

UNIVERSITY OF MINNESOTA
AGRICULTURAL EXPERIMENT STATION

GROWTH AND DECLINE OF
FARM TRADE CENTERS IN
MINNESOTA, 1905-1930

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A THRIVING FARMERS' TRADE CENTER

UNIVERSITY FARM, ST. PAUL

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GROWTH AND DECLINE OF FARM TRADE CENTERS IN MINNESOTA, 1905-1930

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I. INTRODUCTION

Agriculture in the United States is far from being a self-sufficient industry. The American farmer produces crops for a market and buys at the markets the supplies that he deems necessary for production and for family living. Thus the farmer and his family come into contact with the towns and cities and make the interdependence of farm and village more complete. The welfare of a commercial agriculture is dependent upon the size and quality of its markets, both immediate and ultimate; also upon the nature and quality of the local trading centers. The facility with which farmers may reach a trading center that can easily and efficiently receive their products and, in turn, distribute to them supplies that they demand, is closely related to their prosperity and satisfaction.

In recent years a growing interest in the standard of living of the farm population has stimulated students of rural life to inquire into the nature and accessibility of farm trading centers, the use farmers make of them, and the relation of their size and quality to farm standards of living. This study is an attempt to understand the differentials in the growth and decline of Minnesota trading centers and to relate them to certain factors in agriculture and rural life. The study was conducted during the year 1930-31, and was a logical outgrowth of a preliminary study of Minnesota farm trade centers made in the previous year.¹

The sources of information were the Federal census, the Minnesota State census of 1905, Bradstreet's Commercial Ratings, special data of the Division of Agricultural Economics of the University of Minnesota, and field case studies of trade centers in selected areas. The measures of growth and decline used for trade centers differed. In the case of incorporated villages under 2,500, the population criterion was used. Villages that increased in population by 10 per cent or more during the period under consideration were classified as growing; those that decreased by 10 per cent or more were classified as declining; those having less than 10 per cent change were said to be stationary. The Federal Census supplied the data.

For the unincorporated trade centers, the number of business establishments located at the center was the criterion. An increase in the number of business establishments for the period under consideration

¹ Zimmerman, C. C. Farm Trade Centers in Minnesota, 1905-29. Minn. Agr. Expt. Sta., Bull. 269.

was classified as growth; a decrease was classified as decline. The data were supplied by Bradstreet's ratings. The use of the two criteria of growth and decline are justified on grounds of convenience and on the fact that the two variables are highly correlated. Population measures could not be used throughout because the census does not list unincorporated places and Bradstreet's population estimates appeared to be unreliable. As the separation of incorporated and unincorporated centers necessitated the use of the census lists, the task was much simplified by employing change in population as a criterion of growth or decline. Two random samples of 200 incorporated villages were used to determine the relation of population and the number of business units. One was taken from 1905 and the other from 1920 data. The coefficients indicated a correlation of 0.9. This relationship is sufficiently close to warrant substitution of population for business units as a criterion.

II. GENERAL TREND OF FARM TRADE CENTERS IN MINNESOTA

Number of Trade Centers

During the last twenty-five years the trade centers in Minnesota have increased in number. Bradstreet's ratings listed 1,535, exclusive of Minneapolis, St. Paul, and Duluth, in 1905; and 1,564 in 1929, an increase of 1.9 per cent. The trend has not been constant, however. The total number of trade centers increased to 1,635 in 1915, after which the number steadily declined until 1931. The number of centers of more than 500 population increased 28 per cent, but those of less than 500 population decreased 2.7 per cent. While the total is probably correct, the classification into population groups is not necessarily so. The population for intercensus years is based upon Bradstreet's estimates, which are apparently conservative. The smaller places can not be checked with the census count, but it is noteworthy that the census of 1905 gave 37 centers with a population of 2,500 or more, while the

Table 1
Number of Farm Trade Centers in Minnesota, 1905-29, by Five-Year Periods*

| Year | No. of trade centers | | | |
|---------------------------|----------------------|----------------------|-------------------------|-----------------------|
| | Total | Under 500 population | 501 to 2,500 population | Over 2,500 population |
| 1905 | 1,535 | 1,307 | 192 | 36 |
| 1910 | 1,579 | 1,323 | 215 | 41 |
| 1915 | 1,635 | 1,371 | 221 | 43 |
| 1920 | 1,607 | 1,339 | 221 | 47 |
| 1925 | 1,599 | 1,307 | 237 | 55 |
| 1929 | 1,564 | 1,272 | 238 | 54 |
| Per cent increase 1905-29 | 1.9 | -2.7 | 23.9 | 50.0 |

* Data from Zimmerman, C. C., Farm Trade Centers in Minnesota. Minn. Agr. Exp. Sta., Bull. 269, pp. 18-19.

1930 census lists 73 such centers, including Minneapolis, St. Paul, and Duluth. Consequently, the growth in number of places large enough to be classed as cities has been even greater than Table 1 indicates. In this bulletin, the census classification is used for all incorporated places.

The growth in the number of trade centers during the period under consideration was so much the result of the settlement of northern and northeastern Minnesota that it is advisable to separate this area from the rest of the state. Table 2, which omits this area, consisting of 16 counties,² indicates that in the remaining 71 counties the total number of trade centers declined between 1905 and 1929 to the extent of 6.2 per cent, owing to the marked decrease in the number of trade centers under 500 population. The increase in the number of larger places was also less than for the state as a whole.

Table 2
Number of Farm Trade Centers in Minnesota, 1905 and 1929 (Exclusive of 16 Northern and Northeastern Counties), by Population of Centers

| Year | Number of trade centers | | | |
|---------------------------|-------------------------|----------------------|-------------------------|-----------------------|
| | Total | Under 500 population | 501 to 2,500 population | Over 2,500 population |
| 1905 | 1,270 | 1,074 | 167 | 29 |
| 1929 | 1,191 | 948 | 201 | 42 |
| Per cent increase 1905-29 | -6.2 | -11.7 | 20.3 | 44.8 |

Population of Trade Centers

During the period 1900-30, the population of Minnesota increased 46.4 per cent. In 1900 half the population lived outside of incorporated places and only 34 per cent lived in cities, i.e., in incorporated places of 2,500 or more. By 1930 the urban population comprised 49 per cent of the whole and the unincorporated population had declined to 37.7 per cent. Incorporated villages also lost, relatively. Table 3 shows the facts. During the thirty years, the urban population increased 110.3 per cent, the incorporated village population increased 29.4 per cent, and the unincorporated population increased 8.5 per cent.

Table 3
Growth of Population in Minnesota, 1900-30, by Urban, Village, and Unincorporated Territory

| | 1900 | | 1930 | | Per cent increase, 1900-30 |
|-----------------------------|-----------|----------|-----------|----------|----------------------------|
| | Number | Per cent | Number | Per cent | |
| Total | 1,751,394 | 100.0 | 2,563,953 | 100.0 | 46.4 |
| Urban | 598,100 | 34.1 | 1,257,616 | 49.0 | 110.3 |
| Incorporated village | 263,042 | 15.1 | 340,347 | 13.3 | 29.4 |
| Unincorporated territory .. | 890,252 | 50.8 | 965,990 | 37.7 | 8.5 |

² These counties are Aitkin, Beltrami, Cass, Carlton, Clearwater, Cook, Crow Wing, Hubbard, Itasca, Kanabec, Koochiching, Lake, Lake of the Woods, Pine Roseau, and St. Louis.

A truer picture of population trends in the more settled portions of the state may be obtained by omitting the figures for the 16 northern and northeastern counties to which reference has been made. This territory was relatively pioneer territory in 1905 and its settlement since then, together with the development of the towns and cities of the iron range, has greatly affected the population trends of the state. Table 4 shows that the population of the other 71 counties has grown less rapidly. The population in the incorporated villages of this more settled part of the state grew approximately two-thirds as fast as that of the state as a whole; the unincorporated lost 1.5 per cent.

Table 4
Growth of Population in Minnesota, 1900-30 (Exclusive of 16 North and Northeastern Counties), by Urban, Village, and Unincorporated Territory

| | 1900 | | 1930 | | Per cent increase, 1900-30 |
|-----------------------------|-----------|----------|-----------|----------|----------------------------|
| | Number | Per cent | Number | Per cent | |
| Total | 1,575,086 | 100.0 | 2,145,607 | 100.0 | 36.2 |
| Urban | 521,826 | 33.2 | 1,058,455 | 49.3 | 102.8 |
| Incorporated village..... | 241,329 | 15.3 | 287,480 | 13.4 | 19.1 |
| Unincorporated territory .. | 811,931 | 51.5 | 799,672 | 37.3 | -1.5 |

In 1900 there were in the state 37 cities of 2,500 or more population in 34 counties. By 1930 there were 73 cities in 48 counties. Each decade has seen the urban population grow at a rate varying from one and one half to two and one half times as great as that of the state as a whole.

Table 5
Growth of Incorporated Villages in Minnesota in Number and Population, 1900-30, by Decades

| Year | Places | | Population | | Population per village |
|---------------|--------|-------------------|------------|-------------------|------------------------|
| | Number | Per cent increase | Number | Per cent increase | |
| 1900 | 404 | ... | 263,042 | ... | 651 |
| 1910 | 586 | 45.0 | 326,166 | 24.3 | 556 |
| 1920 | 633 | 8.0 | 368,269 | 12.9 | 581 |
| 1930 | 650 | 2.6 | 347,945 | -5.5 | 534 |
| 1900-30 | ... | 60.9 | | 32.3 | ... |

The incorporated village population has also grown substantially. Table 5 shows that the number of such places has increased 60.9 per cent and the population 32.3 per cent since 1900. Between 1920 and 1930 the population declined, however, and the number of places increased slightly. In the meantime the average number of persons per village has declined. Possibly smaller places are now being incorporated than formerly. In the more settled parts of the state, omitting the 16 northern and northeastern frontier counties, the number of in-

corporated villages increased only 46.7 per cent and the population only 21.4 per cent between 1900 and 1930. (See Table 6.) Thus, the rapid growth of incorporated villages in the state since 1905 must be attributed, to a considerable degree, to the extension of the settled area.

The unincorporated population, composed of farm residents, unincorporated villages, and other non-farm people living in the open country, has increased 8.5 per cent since 1900. From 1900 to 1910 it increased one per cent; during the next decade, 7.6 per cent; and between 1920 and 1930 it lost 0.1 per cent. The gain for the 30-year period was 8.5 per cent. On the county basis, 36 counties lost unincorporated population during the 30-year period. These counties were chiefly in the southeastern, central, and west central parts of the state.

Table 6
Growth of Incorporated Villages in Number and Population, 1900-30
(Exclusive of 16 Northern and Northeastern Counties) by Decades

| Year | Places | | Population | | |
|---------------|--------|-------------------|------------|-------------------|------------------------|
| | Number | Per cent increase | Number | Per cent increase | Population per village |
| 1900 | 370 | ... | 241,329 | ... | 652 |
| 1910 | 503 | 35.9 | 277,275 | 14.8 | 551 |
| 1920 | 535 | 6.4 | 313,505 | 13.0 | 586 |
| 1930 | 543 | 1.5 | 293,151 | -6.5 | 539 |
| 1900-30 | ... | 46.7 | | 21.4 | ... |

Actual counts of the farm population before the 1930 census are not available. Truesdell's³ estimate of the farm population of 1910 indicates a gain of 7.7 per cent between 1910 and 1920. After 1920 the farm population declined sharply until after 1925 and then increased as the economic depression came on. The 1930 census indicated a decrease of 0.6 per cent between 1920 and 1930. There seems little doubt that the farm population was greater in 1930 than in 1900.

If these conclusions with respect to the farm population are correct, it may be assumed that the population in unincorporated villages and in the open country, not counted as farm population, has increased steadily since 1900.

From these facts, it appears evident that during the last 30 years the population of Minnesota has been growing chiefly in the urban and village centers. The population in incorporated villages and unincorporated territory has decreased in relation to the urban; the population in incorporated and unincorporated villages taken together has scarcely held its own; and the farm population has dropped from approximately one-half to one-third of the total. The farm population has lost both relatively and absolutely, if the frontier counties of northeastern Minnesota are excluded.

³ Truesdell, L. E. Farm Population of the United States. Census Monograph VI, p. 45.

Business Units

The picture of the growth of farm trade centers suggested by the preceding analysis is more evident when the analysis is made on the basis of business units. Zimmerman⁴ showed that the number of business units in the trade centers has increased since 1905 (Table 7). As the number of business units and the population per trade center are correlated,⁵ and as the population of these centers has increased, an increase in the number of business units was to be expected. It should be noted, however, that both the population and the number of business units of the larger centers increased largely by means of an increase in the number of centers; in the smaller centers the slight increase came as the result of an increase in the average number of business units per center.

Table 7
Number of Business Units of Farm Trade Centers, 1905-29, by Five-Year Periods, and Population of Trade Centers*

| Year | Total Business Units | | | | |
|------------------------------------|----------------------|---------------------------------|------------------------------------|---------------------------------------|---|
| | In all trade centers | In centers under 500 population | In centers of 500-2,500 population | In centers of 2,500-10,000 population | In centers of more than 10,000 population |
| 1905 | 24,066 | 9,277 | 9,442 | 4,345 | 1,002 |
| 1910 | 25,168 | 9,103 | 9,902 | 4,843 | 1,320 |
| 1915 | 27,271 | 9,936 | 10,421 | 5,218 | 1,696 |
| 1920 | 28,988 | 10,711 | 10,592 | 5,684 | 2,001 |
| 1925 | 30,821 | 10,349 | 11,159 | 6,187 | 3,126 |
| 1929 | 29,786 | 9,912 | 10,919 | 5,778 | 3,177 |
| Per cent increase 1905-29 | 23.8 | 6.8 | 15.6 | 32.9 | 217.0 |

* Summarized from Zimmerman, C. C., *Farm Trade Centers in Minnesota*. Minn. Agr. Expt. Sta. Bull. 269, pp. 51-56.

From these data it may be concluded that the small trade centers in Minnesota have lost, relatively, in both population and business units during the last twenty-five years. And if the territorial factor is held constant, that is, if the 16 northeastern counties are omitted from the analysis, these small centers have lost absolutely as well as relatively.

III. DIFFERENTIAL GROWTH AND DECLINE OF FARM TRADE CENTERS

Since 1900 the trade centers of more than 2,500 population have grown both individually and as a class. As only three of these centers that were classed as cities in 1930 actually lost population during the previous thirty years, growth was almost a uniform characteristic. It was not so, however, with the centers of less than 2,500 population.

⁴ *Op. cit.*

⁵ Two random samples of more than 200 cases each yielded coefficients of 0.89 and 0.90 for incorporated villages. Two similar samples gave coefficients of 0.70 and 0.61 for unincorporated villages.

As they displayed a pronounced differential of growth and decline, and as farmers are primarily in contact with this large group, it seems advisable to examine them more closely.

In order to make the results of this study comparable with previous studies of Minnesota trade centers,⁶ the period covered is, in the main, that of 1905 to 1930. Furthermore, as this study has been made from the point of view of the relation of the farm population to the trade centers, particular attention is given to the analysis of the trade center situation in the agricultural sections of the state.

