GEOGRAPHIC AND RESIDENTIAL DISTRIBUTION OF IOWA'S POPULATION AND CHANGE 1950-1960

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Introduction

While the total population of Iowa has experienced slow growth over recent decades, this stability for the state as a whole masks some striking changes which have occurred within the state. It will be the purpose of this report to develop a picture of the present distribution of numbers of people within the state, and examine the recent (1950-1960) changes which have contributed to this distribution.

PART I

Total Population of Iowa's Counties

Figure 1 indicates the share of Iowa's 1960 population which resides in each county. Counties have been grouped into quartiles according to the proportionate share of the state's population which they contain.[1] It can be seen that those counties in the highest quartile tend to cluster around the center of the state and near the two river borders. This distribution approximates the urban development in the state. Many low population counties are grouped along the southern border.

Another way of looking at population distribution is to group counties containing an approximate quarter of the state's population ranged from the most dense to the least. This has been done in Figure 2. It will be noted that only four heavy population counties account for one quarter of the state's population while 49 low population counties sum to another quarter.

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[1] That is, the approximately one-fourth of the counties having the highest per cent of the state's population constitute the first quartile, the twenty-five counties with the next highest per cent of the total population of the state make up the second quartile, and so on.

PERCENT OF TOTAL IOWA POPULATION IN EACH COUNTY, 1960

QUARTILES

- QUARTER WITH HIGHEST PERCENT
- 2 nd HIGHEST
- 3 rd HIGHEST
- QUARTER WITH LOWEST PERCENT

FIGURE 1

SOURCE: 1960 CENSUS OF POPULATION

PERCENTAGE OF TOTAL STATE POPULATION, BY COUNTIES, IOWA, 1960

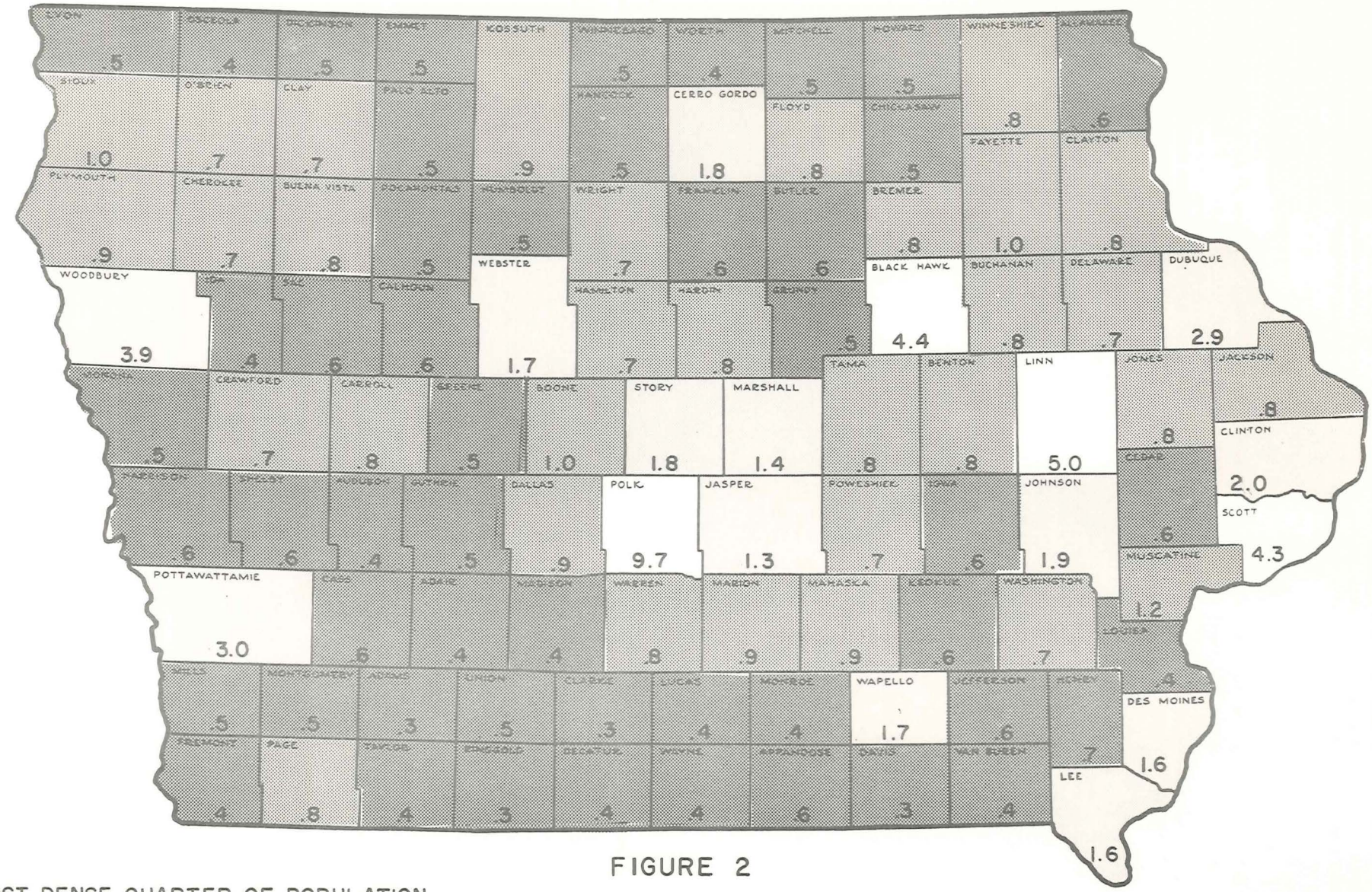


FIGURE 2

- MOST DENSE QUARTER OF POPULATION
- SECOND DENSEST QUARTER OF POPULATION
- THIRD DENSEST QUARTER OF POPULATION
- LEAST DENSE QUARTER OF POPULATION

SOURCE: 1960 CENSUS OF POPULATION

Yet another way of looking at distribution is to present the population per square mile. The counties have been divided into quartiles according to the relative concentration which they obtain and the results are displayed in Figure 3. This method of describing density changes the relative position of those counties with large areas which otherwise rank higher in their contribution to the total state population.

