Household	-392	-33.6	-1,831	-24.7	-987	-28.3
Other Personal	165	20.3	978	16.1	692	21.4
Personal Service	-227	-11.5	-853	-6.3	-295	-4.4

Table 11. (Continued)

	(People per square mile)			
	(4) 65.0 to 461.0 n = 17		(5) Total n = 99	
	<u>Employment Change</u>		<u>Employment Change</u>	
	Absolute	Percent	Absolute	Percent
Private Household	-3,741	-32.6	-6,591	-29.5
Other Personal	3,191	20.9	5,026	19.8
Personal Service	-550	-2.1	-1,925	-3.9

Table 12. Components of change in county professional and related services employment by population density

	(1)		(2)		(3)	
	14.0 to 23.9		24.0 to 36.9		37.0 to 64.9	
	n = 13		n = 53		n = 16	
	<u>Employment Change</u>		<u>Employment Change</u>		<u>Employment Change</u>	
	Absolute	Percent	Absolute	Percent	Absolute	Percent
Hospitals	509	64.5	3,141	68.8	1,391	34.1
Educational Service	525	17.0	8,205	45.9	4,833	60.4
Private & Public Industries						
Private	424	67.5	3,096	83.1	1,758	79.2
Government	-44	-1.8	3,624	25.6	2,505	43.3
Welfare, Religious, &						
Nonprofit Organizations	113	22.8	-105	-2.5	-174	-7.8
Other Professions	903	111.3	6,491	116.7	3,160	103.2
Professional & Related						
Service	2,050	39.5	17,732	55.1	9,210	53.1

Table 12. (Continued)

	(4) 65.0 to 461.0 n = 17		(5) Total n = 99	
	<u>Employment Change</u> Absolute	<u>Employment Change</u> Percent	<u>Employment Change</u> Absolute	<u>Employment Change</u> Percent
Hospitals	6,984	39.3	12,025	44.2
Educational Service	24,184	70.2	37,747	59.5
Private & Public Industries				
Private	6,529	82.6	11,807	81.6
Government	14,914	56.2	20,999	42.9
Welfare, Religious, &				
Nonprofit Organizations	1,316	14.5	1,150	7.2
Other Professions	13,375	97.8	23,929	103.6
Professional & Related				
Service	45,859	61.2	74,851	57.7

It can be seen in Table 11 that declining employment in private households accounted for the loss in personal service employment. Other personal services employment (hotels, garment services, beauty, barber, dressmaking and shoe repair shops) increased during the 1960's. However, no association existed between the degrees of urbanization and employment change in the components of personal services.

The industrial category that had both the largest percentage and absolute increases in employment for the state was professional and related services. While the tendency was for the more urbanized counties to have the largest relative increases in employment in professional and related services, the increases for the less urbanized counties also were quite large. The most urbanized counties had a percentage employment increase in this category of 61.2 percent. The most rural counties had the lowest percentage increase (+39.5 percent), but the increase was the second highest experienced by these counties in any industrial category. Also, all urbanization classes had their largest absolute gain in employment in this category.

Table 12 shows the employment change that took place within the components of professional and related services. All urbanization classes realized substantial percentage employment gains in educational services. However, the least urbanized counties did not have as large a percentage increase as the more urbanized counties. Relative employment gains in total educational services increased with the degree of urbanization. Such was also the case in the governmental sector of

educational services. In fact, the least urbanized counties experienced the only decrease in employment for a component of educational services (-1.8 percent in governmental educational services).

The single largest contributor to increased employment in professional and related services (Table 12) was legal, engineering and miscellaneous professional services. The smallest relative increase in this category occurred in the most urbanized counties where employment rose by "only" 97.8 percent. There was some variability in the relative employment gain in other professional services when the relative gain was highest in counties with population density 24.0 to 36.9 (116.7 percent). Hospital employment increased 64.5 percent in the least urbanized counties during the 1960's while the more urbanized counties of Classes 2,3 and 4 had increased employment of 68.6 percent, 34.2 percent and 39.3 percent respectively. In absolute terms, the most urbanized counties accounted for most of the increased hospital employment in the state during the 1960's.

The last major industrial category with local market orientation to be considered is public administration. Again, all urbanization classes experienced increased public administration employment. However, counties in urbanization Class 3 had the highest percentage increase (30.5 percent). The most urbanized counties experienced the next highest increase (23.9 percent) while the less urbanized counties of Classes 1 and 2 had relatively small employment gains (7.6 percent and 7.5 percent respectively) in public administration.

Components of Manufacturing

It has been shown that the rural counties had a higher percentage increase in manufacturing employment than the more urbanized counties. With manufacturing being a major generator of new jobs in Iowa during the 1960's, a closer look at the components of manufacturing employment may be appropriate.

Durable manufacturing

The most rural counties experienced the largest percentage increase in durable manufacturing employment (76.0 percent) during the 1960's. There existed a direct association between the density of a county and the relative employment increase in durable manufacturing. The largest percentage gain was in the least urbanized counties and the smallest relative increase (19.7 percent) was in the most urbanized counties (population density 65.0 to 461.0).

Table 13 shows that furniture, lumber and mill product industries had the only loss of employment in durable manufacturing for the state. This loss occurred mainly in the most urbanized counties. Counties with population density of 37.0 to 64.9 (Class 3) had the largest employment increase in both absolute and percentage terms (354 additional jobs or a 61.5 percent increase). Counties with population density of 24.0 to 36.9 (Class 2) also experienced an employment gain (22.3 percent) while counties with population density 14.0 to 23.9, i.e. the most rural counties, had a decline in employment (5.2 percent or 7 jobs) in furniture, lumber and mill product industries.

Table 13. Components of change in county manufacturing employment by population density

	(1)		(2)		(3)	
	14.0 to 23.9		24.0 to 36.9		65.0 to 461.0	
	n = 13		n = 53		n = 16	
	<u>Employment Change</u>		<u>Employment Change</u>		<u>Employment Change</u>	
	Absolute	Percent	Absolute	Percent	Absolute	Percent
Manufacturing	1,121	36.7	12,081	39.4	4,477	22.2
Durable	819	76.0	11,018	75.2	3,604	31.6
Furn. Lumber	-7	-5.2	250	22.3	354	61.5
Metal	243	101.2	2,661	173.0	361	22.1
Mach. Ex. Elec.	333	97.4	2,460	43.6	1,674	42.4
Elec. Mach., Equip.	5	3.3	1,285	33.9	-590	-14.4
Motor Vehicles	190	612.9	2,576	610.4	467	144.6
Other Durable	55	31.1	1,786	82.8	1,338	161.0
Nondurable	302	15.3	1,063	6.6	873	10.0
Food & Kindred	-265	-26.2	-280	-2.8	-632	-12.2
Textile Mill & Fabric	273	102.6	56	5.2	-26	-4.6
Printing, Publishing	9	2.1	-439	-12.1	256	15.6
Chemical & Allied	25	24.8	385	68.8	16	2.6
Other Nondurable	260	161.5	1,353	148.7	1,259	167.6

Table 13. (Continued)

	(4)		(5)	
	65.0 to 461.0		n = 99	
	n = 17		n = 99	
	<u>Employment Change</u>		<u>Employment Change</u>	
	Absolute	Percent	Absolute	Percent
Manufacturing	10,482	7.7	28,161	14.8
Durable	13,939	19.7	29,380	30.0
Furn. Lumber	-836	-15.3	-239	-3.3
Metal	4,334	25.6	7,599	37.3
Mach. Ex. Elec.	5,547	22.3	10,014	28.8
Elec. Mach., Equip.	1,831	15.3	2,531	12.7
Motor Vehicles	958	64.4	4,191	185.1
Other Durable	2,105	20.9	5,284	40.0
Nondurable	-3,457	-5.3	-1,207	-1.3
Food & Kindred	-9,786	-24.7	-10,963	-19.7
Textile Mill & Fabric	-460	-17.1	-157	-3.4
Printing, Publishing	-292	-2.5	-466	-2.7
Chemical & Allied	2,091	55.6	2,517	50.0
Other Nondurable	4,990	70.3	7,862	88.2

During the 1960's, the machinery, except electrical, industries had the largest absolute employment increase in manufacturing (10,014 jobs) for the state. An association existed between county population density and the percentage employment gain in machinery, except electrical industries. The least urbanized counties experienced a percentage increase that was more than double that experienced by the most urbanized counties. However, most of the new jobs (5,547) in this category were realized in the most urbanized counties (population density 65.0 to 461.0) of the state.

In a related category, electrical machinery, equipment and supply, neither absolute nor percentage employment gains were as high as in the machinery, except electrical, category. The largest percentage increase (33.9 percent) was realized in counties with population density 24.0 to 36.9, but the most urbanized counties had the highest absolute increase (1,831 jobs). The only employment decrease (-14.4 percent or 590 jobs) experienced in this category for an urbanization class occurred in counties with population density 37.0 to 64.9.

The last major component of durable manufacturing, motor vehicles and other transportation, had the largest percentage increase of any industrial category (185.1 percent or 4,191 additional jobs). Again, employment change in motor vehicles and other transportation was associated with population density. Most of the absolute increase occurred in the counties of population density 14.0 to 36.9. The most rural counties (14.0 to 36.9 people per square mile) had the largest

relative increase (612.9 percent) followed closely by counties with populations of 24.0 to 36.9 people per square mile (610.4 percent).

Employment in stone, clay, glass and concrete products and professional, photographic, and time keeping equipment (other durable manufacturing) accounted for 5,284 additional jobs in the state during the 1960's. The employment increase in other durable manufacturing was highest in counties with population density 37.0 to 64.9 (161.0 percent). The most urbanized counties had the largest absolute increase with 2,105 additional jobs. While there was much variability in the absolute and percentage employment changes in other durable manufacturing among urbanization groups, no consistent association between employment changes and degree of urbanization was found.

Nondurable manufacturing

State employment in nondurable manufacturing decreased by 1.3 percent or 1,207 jobs during the 1960-1970 period. But the only counties that had an employment loss were the most urbanized counties (population density 65.0 to 461.0). A 5.3 percent decrease in these counties in nondurable manufacturing employment easily outweighed the employment gains that occurred in other urbanization classes. The least urbanized counties experienced the highest percentage increase (15.3 percent), while the largest absolute increase (1,063 additional jobs) occurred in counties with population density 24.0 to 36.9.

Food and kindred products manufacturing was the only component of total manufacturing that had decreased employment in all urbanization

classes. The most urbanized counties had the largest decrease in food and kindred product jobs (9,786). Less urbanized counties, while having losses, did not experience the same magnitude of the absolute loss that occurred in the most urbanized counties. However, the highest percentage loss was in the least urbanized counties (26.2 percent).

Employment in textile mill and fabricated products declined by 3.4 percent or 157 jobs during the 1960's. The variability among urbanization classes pointed to the largest percentage and absolute employment increases were in the least urbanized counties. While these counties experienced a gain, counties with population densities of 37.0 to 461.0 had an employment loss in this category. There was a strong inverse association between population density and employment change in textile mill and fabricated product industries.

Iowa lost 460 jobs (2.7 percent decrease) in printing, publishing, and allied industries during the 1960's. Most of this loss (439 jobs) occurred in counties with population densities of 24.0 to 36.9. An appreciable employment increase (15.6 percent or 256 additional jobs) was realized in counties with population density 37.0 to 64.9. The only other increase (2.1 percent or 9 additional jobs) was in the least urbanized county class.

Employment in chemical and allied industries increased in each urbanization class. The largest percentage increase (68.8 percent) was realized by counties with populations of 24.0 to 36.9 people per square mile. The only other urbanization class that experienced a substantial

employment gain (55.6 percent) was Class 4. But most of the absolute employment increase (2,091 jobs of the 2,517 additional jobs) occurred in the most urbanized counties.

With the exception of Class 4, all urbanization classes experienced at least a doubling of their 1960 employment in tobacco, paper, petroleum refining, rubber, plastics and leather product industries, i.e., other nondurable manufacturing. The most ruralized counties had an increase of 161.5 percent (260 additional jobs) while the Class 2 counties had an increase of 148.7 percent (1,353 additional jobs). Counties with population density of 37.0 to 64.9 had the highest percentage increase (167.6 percent) while the most urbanized counties had the highest absolute increase (4,990 additional jobs).

VARIABILITY IN IOWA'S EMPLOYMENT CHANGES
BY FUNCTIONAL ECONOMIC AREAS

The employment structure of Iowa did not change uniformly over the state during the 1960 decade. To examine the spatial differences, functional economic areas (FEA) were used (No. 2). Each FEA is identified in the discussion by the name of the central city or **largest urban place** therein.

During the 1960's, the most rapid growth in total employment (Table 14) in Iowa occurred in the FEA's identified by Cedar Rapids, Davenport, Des Moines, Dubuque, Marshalltown and Waterloo. These six FEA's had total employment increases greater than the state increase (6.8 percent) across all Iowa industries. They included the central and east central counties of the state. Seven FEA's (Ottumwa, Fort Dodge, Decorah, Creston, Mason City, Sioux City and Carroll) experienced a decline in total employment in the 1960-1970 decade (Figure 3).

Total export employment increased in only the Dubuque, Davenport and Burlington FEA's. Mixed industry employment rose in twelve of the sixteen FEA's whereas employment in local industries increased in all economic areas.