Incorporated Trade Centers Under 2,500 Population

Since 1905 the number of incorporated trade centers with less than 2,500 population has increased 21.3 per cent. If the 16 northeastern counties are excluded, the increase was from 468 to 542, or 16 per cent (see Table 8). During the same period the population of these centers increased 3.5 per cent. Both the number of places and the population increased in the three groups under 1,500 population and decreased in the two groups between 1,500 and 2,500 population. These changes were due, to a considerable extent, to the loss of some larger centers that passed over into the city class, and to the gain of a considerable number of small unincorporated centers that passed over into the ranks of the smaller incorporated centers. There was little change in the average size of the centers in the different groups, altho the decrease in number of larger centers and the increase in number of smaller centers lowered the average size of all these incorporated centers from 591 persons in 1905 to 529 in 1930.

Table 8

Changes in Number and Population of Incorporated Trade Centers Under 2,500 Population, in Minnesota, 1905-30, by Size of Center (Exclusive of 16 Northern and Northeastern Counties)

| Population group | Number of places | | | Population | | |
|-------------------|------------------|------|-------------------|------------|---------|-------------------|
| | 1905 | 1930 | Per cent increase | 1905 | 1930 | Per cent increase |
| Under 500 | 284 | 343 | 21 | 75,823 | 88,862 | 17.1 |
| 500-999 | 99 | 122 | 23 | 67,110 | 84,931 | 26.5 |
| 1,000-1,499 | 43 | 50 | 16 | 53,048 | 61,458 | 15.8 |
| 1,500-1,999 | 24 | 17 | -29 | 41,873 | 29,833 | -28.7 |
| 2,000-2,499 | 18 | 10 | -44 | 40,378 | 21,683 | -46.2 |
| Total | 468 | 542 | 16 | 276,951 | 286,767 | 3.5 |

A more comprehensive notion of the changes that have occurred with respect to the number of incorporated trade centers may be obtained from Table 9. Of the 536 centers existing in 1905, 30 had become cities by 1930, 6 had lost incorporation, one city had declined to the village class, and 149 new centers had entered the group through

⁶ Zimmerman, *op. cit.*

incorporation. The proportion of new entries through incorporation was much higher in northeastern Minnesota than in the more settled portions of the state.

Table 9
Analysis of Changes in Number of Incorporated Trade Centers Under 2,500 Population, 1905-30

| Item | State | State less 16 northeast counties | 16 northeast counties |
|--|-------|----------------------------------|-----------------------|
| Total number of centers, 1905..... | 536 | 468 | 68 |
| Total number of centers, 1930..... | 650 | 542 | 108 |
| Total number remained within class.... | 500 | 439 | 61 |
| Total number became cities..... | 30 | 26 | 4 |
| Total number lost incorporation..... | 6 | 3 | 3 |
| Total number declined from city to village | 1 | 1 | 0 |
| Total new incorporations..... | 149 | 102 | 47 |

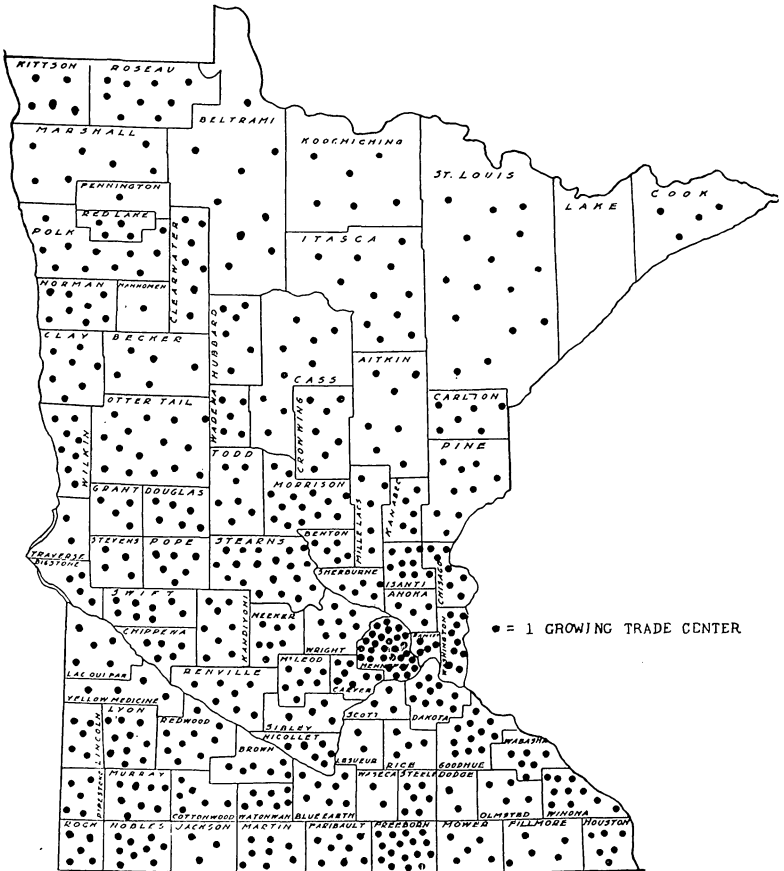


Fig. 1. Growing Trade Centers: Distribution of 591 Places of Less Than 2,500 Population in 1905 That Grew, 1905-30

In this map, and all subsequent maps, Lake of the Woods County has been included with Beltrami County.

Analysis of the 536 incorporated trade centers that existed in 1905 reveals the fact that 296, or 55.2 per cent, grew as much as 10 per cent in population during the next 25 years; 142, or 26.5 per cent, remained stationary in the sense that they gained or lost less than 10 per cent in population; and 98, or 18.3 per cent, lost 10 per cent or more in population. (See Table 10 and Figures 1, 2, and 3.)

Unincorporated Trade Centers

Unincorporated trade centers constitute by far the largest single group in Minnesota. Of the total number listed by Bradstreet's Commercial Ratings in 1905, 74.7 per cent were unincorporated centers, and in 1929 68.3 per cent were of this class. These centers range in size from the rural neighborhood center with one general store to the unincorporated village of a few hundred inhabitants. There is no definite line based upon size that divides the unincorporated from the incorpo-

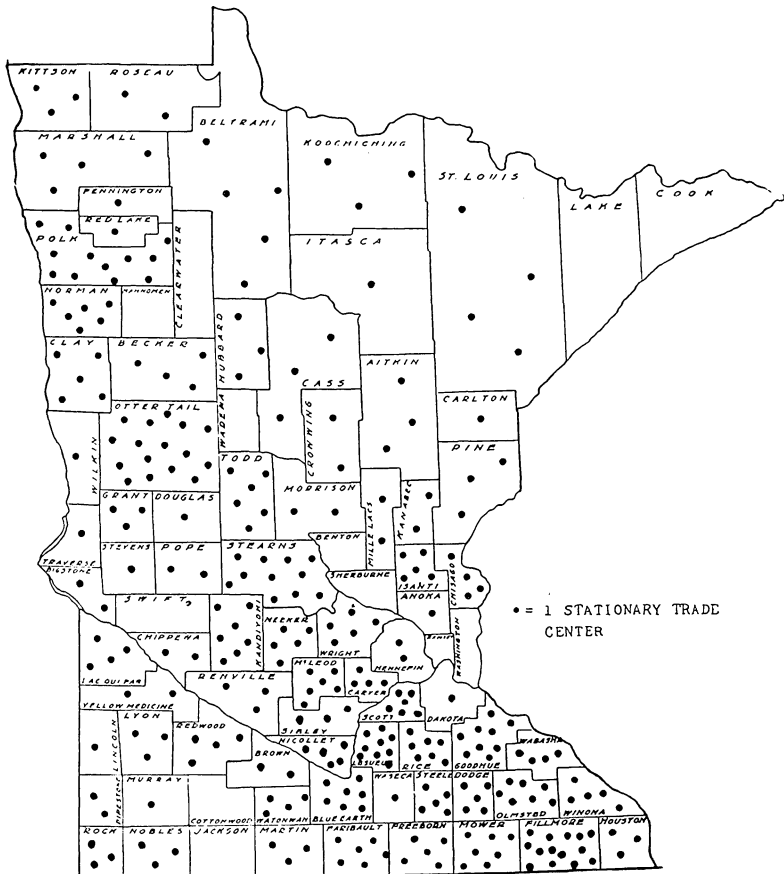


Fig. 2. Stationary Trade Centers: Distribution of 305 Places of Less Than 2,500 Population in 1905 That Remained Stationary, 1905-30

rated centers. Some centers are incorporated with 100 or even less inhabitants. There probably are, however, no unincorporated centers with more than 500 population.

Table 10
Growth and Decline of Minnesota Trade Centers Under 2,500
Population, 1905-30

| Nature of change | Number* | Per cent | Incorporated villages† | | Unincorporated centers‡ | |
|--------------------|--------------|--------------|------------------------|--------------|-------------------------|--------------|
| | | | Number | Per cent | Number | Per cent |
| Grew | 591 | 50.1 | 296 | 55.2 | 295 | 45.7 |
| Stationary | 305 | 25.8 | 142 | 26.5 | 163 | 25.3 |
| Declined | 285 | 24.1 | 98 | 18.3 | 187 | 29.0 |
| Total | 1,181 | 100.0 | 536 | 100.0 | 645 | 100.0 |

* Includes only centers appearing in both 1905 and 1929-30.

† Growth and decline measured by population changes, 1905-30.

‡ Growth and decline measured by changes in number of business units, 1905-29.

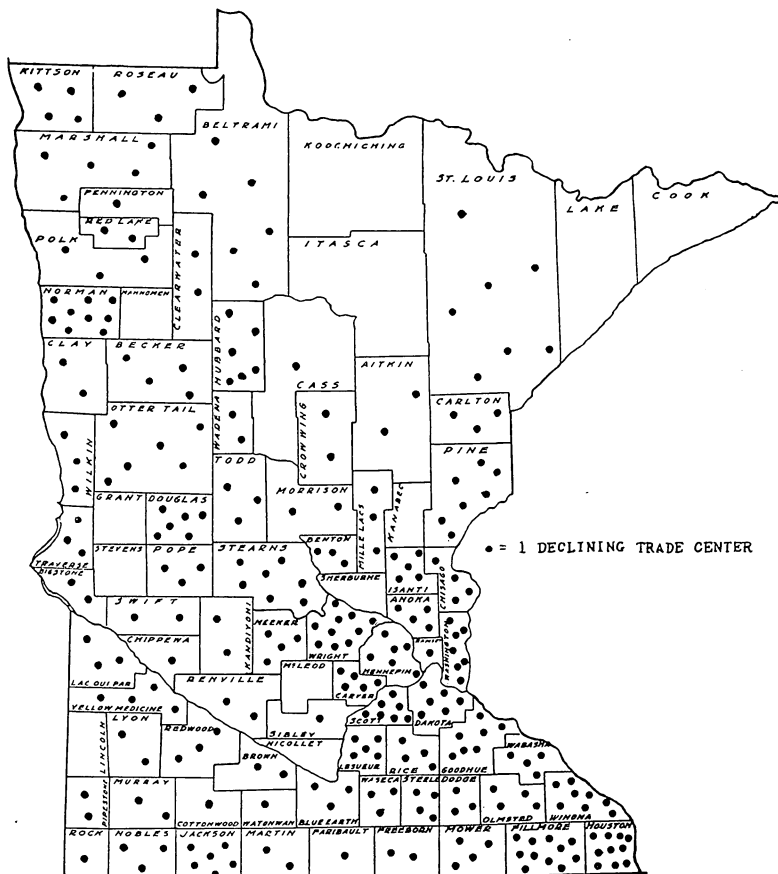


Fig. 3. Declining Trade Centers: Distribution of 285 Places of Less Than 2,500 Population in 1905 That Declined, 1905-30

The determination of the exact number of unincorporated trade centers is difficult. Assuming that Bradstreet's ratings list all centers having one or more business establishments, the number of incorporated centers must be obtained from other sources. For purposes of this study, the lists of incorporated centers were obtained from the reports of the Federal census. But these lists do not check completely with Bradstreet's lists with respect to either name or number of places. Consequently, no claim is made for the absolute accuracy of the figures indicating the number of unincorporated trade centers. It is believed, however, that they are very nearly correct. The changes in the number of unincorporated trade centers, 1905-29, may be indicated by the following analysis:

| | |
|--|------|
| Total unincorporated centers in 1905..... | 973* |
| Total unincorporated centers in 1929..... | 844 |
| Per cent loss in numbers, 1905-29..... | 13.3 |
| Total number listed in both 1905 and 1929..... | 645 |
| Number listed in 1905 only..... | 328 |
| Number listed in 1929 only..... | 342 |
| Number incorporated after 1905..... | 149 |
| Number losing incorporation, 1905-30..... | 6 |

* Includes the 149 centers incorporated after 1905 but not the 6 losing incorporation. These figures, plus those for incorporated centers, do not check with Zimmerman's total (p. 4). The difference, approximately one-half of one per cent, apparently resulted from a difference of a half year in the date of issue of the 1905 Bradstreet's used.

Thus, while the number of incorporated trade centers was increasing 21.3 per cent, the number of unincorporated ones was decreasing 13.3 per cent. But this general decline in number of unincorporated centers was by no means uniform over the state. In the 16 northern and northeastern counties, where many settlers have come in since 1905, the number of these centers increased 35.5 per cent; in the remainder of the state the number decreased 24.8 per cent. The unincorporated trade centers have been decreasing in importance in Minnesota, so far as numbers are concerned, except in the areas undergoing settlement during the period under consideration.

Table 11
Changes in Number of Unincorporated Trade Centers in Minnesota, 1905-29,
by Sections of the State

| Year | State | State less 16 northeastern counties | 16 northeastern counties |
|-------------------------------|-------|---|-----------------------------|
| 1905 | 973 | 787 | 186 |
| 1929 | 844 | 592 | 252 |
| Percent increas 1905-29 | -13.3 | -24.8 | 35.5 |

Table 10 shows also that these unincorporated centers had less chance to grow in size than the incorporated ones. Of the 645 unincorporated trade centers of 1905 that still existed in 1929, only 45.7

per cent had grown as compared with 55.2 per cent of the incorporated ones. Of the former, 29 per cent had declined as compared with 18.3 per cent of the latter. It must not be inferred that the incorporated group grew at the expense of the unincorporated group, and that the reason why the unincorporated group showed little growth was that those that grew became incorporated. This table deals only with the centers in existence in 1905 and classifies them according to their incorporated status at that time. Their subsequent growth was determined irrespective of later shifts in incorporation. Hence, it may be concluded that since 1905 unincorporated trade centers have not only declined in numbers, but those that have persisted throughout the period have remained practically at a standstill. The reasons for this differential growth remain speculative. Perhaps some stimulus to growth arose from superior size and the fact of incorporation. Perhaps by 1905 the locations of permanent advantage had already been manifested through the development of the incorporated villages. Perhaps the rapid development of communication facilities shortly after 1905 played a part.