The discussion above has treated the present distribution of population according to county totals; it remains to examine recent change in county population. Figure 4 presents the changes in county population, again divided in quartiles, as ranged from those which increased the most down through those that experienced the greatest decline from 1950 to 1960.

It is instructive to compare the change in county population (Figure 4) to the proportion of population in each county (Figure 1). Generally, the same patterns occur in both maps; that is to say, the counties having the larger relative present population were the ones to gain the most while low population counties tended to decrease. The rank order correlation between 1950 population rank and the 1950-1960 change rank of counties is 0.67.

While the general relationship between total population and recent change holds, some individual counties are exceptions to the rule. For example, Warren County with only 0.8 percent of the state's population gained 17.3 percent in the last decade.

PART II

Distribution According to Size of Place and Rural - Urban Residence

The urban population consists of those people living in towns and cities of 2,500 and over plus the densely settled areas around cities of 50,000 and over which the Bureau of the Census declares to be urbanized because

POPULATION PER SQUARE MILE IN IOWA, BY COUNTIES
1960

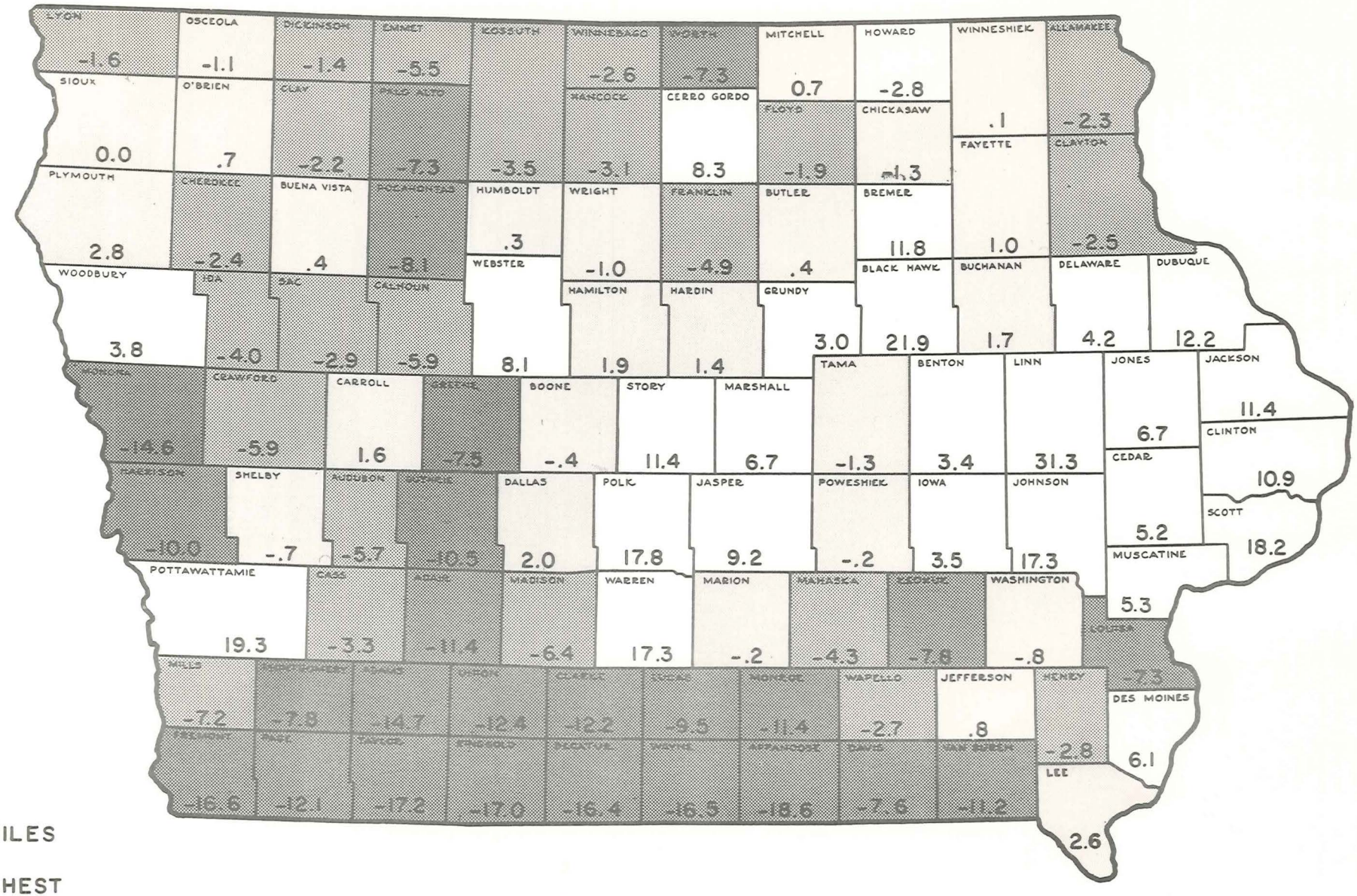
QUARTILES

- QUARTER WITH HIGHEST DENSITY
- 2nd QUARTER
- 3rd QUARTER
- QUARTER WITH LOWEST DENSITY

FIGURE 3

SOURCE: 1960 CENSUS OF POPULATION

PERCENT CHANGE IN TOTAL POPULATION OF IOWA COUNTIES
1950 - 1960



QUARTILES

- HIGHEST
- 2nd
- 3rd
- LOWEST

FIGURE 4

SOURCE: 1960 CENSUS OF POPULATION

of the functional relationship of these areas to the central cities. The above areas are referred to as the "urban fringe" and may contain incorporated places of less than 2,500 as well as unincorporated territory. In Iowa, this fringe population contributes less than one percent to the total population.

The urban population in Iowa, then, consists essentially of the numbers living in places of 2,500 and over. Figure 5 shows the distribution of such places each of which is drawn with a circle proportional to its 1960 population. This proportionality device allows places to be represented by an area relative to their population rather than the actual area they occupy. Looked at this way, urban development in Iowa appears to be heaviest in an area bounded by a polygon drawn with Ft. Dodge, Mason City, Dubuque, Clinton, Keokuk, and Des Moines as vertices. A secondary urban development appears along the western border at Sioux City and Council Bluffs.