Primarily Export Industries

While total export employment (manufacturing plus agriculture, forestry and fisheries) rose in the Dubuque, Davenport and Burlington

Table 14. Components of change in county employment between 1960-1970, by market orientation, industry and functional economic area

Industry	1 n = 5		2 n = 8		3 n = 9	
	Employment Absolute	Change Percent	Employment Absolute	Change Percent	Employment Absolute	Change Percent
<u>Primarily Export</u>						
Agri., Forest., Fish.	-5,215	-34.6	-6,950	-38.3	-5,763	-31.5
Manufacturing	689	22.2	1,910	23.9	1,957	40.5
TOTAL EXPORT	-4,526	-24.9	-5,040	-19.3	-3,806	-16.4
<u>Mixed Export & Local</u>						
Mining	18	24.0	57	63.3	21	31.3
Construction	-226	-11.0	-144	-4.4	-141	-5.3
Transportation	-364	-26.2	-339	-17.4	-20	-1.4
Communications	-153	-40.8	-54	-9.2	-148	-24.7
Wholesale	75	7.8	-115	-5.1	268	14.9
Finance, Insurance						
Real Estate	86	11.4	371	23.0	351	26.6
TOTAL MIXED	-564	-10.1	-224	-2.3	331	4.2
<u>Primarily Local</u>						
Retail Trade	844	16.1	1,023	10.7	1,464	17.3
Utilities, San. Service	212	71.9	86	13.8	85	12.6
Business & Repair	56	10.1	189	16.3	-23	-2.6
Personal Service	75	5.2	-343	-11.8	-32	-1.3
Entertainment & Recreation	-95	-46.1	2	0.6	-37	-10.0
Professional & Related	2,211	57.0	2,981	45.7	3,593	64.0
Public Administration	152	19.2	118	8.0	289	19.6
TOTAL LOCAL	3,455	27.8	4,056	17.9	5,339	26.7
<u>Nonreporting Industries</u>	-532		-933		-1,088	
TOTAL CHANGE	-2,167	-6.0	-2,141	-3.7	776	1.5

Table 14. (Continued)

Industry	4 n = 5		5 n = 6		6 n = 4	
	Employment Absolute	Change Percent	Employment Absolute	Change Percent	Employment Absolute	Change Percent
<u>Primarily Export</u>						
Agri., Forest., Fish.	-3,527	-30.4	-4,296	-34.9	-3,223	-32.0
Manufacturing	-660	-6.9	-221	-3.0	2,549	43.5
TOTAL EXPORT	-4,187	-19.7	-4,517	-22.9	-674	-4.2
<u>Mixed Export & Local</u>						
Mining	4	8.5	29	26.9	31	45.6
Construction	117	3.4	18	0.8	9	0.5
Transportation	-53	-2.0	-73	-4.1	-327	-23.2
Communications	82	10.5	-105	-22.3	56	11.8
Wholesale	-57	-1.8	448	27.3	288	27.1
Finance, Insurance						
Real Estate	734	35.4	258	20.1	231	22.8
TOTAL MIXED	827	6.8	575	7.6	288	4.9
<u>Primarily Local</u>						
Retail Trade	692	6.1	972	12.4	1,188	19.7
Utilities, San. Services	247	32.1	135	23.6	151	31.2
Business & Repair	113	8.1	109	12.0	96	13.2
Personal Service	-281	-9.1	133	6.4	151	9.4
Entertainment & Recreation	154	41.7	13	5.3	51	25.0
Professional & Related	3,502	43.2	2,625	49.7	2,176	50.1
Public Administration	161	6.8	103	6.9	135	12.6
TOTAL LOCAL	4,588	16.8	4,588	16.8	4,090	22.2
Nonreporting Industries	-2,036		-936		-514	
TOTAL CHANGE	-808	-1.3	-778	-1.7	3,048	8.4

Table 14. (Continued)

Industry	7 n = 6		8 n = 3		9 n = 3	
	Employment Absolute	Change Percent	Employment Absolute	Change Percent	Employment Absolute	Change Percent
<u>Primarily Export</u>						
Agri., Forest., Fish.	-5,056	-35.1	-2,255	-27.5	-2,322	-32.7
Manufacturing	928	4.6	2,675	24.6	3,203	12.8
TOTAL EXPORT	-674	-4.2	420	2.2	881	2.7
<u>Mixed Export & Local</u>						
Mining	-10	-7.2	24	27.3	53	44.2
Construction	208	5.8	405	21.5	1,448	40.0
Transportation	-486	-18.5	-155	-11.4	0	0.0
Communications	-178	-18.5	-5	-1.6	29	3.3
Wholesale	435	16.0	188	15.7	1,552	62.5
Finance, Insurance						
Real Estate	585	26.9	382	36.2	1,265	45.0
TOTAL MIXED	554	4.5	839	14.2	4,347	34.7
<u>Primarily Local</u>						
Retail Trade	2,788	24.0	1,047	16.1	3,039	23.4
Utilities, San. Service	414	59.9	177	35.3	379	37.6
Business & Repair	177	13.0	215	29.4	769	44.9
Personal Services	149	4.5	-182	-9.3	-161	-4.5
Entertainment & Recreation	30	6.3	19	6.4	-2	-0.3
Professional and Related	6,638	69.5	3,207	56.9	5,806	65.4
Public Administration	501	25.8	231	21.2	1,369	63.7
TOTAL LOCAL	10,697	36.9	4,714	28.2	11,199	36.2
Nonreporting Industries	-1,119		-1,320		-2,903	
TOTAL CHANGE	6,004	7.9	4,653	11.2	13,524	17.9

Table 14. (Continued)

Industry	10 n = 7		11 n = 8		12 n = 6	
	Employment Absolute	Change Percent	Employment Absolute	Change Percent	Employment Absolute	Change Percent
<u>Primarily Export</u>						
Agri., Forest., Fish.	-5,613	-31.1	-5,001	-29.6	-3,774	-28.5
Manufacturing	4,870	18.2	3,078	9.0	850	34.7
TOTAL EXPORT	-743	-1.7	-1,923	-3.8	-2,924	-18.6
<u>Mixed Export & Local</u>						
Mining	67	33.5	33	6.7	32	62.7
Construction	1,176	21.5	716	6.8	169	9.2
Transportation	-209	-6.5	-113	-1.6	-8	-0.9
Communications	164	14.4	369	11.7	-45	-13.7
Wholesale	1,284	40.1	1,048	13.2	82	7.9
Finance, Insurance						
Real Estate	1,705	48.6	4,079	32.5	261	36.0
TOTAL MIXED	4,187	25.0	6,132	14.7	491	10.1
<u>Primarily Local</u>						
Retail Trade	5,289	30.7	8,120	29.0	1,087	19.6
Utilities, San. Services	409	32.5	375	15.3	145	44.3
Business & Repair	889	45.9	1,392	28.5	1	0.2
Personal Services	119	2.2	230	-2.4	-256	-14.8
Entertainment & Recreation	170	23.4	258	20.0	-53	-24.1
Professional & Related	11,919	63.6	17,758	66.4	1,845	55.8
Public Administration	1,190	42.9	2,067	23.8	35	3.8
TOTAL LOCAL	19,985	41.6	29,740	36.4	2,804	22.2
Nonreporting Industries	-3,312		-5,101		-723	
TOTAL CHANGE	20,117	18.4	28,848	16.5	-352	-1.1

Table 14. (Continued)

Industry	13 n = 8		14 n = 7		15 n = 10	
	Employment Absolute	Change Percent	Employment Absolute	Change Percent	Employment Absolute	Change Percent
<u>Primarily Export</u>						
Agri., Forest., Fish.	-4,424	-26.8	-2,598	-26.3	-5,851	-39.0
Manufacturing	1,316	16.0	727	57.8	774	7.2
TOTAL EXPORT	-3,108	-12.6	-1,871	-16.8	-5,077	-19.7
<u>Mixed Export & Local</u>						
Mining	-23	-15.3	63	75.9	-246	-49.8
Construction	575	13.8	118	9.5	-318	-10.3
Transportation	-917	-16.2	-54	-6.6	-491	-20.5
Communications	-94	-9.1	-31	-15.0	-160	-24.2
Wholesale	106	3.7	-203	-27.8	-13	-0.8
Finance, Insurance, Real Estate	373	13.9	64	12.3	181	12.6
TOTAL MIXED	20	0.1	-43	-1.2	-1,047	-10.7
<u>Primarily Local</u>						
Retail Trade	1,198	10.1	74	1.9	587	6.2
Utilities, San. Services	297	28.9	94	31.2	-134	-14.0
Business & Repair	267	18.6	-23	-5.0	37	3.5
Personal Services	-366	-10.9	-101	-9.6	-241	-8.5
Entertainment & Recreation	-30	-7.0	-55	-38.5	-45	-14.7
Professional & Related	4,046	50.8	1,329	44.9	3,205	47.1
Public Administration	15	0.6	-45	-5.2	9	0.5
TOTAL LOCAL	5,427	19.0	1,273	13.2	3,418	14.7
Nonreporting Industries	-1,128		-462		-1,561	
TOTAL CHANGE	1,211	1.7	-1,103	-4.5	-4,267	-7.3

Table 14. (Continued)

Industry	16 n = 4		TOTAL n = 99	
	Employment Absolute	Change Percent	Employment Absolute	Change Percent
<u>Primarily Export</u>				
Agri., Forest., Fish.	-2,162	-38.2	-68,030	-32.3
Manufacturing	3,516	30.7	28,161	14.8
TOTAL EXPORT	1,354	7.9	-39,869	-10.0
<u>Mixed Export & Local</u>				
Mining	34	30.4	187	7.9
Construction	64	3.2	4,194	7.9
Transportation	-333	-14.9	-3,942	-10.0
Communications	-90	-19.6	-363	-2.9
Wholesale	250	18.8	5,636	15.6
Finance, Insurance, Real Estate	189	18.6	11,115	30.4
TOTAL MIXED	114	1.6	16,827	9.4
<u>Primarily Local</u>				
Retail Trade	812	11.8	30,224	18.6
Utilities, San. Services	182	32.3	3,254	26.0
Business & Repair	248	27.0	4,512	21.8
Personal Services	-359	-15.2	-1,925	-3.9
Entertainment & Recreation	-44	-13.6	336	5.0
Professional & Related	2,010	38.0	74,851	57.7
Public Administration	118	7.6	6,448	19.7
TOTAL LOCAL	2,967	16.6	117,700	28.5
Nonreporting Industries	-1,652		-25,320	
TOTAL CHANGE	2,783	6.6	69,338	6.8

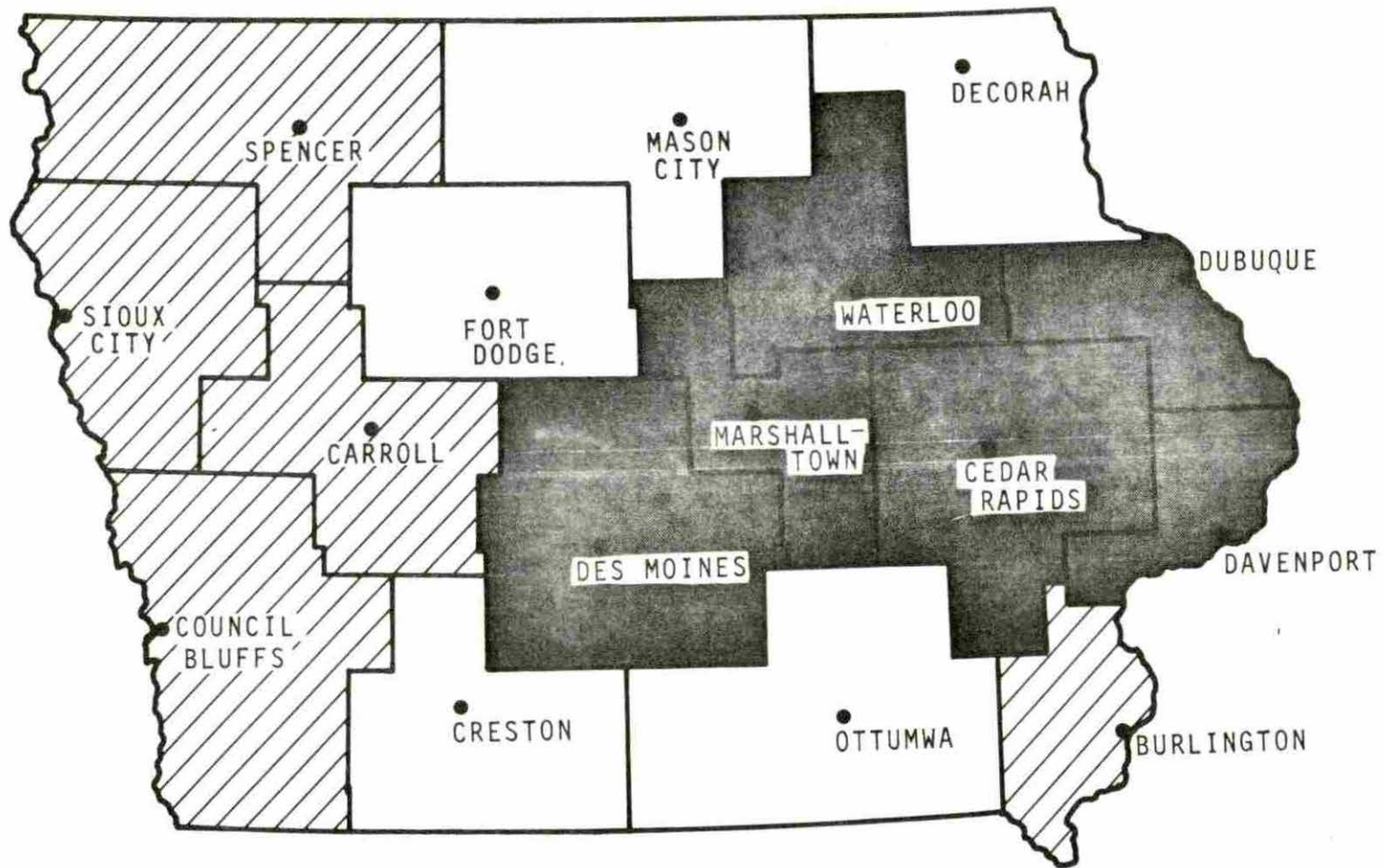


Figure 3. Percentage change in total employment, 1960 to 1970, by functional economic area

FEA's (Figure 4), the increase in each case was small. Nevertheless, in these areas manufacturing employment increased enough to more than offset the decline in agriculture, forestry and fisheries.

The percentage decline in agriculture, forestry, and fisheries employment was quite similar among the FEA's, ranging for most from the high 20's to the low 30's.

The larger percentage decreases occurred in the Ottumwa, Burlington, Mason City, Decorah, Fort Dodge and Waterloo FEA's. The smallest percentage losses in agriculture, forestry and fisheries employment were in the Creston, Council Bluffs, Dubuque and Carroll FEA's. On the other hand, the largest absolute losses in this category were in the northern FEA's. While no economic area experienced an employment increase during the 1960's in agriculture, forestries and fisheries, the far eastern economic areas of the state had the smallest absolute losses in this category.

Three FEA's (Creston, Marshalltown and Spencer) had a relative increase in manufacturing employment of over 40 percent. The Creston FEA had the largest increase (57.8 percent) which represented 727 additional jobs. The only economic areas that had decreased manufacturing employment during the 1960's were Sioux City (-6.9 percent) and Fort Dodge (-3.0 percent). The largest absolute increases occurred in the FEA's of Cedar Rapids (4,870), Burlington (3,516), Davenport (3,203) and Des Moines (3,078). The components of manufacturing are discussed in more detail later.