Decline of Small Centers

When viewed from the standpoint of either the total number of named centers or the total number of business centers extant, there has been a decline in number of small centers in Minnesota during the last 25 years. In 1910 the Rand McNally Library Atlas, which attempts to list all named places whether or not they have business units and an assigned population, listed 3,016 centers in Minnesota, of which 52.5 per cent had an assigned population. As Rand McNally habitually records the population of places as low as 25 persons, or even less, it is certain that nearly half of these centers were very small. In 1920 the atlas listed only 2,602 places, 63 per cent of which had an assigned population. The number having an assigned population increased by 56 places and those having no assigned population decreased by 470 places. By this test the number of places has been growing fewer and of larger average size.

Bradstreet's Commercial Ratings endeavors to list all centers having one or more business establishments.⁷ This difference in listing policy necessarily reduces the number of places listed by Bradstreet's much below that listed by Rand McNally. A careful check of the two lists for corresponding dates, however, indicates that practically every center listed by the former is also listed by the latter. Confusion of names makes a few cases uncertain.

It has already been pointed out (Table 1) that according to Bradstreet's ratings the total number of business centers increased from

⁷ Prior to July, 1918, the Ratings also included post offices where no business establishment existed. These were dropped after that date.

1905 to 1915 and then declined to 1929, leaving a small net gain over 1905. Barring the comparatively small group of incorporated villages of 1,500 to 2,500 population, no group has sustained a loss of numbers except that of unincorporated centers of less than 500 inhabitants. The analysis may be carried further. In 1905 there were 799 unincorporated trade centers with less than five business establishments. By 1929 the number had declined to 676, a decline of 15.3 per cent. That is to say, this group of trade centers having less than five business units and comprising more than half of the trade centers in the state, sustained a loss in numbers more than five times as great as all trade centers under 500 inhabitants. In 1905 this group comprised 82 per cent of all unincorporated trade centers; by 1929 it comprised but 80 per cent.

Disappearing Trade Centers

In his preliminary analysis of Minnesota trade centers, Zimmerman⁸ found that, according to Bradstreet's ratings, 320 business centers that had existed in 1905 had ceased to exist by 1929. He found that they were not evenly distributed over the state but tended to concentrate within a belt extending diagonally from the southeastern corner to the northwestern corner. Very few were located in either the extreme northeastern or the extreme southwestern parts.

Table 12
Relation of Date of Disappearance of 306 Trade Centers to Their Listing in the 1910 Rand McNally Atlas

| | Date of disappearance from Bradstreet's ratings | | | | | Total |
|---|---|---------|---------|---------|---------|-------|
| | 1905-10 | 1910-15 | 1915-20 | 1920-25 | 1925-29 | |
| | Number of centers | | | | | |
| Trade centers listed in Bradstreet's and also listed in 1910 Rand McNally | 87 | 66 | 50 | 30 | 38 | 271 |
| With population | 7 | 54 | 43 | 24 | 38 | 166 |
| With no population | 80 | 12 | 7 | 6 | 0 | 105 |
| Not listed in 1910 Rand McNally.. | 29 | 5 | 1 | 0 | 0 | 35 |
| Total | 116 | 71 | 51 | 30 | 38 | 306 |
| Per cent listed in 1910 Rand McNally | 75 | 93 | 98 | 100 | 100 | 88.5 |

Subsequent analysis of this group of disappearing centers showed that the disappearance of a trade center is somewhat a matter of definition. In Bradstreet's ratings a trade center exists when it has one or more business establishments. When the last business establishment ceases to exist, the center disappears from the Ratings.⁹ Hence, the disappearances recorded by Zimmerman were "economic disappearances," or the disappearance of centers for business purposes. This does not mean that these centers discontinued all other functions at the same time, or indeed at all. Many continued to exist, in the sense of

⁸ Op. cit., pp. 30-33 for discussion and maps.

⁹ See footnote 7.

being named places, and served as centers for a certain number of non-economic functions. A comparison of the disappearance of these centers from Bradstreet's ratings and from the Rand McNally atlas of all named places illustrates this point.

It is evident from Tables 12 and 13 that in the case of existing economic trade centers there is a high degree of agreement in the listings of these two sources of information. Centers disappearing from Bradstreet's were listed, nearly 100 per cent, in the issue of Rand McNally's atlas preceding the period of disappearance. It is also evident that there is a strong likelihood of centers being retained in Rand McNally after having been dropped by Bradstreet. They are likely to be carried from 5 to 10 years and may be carried much longer. There is ample evidence here, however, that the center which loses its business establishments faces a high probability of complete disappearance in the course of a few years. For example, the 116 trade centers that disappeared from Bradstreet's ratings between 1905 and 1910 had three chances in four of being listed in the 1910 Rand McNally atlas, but only one chance in four of being listed in the 1920 edition.

Table 13
Relation of Date of Disappearance of 306 Trade Centers to Their Listing in the 1920 Rand McNally Atlas

| | Date of disappearance from Bradstreet's ratings | | | | | Total |
|---|---|---------|---------|---------|---------|-------|
| | 1905-10 | 1910-15 | 1915-20 | 1920-25 | 1925-29 | |
| | Number of centers | | | | | |
| Trade centers listed in Bradstreet's and also listed in 1920 Rand McNally | 32 | 21 | 21 | 28 | 38 | 140 |
| With population | 2 | 0 | 3 | 16 | 38 | 59 |
| With no population | 30 | 21 | 18 | 12 | 0 | 81 |
| Not listed in 1920 Rand McNally.. | 84 | 50 | 30 | 2 | 0 | 166 |
| Total | 116 | 71 | 51 | 30 | 38 | 306 |
| Per cent listed in 1920 Rand McNally | 27 | 30 | 41 | 93 | 100 | 45.7 |

The correlation between the population and the number of business establishments is reflected in these tables. A high proportion of the disappearing centers were listed, with population, in the issues of the Rand McNally atlas ten or more years prior to their disappearance from Bradstreet's ratings. However, as the date of the Rand McNally atlas approached the date of disappearance from Bradstreet's ratings, the proportion of centers listed in the Rand McNally atlas, with a population, decreased.

Analysis of this group of disappearing trade centers further revealed that owing to changes in name and to minor shifts in the location and nature of small centers concomitant with change in name, cases of apparent but not actual disappearance had been included in the list.

When these cases were removed as far as possible with the data available, it was found that 306 trade centers had actually disappeared as economic centers between 1905 and 1929. The dates of disappearance by 5-year periods are as follows:

| Date of disappearance | Number of centers disappearing | Per cent |
|-----------------------|--------------------------------|------------|
| 1905-10 | 116 | 38 |
| 1910-15 | 71 | 23 |
| 1915-20 | 51 | 17 |
| 1920-25 | 30 | 10 |
| 1925-29 | 38 | 12 |
| Total | 306 | 100 |

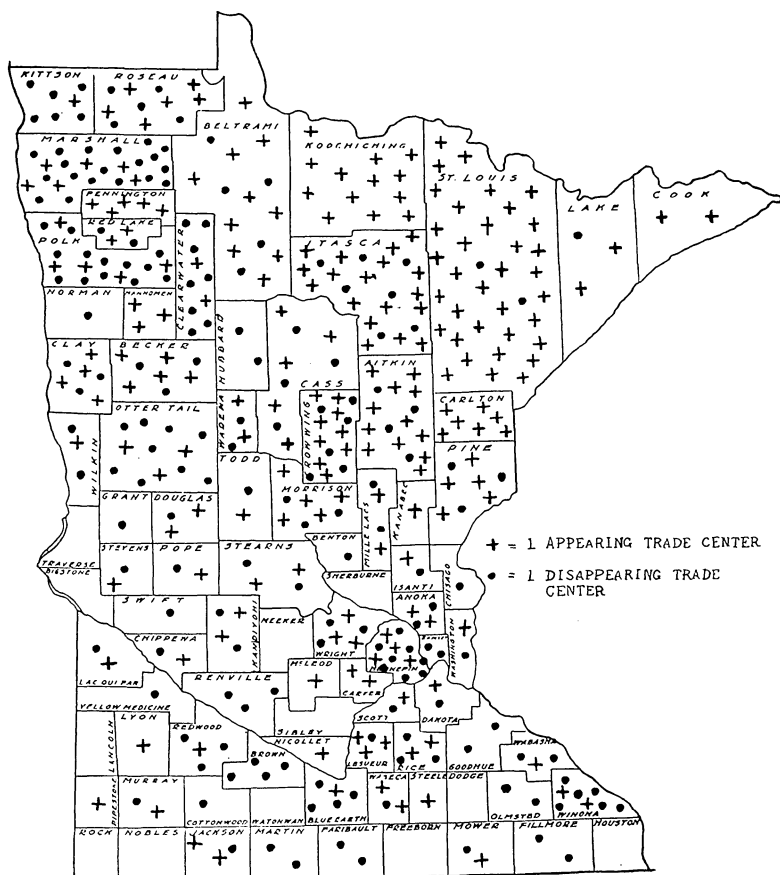


Fig. 4. Distribution of 218 Trade Centers That Appeared and 187 That Disappeared, 1905-15

The majority of trade centers disappeared during the 10-year period 1905-15. Many of these were of the small country store variety. In another connection the close relation of these disappearances to the discontinuance of rural post offices is pointed out. That most of these

disappearing centers were relatively unimportant, and always had been so, is shown by the fact that only 8 had ever been incorporated villages. On the other hand, these small centers, generally speaking, had existed for some time and had undoubtedly played an important part in the local rural life of the last quarter of the last century. Fully 80 per cent of these centers were in existence as early as 1870. Of those incorporated, one was incorporated by 1870, four by 1880, one by 1890, and two by 1900.

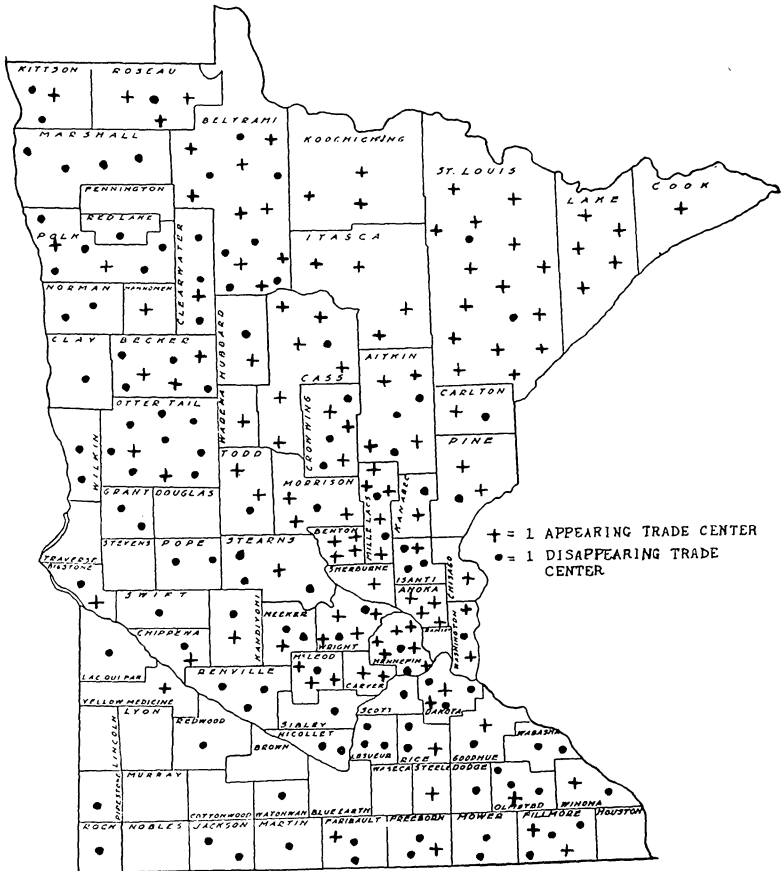


Fig. 5. Distribution of 124 Trade Centers That Appeared and 119 That Disappeared, 1915-29

When the geographic location of these disappearing centers was studied in relation to the date of disappearance, little of significance was found. (See Figs. 4 and 5.) Centers disappearing before 1920 were in the northwestern counties; those disappearing after 1920 were in the southeastern quarter of the state.

Appearing Trade Centers

In his study already referred to, Zimmerman found that during the period 1905-29 a group of 356 trade centers had apparently come into

existence. His map indicates that these new centers were located predominantly in the newer developed areas of the northeastern part of the state, and also in the neighborhood of the Twin Cities.

What has been said relative to the definition of a disappearing trade center applies with logical modification to these appearing centers. A trade center was regarded as an appearing center when it appeared in Bradstreet's ratings with one or more business establishments. That many centers which appeared as new trading centers had already existed for a time as named places, sometimes with an assignable population, prior to their appearance as economic centers is made clear by a comparison of the occurrence of these newly appearing centers in Bradstreet's ratings and in the Rand McNally atlas. Tables 14 and 15 show these comparisons. While centers appearing in Bradstreet's for the first time were practically certain to be listed in the Rand McNally atlas five to ten years later, they stood a fifty-fifty chance of being listed in Rand McNally five years before appearing in Bradstreet's. In the latter case, they were likely to be listed without population, for a center without business establishments is likely to have little or no population.

Table 14
Relation of the Date of Appearance of 342 Trade Centers to Their Listing in the 1910 Rand McNally Atlas

| | Date of appearance in Bradstreet's ratings | | | | | Total |
|---|--|---------|---------|---------|---------|-------|
| | 1905-10 | 1910-15 | 1915-20 | 1920-25 | 1925-29 | |
| | Number of centers | | | | | |
| Trade centers listed in Bradstreet's and also listed in 1910 Rand McNally | 118 | 75 | 23 | 14 | 12 | 242 |
| With population | 96 | 6 | 0 | 0 | 1 | 97 |
| With no population | 28 | 69 | 23 | 14 | 11 | 145 |
| Not listed in 1910 Rand McNally.. | 8 | 17 | 20 | 29 | 26 | 100 |
| Total | 126 | 92 | 43 | 43 | 38 | 342 |
| Per cent listed in 1910 Rand McNally | 94 | 82 | 53 | 33 | 32 | 70.7 |

Table 15
Relation of the Date of Appearance of 342 Trade Centers to Their Listing in the 1920 Rand McNally Atlas

| | Date of appearance in Bradstreet's ratings | | | | | Total |
|---|--|---------|---------|---------|---------|-------|
| | 1905-10 | 1910-15 | 1915-20 | 1920-25 | 1925-29 | |
| | Number of centers | | | | | |
| Trade centers listed in Bradstreet's and also listed in 1920 Rand McNally | 126 | 92 | 42 | 26 | 13 | 299 |
| With population | 123 | 90 | 40 | 10 | 2 | 265 |
| With no population | 3 | 2 | 2 | 16 | 11 | 34 |
| Not listed in 1920 Rand McNally.. | 0 | 0 | 1 | 17 | 25 | 43 |
| Total | 126 | 92 | 43 | 43 | 38 | 342 |
| Per cent listed in 1920 Rand McNally | 100 | 100 | 97 | 60 | 34 | 87.4 |

As in the case of disappearing trade centers, some confusion resulted from changed names and other local circumstances which made it appear in the records that a new center had arisen when such was not the case. When these cases had been eliminated as far as the nature of the data would permit, it was found that 342 trade centers had appeared between 1905 and 1929 and had persisted to the latter date. The dates of their appearance, according to Bradstreet's ratings, were as follows:

| Date of appearance | Number of centers | Per cent |
|--------------------|-------------------|------------|
| 1905-10 | 126 | 37 |
| 1910-15 | 92 | 27 |
| 1915-20 | 43 | 12 |
| 1920-25 | 43 | 13 |
| 1925-29 | 38 | 11 |
| Total | <u>342</u> | <u>100</u> |

It is evident from these figures that the appearing trade centers followed approximately the same distribution in time as the disappearing centers. That is, 64 per cent appeared between 1905 and 1915; and that is the period during which 61 per cent of the disappearing centers ceased to be listed. A comparison of locations by county, however, indicates that while there was some overlapping, in the main the areas showing a high rate of appearing centers and the areas showing a high rate of disappearing centers were quite different areas. (See Figures 4 and 5.) In certain of the Red River Valley counties, as well as in the neighborhood of the Twin Cities, rather high rates of both appearing and disappearing centers occurred during the same period, indicating a dynamic condition in these areas. In general, however, the appearing centers were located in the northeastern counties and the disappearing centers in the southeastern and northwestern counties. During the later years of the period under consideration (1905-29), there was more complete segregation of the areas of appearing and disappearing centers. Between 1920 and 1929 the appearing centers were more definitely localized in the extreme northeastern counties and in the neighborhood of the Twin Cities, while the disappearing centers were chiefly in the southeastern and western counties.