Since we have seen that places of over 2,500 contain almost all of Iowa's urban population, one would expect that counties which have places of this size and larger would have a large urban population in comparison to their total population. Figure 6 shows the percent of each Iowa county which is urban, and the configuration of this may correspond roughly to the configuration of circles on Figure 5. Seven counties in Iowa are now over 3/4 urban, and one of these, Polk, is over 90 percent urban. Twenty-one Iowa counties had no urban population. Since the sum of the rural and urban components equals the total county population, the proportion rural of each county equals the difference between the percent urban and 100 percent.

Figure 7 shows the change in the urban population of each county which occurred between 1950 and 1960. The majority of counties which had urban

URBAN PLACES IN IOWA WITH AREA DRAWN PROPORTIONAL TO 1960 POPULATION

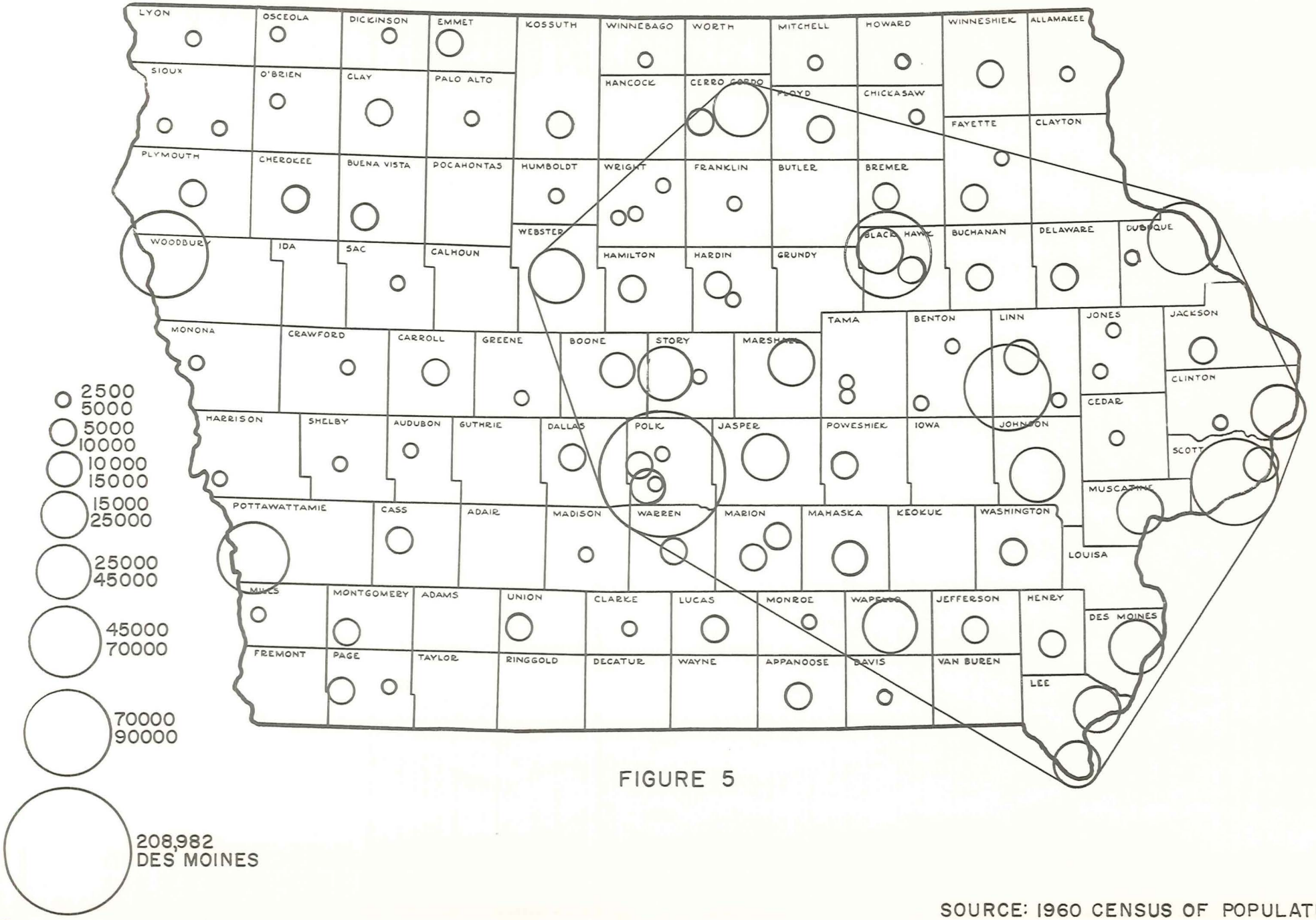
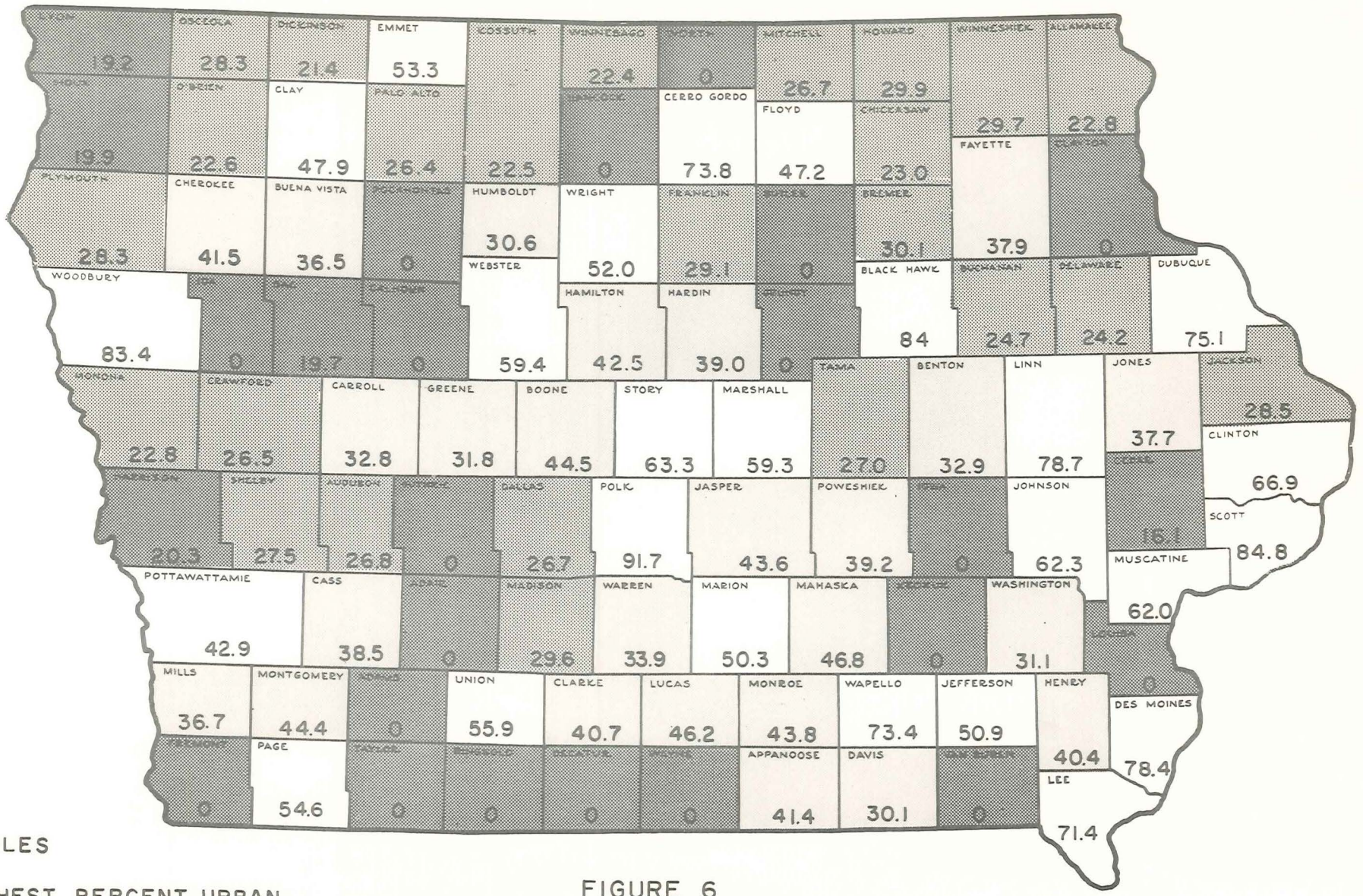