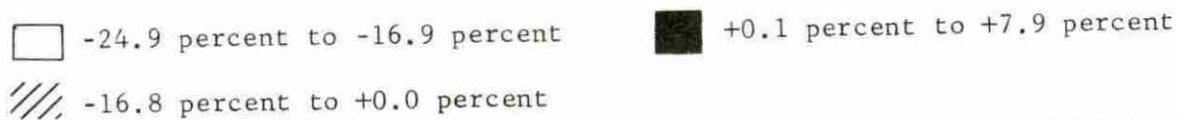
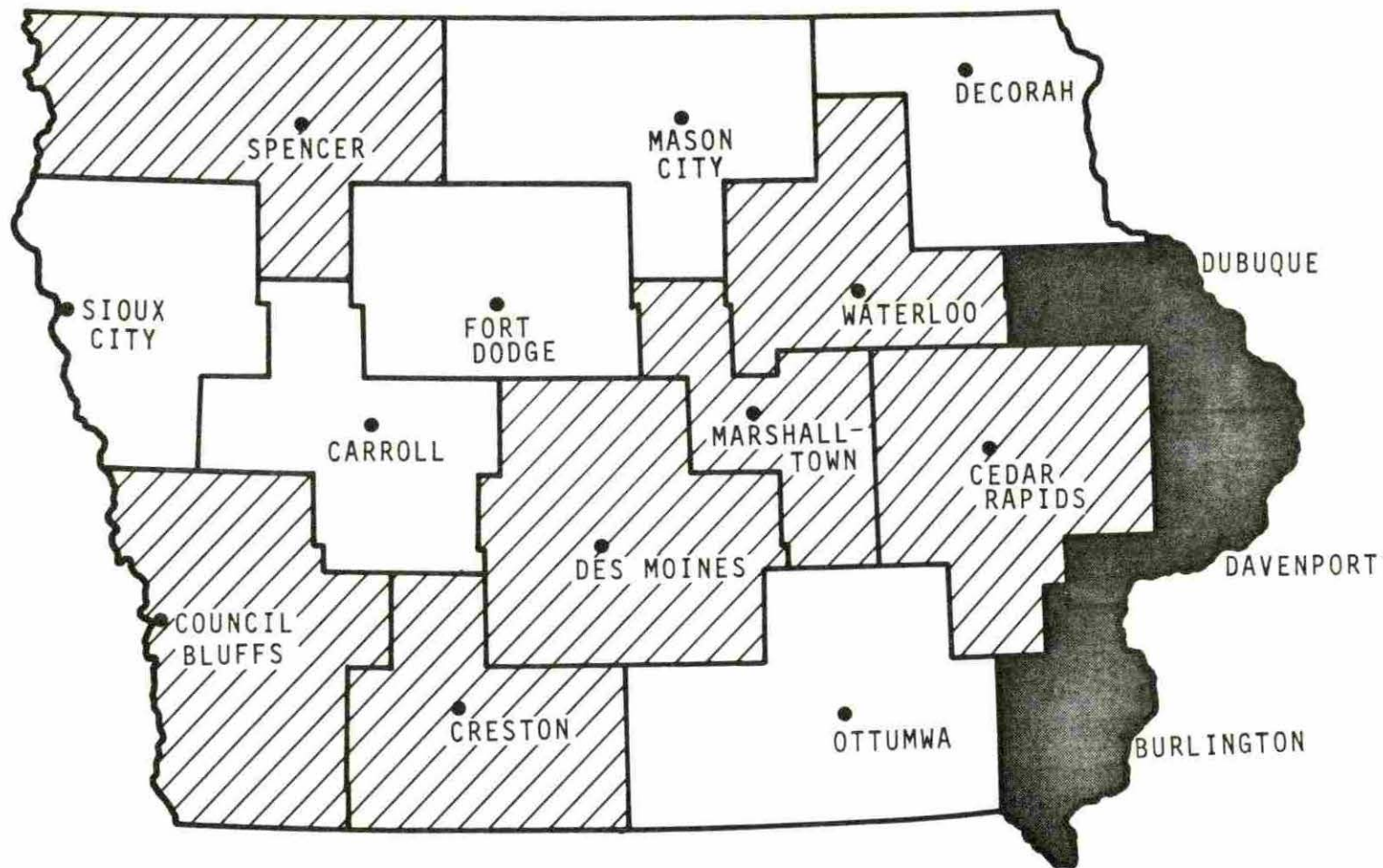


Figure 4. Percentage change in total "export" industry employment, 1960 to 1970, by functional economic area

Mixed Industries

Total employment in the mixed category increased in twelve FEA's and decreased in only four FEA's. The economic areas of the state that had the largest percentage total mixed employment increases (as seen in Figure 5) included Davenport, Cedar Rapids, Des Moines and Dubuque. The Davenport FEA had the largest percentage increase (34.7 percent) while the Des Moines FEA had the highest absolute employment increase (6,132 additional jobs).

Most of the FEA's had increased employment in the construction industry, but four FEA's had an employment loss. A decrease of 10.3 percent in the Ottumwa FEA represented the largest absolute loss (318 jobs) in this industrial category. The largest percentage decrease occurred in the Decorah FEA where employment declined 11.0 percent. On the other hand, large percentage increases were experienced in the Davenport (40.0 percent), Cedar Rapids (21.5 percent) and Dubuque (21.5 percent) FEA's. Absolute increases were highest in the FEA's of Davenport (1,448 additional jobs) and Cedar Rapids (1,176 additional jobs).

No FEA experienced an increase in employment in the transportation industry. The Davenport FEA, however, had the same employment level in 1970 as it did in 1960 (2,599 jobs). Percentage decreases were highest in the FEA's of Decorah (-26.2 percent), Marshalltown (-23.2 percent), Ottumwa (-20.5 percent) and Waterloo (-18.5 percent). The largest absolute loss in employment was experienced in the Council Bluffs FEA (917 jobs).

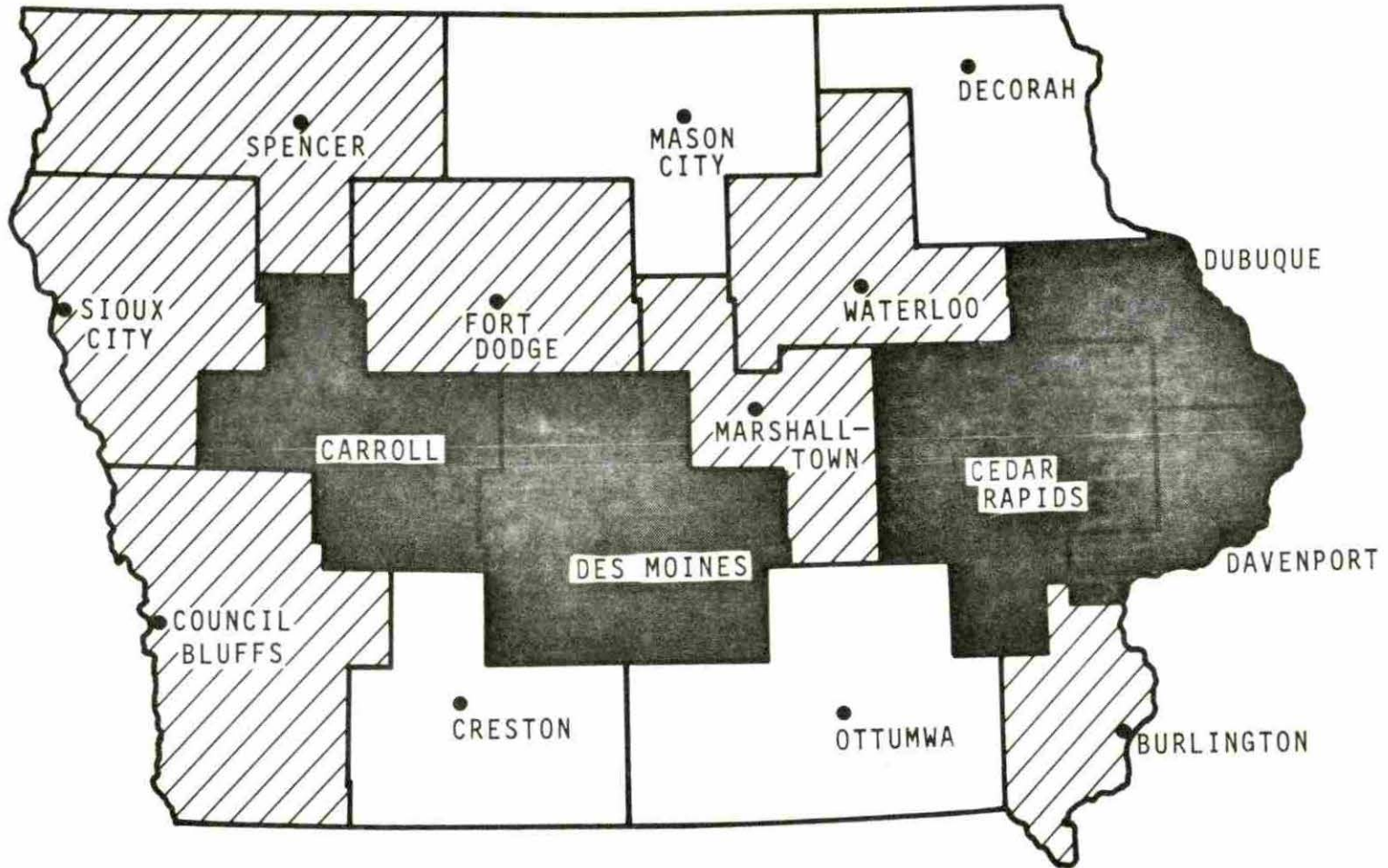


Figure 5. Percentage change in total "mixed" industry employment, 1960 to 1970, by functional economic area

Employment increased in five FEA's for the communication industry. The Cedar Rapids FEA had an employment increase of 14.4 percent (164 additional jobs) while the Marshalltown (56 additional jobs), Des Moines (369 additional jobs), Sioux City (82 additional jobs) and Davenport (29 additional jobs) FEA's had communications employment increases of over 3 percent in the 1960 decade. The Decorah FEA had the largest decrease for this category with an employment drop of 40.8 percent. Three other economic areas had decreases of more than 20 percent (Spencer, Ottumwa and Fort Dodge).

Wholesale trade employment increased in twelve FEA's during the 1960's. The largest increase, 62.5 percent or 1,552 additional jobs, was in the Davenport FEA. The FEA's of Cedar Rapids, Fort Dodge and Marshalltown had employment increases of over 27 percent. The FEA's of Creston (-27.8 percent or 203 jobs), Mason City (-5.1 percent or 115 jobs), Sioux City (-1.8 percent or 57 jobs) and Ottumwa (-0.8 percent or 13 jobs) were the only areas of the state that had decreases in wholesale trade employment.

Finance, insurance and real estate represented an unique component of the mixed industries. All FEA's had increased employment in this category, ranging from 11.4 percent in the Decorah FEA to 48.6 percent in the Cedar Rapids FEA. Five other economic areas had employment increases of over 30 percent (Davenport, 45.0 percent; Dubuque 36.2 percent; Carroll, 36.0 percent; Sioux City, 35.4 percent; and Des Moines 32.5 percent). The smallest relative employment gains were experienced

in the Council Bluffs (13.9 percent), Creston (12.3 percent), Ottumwa (12.6 percent) and Decorah (11.4 percent) FEA's.

Primarily Local Industries

Employment gains in local industries ranged from 13.2 percent in the Creston FEA to 41.6 percent in the Cedar Rapids FEA. Four FEA's, Cedar Rapids, Waterloo, Davenport and Des Moines, had percentage employment increases of over 35 percent. Six FEA's had increases of 13.2 percent to 20.0 percent. Figure 6 shows how total employment in local industries changed during the 1960's.

Employment in retail trade (Table 15) increased in all FEA's. Five FEA's experienced employment increases greater than the state increase of 18.6 percent. They included Cedar Rapids (30.7 percent), Des Moines (29.0 percent), Waterloo (24.0 percent), Marshalltown (19.7 percent) and Carroll (19.6 percent). The largest absolute increases, however, occurred in the Des Moines (8,120 additional jobs), Cedar Rapids (5,289 additional jobs), Davenport (3,039 additional jobs), and Waterloo (2,788 additional jobs) FEA's.

Employment in all industrial categories comprising retail trade, except food and dairy product stores, rose in each FEA during the 1960's (Table 15). In food and dairy retailing, six FEA's (Creston, Ottumwa, Dubuque, Marshalltown, Sioux City and Mason City) had employment losses. The Ottumwa FEA also had the smallest percentage employment gain in eating and drinking places (5.5 percent). The largest percentage employment

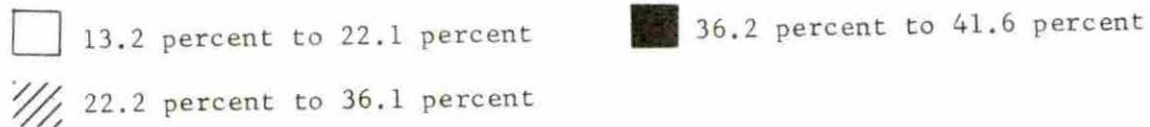
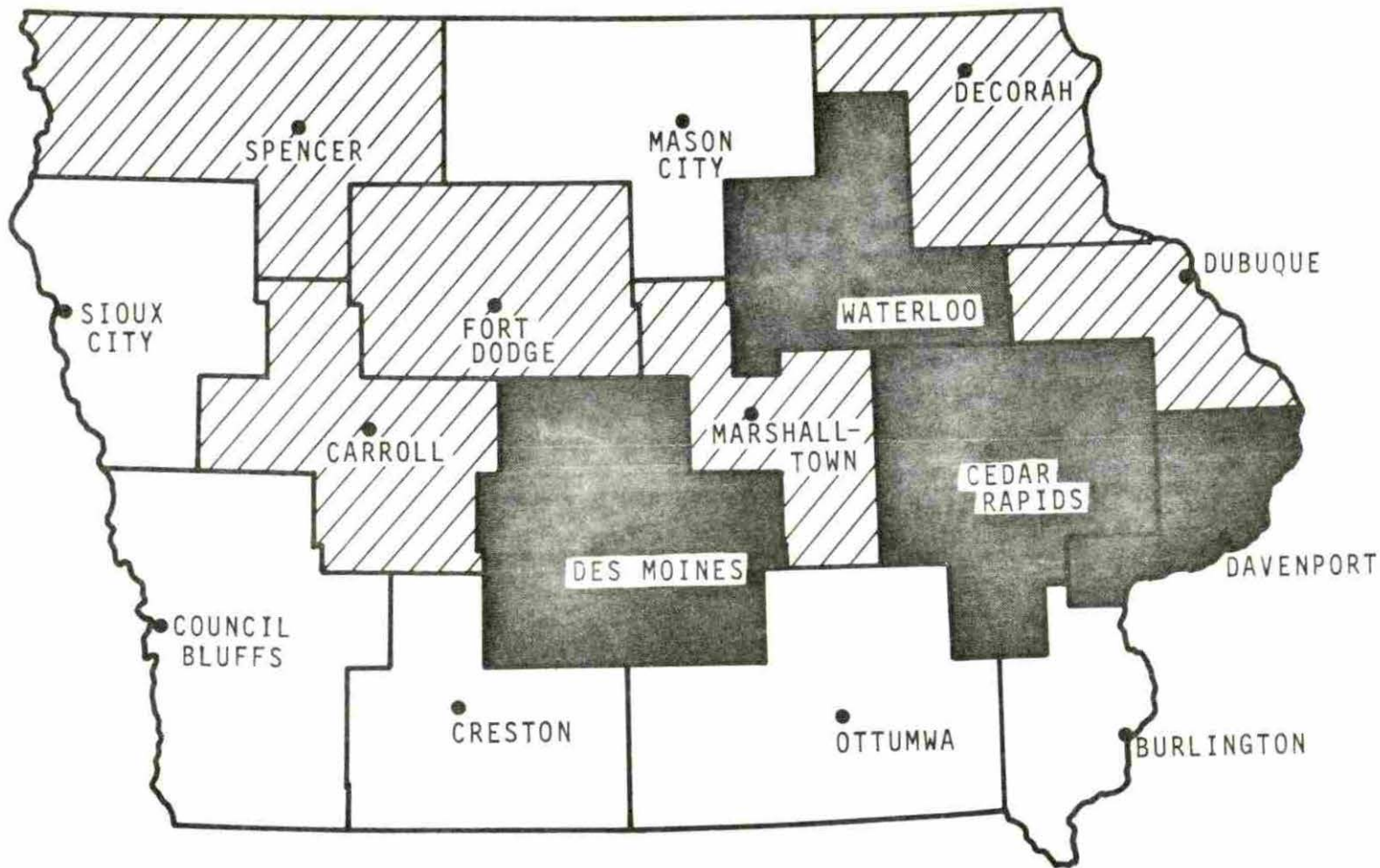