IV. GENERAL FACTORS RELATED TO THE DIFFERENTIAL GROWTH AND DECLINE OF FARM TRADE CENTERS

Size of Farm Trade Centers

The data of this report have already made clear that in Minnesota since 1905 the probability of a trade center growing in size has varied with the size of the center. Centers that were large enough to be classed as cities in 1905 almost invariably grew. The chances were 92 in 100 that these centers would have more population in 1930 than in 1905. Incorporated centers with less than 2,500 population in 1905 grew much less frequently. In this group the chances of a center growing 10 per cent or more in size by 1930 were 55 in 100, and the chances of its losing 10 per cent or more of its population were 18 in 100. Unincorporated centers grew still less often. In this group, the chances of a center having more business establishments in 1929 than in 1905 were 46 in 100, and the chances of its having fewer business establishments were 29 in 100. Still less were the chances for the centers of less than five business establishments. Here the chances were but 14 in 100 that one of these centers would have five or more business establishments by 1929, and the chances were 40 in 100 that the center would disappear entirely before that date.

It is evident that during the last 25 years the forces of growth have been centered increasingly upon the larger trade centers, and that the smaller centers have fallen more and more without the stream of progress as measured by size.

Regional Distribution of Farm Trade Centers

As has been pointed out in Parts II and III the phenomena of the growth and decline of trade centers have varied considerably between northeastern Minnesota and the rest of the state. It may now be stated that further regional distinctions are important. Table 16 and Figures 6 and 7 show some of the most significant of these variations. In this analysis, the county was used as the unit, and the number of trade centers that grew during the period 1905-30 was related to the total number persisting during that period. The resulting ratios multiplied by 100 to eliminate fractions are shown by Figure 6. It will be noted that, in general, the counties having a high ratio of growing centers to total centers were located either in 22 northeastern or in 23 southwestern counties. Counties with ratios under 60 were likely to be within a belt from one to three counties in width, running diagonally across the state from the southeastern corner to the northwestern. The lowest ratios are in the counties in the extreme southeastern part of the state.

Table 16
 Ratios of Growing and Declining Trade Centers to Total Number, 1905-30;
 1,181 Trade Centers of Less Than 2,500 Population
 in 1905, by Section of State

| Area | Incorporated and unincorporated trade centers | | Incorporated trade centers | | Unincorporated trade centers | |
|---------------------------------|---|---|---|---|---|---|
| | Ratio X 100 of growing to total centers | Ratio X 100 of declining to total centers | Ratio X 100 of growing to total centers | Ratio X 100 of declining to total centers | Ratio X 100 of growing to total centers | Ratio X 100 of declining to total centers |
| State | 50 | 24 | 55 | 18 | 46 | 29 |
| Northeastern, 22 counties*..... | 64 | 21 | 71 | 19 | 63 | 23 |
| Central, 41 counties..... | 42 | 27 | 45 | 20 | 38 | 32 |
| Southwestern, 23 counties..... | 59 | 19 | 65 | 14 | 50 | 26 |

* Beltrami and Lake of the Woods Counties treated as one.

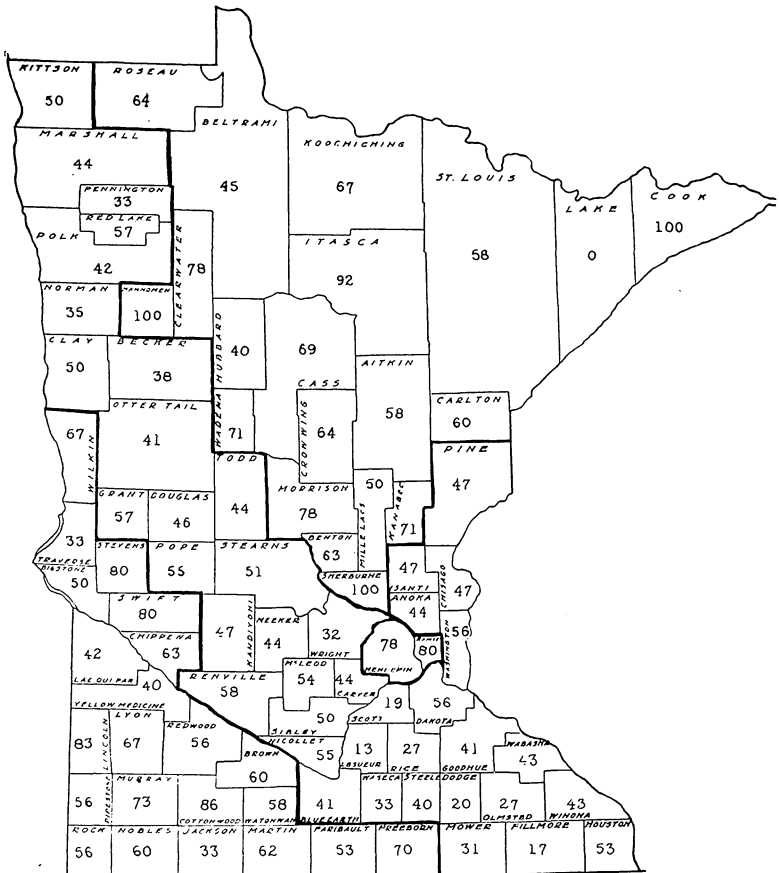


Fig. 6. Ratio of Number of Growing Trade Centers to Total Number of Trade Centers, 1905-30
 Includes all centers under 2,500 population in 1905 that did not disappear before 1930. Actual ratio is multiplied by 100.

Separation of the incorporated and unincorporated centers suggested no changes in the three belts, or areas, already indicated as far as the incorporated centers was concerned. The ratios of growing incorporated centers to all incorporated centers were higher than when all centers were included, but only 5 high-ratio counties (75 or over) were located in the central belt. In the case of unincorporated centers, however, the county ratios showed less disposition to follow these belts, altho the belt averages still maintained the regional differences previously noted. Some Red River Valley counties had high ratios and a few high-ratio counties were scattered throughout the central belt, but the belt average ratio of 38 was well below the state average of 46.

The ratios of the number of declining trade centers to the total number presents a somewhat different picture of the regions of the state under discussion. (See Table 16.) As a rule, where the ratio of growing centers to total centers was high the ratio of declining centers to total centers was low, and vice versa. Therefore, the highest ratios of declining centers to total centers occurred in the central belt, and the lowest ratios in the northeastern and southeastern areas. However, the northeastern area that had the highest ratios for growing trade centers also had some of the highest ratios for declining trade centers. This appears to be a reflection of the strong differential occurring in village growth and decline in parts of this region due to shifts in mining, a decline in lumbering, and changes in a somewhat precarious agriculture.

A better grouping of counties into regions on the basis of the ratios of declining centers to total centers is indicated in Figure 7. In this grouping, all but four of the high-ratio counties (30 and over) were located in either the southeastern or the northwestern areas. This grouping of counties holds very well for incorporated centers taken alone, but is less representative of the ratios for unincorporated centers. In the case of the latter group, the southeastern area is well indicated; but there were no high-ratio counties in the northwestern area. Apparently this situation may be explained by the fact that in this northwestern group of counties a high proportion of the unincorporated centers that declined during the period disappeared entirely and hence are not included in these ratios, altho they represent declining centers.

It is evident, therefore, that the probability of a trade center growing or declining in size during the period 1905-30, was much affected by the region in which it was located. The greatest chances of growth prevailed in the northeastern area, the smallest in the central area, particularly in the southeastern part of that belt.¹⁰

¹⁰ While the ratios used were computed on a county basis, it is evident that county lines have little or no relation to variation in the probability of growth and decline of trade centers. For this reason attempts to relate these ratios with other relevant variables on the county basis were poorly rewarded.

With certain modifications, these conclusions may be extended to cover trade centers that grew at an exceptionally rapid rate. Of 54 incorporated villages that gained 100 per cent or more in population or number of business establishments in 1905-30, 26 were located in the northeastern area, and 9 in the southwestern area. There was a noticeable concentration of rapidly growing centers in the neighborhood of the Twin Cities. This accounted for a considerable number occurring in the central belt.

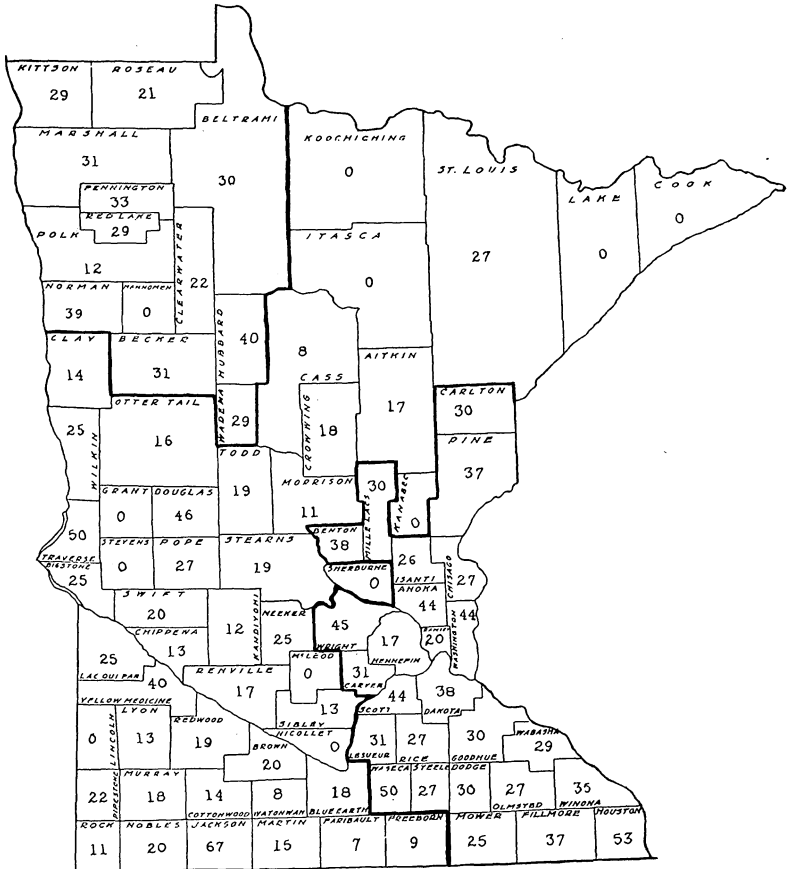


Fig. 7. Ratio of Number of Declining Trade Centers to Total Number of Trade Centers, 1905-30

Includes all centers under 2,500 population in 1905 that did not disappear before 1930. Actual ratio is multiplied by 100.

In the case of unincorporated centers that grew at an exceptionally rapid rate, one-third were located in the northeastern section, one-seventh in the southwestern section, and the rest, approximately one-half, in the central belt. These rapidly growing centers were pretty evenly distributed over the state except for a noticeable concentration in the

neighborhood of the Twin Cities. The ratio of rapidly growing centers of this type to the total number was much higher in the northeastern section (39) than in the other two sections, which had nearly equal ratios, 25 and 26, respectively. In other words, when considered from the standpoint of the chances of rapid growth, an unincorporated center in the northeastern area had a 50 per cent better chance of making exceptional growth than an unincorporated center in either of the other sections of the state.

Trade centers that declined at an unusually rapid rate, i.e., lost 50 per cent or more of their population or business establishments during the 25-year period, were scarce in the incorporated group. There were only 10 such villages, and 6 of them were in northeastern counties. In the unincorporated group, however, there were 120 such places. This amounted to 64 per cent of all unincorporated places of 1905 that lost 10 per cent or more of their business establishments before 1930. The chances were 29 in 100 that an unincorporated center existing in 1905 would lose 10 per cent or more of its business establishments before 1930; the chances were 18 in 100 that it would lose 50 per cent or more of its business establishments. Its chances of disappearing entirely as a business center were one in four.

A study of the regional distribution of these rapidly declining centers showed that the probability of rapid decline was highest in the central belt, owing to a definite concentration in the extreme southeastern counties. In this central belt the chances of a village unincorporated in 1905 losing 50 per cent or more of its business establishments before 1930 were 20 in 100, while in the 15 southeastern counties of this central belt, the chances were 24 in 100. In the northeastern region the chances of such decline were 17 in 100 and in the southwestern region they were but 15 in 100.

As a general conclusion, therefore, it may be stated that the chances of growth and the chances of decline were related inversely. That is, the region in which the highest probability of growth prevailed was also the region of lowest probability of decline. This clearly indicates the influence of regional as contrasted with purely local factors in the growth and decline of trade centers. There was one exception to the general rule, however. The northeastern section showed a higher probability of growth of trade centers than the southwestern section. It also showed a higher probability of decline in trade centers than the southwestern section. Apparently, this may be regarded as a reflection of the more variable conditions existing in the northeastern section. In this area mining occurs, with its rapid growth of new mining centers and a decline of exhausted ones. The same may be said of lumbering. Much of the agriculture exists on a more or less precarious basis. In the more stable agricultural counties of the southwestern section, trade

centers depending chiefly upon a gradually expanding agriculture, have during the last twenty-five years enjoyed a steady growth with a minimum of cases of decline. There were relatively fewer cases of exceptional growth and exceptional decline in this area than in either of the other sections of the state.

Tributary Population

That the growth and decline of farm trade centers is related to the population that supports them is an obvious fact. The extent to which trade centers develop the non-agricultural industries, of course, affects this relationship. In Minnesota, the smaller centers, those having a population of less than 2,500, are still closely related to agriculture, if certain mining towns are omitted. Evidently this relationship is more remote in the case of larger places, however.