FIGURE 5

SOURCE: 1960 CENSUS OF POPULATION

PERCENT OF COUNTY POPULATION WHICH IS URBAN
IOWA, 1960

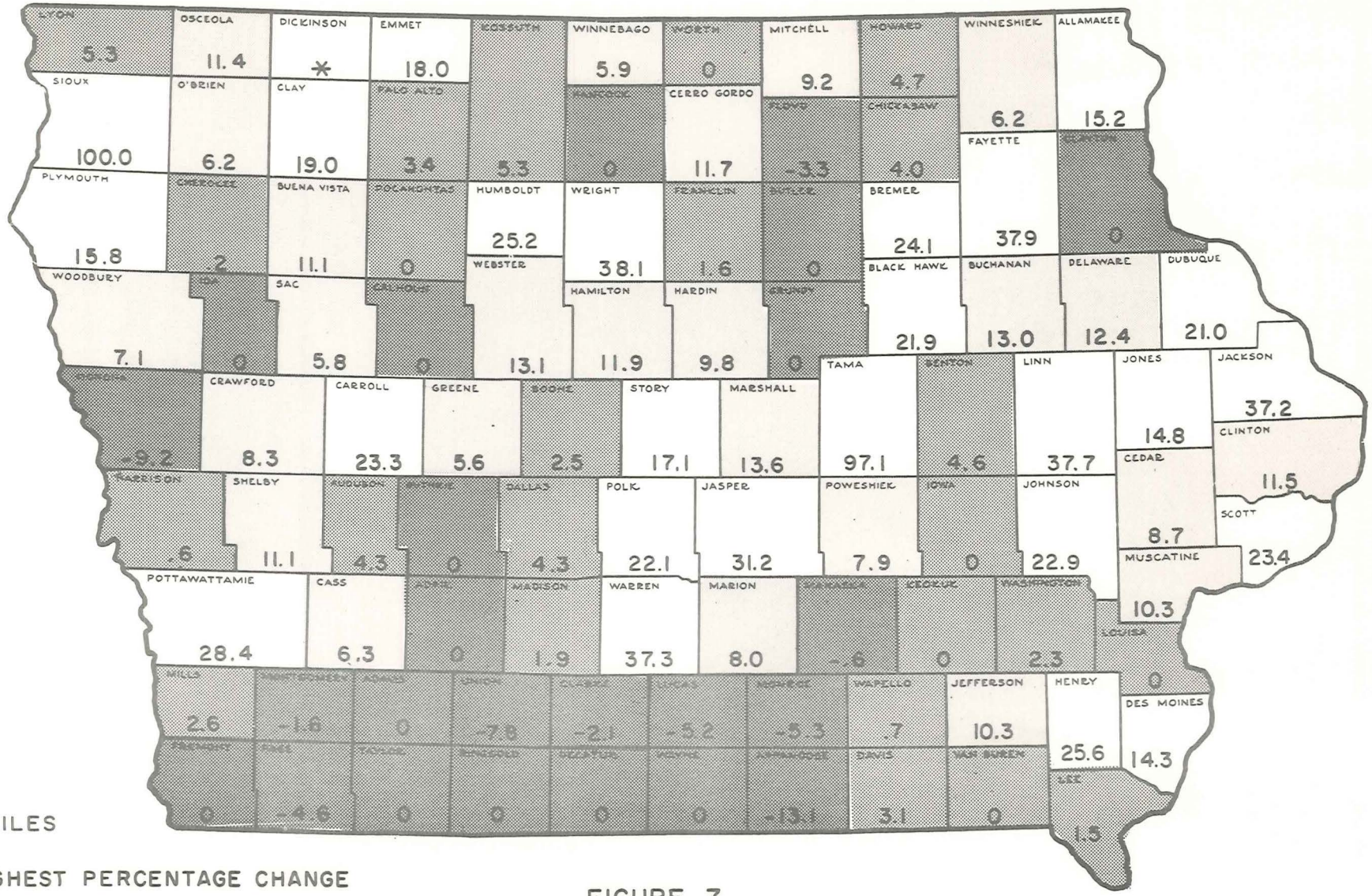


QUARTILES

- HIGHEST PERCENT URBAN
- 2nd
- 3rd
- LOWEST PERCENT URBAN

FIGURE 6

PERCENT CHANGE IN URBAN POPULATION BY COUNTY
IOWA, 1950 - 1960



QUARTILES

- HIGHEST PERCENTAGE CHANGE
- 2 nd
- 3 rd
- LOWEST PERCENTAGE CHANGE

FIGURE 7

*DICKINSON COUNTY HAD NO URBAN POPULATION IN 1950, HENCE THE PERCENT CHANGE 1950-1960 CANNOT BE CALCULATED.

populations in 1950 experienced gain in the urban component from 1950 to 1960. Only ten counties lost urban population.