Figure 6. Percentage change in total "local" industry employment, 1960 to 1970, by functional economic area

Table 15. Components of change in FEA retail trade and professional and related services ,
1960-1970

Industry	1 n=5		2 n=8		3 n=9	
	Absolute Change	Percent Change	Absolute Change	Percent Change	Absolute Change	Percent Change
Food & Diary Product Stores	76	9.0	-3	-0.2	134	10.4
Eating & Drinking Places	227	22.7	219	11.8	461	30.6
Other Retail Places	541	15.9	807	13.0	869	15.3
TOTAL RETAIL TRADE	844	16.1	1,023	10.7	1,464	17.3
Hospitals	276	63.3	404	34.7	701	98.5
Educational Services	1,378	59.1	1,250	38.4	1,697	53.7
Private	880	102.4	368	57.5	831	121.5
Government	282	19.2	548	21.0	560	22.6
Welfare, Religious, Nonprofit Organization	-179	-33.5	-117	-12.6	18	2.3
Other Professional	736	126.9	1,444	122.3	1,177	123.0
TOTAL PROFESSIONAL AND RELATED SERVICES	2,211	57.0	2,981	45.7	3,593	64.0

Table 15. (Continued)

Industry	4 n=5		5 n=6		6 n=4	
	Absolute Change	Percent Change	Absolute Change	Percent Change	Absolute Change	Percent Change
Food & Dairy Product Stores	-8	0.0	123	10.3	-6	-0.6
Eating & Drinking Places	369	16.4	303	20.2	358	28.4
Other Retail Trade	331	4.5	546	10.6	836	22.3
TOTAL RETAIL TRADE	692	6.1	972	12.4	1,188	19.7
Hospitals	345	15.2	355	38.5	272	40.0
Educational Services	1,897	56.1	1,218	49.9	1,267	58.4
Private	620	56.7	341	95.8	307	58.1
Government	962	42.0	707	33.9	834	50.8
Welfare, Religious, Nonprofit Organizations	106	11.5	-94	-11.7	-69	-9.3
Other Professional	1,154	76.0	1,146	102.7	706	93.8
TOTAL PROFESSIONAL AND RELATED SERVICES	3,502	43.2	2,625	49.7	2,176	50.1

Table 15. (Continued)

Industry	7 n=6		8 n=3		9 n=3	
	Absolute Change	Percent Change	Absolute Change	Percent Change	Absolute Change	Percent Change
Food & Dairy Product Stores	53	3.1	-13	-1.4	346	18.2
Eating & Drinking Places	645	28.7	155	10.7	939	39.0
Other Retail Trade	2,090	27.3	905	22.1	1,754	20.2
TOTAL RETAIL TRADE	2,788	24.0	1,047	16.1	3,039	23.4
Hospitals	915	42.5	704	52.8	908	49.6
Educational Services	3,712	79.2	1,907	82.9	2,830	78.4
Private	1,466	202.2	693	46.6	727	71.8
Government	1,865	47.1	1,118	137.7	1,769	68.1
Welfare, Religious, Nonprofit Organizations	240	19.9	-114	-11.4	113	8.8
Other Professional	1,771	117.5	710	70.8	1,955	90.7
TOTAL PROFESSIONAL AND RELATED SERVICES	6,638	69.5	3,207	56.9	5,806	65.4

Table 15. (Continued)

Industry	10 n=7		11 n=8		12 n=6	
	Absolute Change	Percent Change	Absolute Change	Percent Change	Absolute Change	Percent Change
Food & Dairy Product Stores	325	12.5	1,019	24.5	88	11.8
Eating & Drinking Places	1,495	42.9	2,012	39.7	156	13.1
Other Retail Trade	3,469	31.1	5,089	27.1	843	23.4
TOTAL RETAIL TRADE	5,289	30.7	8,120	29.0	1,087	19.6
Hospitals	2,034	44.3	2,960	56.4	453	84.8
Educational Services	6,551	64.0	9,100	68.8	547	30.5
Private	1,350	79.9	2,585	91.7	316	117.9
Government	4,617	54.1	5,394	51.8	89	5.8
Welfare, Religious, Nonprofit Organizations	296	20.7	630	19.5	86	21.4
Other Professional	3,038	121.6	5,071	100.4	759	131.1
TOTAL PROFESSIONAL AND RELATED SERVICES	11,919	63.6	17,758	66.4	1,845	55.8

Table 15. (Continued)

Industry	13 n=8		14 n=7		15 n=10	
	Absolute Change	Percent Change	Absolute Change	Percent Change	Absolute Change	Percent Change
Food & Dairy Product Stores	78	4.5	-108	-17.4	-92	-6.0
Eating & Drinking Places	563	26.3	183	24.8	91	5.5
Other Retail Trade	557	6.9	-1	0.0	588	9.4
TOTAL RETAIL TRADE	1,198	10.1	74	1.9	587	6.2
Hospitals	828	42.5	192	39.6	533	35.7
Educational Services	1,655	47.0	467	25.5	1,150	35.0
Private	261	49.9	333	65.9	399	50.6
Government	1,042	34.8	62	4.7	493	19.8
Welfare, Religious, Nonprofit Organizations	-110	-10.2	162	68.6	143	18.6
Other Professional	1,673	117.6	508	124.5	1,379	110.1
TOTAL PROFESSIONAL AND RELATED SERVICES	4,046	50.8	1,329	44.9	3,205	47.1

Table 15. (Continued)

Industry	16 n=4		TOTAL n=99	
	Absolute Change	Percent Change	Absolute Change	Percent Change
Food & Dairy Product Stores	147	13.0	2,159	8.8
Eating & Drinking Places	196	17.1	8,372	27.1
Other Retail Trade	469	10.2	19,693	18.4
TOTAL RETAIL TRADE	812	11.8	30,224	18.6
Hospitals	145	10.3	12,025	44.2
Educational Services	1,124	50.9	37,747	59.5
Private	330	66.9	11,807	81.5
Government	657	38.3	20,999	42.9
Welfare, Religious, Nonprofit Organizations	39	6.9	1,150	7.2
Other Professional	702	62.3	23,929	103.6
TOTAL PROFESSIONAL AND RELATED SERVICES	2,010	37.9	74,851	57.7

increase for this category occurred in the Cedar Rapids FEA (42.9 percent). The larger employment increases in eating and drinking places occurred in the east central sections of the state-- the same sections that experienced the big increases in total industrial employment.

Employment in utility and sanitary services increased in all FEA's with the exception of the Ottumwa FEA (-14.0 percent or 134 jobs lost). The smallest percentage employment increase was in the Spencer FEA (12.6 percent). Ten FEA's had employment increases of 30 percent or more in this industry with the highest increase in the Decorah FEA (71.9 percent). However, the largest absolute employment increases were in the FEA's of Waterloo (414 jobs), Cedar Rapids (409 jobs), Davenport (379 jobs) and Des Moines (375 jobs).

The Spencer and Creston FEA's were the only areas experiencing a decline in employment in business and repair services (-2.6 percent and -5.0 percent respectively). The largest percentage employment increases were in the Cedar Rapids (45.9 percent), Davenport (44.9 percent), Dubuque (29.4 percent), Des Moines (28.5 percent) and Burlington (27.0 percent) FEA's. These five FEA's were the only areas that had increases exceeding the state increase (21.8 percent). Also, these five FEA's along with the Council Bluffs' FEA, had the largest absolute employment gains in business and repair services.

One-half of the FEA's had employment increases in entertainment and recreation. The largest percentage and absolute gains were in the FEA's of Sioux City (41.7 percent or 154 jobs), Marshalltown (25.0 percent or

51 jobs), Cedar Rapids (23.4 percent or 170 jobs) and Des Moines (20.0 percent or 258 jobs). While the state had an employment increase in the category during the 1960's of 5.0 percent or 336 new jobs, substantial relative decreases occurred in the FEA's of Decorah (-46.1 percent or 154 jobs), Creston (-38.5 percent or 55 jobs) and Carroll (-24.1 percent or 53 jobs).

Employment in professional and related fields increased substantially in all FEA's. Representing the smallest percentage increase was the Burlington FEA with a rise of 38.0 percent or 2,010 new jobs (the third lowest absolute increase). Ten areas had employment increases of 50 percent or more in this category. These FEA's were located in the central, northwest and east central sections of Iowa.

The components of professional and related services are shown in Table 15. Most economic areas had their largest absolute gains in the educational services category, followed by the other professional services. However, the majority of these areas had the largest percentage increase in the other professional services followed by educational services. The largest absolute gain that occurred in educational services came from governmental institutions whereas the largest percentage change occurred in private educational institutions. The largest relative gains in private institutions were in the Decorah (102.4 percent), Carroll (117.9 percent), Spencer (121.5 percent) and Waterloo (202.2 percent) FEA's. The largest relative gains in public institutions occurred in the FEA's of Dubuque (137.7 percent), Davenport (68.1 percent), Cedar Rapids (54.1 percent), Des Moines (51.8 percent) and Marshalltown (50.8 percent).

The last component of interest in the local industries is public administration. Only the Creston FEA experienced a decrease in public administration employment (-5.2 percent or 45 jobs) during the 1960's. Major employment increases occurred in the FEA's of Davenport, Cedar Rapids, Waterloo, Des Moines and Dubuque. The increases ranged from 21.2 percent in the Dubuque FEA to 63.7 percent in the Davenport FEA. In absolute terms, the largest increases occurred in the Des Moines (2,067 jobs), Davenport (1,369 jobs) and Cedar Rapids (1,190 jobs) FEA's.

Components of Manufacturing

It was shown that total manufacturing employment increases were relatively highest in the FEA's of Creston (57.8 percent), Marshalltown (43.5 percent) and Spencer (40.5 percent). Figure 7 shows how total manufacturing, durable manufacturing and nondurable manufacturing employment changed in each FEA during the 1960's. Most of the increase in manufacturing employment occurred in durable manufacturing. While durable manufacturing employment increased 30.0 percent in Iowa, non-durable manufacturing decreased 1.3 percent. The components of change in total manufacturing are shown in Table 16.

Durable manufacturing

Durable manufacturing employment increases ranged from 7.8 percent in the Davenport FEA to 189.1 percent in the Creston FEA. Five FEA's had an employment gain in durable manufacturing of over 60 percent (Creston, Spencer, Decorah, Mason City and Marshalltown). The largest

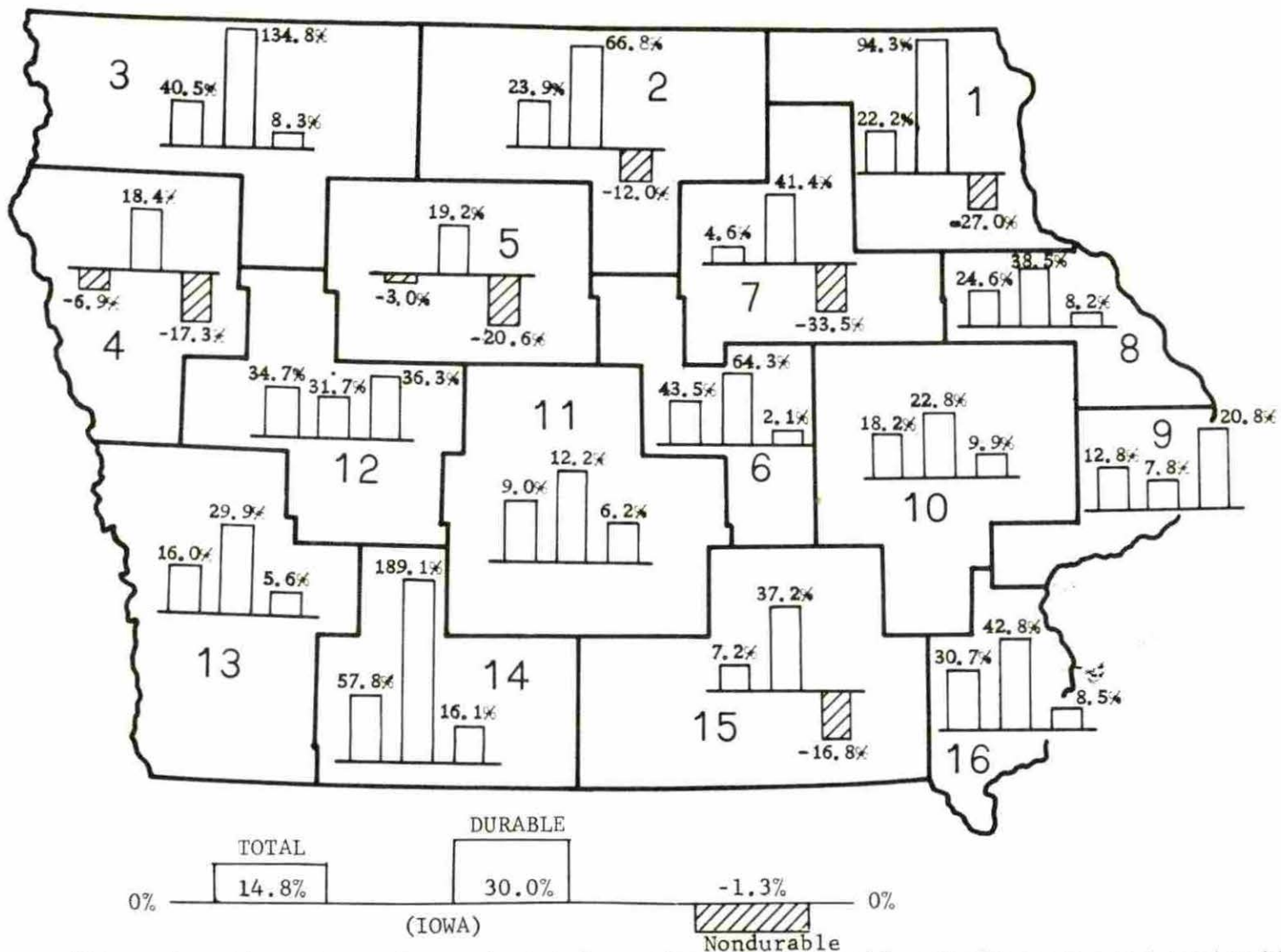


Figure 7. Percentage change in total manufacturing, durable manufacturing and nondurable manufacturing employment, 1960 to 1970, by functional economic area