It is a matter of common observation that there is generally a direct relation between the density of country population and the frequency of trade centers. Brunner¹¹ concludes that while a certain irreducible minimum population is necessary to support a trade center, and that while the actual supporting population may vary considerably above that minimum, the total supporting population will vary less than either the density of the supporting population or the area tributary to the center. Which is to say that the area tributary to the trade center and the density of the supporting population vary inversely with each other, thereby serving to stabilize the total amount of supporting population. One may say, therefore, that the number of trade centers tends to vary directly and the average area per trade center inversely with the density of the supporting population. Such an inverse correlation exists in the Minnesota data between the density of population and the area per trade center, and it is fairly high. When the average area per trade center (using the sum of the incorporated and unincorporated centers under 2,500 population) in the respective counties, in 1930, was correlated with the density of farm population in those counties in 1930, the coefficient of correlation was found to be -0.64 ; $E_r = 0.063$. Apparently, there has been little change in this relationship since 1905, altho the data do not allow accurate comparisons.

Attempts to relate, on a county basis, changes in the density of unincorporated population to changes in area per trade center revealed little of significance. In a similar manner it was found that changes in the density of unincorporated population were only slightly related to the proportion of trade centers growing or declining. But these efforts only served to show that the county is not a satisfactory unit for such comparisons. Figure 8 indicates that when regions rather than counties were compared, a general correspondence existed (1) between

¹¹ Brunner, Ed. deS. *Village Communities*, p. 29.

changes in density of the unincorporated population and the proportion of trade centers growing or declining, and (2) between changes in the density of the unincorporated population and the appearance of new centers and the disappearance of others.

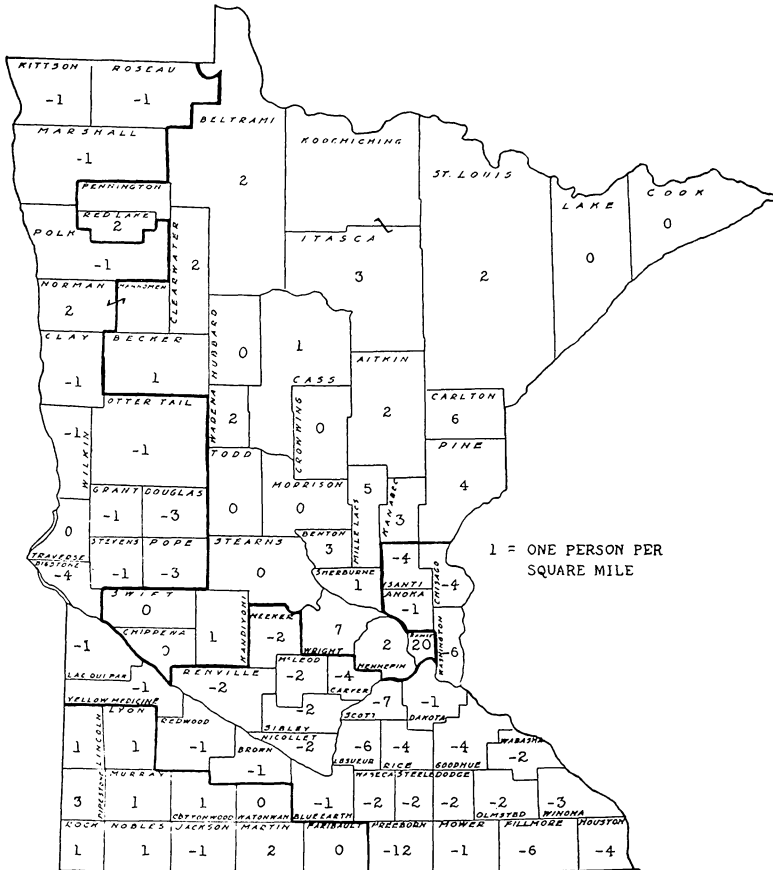


Fig. 8. Changes in Density of Unincorporated Population, 1905-30

Changes in Wealth and Income of the Farm Population

Trade centers must have their supporting population but the wealth and purchasing power of the supporting population are also important. As the agricultural trade center is supported by the volume of trade carried on with the farm population, it appears that, other things being equal, changes in the economic prosperity of the farm population, as evidenced by changes in farm property values and income values, would affect the volume of trade and thereby affect the growth of the trade center. For purposes of this study, change in the value of all farm property per county was used as an index of the changes and trends in

the wealth of the farm population. Prior to 1910 the values of farm property per county in Minnesota were generally rising, owing to the influence of continued settlement. In order to obtain county and regional differentials, therefore, the changes occurring prior to 1910 were omitted. The percentage change in the value of all farm property per county, 1910-25, was computed after correcting the census figures for changes in price level.¹² It was found that, when so deflated, the values of all farm property had risen between 1910 and 1925 in most counties. A small group in southeastern Minnesota and another along the western border had lost in value. In general, the northeastern counties had the greatest gains, central and southwestern counties the next largest, and southeastern counties the least. These percentage changes in value of all farm property were correlated with the proportion of declining trade centers. When the ratio of declining trade centers to total trade centers 1905-29 was used, the correlation was too low to be significant. But when the ratio of declining to growing trade centers was used, the coefficient of linear correlation was 0.28: $E_r = 0.099$. Thus, even on a county basis, the relationship was significant, tho low. The county is hardly a satisfactory unit for such comparisons, however, as shown by Figure 9. It is evident that in a regional way there was considerable correspondence between the areas of declining trade centers and areas in which farm property values either failed to gain or actually declined. The relation of change in farm property values to the appearance of new trade centers is also evident, as most of the new centers appeared in the newer sections of the state where farm values per county were increasing; but the relation to disappearing trade centers was slight. The marked disappearance of trade centers in the Red River Valley between 1900 and 1920 occurred during a period of rising farm property values. Again, in the southwestern counties, where the value of farm property showed good gains between 1900 and 1910 but a general decline from 1920 to 1925, there were relatively few appearances of disappearances during the 30-year period. On the other hand, in the southeastern group of counties the relation of declining farm values to the decline and disappearance of trade centers is clear.

It is regrettable that satisfactory statistics of agricultural income by counties are not available for a comparable period of years. If it were possible to relate growth and decline of trade centers to changes in agricultural income, it seems probable that a relationship would be found similar to that existing with farm property values. Zimmerman¹³ is of the opinion that the rising standards of living of the farm population have greatly affected farm trade centers. It appears to be beyond ques-

¹² The index used was that of wholesale prices found in *Farm Economics*, Cornell Univ. No. 45, pp. 698-699. June, 1927.

¹³ *Op. cit.*, pp. 22, 39.

tion that farmers generally live better today than they did twenty-five years ago. A more elaborate standard of living has been made possible by the great increase in the number and variety of things that can be obtained for a given expenditure. It is certainly true, also, that the farm population has brought about qualitative changes in its living as well as quantitative ones, and as a result the nature of the business establishments and service agencies of the farm trade centers have undergone certain changes to meet these changed standards and living practices. But whether the average farm family actually contributes more buying power in the trade centers today than it did twenty-five years ago, is another question. A satisfactory answer to this question would represent an important contribution to the knowledge of this subject.

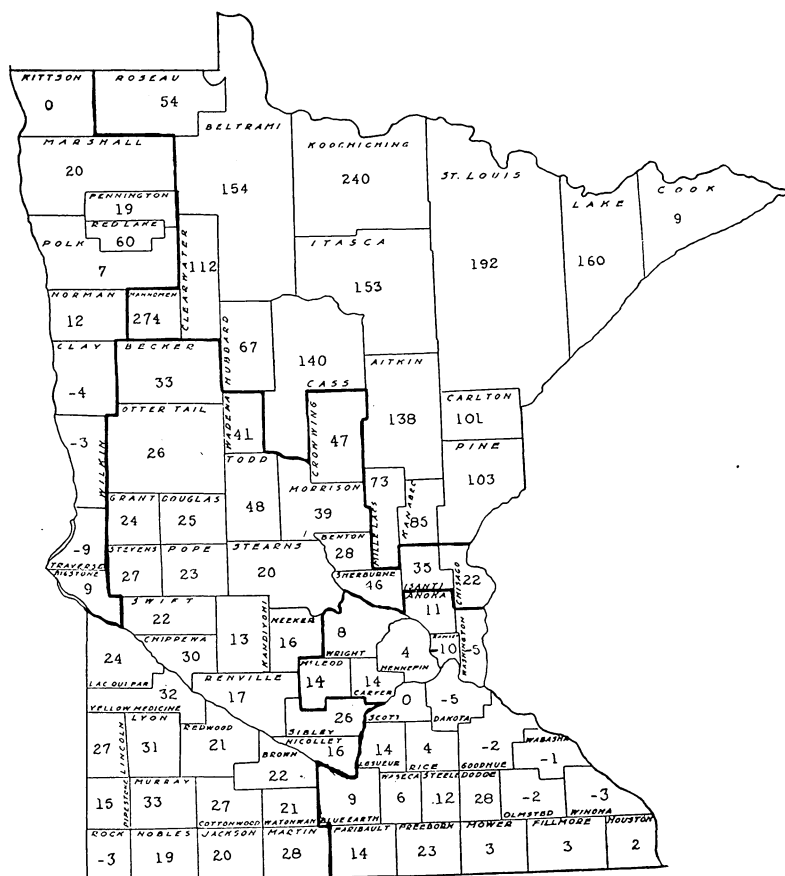


Fig. 9. Per Cent Increase or Decrease in Value of All Farm Property per County, 1910-25 Values deflated to base,1910-14 equals 100.

A general notion of the income trends of the farm population in Minnesota during the last twenty years may be obtained from the figures

given in Appendix C. The gross cash income from the sales of the principal farm products has been estimated by the Division of Agricultural Economics of the University of Minnesota.¹⁴ The commodities included were wheat, corn, oats, barley, rye, flax, hay, potatoes, hogs, cattle, calves, lambs, sheep, chickens, eggs, butterfat, and milk. These income estimates were deflated to the base of 1909-14 by use of the index of prices paid by farmers for commodities bought for production and living purposes.¹⁵ This index is not ideal, as it is computed for the United States rather than for Minnesota and is weighted rather heavily with certain commodities that would probably be of less importance in Minnesota. Nevertheless, as the point at issue here is the amount of money spent in the trade centers, the index appears to be the best available. The number of farms was obtained from the various census reports and interpolated for intervening years. The number of persons per farm was obtained by dividing the farm population by the number of farms.

The conclusions that may be drawn from this table are: (1) That the gross cash income of Minnesota farmers has increased since 1910 because of an increase in the number of farms and farmers and because of an increase in income per farm. The gross cash income per farm for the last five years, 1926-30, averaged 23 per cent above the average for the first five years, 1910-14. (2) The number of persons per farm has declined, thereby increasing the gross cash income per person at a rate considerably higher than would have been the case because of increased income alone. The gross cash income per person for the last five years, 1926-30, averaged 36 per cent above the average for the years 1910-14.

It appears, therefore, that the average farm family of Minnesota is spending fully as much money, probably more, in the trade centers today as it did twenty years ago. And if it is true that the farm family is spending more of its income and saving less, it seems practically certain that the average family is spending more in the trade centers than formerly. It does not follow that these conclusions apply to any particular county or even to any particular group of counties. The point of greatest importance for this discussion is that, as a state-wide factor in the decline in farm trade centers, decrease in agricultural income has evidently been of no significance. Rather it may be stated that throughout the major portion of Minnesota where farm values have increased, agricultural income has probably increased also and tended to give the farm trade centers increasing support. In these areas the decline and disappearance of farm trade centers must be regarded as

¹⁴ See Minnesota Farm Business Notes, No. 94. Sept. 20, 1930.

¹⁵ See The Agricultural Situation, issued by the Bureau of Agricultural Economics, Vol. 15, No. 5, p. 21. May, 1931.

due to differentials in support, or allegiance, on the part of the farm population, or as due to factors lying outside of agriculture itself. This conclusion appears to be true insofar as general factors are concerned. In areas in which farm values have ceased to hold their own, however, incomes have probably declined, or the number of farms has decreased, or both, thereby decreasing the agricultural support of the trade centers.

A point of interest in this connection, also, is the fact that with the decline in the number of persons per farm, the family may now enjoy higher standards of living for the same cash expenditure as formerly. This change is likely one of the factors that has been responsible for the changes that have occurred in the nature of trade center business establishments and service agencies.

Growth of Improved Facilities for Transportation and Communication

The importance of transportation and communication in social organization is too well known to require elaboration here. Change in these facilities is a basic factor in the rise, decline, and realignment of groups. In our time, perhaps the most conspicuous of these changes has been the growth of the motor car and improved roads. Various studies¹⁶ have testified to the importance of the newer agencies of communication and transportation in the reorganization of rural life. The general results include (1) realignment of processes, technics, and loyalties—both economic and social; (2) regrouping and the rise of larger units of rural organization; (3) decline and disappearance of many small centers and service agencies whose chief basis of existence was found in isolation.

The available data with respect to the growth of automobiles in rural Minnesota are meager. Assuming that with some lag the registration of automobiles in rural territory is rather highly correlated with the total registration, it becomes possible, by patching together data from different sources,¹⁷ to gain some general notion of the growth of motor vehicles in the state. (See Appendix D for figures.) Before 1910 there were very few automobiles in Minnesota and probably none among the farm people. By 1913 there were less than 50,000 in the state. Consequently, it is safe to say that the revolutionary influences of the automobile in rural Minnesota have been exerted chiefly during the last 18 years. During this time many small trade centers have been thrown into competition with larger and more distant centers and, having no

¹⁶ Of special significance here are: Committee on Business Research. "The Influence of Automobiles and Good Roads on Retail Trade Centers." Nebraska Univ. Studies in Business, No. 18, 1927. Hoffer, C. R. "A Study of Town-Country Relationships." Mich. Agr. Expt. Sta., Special Bull. 181. Canon, Helen. "Sizes of Purchasing Centers of New York Farm Families," Cornell Agr. Expt. Sta., Bull. 472. Zimmerman, C. C. "Farm Trade Centers in Minnesota," Minn. Agr. Expt. Sta., Bull. 269.

¹⁷ Department of State, the State of Minnesota; "Statistical Abstract of the United States." 1928, p. 375.

sound basis of existence except the monopoly of trade arising out of isolation, have been unable to survive the conflict and have declined or even disappeared entirely. On the other hand, the majority of disappearing trade centers recorded in this study disappeared before 1915, during a period before the automobile had become highly influential in rural life. Later in this study it is pointed out, however, that these earlier disappearances were rather closely related to the decline of the rural post office, a phenomenon that was itself closely related to the good roads movement. Case studies show clearly that improved methods of communication and transportation have played an important part in the disappearance of small centers. Local factors appear to play such an important part in these cases, however, that communication must often be regarded as only a contributing factor.

Large Cities and Density of Population

The cities of Minnesota are far from being evenly distributed. They show concentration (1) in the neighborhood of the Twin Cities, (2) throughout the southern and southeastern counties, and (3) in the northeastern section, particularly in St. Louis County. In general, the distribution of cities is directly correlated with the density of both the total population and the rural population. It has been pointed out that a positive correlation exists between the density of population and the density of trade centers.