Quite another picture emerges if one examines the changes in the rural population of Iowa Counties from 1950 to 1960. An examination of Figure 8 reveals that 79 counties had a smaller number of rural people in 1960 than they did in 1950. The total drop in rural population for the state was 5.5 percent from 1950 to 1960. Most counties contributed to this reduction.

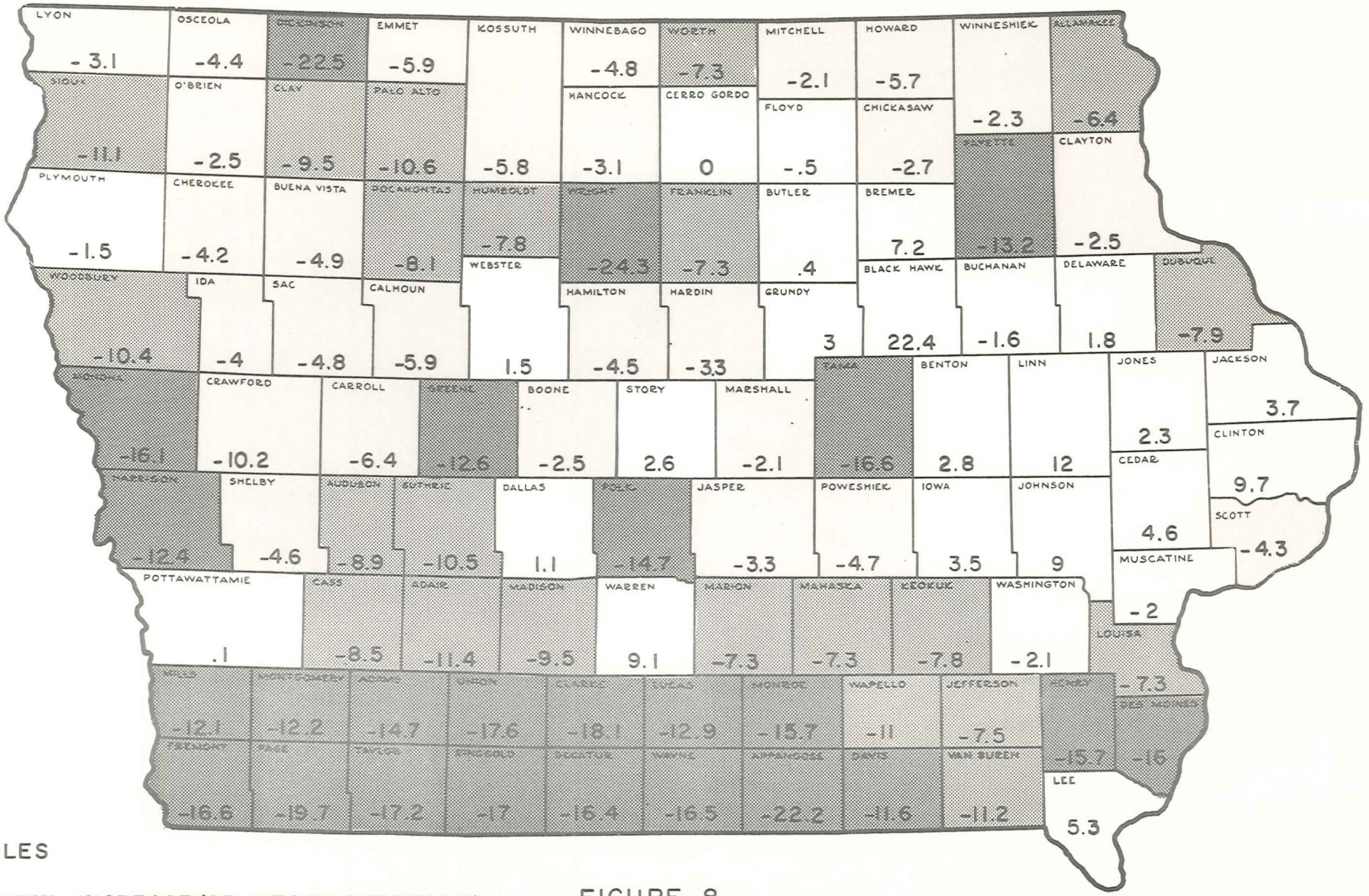
The 1950 to 1960 change in total population considered in relation to the change in rural and urban components for the same decade reveals many patterns of differential change. The total population of a county may have increased, decreased or remained stationary and each component (rural and urban) could have experienced one of the three aforementioned effects. Figure 9 sets out the actual changes in total population and rural and urban parts as they occurred from 1950 to 1960. All of the occurrences of "no change" were in the urban component of those counties which had no urban population either in 1950 or 1960.

The numbers in the counties in Figure 9 indicate the various relations of change in total county population to changes in rural and urban components. Seven different combinations of growth were found and the most frequent combinations are described below:

Combination 1 - Total growth, urban growth, and rural growth. For the most part, these are counties which contain a large city or are close to a large city. The growth in the rural component can probably be accounted for by suburban and satelite development that is dispersed and lacks the size to be classified as urban. Sixteen counties had this pattern of growth between 1950 and 1960.

Combination 2 - Total Growth, urban growth, and rural decline.