Table 16. Components of change in FEA manufacturing employment, 1960-1970

Industry	1 n=5		2 n=8		3 n=9	
	Absolute Change	Percent Change	Absolute Change	Percent Change	Absolute Change	Percent Change
Furniture, Lumber	30	14.1	-42	-19.9	203	338.3
Metal	413	464.0	385	283.1	-27	-14.9
Machinery, except elec.	436	116.0	39	2.3	551	161.1
Electrical machinery, equipment & supplies	-34	-16.0	100	56.8	116	54.5
Motor vehicles	90	52.9	1,904	1,453.4	146	1,123.1
Other Durable Goods	252	127.3	47	3.7	669	158.9
TOTAL DURABLE GOODS	1,187	94.3	2,433	66.8	1,658	134.8
Food & Kindred	-543	-38.1	-687	-23.3	72	2.6
Textile Mill & Fabric	0	0.0	106	61.3	188	172.5
Printing, Publishing	-20	-6.2	-88	-13.1	-112	-19.1
Chemical & Allied	13	40.0	-104	-22.1	-4	-3.7
Other Nondurable	57	150.0	257	317.3	155	418.9
TOTAL NONDURABLE	-498	-27.0	-523	-12.0	299	8.3
TOTAL MANUFACTURING	689	22.2	1,910	23.9	1,957	40.5

Table 16. (Continued)

Industry	4 n=5		5 n=6		6 n=4	
	Absolute Change	Percent Change	Absolute Change	Percent Change	Absolute Change	Percent Change
Furniture, Lumber	-245	-81.1	-64	-56.6	-13	-13.1
Metal	59	19.6	36	18.2	929	36.2
Machinery, except elec.	575	68.5	716	95.7	759	170.9
Electrical machinery equipment & supply	-187	-25.3	446	106.2	-10	-3.1
Motor vehicles	116	57.1	-87	-48.6	107	159.7
Other Durable Goods	199	46.8	-417	-25.7	735	180.6
TOTAL DURABLE GOODS	517	18.4	630	19.2	2,507	64.3
Food & Kindred	-1,484	-28.6	-1,033	-35.1	-35	-3.4
Textile Mill & Fabric	-14	-3.7	16	18.8	-65	-51.6
Printing, Publishing	-250	-25.0	-133	-19.7	29	7.6
Chemical & Allied	287	305.3	63	17.6	35	70.0
Other Nondurable	284	147.9	236	302.6	78	21.1
TOTAL NONDURABLE	-1,177	-17.3	-851	-20.6	42	2.1
TOTAL MANUFACTURING	689	22.2	1,910	23.9	1,957	40.5

Table 16. (Continued)

Industry	7 n=6		8 n=3		9 n=3	
	Absolute Change	Percent Change	Absolute Change	Percent Change	Absolute Change	Percent Change
Furniture, Lumber	20	13.8	-139	-8.6	-466	-27.6
Metal	933	53.5	-37	-4.2	625	10.2
Machinery, except elec.	2,484	33.4	1,698	59.2	677	14.7
Electrical machinery equipment & supply	-136	-39.2	88	34.8	160	33.5
Motor vehicles	268	454.2	20	37.0	189	126.0
Other Durable Goods	657	136.3	638	317.4	18	0.8
TOTAL DURABLE GOODS	4,226	41.4	2,268	38.5	1,203	7.8
Food & Kindred	-3,370	-42.9	-265	-7.2	-38	-0.7
Textile Mill & Fabric	-203	-37.7	-9	-5.1	-236	-32.4
Printing, Publishing	-73	-7.0	55	8.6	-217	-17.0
Chemical & Allied	-17	-10.9	157	119.8	945	64.3
Other Nondurable	365	140.4	469	133.2	1,546	356.8
TOTAL NONDURABLE GOODS	-3,298	-33.5	407	8.2	2,000	20.8
TOTAL MANUFACTURING	928	4.6	2,675	24.6	3,203	12.8

Table 16. (Continued)

Industry	10 n=7		11 n=8		12 n=6	
	Absolute Change	Percent Change	Absolute Change	Percent Change	Absolute Change	Percent Change
Furniture, Lumber	116	26.1	281	31.2	-54	-64.3
Metal	955	132.5	-372	-13.1	107	
Machinery, except elec.	202	3.9	531	9.1	14	3.9
Electrical machinery equipment & supply	1,937	20.5	-537	-12.8	149	876.5
Motor vehicles	-14	-4.8	702	178.6	24	45.3
Other Durable Goods	730	66.7	1,374	65.0	36	12.0
TOTAL DURABLE GOODS	3,926	22.8	1,979	12.2	276	31.7
Food & Kindred	-246	-3.9	-2,341	-39.9	343	29.7
Textile Mill & Fabric	8	3.4	-105	-13.6	10	83.3
Printing, Publishing	136	8.0	1,017	16.5	22	6.3
Chemical & Allied	213	60.5	82	11.1	44	220.0
Other Nondurable	833	79.8	2,446	58.4	155	337.0
TOTAL NONDURABLE GOODS	944	9.9	1,099	6.2	574	36.3
TOTAL MANUFACTURING	4,870	18.2	3,078	9.0	850	34.7

Table 16. (Continued)

Industry	13 n=8		14 n=7		15 n=10	
	Absolute Change	Percent Change	Absolute Change	Percent Change	Absolute Change	Percent Change
Furniture, Lumber	280	80.5	11	47.8	19	5.5
Metal	232	38.0	287	2,391.7	498	44.9
Machinery, except elec.	394	58.9	107	62.9	494	23.1
Electrical machinery equipment & supply	-18	-1.8	-21	-52.5	230	31.1
Motor vehicles	-85	-21.1	154	962.5	386	1,135.3
Other Durable Goods	250	48.5	35	83.3	147	36.5
TOTAL DURABLE GOODS	1,053	29.9	573	189.1	1,774	37.2
Food & Kindred	259	9.4	-145	-30.5	-1,154	-27.8
Textile Mill & Fabric	134	77.5	255	174.7	-142	-18.3
Printing, Publishing	-324	-27.8	-62	-25.4	-204	-29.1
Chemical & Allied	-50	-14.6	71	645.5	-9	-10.0
Other Nondurable	244	93.1	35	45.5	509	204.4
TOTAL NONDURABLE GOODS	263	5.6	154	16.1	-1,000	-16.8
TOTAL MANUFACTURING	1,316	16.0	727	57.8	774	7.2

Table 16. (Continued)

Industry	16 n=4		TOTAL n = 99	
	Absolute Change	Percent Change	Absolute Change	Percent Change
Furniture, Lumber	-176	-25.0	-239	-3.3
Metal	2,576	92.1	7,599	37.3
Machinery, except elec.	337	32.8	10,014	28.8
Electrical machinery equipment & supply	248	17.2	2,531	12.7
Motor vehicles	271	589.1	4,191	185.1
Other Durable Goods	-86	-6.2	5,284	40.0
TOTAL DURABLE GOODS	3,170	42.8	29,380	30.8
Food & Kindred	-296	-20.2	-10,963	-19.7
Textile	-100	-63.3	-157	-3.7
Printing, Publishing	-242	-38.7	-466	-2.7
Chemical & Allied	791	128.0	2,517	50.0
Other Nondurable	193	16.3	7,862	88.2
TOTAL NONDURABLE GOODS	346	8.5	-1,027	-1.3
TOTAL MANUFACTURING	3,516	30.7	28,161	14.8

absolute increases were in the Cedar Rapids (3,926 new jobs), Burlington (3,170 new jobs) and Waterloo (4,226 new jobs) FEA's.

Furniture, lumber and mill product industries showed the only loss in employment in durable manufacturing. While the state lost 3.3 percent of its jobs in this category, three economic areas (Sioux City, Carroll and Fort Dodge) had employment losses of over 56 percent. However, not all areas of the state lost employment in furniture, lumber and mill products. The Spencer and Council Bluffs FEA's had percentage gains of 338.3 percent (203 new jobs) and 80.5 percent (280 new jobs) respectively.

The largest absolute increase in employment in durable manufacturing was in machinery, except electrical, industries. No FEA experienced a decrease in employment in this category. On the average, employment in the machinery, except electrical industries, rose by 626 jobs between 1960 and 1970. The largest absolute gains were in the FEA's of Waterloo (2,484) and Dubuque (1,698) while the smallest gains were in the Carroll (14) and Mason City (39) FEA's.

State employment in electrical machinery, equipment and supply increased in the 1960's by 12.7 percent or 2,531 additional jobs. Seven FEA's, however, had employment losses in this category, from -1.8 percent in the Council Bluffs FEA to -52.5 percent in the Creston FEA. The FEA's with the largest percentage gains included Carroll (876.5 percent), Fort Dodge (106.2 percent), Mason City (56.8 percent) and Spencer (54.5 percent). The largest absolute increase was in the Cedar Rapids FEA where employment rose by 1,937 or 20.5 percent.

The percentage gain in motor vehicles and other transportation employment in Iowa was the highest of any industrial category (185.1 percent). However, three areas of the state (Fort Dodge, Council Bluffs, and Cedar Rapids) had an actual employment decrease in this category. The largest gains were in the FEA's of Mason City, Ottumwa, Spencer and Creston where employment rose tenfold or more during 1960's. Five other areas (Davenport, Marshalltown, Des Moines, Waterloo, and Burlington) at least doubled their employment in motor vehicles and other transportation. Absolute increases ranged from twenty additional jobs in the Dubuque FEA and twenty-four additional jobs in the Carroll FEA to 1,904 additional jobs in the Mason City FEA.

Nondurable manufacturing

Employment in nondurable manufacturing decreased in only six FEA's but the sum of these decreases was larger than the total increases in the other ten FEA's. The largest percentage losses were in the Waterloo (-33.5 percent), Decorah (-27.0 percent) and Fort Dodge (-20.6 percent) FEA's. The largest percentage gains were in the FEA's of Carroll (36.3 percent), Davenport (20.8 percent) and Creston (16.1 percent). Three FEA's (Davenport, Sioux City and Ottumwa) had total nondurable manufacturing losses of over 1,000 jobs.

Only three FEA's (Carroll, Council Bluffs and Spencer) had an employment increase in food and kindred products manufacturing (29.7 percent or 343 jobs, 9.4 percent or 259 jobs and 2.6 percent or 72 jobs respectively). The major losses were in the Fort Dodge, Decorah,

Des Moines and Waterloo where employment in food and kindred products decreased by over 1,000 jobs during the 1960's.

Five FEA's had employment decreases in chemical and allied products. However, the state had an employment increase of 50.0 percent resulting from substantial gains in the Creston (645.5 percent), Sioux City (305.3 percent), Carroll (220.0 percent), Burlington (128.0 percent) and Dubuque (119.8 percent) FEA's. The largest absolute increases occurred in the Cedar Rapids (213 jobs), Sioux City (287 jobs), Burlington (791 jobs) and Davenport (945 jobs) FEA's.

The largest percentage losses in textile mill and fabricated products occurred in the FEA's of Burlington (-63.3 percent), Marshalltown (-51.6 percent), Waterloo (-37.7 percent) and Davenport (-32.4 percent). However, seven FEA's had increases in this category. In fact, two FEA's, Spencer and Creston, had an increase of over 170 percent. Three other FEA's (Carroll, Council Bluffs and Mason City) experienced employment increases of 60 percent.

Only five FEA's (Carroll, Marshalltown, Cedar Rapids, Dubuque and Des Moines) had increased employment in printing, publishing and allied industries. The state as a whole experienced an employment loss of 2.7 percent in this category. However, a loss of 17 percent or more occurred in eight of the FEA's with the largest losses in the southernmost FEA's. Absolute losses ranged from twenty jobs in the Decorah FEA to 324 jobs in the Council Bluffs FEA.

CHANGING STRUCTURE OF EMPLOYMENT
IN URBAN PLACES WITH POPULATION
2,500 AND OVER

Attention is now focused on the changing industrial employment structure of Iowa's urban places 2,500 and over population. Interest centers on the differential changes in the employment structure of urban places of different size. Some of the detail in the industrial categories is lost when urban places under 10,000 population are considered along with those of 10,000 and over. This is because the census industrial classifications for places under 10,000 in both 1960 and 1970 were less refined than for places of over 10,000 population. Lost also are the market orientation headings (primarily export, mixed export and local and primarily local) since the components of these headings are not the same between places 2,500 to 10,000 and places with 10,000 and over population.

The employment in urban places of 2,500 and over population in 1960 is shown in Table 17. Note again that the number of jobs in an area may be underestimated in the census data. This underestimation occurs when people from out of town work in town. Most of the 1960 Iowa work force (54.6 percent) was located in these urban places. However, there was much variability associated with size of urban place. In 1960, urban places with populations of 2,500 to 4,499 accounted for only 4.3 percent of all jobs in the state. Those with population of 4,500 to 8,499 accounted for 8.8 percent of the Iowa work force in 1960 whereas places of 8,500 to 24,999 population had only 7.1 percent of the work force.

Table 17. Proportion of 1960 Iowa employment that was located in urban places 2,500 and over, by type of industry

Industry	Iowa	2,500-4,449		4,500-8,499	
	Employment	Employ.	Propor.	Employ.	Propor.
Manufacturing	189,660	5,991	3.2	15,228	8.0
Durable	97,957	2,794	2.9	7,423	7.6
Nondurable	91,803	3,197	3.5	7,805	8.5
Construction	52,979	3,765	7.1	6,002	11.3
Transportation, Communication, Utility & Sani- tary service	64,375	3,171	4.9	7,314	11.4
Wholesale & Retail	198,587	12,728	6.4	23,835	12.0
Finance, Insurance, Real Estate, Business & Repair	57,282	3,023	5.3	6,023	10.5
Professional & Related	129,655	6,977	5.4	12,823	12.2
Public Administra- tion	32,810	2,016	6.1	3,364	10.3
Other	292,154	6,544	2.2	12,592	4.3
TOTAL	1,019,002	44,215	4.3	90,181	8.8

Table 17. (Continued)

Industry	8,500-24,999		25,000-over		TOTAL	
	Employ.	Propor.	Employ.	Propor.	Employ.	Propor.
Manufacturing	22,352	11.8	94,082	49.6	137,653	72.6
Durable	14,744	15.1	45,537	46.5	70,498	72.0
Nondurable	7,608	8.3	48,545	52.9	67,155	73.2
Construction	3,833	7.2	17,055	32.2	30,655	57.9
Transportation, Communication, Utility & Sanitary Service	5,514	8.6	27,444	42.6	43,443	67.5
Wholesale & Retail	16,033	8.1	76,273	38.4	128,869	64.9
Finance, Insurance, Real Estate, Business & Repair	4,178	7.3	27,823	48.6	41,047	71.7
Professional & Related	9,831	7.6	5,508	42.4	87,649	67.6
Public Administration	2,585	7.9	14,305	43.6	22,270	67.9
Other	8,189	2.8	37,896	12.9	65,221	22.2
TOTAL	72,515	7.1	349,896	34.3	556,807	54.6

The largest proportion (34.3 percent) was located in urban places of 25,000 and over population.

Changes in the Industrial Employment Structure

Changes in the structure of industrial employment in these urban places during the 1960's is shown in Table 18. More jobs (71,503) were created in urban places over 2,500 population than in the state as a whole (69,338). This implied that employment on farms and in urban places of under 2,500 population decreased in the 1960's. There was a direct association between the size of an urban place and its proportion of the Iowa total employment increase. However, 46.3 percent of the total absolute increase in employment was in urban places 25,000 and over population. The smallest urban places (2,500 to 4,499 population) accounted for only 11.2 percent of all new jobs that were created in Iowa during the 1960-1970 period.