Figure 10 shows the distribution of cities in Minnesota according to the Census of 1930, and their rate of growth since 1900. The cluster surrounding Minneapolis and St. Paul, as well as the cities of the iron range area, grew rapidly. The cities of the southern counties grew much more slowly. This condition appears to be related to the growth and decline of the smaller trade centers. Thus, it was found that in the areas where cities are clustered and growing rapidly the smaller trade centers showed a high ratio of growing centers to total trade centers. But the ratio of declining centers to the total number may also be high, indicating that in such a dynamic area few trade centers remain stationary. Where the cities are more scattered and of slower growth, the smaller trade centers are likely to be of slow growth, many remaining stationary or declining.

Apparently the significant relationship here is the common one of both cities and villages to agriculture and industry. Agriculture alone seldom builds large cities. Urban industrialism does that. The areas of greatest density of population (both total and rural) tend to reach a saturation point for a given type of agriculture, and hence also for population and the number of trade centers necessary to supply the farm population. Beyond that point the cities that grow, particularly those that grow at a rapid rate, are likely to be those that industrialize and cease to remain what is known as "agricultural towns." But the cities that

industrialize and grow, provide non-agricultural support for many immediately surrounding villages and a strong differential growth and decline sets in among them. Failure of these cities to industrialize, however, results in a general slowing down of growth in the trade centers and a disposition to reflect the condition of agriculture in their rates of growth or decline.

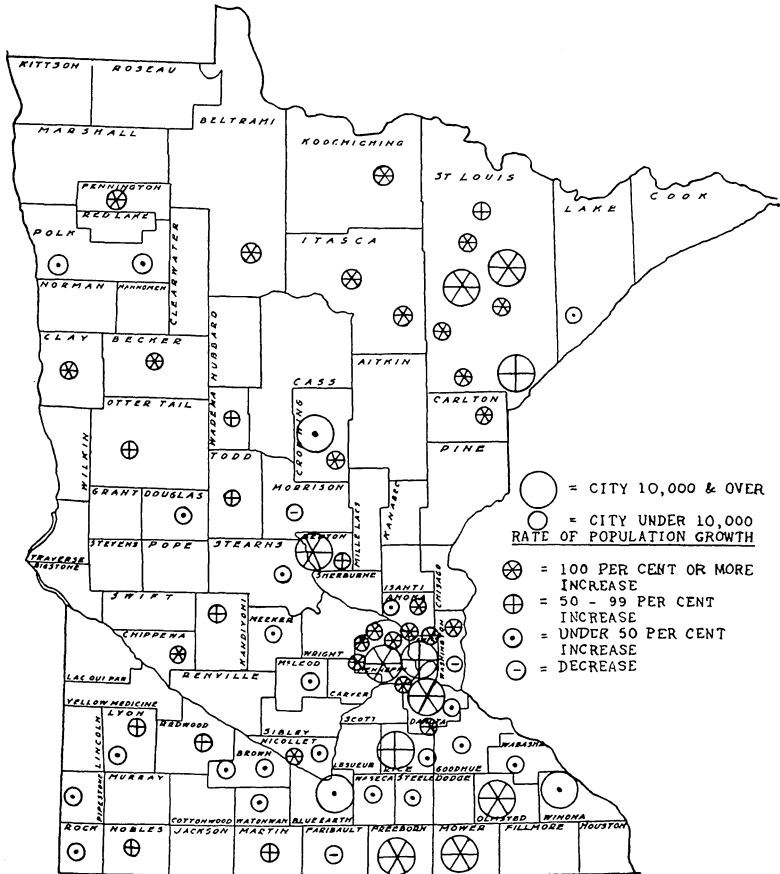


Fig. 10. Distribution of the Cities of 1930, Their Size, and Their Rate of Growth, 1900-30
A city is any incorporated center of 2,500 or more population.

This may be regarded as a tentative explanation of at least some of the relationships observed between the distribution and growth of Minnesota cities and the growth and decline of small farm trade centers.

Occurrence of a Railroad

The occurrence of a railroad in a trade center has generally been regarded as favorable to its growth.¹⁸ The development of the agricul-

¹⁸ Vogt, P. Introduction to Rural Sociology, p. 364. The author has verified Vogt's conclusions for later periods in Ohio.

tural resources of a community requires a trade center with reasonably good transportation facilities. The trade center that offers ready means of transportation of farm products out of the community and of farm supplies into the community is likely to obtain and hold the support of the farm population better than its competitor that offers less along this line.

Yet the mere occurrence of a railroad in a trade center is in itself no guarantee of growth. It has been pointed out (Table 10) that during the period under consideration only 55.2 per cent of the incorporated villages of a population of under 2,500 grew, while 18.3 per cent declined. Only 3 per cent of these villages had no railroad and the distribution of this small number among the growing, declining, and stationary groups showed no definite tendency. It was necessary, therefore, to turn to the group of unincorporated trade centers to study the relation of the railroad to growth and decline. It was found that of the 645 trade centers of which the growth and decline were traced from 1905 to 1930, 48.5 per cent were located on a railroad in 1929. Of those that grew, 65.1 per cent had a railway; of those that declined, only 35.8 per cent had a railroad; but only 33.1 per cent of the stationary centers were so located. Hence, ready access to a railroad seems to have played some part in the differential growth and decline of these small unincorporated trade centers. In centers that grew, the railroad occurred 34 per cent more often than in the group as a whole, and in centers that declined or failed to grow, the railroad occurred 29 per cent less often than in the entire group.

Table 17

Relation of Growth and Decline of Unincorporated Trade Centers, 1905-30, to Their Location on a Railroad

| Nature of change | Number | Per cent | Located on railroad | |
|---------------------------|--------|----------|---------------------|----------|
| | | | Number | Per cent |
| Grew | 295 | 45.7 | 192 | 65.1 |
| Remained stationary | 163 | 25.3 | 54 | 33.1 |
| Declined | 187 | 29.0 | 67 | 35.8 |
| Total | 645 | 100.0 | 313 | 48.5 |

Similar results were obtained when the occurrence of the railroad was related to the appearance of new trade centers and the complete disappearance of former ones. Of 342 appearing trade centers studied on this point, 161, or 47 per cent, had a railroad during the first five years of their appearance as trade centers. Of 306 former trade centers that disappeared entirely, it was found that only 67, or 21 per cent, were located on a railroad during the five-year period immediately preceding disappearance.

These data lead to the conclusion that during the last 25 years the newly appearing trade center was as likely to be located on a railroad

as any unincorporated center in the state, and that the disappearing trade center was less than half as likely to be located on a railroad as any other unincorporated trade center, and one-third as likely to be so located as a growing unincorporated trade center.

Table 18
Relation of Number of Discontinued Post Offices per County to Number of Disappearing Trade Centers per County, 1905-30

| Trade centers disappearing | Post offices discontinued | |
|----------------------------|---------------------------|--------------------------|
| | Average No. | No. of counties in group |
| Under 2 | 5.9 | 31 |
| 2-3 | 10.3 | 21 |
| 4-5 | 16.0 | 20 |
| 6-7 | 24.2 | 6 |
| 8-9 | 24.2 | 3 |
| 10 and over..... | 34.5 | 6 |
| Total | 12.9 | 86 |

Decline of the Rural Post Office

The decline of the rural post office is significantly related to the decline of trade centers having only one or a few business establishments. With the development of the rural free delivery, large numbers of country post offices were discontinued. This removed, from the centers so affected, one of their chief service functions, and the result was to reduce the support of the centers. Furthermore, the income from the post office was lost, and in many country stores this was the margin required to make the business profitable. With profits affected and support shifting to larger places, many of these small centers ceased to exist entirely. The distribution of discontinued post offices by five-year periods, beginning with 1905-10, shows that by far the largest number was discontinued during the first period and that the number discontinued has decreased during each five-year period since. Furthermore, the geographic distribution of these discontinued post offices by five-year periods shows that the first offices discontinued were located in the southeastern part of the state, where settlement was oldest and population of greatest density. The relative number of post offices discontinued and their geographic distribution by five-year periods show a marked correlation with the distribution in time and space of trade centers that disappeared from Bradstreet's ratings after 1905. (See Appendix E.) Table 18 shows that when the number (1,070) of post offices discontinued during the period was related to the number (306) of trade centers that disappeared during the period, using the county as the unit of comparison, the correlation was reasonably high. Standing alone, this fact proves little. It might mean merely that a high proportion of the disappearing trade centers had a post office at or near to the time of disappearance. Case studies of a considerable number

of these disappearing centers, however, indicated clearly that the loss of the post office was one of the steps by which the small trade center declined to the point of disappearance as a business center. As the relationship has been general throughout the state during the period under consideration, the decline of the country post office may be regarded as a general factor in the decline of the elementary trade center.

V. LOCAL FACTORS IN GROWTH AND DECLINE OF TRADE CENTERS¹⁰

The scope of this study does not permit any complete statement with respect to the many local factors having some bearing upon the growth of certain trade centers and the decline of others. No study has been made of the purely local circumstances that have made it possible for certain trade centers to grow rapidly while others decline. An attempt was made to determine the local factors involved in the two groups of appearing and disappearing centers, however. Case studies were collected for 47 newly appearing centers in 9 counties—Crow Wing, Hennepin, Jackson, Marshall, Olmsted, Ottertail, Rice, Winona, and Wright. These cases represented a variety of conditions and are believed to be representative of the entire group of newly appearing trade centers. An analytical tabulation of the local factors that appeared significant in these cases revealed the following:

| Appearing Trade Centers | |
|--|-----------------|
| Factor | Number of cases |
| 1. Communication and transportation factors..... | 25 |
| a. Grew up at cross-roads..... | 9 |
| b. New town on new railroad..... | 8 |
| c. Began with post office..... | 7 |
| d. Grew up at river crossing..... | 1 |
| 2. Industrial factors | 25 |
| a. Grew up about new creamery..... | 9 |
| b. Grew about lumbering developments..... | 7 |
| c. Grew about mining developments..... | 6 |
| d. New farming center..... | 2 |
| e. Grew up about water-power flour mill..... | 1 |
| 3. Convenience center for rural trade..... | 24 |
| 4. Resort town | 7 |
| 5. Nationality neighborhood center..... | 7 |
| 6. Grew up at township political center..... | 6 |
| 7. Result of definite boom period or movement..... | 4 |
| 8. Grew up at church center..... | 3 |
| 9. Suburban center | 3 |
| 10. Community conflict resulting in separation of one community into two | 1 |
| Total | 105 |

¹⁰ For the case studies upon which this section is based and for assistance in its preparation, the author is indebted to Carl F. Kraenzel, graduate assistant in Rural Sociology.

Most of these factors are self-explanatory. The great majority of new centers appeared to be the result of shifts of population and industry requiring new convenience centers for trading; and the result of changes in transportation facilities or shifts in the streams of transportation and travel, resulting in new trade centers at vantage points.

In many instances the field worker was able to distinguish more than one factor that had been operative in the appearance of a given trade center. Of the 47 trade centers investigated, the appearance of 13 was attributed to one factor, 13 to two factors, 18 to three factors, and 3 to four factors.

Most of these factors in the appearance of trade centers are set forth in terms of the local characteristic. For the most part they may be regarded as immediate causes, altho many of them have, also, more fundamental implications. The predominant fundamental cause was newly developing territory having a population that stood ready to support commercial agencies. In many cases, however, realignments alone were responsible.

In like manner, case studies were made of 68 disappearing trade centers located in 10 counties²⁰ and believed to be representative of the situation throughout the state. A careful study of the factors operative in the decline of these trade centers led to the following classification and summary:

Disappearing Trade Centers

| Fundamental factors in decline | Number of cases |
|---|---|
| 1. Decline of tributary population or changes in the composition of the tributary population..... | 18 |
| 2. Industrial changes: Decline of, or shifts in non-agricultural industry, such as lumbering; changes in type of farming, such as shifts from one type to another or a more intensive development of the same type..... | 23 |
| 3. Changes in communication and transportation facilities.. | 52 |
| 4. Changes in marketing organization and buying habits... | 37 |
| 5. Social conflict | 7 |
| a. Intra-community conflict | 5 |
| b. Inter-community conflict | 2 |
| 6. Competition with other trade centers, as a secondary factor in conjunction with population changes, industrial changes, transportation changes, marketing organization, and buying habits | 49 |
| Total | <hr style="width: 10%; margin-left: auto; margin-right: 0;"/> 186 |

²⁰ The counties were Crow Wing, Hennepin, Marshall, Jackson, Olmsted, Ottertail, Rice, Renville, Winona, and Wright.

| Immediate factors in decline | Number of cases |
|--|-----------------|
| 1. Loss of post office..... | 22 |
| 2. Destruction of business establishments that were not rebuilt | 5 |
| 3. Death of proprietor of business establishment..... | 4 |
| 4. Break down of social unity due to decline of dominant institution, the church | 3 |
| 5. Poor merchandising—too few goods and poor service... | 2 |
| 6. Loss of county seat..... | 1 |
| Total | 37 |

As the factors operative in the decline and disappearance of trade centers may be stated at different levels, it appeared to be desirable to distinguish between what are styled fundamental factors and immediate factors. As to the former, the attempt was made to set forth those deep running trends or currents of economic and social change that bring about fundamental changes in human relationships. Among these, some may require further explanation. Changes from grain to dairy farming sometimes meant the death of the small center that had grown up about the elevator, as dairy products were marketed elsewhere. A more intensive development of dairying often resulted in the small center used for shipping purposes being abandoned for the larger creamery center. In the same manner, the small creamery center was abandoned for the larger one. A change in marketing center generally resulted in a corresponding change in buying habits.

The small neighborhood trading center, which was prominent in rural territory before the days of improved transportation, was conspicuous in this group of disappearing trade centers. These centers owed their existence to isolation and their convenience to country people. Consequently, improved transportation resulted in their disappearance. However, changes in the main arteries of travel and the building of new railroads which missed certain small centers were equally effective. Such centers either moved to new points of vantage or gave way entirely to new centers. This factor was especially noted in certain northwestern counties, such as Marshall, and accounted for many of the changes noted there.

With respect to these fundamental factors, the 68 cases produced 186 classifications. Nine cases showed evidence that only one of the fundamental factors listed had influenced its decline, 20 cases showed two factors, 20 cases showed three factors, 17 showed four factors, and 2 cases showed five factors.

The immediate factors are of less significance than the fundamental. They represent the more or less obvious, the final step in the decline of trade centers. The list appears self-explanatory. No immediate factor was assigned in 40 cases; in 20 cases only one was assigned, in 7 cases two, and in one case three were distinguished.

With the exception of changes in transportation the fundamental factors noted as being important in trade center disappearance were local in their manifestation and may be regarded as local factors altho they have general aspects. The immediate factors were distinctly local in their manifestation, altho for a time the decline of the rural post office assumed general proportions.

SUMMARY

This bulletin reports the results of a study of the differential growth and decline of farm trade centers in Minnesota, 1905-30. The general findings, briefly stated, include the following points:

1. The number of trade centers in the state has increased since 1905, but the number in the older settled portions of the state has decreased. The real decline has been suffered by trade centers with a population of less than 500.

2. With three exceptions, all the cities of 1905 have grown.

3. Incorporated trade centers with a population under 2,500 have grown in both number and population since 1905.

4. Unincorporated trade centers have declined in numbers (13.3 per cent) since 1905. Those existing throughout the period since 1905 have been practically stationary. Considering losses in numbers, also, the group has declined both relatively and absolutely.