PERCENT CHANGE IN RURAL POPULATION BY COUNTY
IOWA, 1950 - 1960

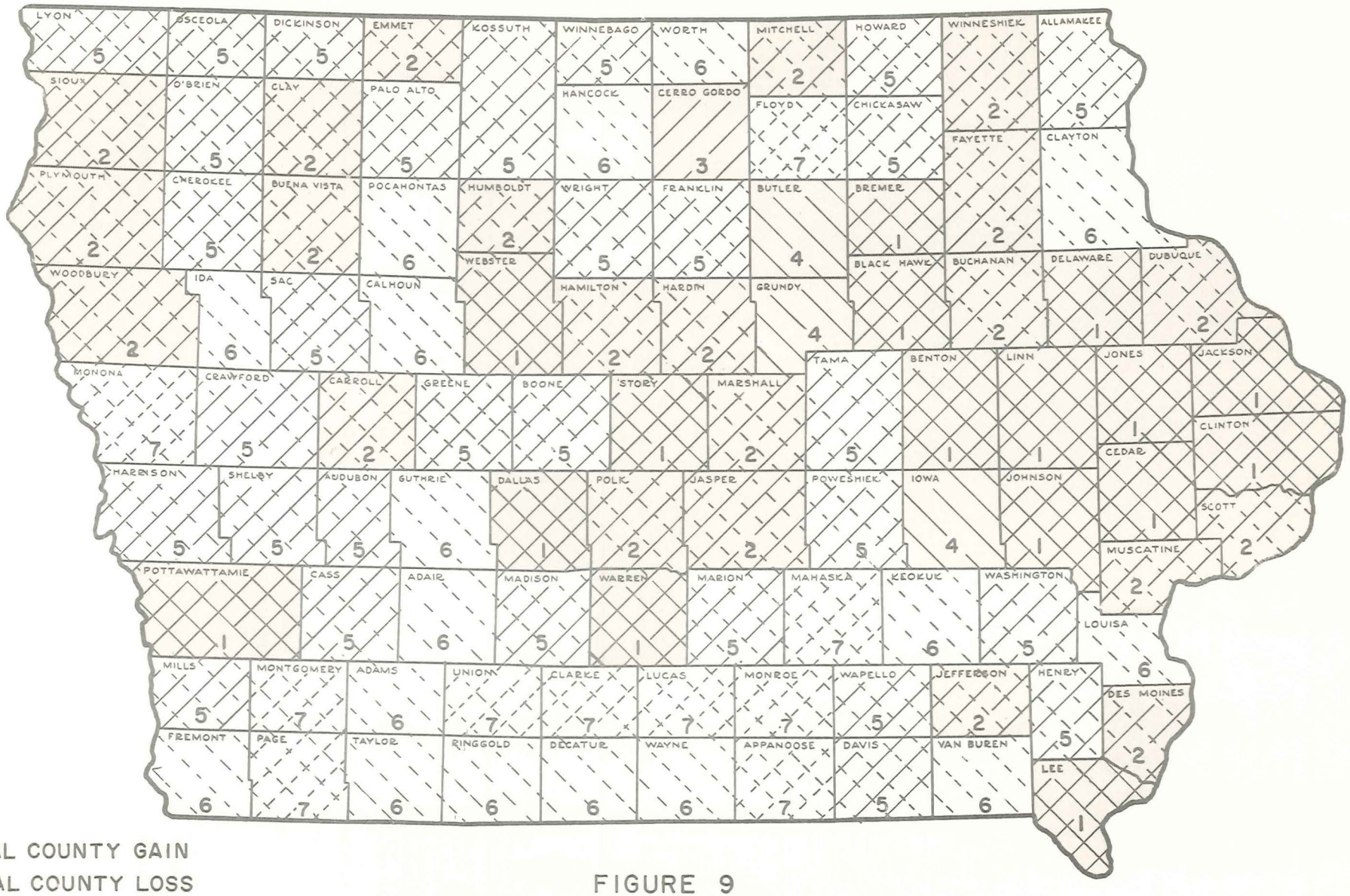


QUARTILES

- HIGHEST INCREASE (OR LEAST DECREASE)
- 2nd
- 3rd
- HIGHEST DECREASE

FIGURE 8

CHANGE IN TOTAL POPULATION AND RURAL AND URBAN COMPONENTS OF IOWA COUNTIES, 1950-1960



TOTAL COUNTY GAIN
TOTAL COUNTY LOSS
URBAN GAIN
URBAN LOSS
RURAL GAIN
RURAL LOSS

NUMBERS INDICATE PARTICULAR COMBINATIONS OF TOTAL, URBAN, AND RURAL CHANGE

FIGURE 9

Twenty-one counties had this pattern of growth in which the total population gained because of urban growth and in spite of rural loss.

Combination 5 - Total loss, urban growth, and rural loss. This was the most common combination with 29 counties following the pattern. Although these counties had an urban gain, it was more than offset by rural loss so as to bring about a loss in total population. In general, these counties had their urban population in small sized cities.

Combination 6 - Total loss, urban unchanged, and rural loss. For the most part, these counties are the ones with no urban place. The rural component of these 18 counties declined and consequently their total population declined.

Combination 7 - Total loss, urban loss and rural loss. Ten counties lost in both their rural and urban parts and consequently in their total population. Seven of the ten are in the southern two tiers of counties.

In 1960, there were 944 incorporated places in Iowa ranging in size from 6 persons in Riddotto to 208,982 in Des Moines. Table 1 shows the distribution of these places according to size class and rural-urban classification for 1950 and 1960. The number of people living in places of each size class and the percent of the total population in each class is also shown for the same decade. The 1950 decade marked a milestone of sorts for Iowa for a comparison of the 1950 and 1960 cumulative percentages indicates that over half of Iowa's population is now urban. Within the urban class, the largest share of population is found in cities of 25,000 and over. In fact, almost one-third of Iowa's total population was found in the 13 cities over 25,000 while the other 931 incorporated places in the state contained in total only a slightly higher share (37.1%). All of the incorporated places in Iowa accounted for about

TABLE 1

POPULATION OF INCORPORATED PLACES BY SIZE, RURAL AND URBAN, IOWA

1950-1960 (new urban definition)