Variability of Total Employment Change in Urban Places with Population 2,500 and Over

Total employment across all urban places increased 12.8 percent during the 1960's (Table 19). The largest percentage increase (25.2 percent) was in the moderate size urban places (population 8,500 to 24,999). The lowest percentage increase (9.2 percent) was in the class representing the largest urban places (population 25,000 and over). While the largest urban places had the lowest percentage increase in

Table 18. Proportion of 1960-1970 Iowa industrial employment changes that occurred in urban places 2,500 and over, by type of industry

Industry	Iowa Absolute Change	2,500-4,499		4,500-8,499	
		Absolute Change	Percent of Iowa	Absolute Change	Percent of Iowa
Manufacturing	28,161	2,371	8.4	1,820	6.5
Durable	29,380	2,206	7.5	1,891	6.4
Nondurable	-1,219	165	-13.5	-71	5.8
Construction	4,194	-306	-7.3	180	4.3
Transportation, Communications, Utility & Sanitary service	-1,051	38	-3.6	-515	49.0
Wholesale & Retail	35,860	1,737	4.8	3,771	10.5
Finance, Insurance, Real Estate & Business & Repair	15,627	641	4.1	1,424	9.1
Professional & Related	62,826	4,301	6.8	9,217	14.7
Public Administra- tion	6,448	358	5.6	602	9.3
Nonreporting Industries	-94,752	-1,347	1.5	-3,131	3.3
TOTAL	69,338	7,733	11.2	13,368	19.3

Table 18. (Continued)

Industry	8,500-24,999		25,000-over		TOTAL	
	Absolute Change	Percent of Iowa	Absolute Change	Percent of Iowa	Absolute Change	Percent of Iowa
Manufacturing	4,685	16.6	-3,111	-11.0	5,765	20.5
Durable	4,063	13.8	3,212	14.3	12,372	42.0
Nondurable	622	-51.0	-7,323	600.73	-6,607	542.0
Construction	348	8.3	1,453	34.6	1,675	39.9
Transportation, Communications, Utility & Sanitary service	-182	17.3	-1,311	124.7	-1,970	187.4
Wholesale & Retail	4,420	12.3	12,028	33.5	21,956	61.2
Finance, Insurance, Real Estate & Business & Repair	2,377	15.2	5,523	35.3	9,965	63.8
Professional & Related	7,994	12.7	27,917	44.4	49,429	78.0
Public Administration	601	9.3	2,209	34.3	3,770	58.5
Nonreporting Industries	-1,986	2.1	-12,263	12.9	-19,087	20.1
TOTAL	18,257	26.3	32,085	46.3	71,503	103.6

Table 19. 1960-1970 Employment changes in Iowa urban places, 2,500 and over, by 1960 urban place size

Industry	2,500 - 4,499 n = 36		4,500 - 8,499 n = 38		8,500 - 24,999 n = 14	
	Employment Absolute	Change Percent	Employment Absolute	Change Percent	Employment Absolute	Change Percent
Manufacturing	2,371	39.6	1,820	12.0	4,685	21.0
Durable	2,206	79.0	1,891	25.5	4,063	27.6
Nondurable	165	5.2	-71	-0.9	622	8.2
Construction	-306	-8.1	180	3.0	348	9.1
Transportation, Communications, Utilities	38	1.2	-515	-7.0	-182	-3.3
Wholesale & Retail	1,737	13.6	3,771	15.8	4,420	27.6
Finance, Insurance, Real Estate, Business & Repair	641	21.1	1,424	23.6	2,377	56.9
Professional & Related	4,301	61.6	9,217	58.3	7,994	81.3
Public Admini- stration	358	17.8	602	17.9	601	23.2
Nonreporting Industries	-1,347	-20.8	-3,131	-24.9	-1,986	-24.3
TOTAL	7,733	17.6	13,368	14.8	18,259	25.2

Table 19. (Continued)

Industry	25,000 - 209,999 n = 14		TOTAL n = 102	
	Employment Absolute	Change Percent	Employment Absolute	Change Percent
Manufacturing	-3,111	-3.3	5,765	4.2
Durable	4,212	9.2	12,372	17.5
Nondurable	-7,323	-15.1	-6,607	-9.8
Construction	1,453	8.5	1,675	5.5
Transportation, Communications, Utilities	-1,311	-4.8	-1,970	-4.5
Wholesale & Retail	12,028	15.8	21,956	17.0
Finance, Insurance, Real Estate, Business & Repair	5,523	19.9	9,965	24.3
Professional & Related	27,917	50.7	49,429	56.4
Public Admini- stration	2,209	15.4	3,770	16.9
Nonreporting Industries	-12,623	-33.3	-19,087	-29.3
TOTAL	32,085	9.2	71,503	12.8

total employment, they had the largest absolute increase (32,085 additional jobs).

Manufacturing

Manufacturing employment increased across all urban places (2,500 and over population) by 4.2 percent or 5,765 additional jobs during the 1960's. However, this net increase accounted for only 20.5 percent of the new manufacturing jobs established in Iowa during the 1960's (urban places less than 25,000 population accounted for nearly one-third of the new manufacturing jobs). The largest percentage increase (39.6 percent) was in the smallest urban places. This increase (2,371 additional jobs) represented 8.4 percent of all new manufacturing jobs created in the 1960's. Employment increases in the more populated cities (4,500 to 8,499 and 8,500 to 24,999) were 12.0 percent and 21.0 percent respectively. They accounted for 6.6 percent and 16.6 percent, respectively, of the increase in manufacturing employment across the state. However, the largest urban places (25,000 and over population) had an actual decrease in manufacturing employment of 3.3 percent or 3,111 jobs.

Most of the increase in total manufacturing employment resulted from greater employment in durable manufacturing. The urban places (2,500 and over population) of Iowa accounted for 42.1 percent of all new jobs in durable manufacturing during the 1960's. All urbanization classes had increased employment for this category with the smallest urban places having the largest relative gain (79.0 percent or 7.5

percent of all new jobs created in durable manufacturing). The smallest percentage increase (9.2 percent) was again in the largest urban places. However, the largest urban places accounted for 14.3 percent of the new jobs in durable manufacturing for the state.

Employment in nondurable manufacturing decreased (-9.8 percent) across all urban places. The decrease in number of jobs (6,607) was five times larger than the state decrease in nondurable manufacturing. Employment increases, however, were experienced in the smallest (2,500 to 4,499) and moderate populated (8,500 to 24,999) urban places (5.2 percent and 8.2 percent respectively). The largest loss of employment was in the most populated urban places where jobs decreased 15.1 percent. The loss here was over six times the nondurable manufacturing employment loss experienced over the state in the 1960's.

Construction

Construction employment increased 5.5 percent (1,675 new jobs) in Iowa's urban places during the 1960's. This represented almost 40 percent of the total construction employment increase experienced by the state. The least populated cities had the only employment loss (-8.1 percent) in this category. Construction employment, however, showed a rise of 8.5 percent or more in urban places population 8,500 and over. The largest urban places accounted for 34.6 percent of the increased construction employment experienced by the state. There existed an association between the size of an urban place and its proportion of the Iowa change in construction employment. While the smallest urban places

had an employment loss, urban places of 4,500 to 8,499 and 8,500 to 24,999 population accounted for 4.3 percent and 8.3 percent of new jobs in construction in Iowa.

Transportation, communications, utility and sanitary service

Employment in transportation, communication, utility and sanitary services decreased greater in urban places 2,500 and over population than in the state as a whole during the 1960's. The 4.5 percent decrease in urban places 2,500 and over population accounted for a displacement of 1,970 jobs compared to the 1,051 jobs lost in this category for the state. This points to the fact that the smallest urban places had the only employment increase (1.2 percent or 38 additional jobs) since the larger urban places (population over 4,455) had a total employment loss of 2,008 jobs in transportation, communication, utility and sanitary services. In fact, the largest urban places accounted for over 124 percent of the loss of jobs in this category for the state during the 1960's.

Wholesale and retail trade

Employment increased about 17.0 percent in Iowa's urban places in wholesale and retail trade. This represented 61.2 percent of the new jobs in this category for the state. Only the moderately populated urban places (8,500 to 24,999 population) showed a higher percentage gain in this category (27.6 percent) than the overall increase experienced by all urban places. However, the highest proportion (33.5 percent) of

the Iowa employment increase was in the largest urban places. There was a direct association between the size of an urban place and its proportion of the Iowa increase in wholesale and retail trade. While urban places with population 4,500 to 8,499 had a higher proportion (12.0 percent to 8.1 percent) of the 1960 total employment in wholesale and retail trade than did urban places with population 8,500 to 24,999, the larger places showed employment gains in this category that were greater than the gains of less populated places (12.3 percent to 10.5 percent).

Finance, insurance, real estate and business and repair services

During the 1960-1970 period, employment in finance, insurance, real estate, and business and repair service industries increased in all urban place classes. Urban places 2,500 and over population accounted for 63.8 percent of all new jobs in this category during the 1960's. The largest percentage increase (56.9 percent) occurred in moderately populated urban places (population 8,500 to 24,999). There was a direct association between the size of an urban place and its proportion of the state employment increase in this category. Over 35 percent of the new jobs were located in Iowa's largest cities (population 25,000 and over). In 1960, these largest urban places had nearly 50 percent of the jobs in finance, insurance, real estate, and business and repair service industries.

Professional and related services

The largest single contributor to increased employment in all urban place classes was professional and related services. Urban places in total realized an employment gain of 56.4 percent or 49,429 additional jobs. This represented 78.7 percent of the new jobs created in this category in the state during the 1960's. The largest percentage increase was in the moderately populated urban places of Class 3 where the gain was 81.3 percent (only 12.7 percent of the state increase, however). The largest absolute increase (27,917 jobs) occurred in the most populated cities and represented 44.4 percent of the state increase for this category.

Public administration

One of the smallest absolute employment increases in urban places was in public administration. Employment increased 16.9 percent or only 3,770 additional jobs across all urban places (58.5 percent of the state employment increase in this category occurred in urban places during the 1960's). Percentage increases ranged from 15.4 percent (34.3 percent of the state increase) in the most populated urban place class to 23.2 percent (9.3 percent of the state increase) in the moderately populated urban places of Class 3. Again, there was a direct association between the size of an urban place and its proportion of the state increase in public administration employment. As the size of an urban place increased, its proportion of the state employment increase in this category also rose.

Variability in Employment Changes by City Size,
Populations 10,000 and Over

Because of greater refinement in the census employment classification, it is possible to describe the 1960-1970 changes in industrial employment in urban places 10,000 or more population in 1960 in greater detail. For this purpose, urban places of 10,000 population and over have been classified into three groups based of 1960 population: 1) those with populations of 10,000 to 15,999; 2) those with populations of 16,000 to 54,999; and, 3) those with populations of 55,000 and over. An urban place (population 10,000 and over) from this point on, for the purposes of this report, is referred to as a city.

The proportion of Iowa's 1960 employment that was located in cities of 10,000 and over population by market orientation and type of industry is shown in Table 20. About 40.6 percent of the states' total employment in the base year 1960 was located in these cities. The largest share was in cities 55,000 and over population. An association existed between city size and proportion of 1960 Iowa total employment.

Total employment across all Iowa cities increased 9.7 percent or 40,045 additional jobs during the 1960's. There was a close inverse relationship between city size and the percentage change in total employment (Table 21). The least populated cities (population 10,000 to 15,999) had a total employment increase of 32.0 percent or 12,385 jobs. Medium sized cities (population 16,000 to 54,999) had a total employment increase of 17.5 percent or 19,450 jobs. The most populated cities, however, had a total employment increase of only 6.6 percent or 17,451 jobs. The largest

Table 20. Proportion of 1960 Iowa industrial employment that was located in urban places 10,000 and over, by market orientation and type of industry

	10,000 - 15,999		16,000 - 54,999		55,000 & Over		Total	
	n = 7		n = 11		n = 7		n = 25	
	<u>Employment Change</u>		<u>Employment Change</u>		<u>Employment Change</u>		<u>Employment Change</u>	
	Absolute	Percent	Absolute	Percent	Absolute	Percent	Absolute	Percent
<u>Primarily Export</u>								
Agri., Forest., Fisher.	554	0.3	1,291	0.6	2,110	1.0	3,955	1.9
Manufacturing	11,443	6.0	30,142	15.9	73,323	38.7	114,908	60.6
TOTAL	11,997	3.0	31,433	7.9	75,433	18.9	118,863	29.7
<u>Mixed Export & Local</u>								
Mining	101	4.2	169	7.1	232	9.7	502	21.1
Construction	2,084	3.9	5,511	10.4	12,739	24.0	20,334	38.4
Transportation	1,682	4.3	4,815	12.2	13,359	33.9	19,856	50.3
Communications	599	4.8	1,432	11.5	4,459	35.9	6,490	52.2
Wholesale Trade	1,640	4.5	3,420	9.5	13,192	36.6	18,252	50.6
Finance, Insurance								
Real Estate	1,866	5.1	3,244	8.9	16,741	45.8	21,851	59.8
TOTAL	7,972	4.4	18,591	10.3	60,722	33.8	87,285	48.5
<u>Primarily Local</u>								
Retail Trade	7,035	4.3	19,020	11.7	45,356	27.9	71,411	43.9
Util. & Sanitary	639	5.1	1,467	11.7	3,915	31.3	6,021	48.2
Business & Repair	833	4.0	2,235	10.8	6,550	31.6	9,618	46.4
Personal Service	2,129	4.4	7,031	14.4	14,086	28.8	23,246	47.5
Entertain. & Rec.	318	4.8	933	14.2	2,223	33.9	3,474	53.0
Profes. & Related	5,132	4.0	24,124	18.6	34,599	26.7	63,855	49.2
Public Adm.	1,329	4.0	3,606	11.0	11,598	35.3	16,533	50.4
TOTAL	17,415	4.2	58,416	14.1	118,327	28.6	194,158	46.9

Table 21. Components of employment change in urban places, 10,000 and over population, by market orientation, industry and population

Industry	10,000 - 15,999 n = 7		16,000 - 54,999 n = 11	
	Employment Absolute	Change Percent	Employment Absolute	Change Percent
<u>Primarily Export</u>				
Agriculture, Fisheries, Forestry	37	6.6	458	35.5
Manufacturing	2,442	21.3	1,417	4.7
TOTAL EXPORT	2,479	20.7	1,875	6.0
<u>Mixed Export & Local</u>				
Mining	1	1.0	-26	-15.4
Construction	385	18.5	-37	-0.7
Transportation	-158	-9.4	-765	-15.9
Communication	73	12.2	21	1.5
Wholesale Trade	1,067	65.1	552	16.1
Finance, Insurance, Real Estate				
TOTAL MIXED	2,622	32.9	755	4.1
<u>Primarily Local</u>				
Retail Trade	2,941	41.8	4,131	21.7
Utilities and Sanitary Services	34	5.3	333	22.7
Business & Repair	421	50.5	945	42.3
Personal Service	407	19.1	-567	-8.1
Entertainment & Recreation	62	19.5	261	28.0
Professional & Related	4,154	80.9	13,944	57.8
TOTAL LOCAL	8,555	49.1	19,618	-33.6
<u>Nonreporting Industries</u>	-1,271		2,798	
TOTAL	12,385	32.0	19,450	17.5

Table 21. (Continued)

Industry	55,000 and Over n = 7		Total n = 25	
	Employment Absolute	Change Percent	Employment Absolute	Change Percent
<u>Primarily Export</u>				
Agriculture, Fisheries, Forestry	57	2.7	542	13.7
Manufacturing	-2,556	-3.5	1,303	1.1
TOTAL EXPORT	-2,499	-3.3	1,845	1.6
<u>Mixed Export & Local</u>				
Mining	162	69.8	137	27.3
Construction	1,412	11.1	1,760	8.7
Transportation	-2,141	-16.0	-3,064	-15.4
Communication	161	3.6	255	3.9
Wholesale Trade	2,007	15.2	3,626	19.9
Finance, Insurance, Real Estate	2,408	14.4	4,672	21.4
TOTAL MIXED	4,009	6.6	7,386	8.5
<u>Primarily Local</u>				
Retail Trade	5,443	12.0	12,515	17.5
Utilities and Sanitary Services	910	23.2	1,277	21.2
Business & Repair	1,694	25.9	3,060	31.8
Personal Service	-1,449	-10.3	-1,609	-6.9
Entertainment & Recreation	37	1.7	360	12.2
Professional & Related	17,127	49.5	35,225	55.2
Public Administration	1,694	14.6	2,801	16.9
TOTAL LOCAL	25,456	21.5	53,629	27.6
<u>Nonreporting Industries</u>	-9,515		-13,584	
TOTAL	17,451	6.6	42,045	9.7

increase in total employment occurred in industries oriented to local markets, whereas the smallest increase occurred in export industries. In the base year 1960, Iowa cities accounted for 46.9 percent of the local jobs and 48.5 percent of the mixed jobs in the state.