5. Small trade centers of less than five business units have declined more than five times as rapidly as all under a population of 500.

6. Of all trade centers under 2,500 in 1905 and existing until 1930, one-half grew in size, one-fourth declined, and one-fourth remained stationary. A higher proportion of incorporated centers grew than of unincorporated ones. The chief areas of growth were the northeastern counties.

7. Since 1905, 306 small trade centers have disappeared as economic centers. They were localized in the southeastern and northwestern counties. The majority disappeared between 1905 and 1915.

8. Since 1905, 342 new economic centers have appeared, chiefly in the newer sections of the state. The majority appeared between 1905 and 1915.

9. The chances of growth or decline of a trade center are affected by both general and local factors. Among the former may be cited size of the center, its regional location, the density of trade centers in relation to the density of its supporting population, changes in the value of farm property, possession of a railroad, and the development of automobile transportation. Among the latter, transportation changes, industrial changes, distance from other centers, summer resort developments, and nationality factors have been important in producing new trade centers.

10. The most prominent factors resulting in the appearance of new trading centers were found to be those arising from the settlement of new territory, the growth of population, the establishment of new industries, and shifts in industry and transportation facilities.

11. The most prominent factors resulting in disappearance of the trade centers were fundamental changes in tributary population, in industry, type of agriculture, transportation, marketing organization and buying habits, and to a lesser degree, social conflict.

12. With respect to the relation of farmers and the trading centers, the findings of this study support the finding of similar studies elsewhere, namely, that during the last twenty-five years farmers have become increasingly associated with larger trade centers for both economic and other purposes. The centers with a population under 500 and particularly those with less than five business establishments, have played a decreasing rôle in the economic and social life of the farmer.

APPENDIX A

Number of Trade Centers under 2,500 Population in 1905 That Persisted from 1905 to 1930, Showing Numbers Growing and Declining, with Ratios to Total; by Incorporated and Unincorporated Centers

| County | Incorporated Centers, 1905-30 | | | | | Unincorporated Centers, 1905-29 | | | | | Total Centers | |
|------------|-------------------------------|---------------|---------------------------|-----------------|-----------------------------|---------------------------------|---------------|---------------------------|-----------------|-----------------------------|---------------------------|-----------------------------|
| | Total | Total growing | Ratio of growing to total | Total declining | Ratio of declining to total | Total | Total growing | Ratio of growing to total | Total declining | Ratio of declining to total | Ratio of growing to total | Ratio of declining to total |
| Aitkin | 3 | 2 | 0.67 | 1 | 0.33 | 9 | 5 | 0.56 | 1 | 0.11 | 0.58 | 0.17 |
| Anoka | 2 | 2 | 1.00 | 0 | .. | 7 | 2 | 0.29 | 4 | .57 | 0.44 | .44 |
| Becker | 4 | 1 | 0.25 | 1 | .25 | 9 | 4 | 0.44 | 3 | .33 | 0.38 | .31 |
| Beltrami | 8 | 3 | 0.38 | 3 | .38 | 12 | 6 | 0.50 | 3 | .25 | 0.45 | .30 |
| Benton | 4 | 3 | 0.75 | 1 | .25 | 7 | 2 | 0.29 | 2 | .29 | 0.45 | .27 |
| Bigstone | 8 | 4 | 0.50 | 2 | .25 | 0 | 0 | 0 | 0 | .. | 0.50 | .25 |
| Blue Earth | 8 | 3 | 0.38 | 1 | .13 | 9 | 4 | 0.44 | 2 | .22 | 0.41 | .18 |
| Brown | 4 | 4 | 1.00 | 0 | .. | 6 | 2 | 0.33 | 2 | .33 | 0.60 | .20 |
| Carlton | 6 | 3 | 0.50 | 2 | .33 | 4 | 3 | 0.75 | 1 | .25 | 0.60 | .30 |
| Carver | 9 | 4 | 0.44 | 3 | .33 | 7 | 3 | 0.43 | 2 | .29 | 0.44 | .31 |
| Cass | 6 | 5 | 0.83 | 0 | .. | 7 | 4 | 0.57 | 1 | .14 | 0.69 | .08 |
| Chippewa | 5 | 5 | 1.00 | 0 | .. | 3 | 0 | 0 | 1 | .33 | 0.63 | .13 |
| Chisago | 8 | 2 | 0.25 | 2 | .25 | 7 | 5 | 0.71 | 2 | .29 | 0.47 | .27 |
| Clay | 7 | 3 | 0.43 | 1 | .14 | 7 | 4 | 0.57 | 1 | .14 | 0.50 | .14 |
| Clearwater | 3 | 2 | 0.67 | 1 | .33 | 6 | 5 | 0.83 | 1 | .17 | 0.78 | .22 |
| Cook | 1 | 1 | 1.00 | 0 | .. | 3 | 3 | 1.00 | 0 | .. | 1.00 | .. |
| Cottonwood | 5 | 4 | 0.80 | 1 | .20 | 2 | 2 | 1.00 | 0 | .. | 0.86 | .14 |
| Crow Wing | 3 | 3 | 1.00 | 0 | .. | 8 | 4 | 0.50 | 2 | .25 | 0.64 | .18 |
| Dakota | 9 | 6 | 0.67 | 2 | .22 | 7 | 3 | 0.43 | 4 | .57 | 0.56 | .38 |
| Dodge | 6 | 2 | 0.33 | 1 | .17 | 4 | 0 | 0 | 2 | .50 | 0.20 | .30 |
| Douglas | 5 | 3 | 0.60 | 1 | .20 | 8 | 3 | 0.38 | 5 | .63 | 0.46 | .46 |
| Faribault | 11 | 5 | 0.45 | 0 | .. | 4 | 3 | 0.75 | 1 | .25 | 0.53 | .07 |
| Fillmore | 11 | 2 | 0.18 | 2 | .18 | 19 | 3 | 0.16 | 9 | .47 | 0.17 | .37 |
| Freeborn | 5 | 3 | 0.60 | 2 | .40 | 18 | 13 | 0.72 | 0 | .. | 0.70 | .09 |
| Goodhue | 6 | 5 | 0.83 | 0 | .. | 21 | 6 | 0.29 | 7 | .33 | 0.41 | .30 |
| Grant | 7 | 3 | 0.43 | 1 | .14 | 1 | 1 | 1.00 | 0 | .. | 0.57 | .. |
| Hennepin | 11 | 8 | 0.72 | 2 | .18 | 24 | 20 | 0.83 | 3 | .12 | 0.78 | .17 |
| Houston | 6 | 3 | 0.50 | 2 | .33 | 13 | 3 | 0.23 | 8 | .62 | 0.32 | .53 |
| Hubbard | 4 | 2 | 0.50 | 2 | 0.50 | 11 | 4 | 0.36 | 4 | .36 | 0.40 | .40 |
| Isanti | 3 | 3 | 1.00 | 0 | .. | 16 | 6 | 0.38 | 5 | 0.31 | 0.47 | 0.26 |

APPENDIX A—Continued

Number of Trade Centers under 2,500 Population in 1905 That Persisted from 1905 to 1930, Showing Numbers Growing and Declining, with Ratios to Total; by Incorporated and Unincorporated Centers

| County | Incorporated Centers, 1905-30 | | | | | Unincorporated Centers, 1905-29 | | | | | Total Centers | |
|---------------------|-------------------------------|---------------|---------------------------|-----------------|-----------------------------|---------------------------------|---------------|---------------------------|-----------------|-----------------------------|---------------------------|-----------------------------|
| | Total | Total growing | Ratio of growing to total | Total declining | Ratio of declining to total | Total | Total growing | Ratio of growing to total | Total declining | Ratio of declining to total | Ratio of growing to total | Ratio of declining to total |
| Itasca | 5 | 5 | 1.00 | 0 | 0 | 7 | 6 | 0.86 | 0 | .. | 0.92 | .. |
| Jackson | 5 | 2 | 0.40 | 3 | 0.60 | 4 | 1 | 0.25 | 3 | 0.75 | 0.33 | 0.67 |
| Kanabec | 2 | 2 | 1.00 | 0 | 0 | 5 | 3 | 0.60 | 0 | .. | 0.71 | .. |
| Kandiyohi | 6 | 3 | 0.50 | 0 | 0 | 11 | 5 | 0.45 | 2 | .18 | 0.47 | .12 |
| Kittson | 6 | 3 | 0.50 | 1 | 0.17 | 8 | 4 | 0.50 | 3 | .38 | 0.50 | .29 |
| Koochiching | 5 | 4 | 0.80 | 0 | 0 | 4 | 2 | 0.50 | 0 | .. | 0.67 | .. |
| Lac Qui Parle | 7 | 3 | 0.43 | 1 | 0.14 | 5 | 2 | 0.40 | 2 | .40 | 0.42 | .25 |
| Lake | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | .. | 0 | .. |
| LeSueur | 10 | 2 | 0.20 | 2 | 0.20 | 6 | 0 | 0 | 3 | .50 | 0.13 | .31 |
| Lincoln | 5 | 4 | 0.80 | 0 | 0 | 1 | 1 | 1.00 | 0 | .. | 0.83 | .. |
| Lyon | 8 | 5 | 0.62 | 1 | 0.13 | 7 | 5 | 0.71 | 1 | .14 | 0.67 | .13 |
| McLeod | 8 | 5 | 0.62 | 0 | 0 | 5 | 2 | 0.40 | 0 | .. | 0.54 | .. |
| Mahnomen | 1 | 1 | 1.00 | 0 | 0 | 0 | 0 | 0 | 0 | .. | 1.00 | .. |
| Marshall | 4 | 1 | 0.25 | 2 | 0.50 | 12 | 6 | 0.50 | 3 | .25 | 0.44 | .31 |
| Martin | 8 | 6 | 0.75 | 0 | 0 | 5 | 2 | 0.40 | 2 | .40 | 0.62 | .15 |
| Meeker | 5 | 3 | 0.60 | 1 | 0.20 | 12 | 4 | 0.33 | 4 | .33 | 0.44 | .25 |
| Mille Lacs | 3 | 1 | 0.33 | 0 | 0 | 7 | 4 | 0.57 | 3 | .43 | 0.50 | .30 |
| Morrison | 6 | 4 | 0.67 | 1 | 0.17 | 12 | 10 | 0.83 | 1 | .08 | 0.78 | .11 |
| Mower | 10 | 3 | 0.30 | 2 | 0.20 | 6 | 2 | 0.33 | 2 | .33 | 0.31 | .25 |
| Murray | 8 | 7 | 0.88 | 1 | 0.13 | 3 | 1 | 0.33 | 1 | .33 | 0.73 | .18 |
| Nicollet | 4 | 4 | 1.00 | 0 | 0 | 7 | 2 | 0.29 | 0 | .. | 0.55 | .. |
| Nobles | 11 | 7 | 0.64 | 1 | 0.09 | 4 | 2 | 0.50 | 2 | .50 | 0.60 | .20 |
| Norman | 8 | 4 | 0.50 | 3 | 0.38 | 15 | 4 | 0.27 | 6 | .40 | 0.35 | .39 |
| Olmsted | 4 | 0 | 0 | 0 | 0 | 11 | 4 | 0.36 | 4 | .36 | 0.27 | .27 |
| Ottertail | 15 | 7 | 0.47 | 1 | 0.07 | 22 | 8 | 0.36 | 5 | .23 | 0.41 | .16 |
| Pennington | 1 | 0 | 0 | 1 | 1.00 | 2 | 1 | 0.50 | 0 | .. | 0.33 | .33 |
| Pine | 8 | 3 | 0.38 | 4 | 0.50 | 11 | 6 | 0.55 | 3 | .27 | 0.47 | .37 |
| Pipestone | 5 | 3 | 0.60 | 2 | 0.40 | 4 | 2 | 0.50 | 0 | .. | 0.56 | .22 |
| Polk | 10 | 3 | 0.30 | 1 | 0.10 | 16 | 8 | 0.50 | 2 | .13 | 0.42 | .12 |
| Pope | 6 | 4 | 0.67 | 1 | 0.17 | 5 | 2 | 0.40 | 2 | 0.40 | 0.55 | 0.27 |

APPENDIX A—Continued

Number of Trade Centers under 2,500 Population in 1905 That Persisted from 1905 to 1930, Showing Numbers Growing and Declining, with Ratios to Total; by Incorporated and Unincorporated Centers

| County | Incorporated Centers, 1905-30 | | | | | Unincorporated Centers, 1905-29 | | | | | Total Centers | |
|----------------------|-------------------------------|---------------|---------------------------|-----------------|-----------------------------|---------------------------------|---------------|---------------------------|-----------------|-----------------------------|---------------------------|-----------------------------|
| | Total | Total growing | Ratio of growing to total | Total declining | Ratio of declining to total | Total | Total growing | Ratio of growing to total | Total declining | Ratio of declining to total | Ratio of growing to total | Ratio of declining to total |
| Ramsey | 3 | 3 | 1.00 | 0 | .. | 2 | 1 | 0.50 | 1 | 0.50 | 0.80 | 0.20 |
| Red Lake | 2 | 1 | 0.50 | 1 | 0.50 | 5 | 3 | 0.60 | 1 | 0.20 | 0.57 | .29 |
| Redwood | 16 | 9 | 0.56 | 3 | .19 | 0 | 0 | 0 | 0 | 0 | 0.56 | .19 |
| Renville | 10 | 6 | 0.60 | 1 | .10 | 2 | 1 | 0.50 | 1 | 0.50 | 0.58 | .17 |
| Rice | 5 | 1 | 0.20 | 1 | .20 | 10 | 3 | 0.30 | 3 | 0.30 | 0.27 | .27 |
| Rock | 5 | 4 | 0.80 | 1 | .20 | 4 | 1 | 0.25 | 0 | 0 | 0.56 | .11 |
| Roseau | 4 | 3 | 0.75 | 0 | .. | 10 | 6 | 0.60 | 3 | 0.30 | 0.64 | .21 |
| St. Louis | 10 | 7 | 0.70 | 3 | .30 | 16 | 8 | 0.50 | 4 | 0.25 | 0.58 | .27 |
| Scott | 5 | 1 | 0.20 | 1 | .20 | 11 | 2 | 0.18 | 6 | 0.55 | 0.19 | .44 |
| Sherburne | 4 | 3 | 0.75 | 1 | .25 | 3 | 2 | 0.67 | 0 | 0 | 1.00 | .. |
| Sibley | 7 | 3 | 0.43 | 1 | .14 | 1 | 1 | 1.00 | 0 | 0 | 0.50 | .13 |
| Stearns | 18 | 11 | 0.61 | 1 | .06 | 17 | 8 | 0.47 | 4 | 0.24 | 0.51 | .19 |
| Steele | 2 | 2 | 1.00 | 0 | .. | 13 | 4 | 0.31 | 4 | 0.31 | 0.40 | .27 |
| Stevens | 4 | 3 | 0.75 | 0 | .. | 1 | 1 | 1.00 | 0 | 0 | 0.80 | .. |
| Swift | 8 | 7 | 0.88 | 1 | .13 | 2 | 1 | 0.50 | 1 | 0.50 | 0.80 | .20 |
| Todd | 11 | 5 | 0.45 | 2 | .18 | 5 | 2 | 0.40 | 1 | 0.20 | 0.44 | .19 |
| Traverse | 4 | 2 | 0.50 | 1 | .25 | 2 | 0 | 0 | 2 | 1.00 | 0.33 | .50 |
| Wabasha | 8 | 3 | 0.38 | 3 | .38 | 6 | 3 | 0.50 | 1 | 0.17 | 0.43 | .29 |
| Wadena | 4 | 3 | 0.75 | 1 | .25 | 3 | 2 | 0.67 | 1 | 0.33 | 0.71 | .29 |
| Waseca | 2 | 1 | 0.50 | 0 | .. | 4 | 1 | 0.25 | 3 | 0.75 | 0.33 | .50 |
| Washington | 3 | 2 | 0.67 | 1 | .33 | 13 | 7 | 0.54 | 6 | 0.46 | 0.56 | .44 |
| Watsonwan | 5 | 4 | 0.80 | 0 | .. | 7 | 3 | 0.43 | 1 | 0.14 | 0.58 | .08 |
| Wilkin | 6 | 4 | 0.67 | 1 | .17 | 6 | 4 | 0.67 | 2 | 0.33 | 0.67 | .25 |
| Winona | 7 | 2 | 0.29 | 4 | .57 | 16 | 8 | 0.50 | 4 | 0.25 | 0.43 | .35 |
| Wright | 14 | 5 | 0.38 | 6 | .43 | 9 | 2 | 0.22 | 5 | 0.56 | 0.32 | .45 |
| Yellow Medicine | 7 | 4 | 0.57 | 1 | .14 | 3 | 0 | 0 | 3 | 1.00 | 0.40 | .40 |
| Northeastern Section | 96 | 68 | 0.71 | 18 | .19 | 160 | 100 | 0.63 | 36 | 0.23 | 0.63 | .21 |
| Central Section | 282 | 127 | 0.45 | 57 | .20 | 387 | 146 | 0.38 | 125 | 0.32 | 0.42 | .27 |
| Southwestern Section | 158 | 102 | 0.65 | 23 | .14 | 100 | 50 | 0.50 | 26 | 0.26 | 0.59 | .19 |
| State | 536 | 297 | 0.55 | 98 | 0.18 | 647 | 296 | 0.46 | 187 | 0.29 | 0.50 | 0.24 |