Size of Place	No. of Places		Population		Percent		Cumulative Percent	
	1950	1960	1950	1960	1950	1960	1950	1960
Urban Places (incorporated)								
Des Moines	1	1	177,965	208,982	6.8	7.6	6.8	7.6
25,000-150,000	12	13	566,064	673,554	21.6	24.5	28.4	32.1
10,000-24,999	10	11	152,512	169,543	5.8	6.1	34.2	38.2
5,000-9,999	28	33	180,738	227,074	6.9	8.2	41.1	46.4
2,500-4,999	42	46	152,154	161,370	5.8	5.8	46.9	52.2
Under 2,500	5	6	5,207	6,969	0.2	0.3	47.1	52.5
Total Urban Incor.	98	110	1,234,640	1,447,492	47.1	52.5		
Other Urban Territory (non-Inc.)	-	-	16,298	16,018	0.6	0.6	47.7	53.1
Total Urban	98	110	1,250,938	1,463,510	47.7	53.1		
Rural Places (Incorporated)								
1,000-2,499	127	131	190,887	196,680	7.3	7.1	55.0	60.2
Under 1,000	709	703	272,453	265,073	10.4	9.6	65.4	69.8
Total Rural Inc.	836	834	463,340	461,753	17.7	16.7		
Other Rural Territory (non-Inc.)	-	-	906,795	832,274	34.6	30.2	100.0	100.0
Total Rural	836	834	1,370,135	1,294,027	52.3	46.9		
TOTAL STATE	934	944	2,621,073	2,757,537	100.0	100.0		

Source: Census 1960
PCI 17A Table 3

70 percent of the total population while the remaining 30 percent of the population resided in areas outside of incorporated places. This non-incorporated population is almost totally rural in Iowa. Although there are 834 rural incorporated places in the state, the people residing in these places comprise only slightly more than one-half of the total rural population; the remainder live outside of incorporated places. The rural population has been traditionally broken down into the rural-farm and rural-nonfarm, but data for this breakdown were not available at the time of this writing.

It is important to realize that Table 1 does not depict the growth of particular communities from 1950 to 1960, but, rather, the change in distribution of the numbers living in each size class of an incorporated place from 1950 to 1960.

Table 2 purports to show how these changes in distribution came about. Starting with the smallest incorporated places, the numbers of which are given in the last row, one can see that there were 712 such places in 1950. Between 1950 and 1960, eleven of these places were added by incorporation. This size category also gained by seven places shrinking into the size group from the size class above where they were in 1950. This total gain of 18 places was offset, however, by 21 places growing out of the size class and 2 being absorbed by annexation while one was lost from the table entirely through disincorporation. Putting the total gain and total loss together, one comes out with a net loss of six so that while there were 712 incorporated places of less than 1000 in 1950, by 1960 there were only 706 such places.

As one progresses up the table, one sees that the most common way for a size class to gain places is by growth from the class below it. Thus, the

Table 2

CHANGE IN NUMBERS OF INCORPORATED PLACES BY SIZE GROUPS

1950-1960

Size of Place	No. in 1950	1950-1960 Increase in No. in Size Group: Gain by Incorpor.	Gain by Growth In Annexation	Gain by Decline	Total Gain to Size Group 1950-1960	1950-1960 Loss in No. in Size Group: Loss thru Annex.	Loss by Growth	Loss by Decline	Loss by dis-incorp.	Total Loss to Size Group 1950-1960	No. in 1960
Over 150,000 (Des Moines)	1	-	-	-	-	-	-	-	-	-	1
25,000-150,000	12	-	1	-	1	-	-	-	-	-	13
10,000-24,999	10	-	3	-	3	-	1	1	-	2	11
5,000-9,999	28	-	7	1	8	-	3	-	-	3	33
2,500-4,999	42	-	10	-	10	-	6	-	-	6	46
1,000-2,499	129	2	21	-	23	-	11	7	-	18	134
under 1,000	712	11	-	7	18	2	21	-	1	24	706

number of places in each size class increased from 1950 to 1960 in all classes above 1000 except for the largest class which remained the same. If one accumulates the numbers of people living in all the places within a 1960 size class and compares the sum of the population of these same places in 1950, the aggregate growth of a size class can be computed for the 1950 to 1960 decade. This has been done in Table 3. It can be seen that those places which were under 1000 in 1960 were almost stable during the decade. As one moves up the table, one can note an increasing rate of growth culminating in the highest rate for cities which were between 10,000 and 24,999 in 1960. Thus, for the state as a whole, the rate at which places grew was definitely associated with the size of the place in 1960 and generally it was the larger places that grew the most.