Primarily export industries

Employment change in the total export market was associated with the size of a city. Across all Iowa cities (population 10,000 and over), total employment in the export industries increased 1.6 percent or 1,845 jobs. The Iowa cities accounted for nearly 30 percent of the total employment in export industries in 1960. The smallest cities had both the largest absolute gain (2,479 new jobs) and the largest percentage gain (20.7 percent). In fact, the largest cities actually lost export employment amounting to 2,499 jobs or a decline of 3.3 percent.

An employment increase of 13.7 percent was realized across Iowa cities in agriculture, forestries and fisheries. However, less than 2 percent of the total employment in this industry in 1960 was located in cities of 10,000 and over population. Most of the new jobs (458) in agriculture, forestries and fisheries in Iowa cities occurred in medium sized cities (population 16,000 to 24,999). These medium size cities, however, had only 0.6 percent of the Iowa 1960 employment for this industry. No association existed between the city size and its employment change in agriculture, forestries and fisheries in the 1960-1970 period.

Most of the absolute employment increase in the export oriented industries was in manufacturing. Over 60 percent of all manufacturing

jobs in 1960 were in cities with population over 10,000. But by 1970, this proportion had dropped 53.3 percent as urban places under 10,000 experienced percentage gains exceeding these of cities 10,000 and over population. The association between the size of a city and the growth in manufacturing employment was very high. The least populated cities had the largest percentage gain (21.3 percent) in this category whereas the largest cities (population exceeding 55,000) experienced a decrease of 3.5 percent in manufacturing employment.

Mixed export and local industries

Iowa cities accounted for 48.5 percent of all jobs associated with a mixed market oriented industry. Total employment in the mixed industries increased 8.5 percent or 7,386 jobs in Iowa cities during the 1960's. All city classes showed increases in total mixed employment. Again, the smallest cities had the largest percentage increase (32.9 percent) while the larger cities tended to have the smaller percentage employment increases (4.1 percent in medium size cities and 6.6 percent in the largest cities).

Employment in the construction industry in all Iowa cities increased 8.7 percent during the decade of the 1960's while most of the absolute change occurred in the largest cities, the highest percentage gain (18.5 percent) was in the smallest cities. In 1960, cities with population of 10,000 to 15,999 employed only 3.9 percent of the Iowa construction labor force while the largest cities employed 24.0 percent of the Iowa construction labor force. Medium size cities employed some 10.4

percent of the Iowa construction labor force in 1960, but during the 1960's their employment decreased by 0.7 percent or 37 jobs in this industry.

Employment in transportation industry decreased in each city class. In fact, the absolute and percentage loss in transportation employment was larger than that of any other industrial category. As shown in Table 22, total city employment in transportation decreased by 15.4 percent or 3,064 jobs during the 1960's. The smallest cities had the smallest percentage loss (9.4 percent).

The only component of the transportation industry that showed an employment increase over all Iowa cities was trucking services and warehousing (0.2 percent or 11 jobs). But only the smallest and largest cities had increased employment in this category (10.0 percent and 5.0 percent respectively). Most of the loss in transportation employment occurred in the railway and railway express industry (-32.1 percent or 3,112 jobs). However, no association existed between city size and employment decrease in any major component of the transportation industry.

An employment increase of 3.9 percent (255 new jobs) was realized in communications in Iowa cities during the 1960's. A little over 50 percent of all communication jobs in 1960 were located in cities with population of 10,000 and over. The highest percentage gain (12.2 percent) during the 1960's occurred in the smallest cities. Medium size cities experienced only a slight increase (1.5 percent) while the largest cities had an increase of 3.6 percent.

Table 22. Components of change in transportation employment in urban places, 10,000 and over, by size of urban place in 1960

	10,000 - 15,999		16,000 - 54,999		55,000 & Over		Total	
	n = 7		n = 11		n = 7		n = 25	
	<u>Employment Change</u>		<u>Employment Change</u>		<u>Employment Change</u>		<u>Employment Change</u>	
	Absolute	Percent	Absolute	Percent	Absolute	Percent	Absolute	Percent
Railway & Railway Express	-310	-32.3	-585	-22.6	-2,217	-36.0	-3,112	-32.1
Trucking Service & Warehouse	60	10.0	-301	-18.8	252	5.0	11	0.2
Other Transportation	92	74.2	121	19.2	-176	-8.0	37	1.2
Transportation	-158	-9.4	-765	-15.9	-2,141	-16.0	-3,064	-15.4

Table 23. Components of change in retail trade employment in urban places, 10,000 and over, by size of urban place in 1960

	10,000 - 15,999		16,000 - 54,999		55,000 & Over		Total	
	n = 7		n = 11		n = 7		n = 25	
	<u>Employment Change</u>		<u>Employment Change</u>		<u>Employment Change</u>		<u>Employment Change</u>	
	Absolute	Percent	Absolute	Percent	Absolute	Percent	Absolute	Percent
Food & Dairy Product Stores	518	47.9	487	16.7	339	5.1	1,344	12.6
Eating & Drinking Places	537	42.7	1,606	48.6	2,015	24.1	4,158	32.1
Other Retail	1,886	40.2	1,993	15.6	3,044	10.0	6,923	14.5
Retail Trade	2,941	41.8	4,131	21.7	5,443	12.0	12,515	17.5

During the 1960's, employment in wholesale trade increased about 19.9 percent in Iowa cities of 10,000 and more population. However, the smallest cities (10,000 to 15,999 population) showed an increase of 65.1 percent. Although these places had only 4.5 percent of Iowa's wholesale trade employment in 1960, the proportion increased to 6.5 percent by 1970. Still, the largest cities experienced most of the absolute increase in wholesale employment (2,007 new jobs). These places accounted for about one-third of the state's wholesale employment in 1960 and also in 1970.

Iowa cities with 1960 population of 10,000 or more had almost 60 percent of the state's employment in finance, insurance and real estate. These cities experienced a 21.4 percent gain in employment in this category during the 1960 decade. However, there was an inverse relationship between city size and the percentage gain in finance, insurance, and real estate employment. The smallest cities had a gain of 67.2 percent; the medium size cities had a gain of 31.1 percent and the largest cities (population 55,000 or more) had a gain of 14.4 percent. As a result, the proportion of 1970 total employment in this category located in the smallest cities increased even though most of the absolute increase in finance, insurance and real estate jobs was located in the bigger cities.

Primarily local industries

Total employment in local industries increased by 27.6 percent (13,584 additional jobs) across Iowa cities during the 1960-1970 period.

The less populated a city was, the greater was the likelihood that it had a high percentage increase in local industrial employment. While the smallest cities had only 4.2 percent of 1960 total employment in local industries, they experienced a gain of 49.1 percent during the 1960's. The more populated cities had an increase in total local industry employment of less than 34 percent. However, the more populated cities (16,000 and over population) experienced larger absolute increases than the smallest cities.

During the 1960's, retail trade employment (Table 21) increased 17.5 percent (12,515 additional jobs) in Iowa cities of 10,000 or more population. In 1960, almost 44 percent of all retail trade employment was located in Iowa cities. Once again, there was an association between city size and the percentage gain in total retail trade employment. The most populated cities had a gain of only 12.0 percent, whereas the least populated cities had a gain of 41.8 percent. However, absolute differences among classes widened because of higher absolute gains in retail trade employment for the more populated cities, than in the least populated cities.

The same association that occurred in total retail trade also occurred in food and dairy product stores and other retail trade (each being a component of total retail trade). However, the medium size cities (population 16,000 to 54,999) had the highest relative employment increase in eating and drinking places while the largest cities had the smallest percentage gain.

Employment in utility and sanitary service increased 21.2 percent (1,277 additional jobs) in Iowa's cities during the 1960's. Again there was a close association between city size and employment gains in utility and sanitary services. But in this instance, the largest percentage gain occurred in the most populated cities rather than the least populated cities. As with the mining industry, the largest relative and absolute employment gains occurred in the most populated cities. These are the only two industrial categories in which this happened.

The second largest percentage employment gain (31.8 percent) among major industrial categories occurred in business and repair services. In 1960, Iowa's cities had 46.4 percent of total employment in this category. This was one of the smallest proportions of any major industrial category. The percentage increase experienced by Iowa's smallest cities (50.5 percent) was almost double that experienced by the largest cities (25.9 percent). However, the absolute increase for the largest cities (1,694 jobs) was over four times the increase experienced in the smallest cities (421 jobs).

In 1960, Iowa cities accounted for 47.5 percent of the personal services employees in the state. During the 1960-1970 period, these urban places lost 1,609 jobs in this category, a decline of 6.9 percent. Only the smallest cities experienced an increase in personal services employment (19.1 percent or 407 new jobs). However, these least populated cities had only 4.4 percent of the Iowa total employed in personal services in 1960. The more populated cities (16,000 to 54,999 and 55,000

and over) experienced employment decreases of 8.1 percent and 10.3 percent respectively. As a result, the absolute differences in personal services employment between city size classes tended to decrease.

Employment in professional and related services increased by 55.2 percent (35,225 additional jobs) in Iowa's cities during the 1960's. This was the largest percentage increase for any major industrial category. In 1960 these cities had nearly a half of all professional and related services jobs in the state. Again, there was an inverse association between city size and percentage gains in employment. The less populated a city was, the greater was the percentage increase in professional and related services employment. The least populated cities had an increase of 80.9 percent while the most populated cities had an employment gain of 49.5 percent. Even with the large percentage increase in the less populated cities, the absolute changes widened the employment differences between the smaller and larger urban places.

Table 24 shows the employment changes for the components of the professional and related services category. There was a close association between city size and percentage change in educational services employment and other professional and related services. The smaller cities experienced larger percentage gains than the more populated cities (55,000 and over population) in these categories. The smaller cities also tended to experience greater percentage gains in hospital employment.

In 1960, Iowa cities accounted for about half of the state's

Table 24. Components of change in professional and related services employment in urban places 10,000 and over by size of urban place in 1960

	10,000 - 15,999 n = 7		16,000 - 54,999 n = 11		55,000 & Over n = 7		Total n = 25	
	<u>Employment Change</u>		<u>Employment Change</u>		<u>Employment Change</u>		<u>Employment Change</u>	
	Absolute	Percent	Absolute	Percent	Absolute	Percent	Absolute	Percent
Hospitals	592	56.6	1,188	21.8	2,942	31.1	4,722	29.6
Educational Services	2,188	107.8	8,954	67.6	8,129	63.3	19,271	68.6
Welfare, Religious, & Nonprofit	75	9.6	471	23.1	655	13.3	1,201	15.5
Other Professional & Related Services	1,299	102.2	3,313	96.9	5,401	73.1	10,013	82.9
Professional & Related	4,154	80.9	13,944	57.8	17,127	49.5	36,711	57.0

employment in public administration. During the 1960-1970 period, they experienced an increase of 16.9 percent in public administration employment. While the absolute differences among city size classes widened, smaller cities tended to have larger percentage gains in public administration employment than the largest cities. The most populated cities gained 1,694 public administration jobs whereas the less populated cities (10,000 to 15,999 and 16,000 to 54,999) gained only 536 jobs and 571 jobs respectively. The smallest cities, however, experienced a 40.3 percent increase. This compares with a 15.8 percent increase for medium size cities and a 14.6 percent increase for the largest cities (Table 21).

Components of manufacturing

Total manufacturing employment increased only 1.6 percent in all urban places with population 10,000 and over in 1960 (Table 25). This compared with an increase of 14.8 percent for the state as a whole. The small relative increase (1.6 percent) was associated with a decrease in total manufacturing employment in Iowa's largest cities (population 55,000 and over). However, all classes of cities with population 10,000 and over experienced increased employment in durable manufacturing. But, only cities of 10,000 to 15,999 population experienced a gain in nondurable manufacturing.

Durable manufacturing During the 1960's, employment in durable manufacturing industries increased 6.9 percent (4,112 jobs) in urban places over 10,000 population. The percentage increase tended to decline

Table 25. Components of change in manufacturing employment in urban places, 10,000 and over, by size of urban place in 1960

	10,000 - 15,999 n = 7		16,000 - 54,999 n = 11		55,000 & Over n = 7		Total n = 25	
	<u>Employment Change</u>		<u>Employment Change</u>		<u>Employment Change</u>		<u>Employment Change</u>	
	Absolute	Percent	Absolute	Percent	Absolute	Percent	Absolute	Percent
Manufacturing	2,442	21.3	1,417	4.7	-2,556	-3.5	1,303	1.1
Durable	1,970	25.2	628	4.1	1,514	4.2	4,112	6.9
Furniture, Lumber								
Mill	115	83.3	-767	-41.2	-450	-16.3	-1,102	-23.2
Metals	369	28.5	2,105	43.4	197	2.5	2,671	19.1
Machinery except								
Electrical	1,008	68.2	469	11.6	2,036	14.4	3,513	17.8
Electrical								
Machinery, Equip.	260	7.6	-129	-8.9	371	5.3	502	4.2
Motor Vehicles	155	93.4	238	377.8	304	31.2	697	57.9
Other Durables	343	26.2	-195	-6.2	1,366	36.8	1,514	18.5
Nondurable	192	5.3	-294	-2.0	-6,380	-17.3	-6,482	-11.7
Food & Kindred	-332	-16.2	-1,702	-19.4	-7,439	-33.4	-9,473	-28.6
Textile, Mill	-65	-27.8	-298	-45.0	-220	-14.3	-583	-73.9
Printing, Publish.								
& Allied	90	11.2	-239	-12.4	-851	-10.8	-1,000	-9.4
Chemical & Allied	81	31.0	781	40.5	237	24.1	1,099	34.6
Other Nondurable	422	160.5	1,167	83.5	1,893	45.3	3,482	59.6

with city size. The smallest Iowa cities had the largest absolute and percentage employment gains (25.2 percent or 1,790 additional jobs). The moderately populated cities (16,000 to 54,999) and the largest cities (55,000 and over) experienced gains of about the same magnitude, 4.1 percent and 4.2 percent respectively.

Employment in furniture, lumber and mill products increased only in cities 10,000 to 15,999 population. Larger urban places experienced an absolute decline in this industrial category. Cities with 16,000 to 54,999 population showed a drop of 41.2 percent and cities with 55,000 and over population had a decline of 16.3 percent.

Employment in the metal industry in cities over 10,000 population increased 19.1 percent (2,671 jobs) during the 1960 decade. However, there was much variability associated with city size. Urban places with 55,000 and over population had an increase of only 2.5 percent, whereas those urban places with 16,000 to 54,999 population showed an increase of 43.4 percent. Places with 10,000 to 15,999 population experienced an increase of 28.5 percent. Most of the absolute increase occurred in the medium size cities (2,105 additional jobs) while the smallest absolute increase was in the most populated cities (197 additional jobs).

During the 1960's, employment in the machinery, except electrical, industries in Iowa's cities increased 17.8 percent (3,513 additional jobs). The absolute increase was the highest among all manufacturing components. Whereas most of the absolute increase occurred in the largest cities (2,036 additional jobs), the highest percentage increase (68.2 percent) was in the least populated cities.

Employment in the electrical machinery, equipment and supply industries did not grow as rapidly in nonelectrical machinery. Iowa's cities in total experienced a gain of only 4.6 percent in this category. The smallest cities again had the highest percentage gain. The moderately populated cities (16,000 to 54,999) experienced a decline and the most populated cities had a percentage increase slightly less than that of the smallest cities.

Large percentage gains in employment in motor vehicles and other transportation occurred in all city classes during the 1960's. The largest percentage gain was in cities with populations of 16,000 to 54,999 (377.8 percent). Medium size cities experienced an increase of 93.4 percent. While cities with population 55,000 and over had the smallest percentage gain (31.2 percent), they experienced the largest absolute increase (304 additional jobs). The growth in motor vehicle employment in cities with populations of 55,000 and over, however, was more rapid than that of any other component of total manufacturing.

Nondurable manufacturing During the 1960's, Iowa cities experienced substantial employment losses in nondurable manufacturing. Employment in this category declined by 11.7 percent or 6,482 jobs. Employment change was associated with city size. The least populated cities had a relative employment gain of 5.3 percent while the more populated cities (16,000 to 54,999 and 55,000 and over) experienced employment losses (-2.0 percent and -17.3 percent respectively). The loss in employment in the largest cities accounted for most of the

absolute loss (6,380) that occurred in Iowa's nondurable manufacturing during the 1960's.

All city size classes had an employment loss in food and kindred products. The total absolute loss for this category was larger than that of any other industry in Iowa's cities. The relative employment loss (28.6 percent) in food and kindred products was second only to the loss in railway and railway express industries (32.1 percent). The smallest percentage loss of jobs occurred in the least populated cities, but the decrease was still 16.2 percent. The medium size cities experienced a decrease of 19.4 percent in food and kindred products employment and the largest cities had a decline of 33.4 percent.

During the decade of the 1960's, employment in printing, publishing and allied industries in Iowa's cities declined by 9.4 percent. Only the smallest cities experienced increased employment in this category (11.2 percent or 90 additional jobs) Of the 1,000 printing and publishing jobs lost in Iowa's cities, 851 jobs were lost in cities with population 55,000 and over and 239 jobs were lost in medium size cities. There was no consistent relationship between the change in printing, publishing and allied industries employment and city size.

The only employment increase for a major component of nondurable manufacturing occurred in the chemical and allied product category (34.6 percent or 1,099 additional jobs). It was also the only major component to have a positive employment gain in each city size class. While there was much variability in relative and absolute employment

gains among city size classes, there was no consistent relationship between employment change and city size. Absolute and percentage gains were greatest in the moderately populated cities (16,000 to 54,999 population). The smallest percentage increase (24.1 percent) occurred in the largest cities. Although cities with population 10,000 to 15,999 experienced an increase in chemical and allied product employment of 31.0 percent, this represented only 81 new jobs.

SUMMARY AND CONCLUSIONS

The main objective of this study was to look at the differential changes in industrial employment structure by different size urban places and degree of urbanization in Iowa counties. Of concern were the differences in the rates of employment growth which contrasted rural areas as against urban areas. Based on these differential employment growth rates during the 1960's, it is possible to draw some tentative conclusions about the relative competitive position of rural communities with respect to attracting different types of industry.

Summary

The changing industrial structure of the state was reviewed and compared with employment changes that occurred in the United States. Among the noteworthy results were: 1) during the 1960's, Iowa had an increase in total employment of 6.8 percent compared with 15.3 percent increase in the nation; 2) in comparing employment changes of Iowa industries against those employment changes of U.S. industries it was found that Iowa had a relative growth in only two major industrial categories (mining and manufacturing) and five subcategories (metal, machinery, except electrical, motor vehicles and other transportation, chemical and allied products and private educational services); and 3) in comparing employment changes of Iowa industries to the overall 6.8 percent employment increase of Iowa, the major growth industries of the state included professional and related services, finance, insurance and real estate, utility and sanitary services, business and repair services, public

administration, retail trade, wholesale trade, manufacturing, construction and mining.

Employment changes in Iowa's counties

Changes in total employment in Iowa counties during the 1960's were directly related to the degree of urbanization (population density). Only the more urbanized counties as measured by population density (36.9 people per square mile) experienced increased total employment. Most of the total employment increase occurred in industries serving local markets. All industries oriented to local markets, except personal services, had growing employment in the 1960's. The larger absolute employment increases in these industries occurred in the most urbanized counties. With few exceptions urbanized counties also had the largest percentage gains in employment. One exception was utility and sanitary services where the least urbanized counties (population density of 14.0 to 23.9 people per square mile) showed the largest percentage gain. The others were retail trade and public administration where counties with population density of 37.0 to 64.9 had the largest percentage gain in employment.

Total employment in mixed market oriented industries also increased in the 1960-1970 period, but at a much slower rate than local market oriented industries. A close association was found between the degree of urbanization and the rate of growth in employment in the industry category. The more urbanized a county was, the larger was the percentage gain in mixed industry total employment. The least urbanized counties had the largest percentage gain in mining while counties with population

density 37.0 to 64.9 had the largest percentage gain in finance, insurance and real estate. Employment in the most urbanized counties grew more rapidly in the other mixed market oriented industries during the 1960's.

Total employment decreased in the industries oriented to export markets. While employment in agriculture, forestry and fisheries decreased independently of the degree of urbanization, total manufacturing employment grew more rapid in the more rural counties of the state. Most of the manufacturing employment growth occurred in durable manufacturing. The highest percentage gains in durable manufacturing employment generally occurred in the least urbanized counties (the exceptions being furniture, lumber and mill products and other durable manufacturing industries). Whereas total employment in nondurable manufacturing decreased in Iowa during the 1960's, the decline was concentrated in the most urbanized counties. Counties with population densities of less than 65 people per square mile generally showed increases in nondurable manufacturing employment. The highest percentage gains occurred in the most ruralized counties where all components of nondurable manufacturing, except food and kindred product industries, showed increased employment.

Employment changes in Iowa's urban places, 2,500 and over

Total employment in all urban places over 2,500 population increased 12.8 percent during the 1960's. The largest percentage

increase in total employment occurred in urban places with population 8,500 to 24,999 in 1960. The largest urban places (1960 population over 25,000) had the smallest percentage increase in total employment but these places had the largest absolute employment gain.

The proportion of Iowa's total employment change that occurred in the urban places during the 1960 decade was 103.6 percent (that is, 71,443 additional jobs in urban places as against 69,338 additional jobs in the state). There did exist a direct relationship between urban places size and its proportion of the Iowa total employment change. However, 46.3 percent of the total absolute change was seen to have occurred in urban places with population 25,000 and over. The smallest urban places (population 2,500 to 4,499) accounted for only 11.2 percent of the total absolute employment change that occurred in the state during the 1960's.

Most of the total employment increase that occurred in Iowa's urban places was a result of the substantial gain in professional and related services. The highest percentage increase in this category occurred in urban places with population 8,500 to 24,999. However, the largest urban places accounted for over 44 percent of the Iowa total employment increase in professional and related services. Second only to the large employment increase in professional and related services was wholesale and retail trade. Once again, the highest percentage increase in employment took place in urban places with populations of 8,500 to 24,999 although the largest cities obtained little over

one-third of all new jobs in wholesale and retail trade. In fact, with the exception of manufacturing, Iowa's largest urban places accounted for the highest proportion of the absolute employment gain that occurred in the industrial structure of the state during the 1960's.

However, the smallest urban places did show a higher percentage employment gain than the largest urban places in total manufacturing -- both durable and nondurable manufacturing -- transportation, communication, utility and sanitary service, (in fact, this was the only employment increase experienced by any urban place class), finance, insurance, real estate, business and repair services, professional and related services, and public administration. It is also of interest to note that Iowa's smallest urban places experienced a faster rate of employment growth in every industrial category than the largest urban places.

Employment changes in Iowa's urban places, 10,000 and over

For the purpose of this report an urban place with a population of 10,000 and over was termed "city". The proportion of Iowa total employment in the base year 1960 that was located in Iowa cities was 40.6 percent. This compares with 54.6 percent for all urban places 2,500 and over. Most of the 40.6 percent proportion was of the labor force located in cities of 55,000 and over population.

An association was found between city size and the 1960-1970 change in total employment. The smallest cities (population 10,000 to 15,999) had the highest percentage employment gain while cities with population 55,000 and over had the smallest percentage employment gain.

Employment change in the export industry category also was found to be associated with city size. Whereas the smallest cities experienced a substantial increase in total export employment, the largest cities had a loss of export employment. Most of this increase and all of the decrease was associated with the employment change that occurred in manufacturing. While all city classes had an employment gain in agriculture, forestries and fisheries, this included only 572 additional jobs in total.

Total manufacturing employment increased only 1.6 percent in all urban places population 10,000 and over as compared to the state manufacturing increase of 14.8 percent. This small increase was associated with a decrease in total manufacturing employment in Iowa's largest cities. However, all city classes experienced increased employment in durable manufacturing. But, only cities of 10,000 to 15,999 population experienced a gain in nondurable manufacturing employment.

As noted earlier, during the 1960's employment in total durable manufacturing increased 6.9 percent in Iowa's cities. This compares with an increase of 30.0 percent for the state as a whole. Only the smallest cities, (population 10,000 to 15,999) had a substantial increase (25.2 percent or 1,970 additional jobs) in durable manufacturing employment, but even this was less than the state increase.

The smallest cities also were shown to have had the only employment increase in furniture, lumber and mill products industries.

The highest percentage employment gains in machinery, except electrical, and electrical machinery, equipment and supply were observed to be in these same least populated cities. Motor vehicles and other transportation had the highest percentage employment increase for a major component of manufacturing, but this increase was still considerably lower than the state increase in this industry. However, cities with population 16,000 to 54,999 did experience an increase of 377.8 percent (238 additional jobs) in this category during the 1960's.

Total nondurable manufacturing employment decreased 11.7 percent in Iowa cities in the 1960's compared to a drop of only 1.3 percent for the state. However, there did exist an association between the size of a city and its percentage change in total nondurable manufacturing employment. This association showed that cities with population 10,000 to 15,999 had nondurable manufacturing employment increase 5.3 percent while cities over 16,000 experienced decreases in employment. No component of nondurable manufacturing in Iowa cities increased greater than or decreased less than the employment changes that occurred in the state for these same industries.

While state employment dropped slightly less than 20 percent in food and kindred products, Iowa cities had a decrease of 28.6 percent. The highest percentage losses occurred in the more populated cities. While employment decreased 23.9 percent in textile mill and fabricated products in Iowa cities, the absolute loss (583) accounted for over 340 percent of the state decrease (169 jobs). The only employment increase that occurred

across Iowa cities in nondurable manufacturing was in chemical and allied product industries. The absolute increase (1,099 jobs) in these cities accounted for 43.7 percent of all new jobs in the state for this category. The highest percentage increase in chemical and allied products was in cities with population 16,000 to 54,999 which accounted for 781 new jobs or over 31 percent of the state employment increase in this category.

Total employment in the mixed industries increased in all city classes. Again, the smallest cities experienced more rapid growth than the largest cities. Most of the absolute increase resulted from employment gains in finance, insurance and real estate. While the smallest cities had the highest relative increase here, the largest cities experienced the largest absolute gain. Mining was the only mixed industry in which employment grew more rapidly in the largest cities than in the small cities.

Total employment in the local industries increased across all city size classes with the smallest cities enjoying the highest relative employment increase. However, the employment gap between city classes widened because of the direct relationship between city size and total absolute change in local industry employment. Most of the absolute gain occurred in professional and related industries. As with most components of the local market oriented category, the highest percentage employment gain in professional and related services was in the smallest cities.

Conclusions

Based on the differential changes in employment noted earlier, of concern is the extent to which one can say something about the relative competitive advantage positions of rural counties and small towns in attracting industrial development in the 1960's. While larger numbers of jobs were being created in the most urbanized counties and most populated cities, certain industries tended to increase employment relatively more in the more rural areas of the state.

Evidently rural counties had a relative competitive advantage in attracting manufacturing industry, both durable and nondurable. Counties with less than 37.0 people per square mile appeared to have a competitive advantage in attracting industries oriented towards metal, machinery, except electrical, electrical machinery, equipment and supply, motor vehicles and other transportation, textile mill and fabricated products and chemical and allied products production.

These same rural counties had a relative competitive advantage in attracting employment in mining and utility and sanitary services industries. All other industries that experienced an employment increase during the 1960 decade tended to locate employment in the more urbanized counties of the state rather than in the rural counties.

In viewing the relative competitive advantage position of small towns as compared to large towns in attracting different types of industry, small towns (population 8,500 and under) had relatively high employment growth rates in only a few industries.

Only total manufacturing, durable manufacturing and transportation, communications, utility and sanitary services industries had employment increasing relatively faster in small towns as compared to large towns. Towns with populations of 8,500 to 24,999 tended to attract most of the industrial expansion that occurred in Iowa's urban places during the 1960's.

Opportunity for further study

A follow up to this study might involve a survey of firms which have located in the more rural and urbanized areas of Iowa. Questions might be asked of the decision makers of these firms regarding why they located where they did. Information generated in this manner might shed additional light on what factors associated with urbanization or ruralization entered the decision to locate.

Data used in this report was an aggregation over many industries. A more complete analysis of the changing industrial employment structure that occurred during the 1960's could be made if information could be obtained from the 226 industry categories that made up the forty industrial groups defined in Standard make-up industrial classification. With a greater refinement in the industrial classification of Iowa's industrial structure the more detailed information could lead to a better understanding of the competitive position of Iowa's rural communities in attracting industrial development.

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