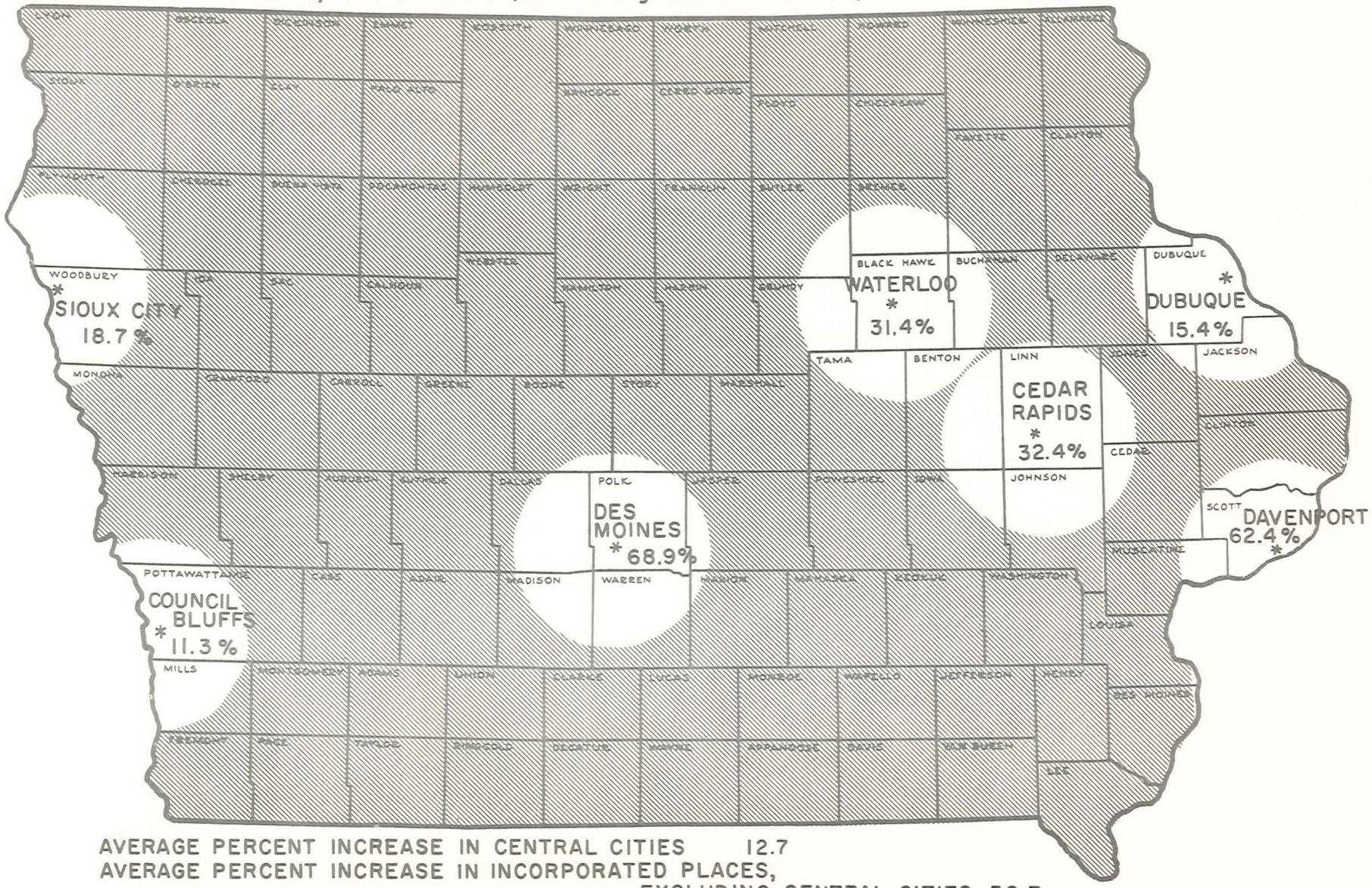
Table 3. Percentage Change in Population of Incorporated Places in Iowa 1950 to 1960. (Classed according of 1960 population)

Size Class in 1960	1950 Population	1960 Population	Percent Change
Des Moines	177,965	208,982	17.4% increase
25,000 to 150,000	588,962	673,554	14.4% increase
10,000 to 24,999	135,968	169,543	24.7% increase
5,000 to 9,999	203,208	227,074	11.7% increase
2,500 to 4,999	145,149	161,370	10.6% increase
1,000 to 2,499	184,054	201,457	9.4% increase
less than 1000	262,655	267,295	1.8% increase
	1,697,961	1,909,275	12.4% increase

Source: U. S. Census of Population 1950 and 1960

Although size of place is one means of predicting growth, it obviously is not the only one, for some small places grew from 1950 to 1960 and some larger places declined in the same decade. It was, therefore, decided to look into another factor, aside from size, which might be associated with the growth or decline of communities; this factor was location with respect to metropolitan centers. It was hypothesized that expansion of larger centers (those having a population of 50,000 or more in 1960) would influence the growth of incorporated places around these centers. This seemed to be a reasonable hypothesis, for many small centers within a metropolitan area tend to become functionally related to the metropolitan center through trade and commerce and some surrounding communities may serve as housing units for the labor force of the large center. With these relations in mind, a circle of 25 miles radius was drawn about each of the metropolitan centers and the incorporated places within these circles were examined for change in the 1950 to 1960 decade. The distance of 25 miles was chosen as this seemed to represent a reasonable commuting distance. Figure 10 shows the disposition of the metropolitan centers and area of analysis around each of the centers. The figures within the circles represent the 1950 to 1960 growth of incorporated places within these circles excluding the central cities. While marked differences exist among the centers, one cannot escape the conclusion that location with respect to a metropolitan center does indeed influence the growth of surrounding incorporated places. All of the incorporated places around the seven major centers showed an aggregate growth of 38.7 percent which may be compared to a growth of 10.6 percent for all incorporated places within the state. The growth rate for these surrounding communities exceeded the rate for the metropolitan cities at their center which grew at an aggregate rate of 12.7 percent.

GROWTH OF INCORPORATED PLACES WITHIN 25 MILE RADIUS OF CENTRAL CITIES IN STANDARD METROPOLITAN STATISTICAL AREAS, 1950-1960 (Excluding Central Cities)



AVERAGE PERCENT INCREASE IN CENTRAL CITIES 12.7
AVERAGE PERCENT INCREASE IN INCORPORATED PLACES, EXCLUDING CENTRAL CITIES 38.7
AVERAGE PERCENT INCREASE FOR BOTH COMBINED 21.9
48 PERCENT OF PEOPLE LIVING IN INCORPORATED PLACES LIVE IN ABOVE AREAS

FIGURE 10

Table 4 compares the rate of growth of all incorporated places classed according to their size in 1960 for the state and for those areas around cities of 50,000 and more in 1960. A comparison of the two columns reveals that the rate was higher for all size classes within the area of metropolitan influence than for the state as whole. The differential was particularly great for small sized places under 2,500.

Table 4

Rate of Growth for different sized places classed in 1960 for the 1950-1960 decade for all of Iowa and for those places with 25 miles of a city of 50,000 or more

Size of Place 1960	Rate of Growth 1950-1960			
	In the state		Within 25 miles of cities 50,000 and over 1960	
	No.	Percent	No.	Percent
25,000 and over	14	15.1	1	22.6
10,000-24,999	11	24.7	4	79.2
5,000-9,999	33	11.7	5	43.9
2,500-4,999	46	10.6	9	28.8
1,000-2,499	134	9.4	32	33.6
0-999	706	1.8	124	26.3
All sized places	944	10.6	175	38.7

The evidence presented above would seem to indicate that at least two factors influence the rate of growth of Iowa's incorporated places: (1) The size of place, and (2) The location of place with respect to a metropolitan center. No doubt many other factors are responsible for the differential rate of growth of Iowa communities, but the two factors mentioned above account for a large part of the differential growth rate.