APPENDIX B

Per Cent Increase in Value of All Farm Property per County, 1910-25
Value Deflated to 1910-14 Base

| County | 1910 | 1925 | Increase, 1910-25 | Per cent increase, 1910-25 |
|-------------------|--------|--------|----------------------|----------------------------------|
| Aitkin | 3,700 | 8,800 | 5,100 | 138 |
| Anoka | 9,200 | 10,200 | 1,000 | 11 |
| Becker | 11,500 | 15,300 | 3,800 | 33 |
| Beltrami | 3,300 | 6,500 | 3,200 | 97 |
| Benton | 8,100 | 10,400 | 2,300 | 28 |
| Big Stone | 13,800 | 15,015 | 1,215 | 9 |
| Blue Earth | 31,700 | 34,500 | 2,800 | 9 |
| Brown | 20,400 | 24,900 | 4,500 | 22 |
| Carlton | 3,700 | 7,440 | 3,740 | 101 |
| Carver | 19,776 | 22,600 | 2,824 | 14 |
| Cass | 3,000 | 7,212 | 4,212 | 140 |
| Chippewa | 16,900 | 22,000 | 5,100 | 30 |
| Chisago | 11,900 | 14,500 | 2,600 | 22 |
| Clay | 23,226 | 22,400 | -826 | -4 |
| Clearwater | 3,100 | 6,570 | 3,470 | 112 |
| Cook | 361 | 393 | 32 | 9 |
| Cottonwood | 21,000 | 26,600 | 5,600 | 27 |
| Crow Wing | 4,595 | 6,760 | 2,165 | 47 |
| Dakota | 22,300 | 21,100 | -1,200 | -5 |
| Dodge | 16,900 | 21,600 | 4,700 | 28 |
| Douglas | 15,800 | 19,800 | 4,000 | 25 |
| Faribault | 31,500 | 35,800 | 4,300 | 14 |
| Fillmore | 35,200 | 36,400 | 1,200 | 3 |
| Freeborn | 27,100 | 33,300 | 6,200 | 23 |
| Goodhue | 31,300 | 30,800 | -500 | -2 |
| Grant | 13,100 | 16,279 | 3,179 | 24 |
| Hennepin | 33,900 | 35,200 | 1,300 | 4 |
| Houston | 16,344 | 16,671 | 327 | 2 |
| Hubbard | 3,100 | 5,163 | 2,063 | 67 |
| Isanti | 8,900 | 11,976 | 3,076 | 35 |
| Itasca | 2,100 | 5,321 | 3,221 | 153 |
| Jackson | 25,600 | 30,767 | 5,167 | 20 |
| Kanabec | 4,600 | 8,490 | 3,890 | 85 |
| Kandiyohi | 22,000 | 24,918 | 2,918 | 13 |
| Kittson | 13,330 | 13,417 | 87 | 1 |
| Koochiching | 1,000 | 3,400 | 2,400 | 240 |
| Lac qui Parle | 25,500 | 31,500 | 6,000 | 24 |
| Lake | 430 | 1,114 | 684 | 160 |
| Lake of the Woods | | 1,885 | 1,885 | 100 |
| LeSueur | 19,500 | 22,160 | 2,660 | 14 |
| Lincoln | 15,300 | 19,401 | 4,101 | 27 |
| Lyon | 22,400 | 29,243 | 6,843 | 31 |
| McLeod | 22,400 | 25,632 | 3,232 | 14 |
| Mahnomen | 1,200 | 4,491 | 3,291 | 274 |
| Marshall | 16,500 | 19,826 | 3,326 | 20 |
| Martin | 29,600 | 37,807 | 8,207 | 28 |
| Meeker | 21,000 | 24,299 | 3,299 | 16 |
| Mille Lacs | 5,400 | 9,344 | 3,944 | 73 |
| Morrison | 13,300 | 18,480 | 5,180 | 39 |
| Mower | 30,376 | 31,261 | 885 | 3 |
| Murray | 22,800 | 30,384 | 7,584 | 33 |
| Nicollet | 15,400 | 17,901 | 2,501 | 16 |
| Nobles | 29,200 | 34,623 | 5,423 | 19 |
| Norman | 15,900 | 17,867 | 1,967 | 12 |
| Olmsted | 26,346 | 25,825 | -521 | -2 |
| Ottertail | 36,800 | 46,470 | 9,670 | 26 |

APPENDIX B—Continued
Per Cent Increase in Value of All Farm Property per County, 1910-25
Value Deflated to 1910-14 Base

| County | 1910 | 1925 | Increase, 1910-25 | Per cent increase, 1910-25 |
|-----------------|--------|--------|----------------------|----------------------------------|
| Pennington | 6,100 | 7,237 | 1,137 | 19 |
| Pine | 7,200 | 14,584 | 7,384 | 103 |
| Pipestone | 16,500 | 18,918 | 2,418 | 15 |
| Polk | 33,900 | 36,341 | 2,441 | 7 |
| Pope | 15,000 | 18,513 | 3,513 | 23 |
| Ramsey | 9,400 | 8,459 | -941 | -10 |
| Red Lake | 3,600 | 5,775 | 2,175 | 60 |
| Redwood | 29,300 | 35,475 | 6,175 | 21 |
| Renville | 32,700 | 38,413 | 5,713 | 17 |
| Rice | 22,100 | 23,039 | 939 | 4 |
| Rock | 24,600 | 23,752 | -848 | -3 |
| Roseau | 6,000 | 9,212 | 3,212 | 54 |
| St. Louis | 6,600 | 19,265 | 12,665 | 192 |
| Scott | 14,200 | 14,251 | 51 | 0 |
| Sherburne | 7,200 | 10,519 | 3,319 | 46 |
| Sibley | 21,400 | 26,881 | 5,481 | 26 |
| Stearns | 33,500 | 40,262 | 6,762 | 20 |
| Steele | 18,500 | 20,731 | 2,231 | 12 |
| Stevens | 13,400 | 17,046 | 3,646 | 27 |
| Swift | 17,700 | 21,540 | 3,840 | 22 |
| Todd | 15,400 | 22,798 | 7,398 | 48 |
| Traverse | 15,800 | 14,430 | -1,370 | -9 |
| Wabasha | 19,100 | 18,838 | -262 | -1 |
| Wadena | 4,600 | 6,497 | 1,897 | 41 |
| Waseca | 16,800 | 17,864 | 1,064 | 6 |
| Washington | 15,900 | 15,247 | -753 | -5 |
| Watsonwan | 15,800 | 19,168 | 3,368 | 21 |
| Wilkin | 15,400 | 14,993 | -407 | -3 |
| Winona | 22,100 | 21,392 | -708 | -3 |
| Wright | 27,107 | 29,440 | 2,233 | 8 |
| Yellow Medicine | 23,900 | 31,659 | 7,759 | 32 |

APPENDIX C

Estimated Gross Cash Income from the Sale of Agricultural Products, Income per Farm and per Person; Values Deflated to 1909-14 Base; Minnesota, 1910-30

| Year | Gross cash income | No. of farms | Gross cash income per farm | Persons per farm | Gross cash per person |
|------|-------------------|--------------|----------------------------|------------------|-----------------------|
| 1910 | \$169,245,524 | 156,137 | \$1,084 | 5.34 | \$203 |
| 1911 | 142,686,099 | 158,371 | 910 | 5.31 | 171 |
| 1912 | 162,630,686 | 160,605 | 1,013 | 5.28 | 192 |
| 1913 | 182,399,079 | 162,839 | 1,120 | 5.25 | 213 |
| 1914 | 182,561,623 | 165,073 | 1,106 | 5.21 | 212 |
| 1915 | 189,969,235 | 167,307 | 1,135 | 5.18 | 219 |
| 1916 | 185,140,617 | 169,541 | 1,092 | 5.15 | 212 |
| 1917 | 205,509,640 | 171,775 | 1,196 | 5.12 | 234 |
| 1918 | 253,297,089 | 174,009 | 1,456 | 5.09 | 286 |
| 1919 | 213,440,287 | 176,243 | 1,211 | 5.06 | 239 |
| 1920 | 184,092,475 | 178,478 | 1,031 | 5.03 | 205 |
| 1921 | 146,992,551 | 180,428 | 815 | 4.95 | 165 |
| 1922 | 168,685,822 | 182,378 | 925 | 4.88 | 190 |
| 1923 | 187,313,385 | 184,328 | 1,016 | 4.80 | 212 |
| 1924 | 222,094,844 | 186,278 | 1,192 | 4.72 | 253 |
| 1925 | 248,564,591 | 188,231 | 1,321 | 4.65 | 284 |
| 1926 | 254,879,423 | 187,680 | 1,358 | 4.68 | 290 |
| 1927 | 237,517,733 | 187,129 | 1,269 | 4.71 | 269 |
| 1928 | 235,336,115 | 186,578 | 1,261 | 4.75 | 265 |
| 1929 | 247,530,940 | 186,027 | 1,331 | 4.79 | 278 |
| 1930 | 223,308,562* | 185,476 | 1,204 | 4.83 | 249 |

* Preliminary estimate.

APPENDIX D

Number of Passenger Automobiles and Motor Trucks Registered in Minnesota

| | | | |
|------|---------|------|---------|
| 1913 | 46,000 | 1925 | 574,529 |
| 1915 | 93,269 | 1926 | 635,502 |
| 1920 | 324,166 | 1927 | 652,263 |
| 1921 | 332,652 | 1928 | 679,590 |
| 1922 | 384,398 | 1929 | 727,082 |
| 1923 | 452,675 | 1930 | 744,338 |
| 1924 | 507,892 | | |

APPENDIX E

Relation of the Discontinuance of Post Offices and the Disappearance of Farm Trade Centers, by Five-Year Periods; Minnesota, 1905-29

| County | 1905-09 | | 1910-19 | | 1920-29 | | All years | |
|---------------|--------------|---------------|--------------|---------------|--------------|---------------|--------------|---------------|
| | Post offices | Trade centers | Post offices | Trade centers | Post offices | Trade centers | Post offices | Trade centers |
| Aitkin | 4 | 4 | 22 | 2 | 10 | 1 | 36 | 7 |
| Anoka | 12 | 1 | 1 | 1 | 1 | .. | 14 | 2 |
| Becker | 8 | 1 | 12 | 5 | 5 | 1 | 25 | 7 |
| Beltrami | 6 | 4 | 28 | 4 | 12 | 4 | 46 | 12 |
| Benton | 5 | 1 | 1 | .. | .. | .. | 6 | 1 |
| Big Stone | 4 | .. | 1 | .. | .. | 1 | 5 | 1 |
| Blue Earth | 12 | 1 | .. | 3 | .. | .. | 12 | 4 |
| Brown | 7 | 3 | .. | 1 | .. | .. | 7 | 4 |
| Carlton | 1 | .. | 2 | .. | 3 | 1 | 6 | 1 |
| Carver | 3 | .. | 2 | .. | 1 | .. | 6 | .. |
| Cass | 5 | 4 | 19 | 1 | 4 | .. | 28 | 5 |
| Chippewa | 5 | .. | .. | 1 | .. | 1 | 5 | 2 |
| Chisago | 8 | 1 | .. | .. | .. | .. | 8 | 1 |
| Clay | 5 | 1 | .. | 2 | 1 | 1 | 6 | 4 |
| Clearwater | 3 | 4 | 13 | 4 | 3 | 3 | 19 | 11 |
| Cook | 1 | .. | 1 | .. | .. | .. | 2 | .. |
| Cottonwood | 4 | .. | .. | 1 | .. | .. | 4 | 1 |
| Crow Wing | 5 | 5 | 12 | 3 | 6 | 1 | 23 | 9 |
| Dakota | 5 | 1 | .. | .. | 4 | 3 | 9 | 4 |
| Dodge | 6 | .. | 1 | .. | 1 | 1 | 8 | 1 |
| Douglas | 8 | 1 | .. | .. | .. | .. | 8 | 1 |
| Faribault | 5 | 1 | 1 | 2 | .. | 1 | 6 | 4 |
| Fillmore | 26 | 1 | .. | 3 | .. | 1 | 26 | 5 |
| Freeborn | 8 | .. | .. | 1 | .. | 1 | 8 | 2 |
| Goodhue | 20 | 1 | 1 | 1 | .. | 1 | 21 | 3 |
| Grant | 5 | .. | 1 | 1 | 1 | 2 | 7 | 3 |
| Hennepin | 28 | 5 | 4 | 4 | 2 | 1 | 34 | 10 |
| Houston | 9 | .. | .. | .. | .. | .. | 9 | .. |
| Hubbard | 3 | .. | 8 | 2 | 1 | 1 | 12 | 3 |
| Isanti | 18 | 1 | .. | .. | .. | 3 | 18 | 4 |
| Itasca | 5 | 6 | 15 | 1 | 5 | .. | 25 | 7 |
| Jackson | 9 | 1 | .. | .. | .. | 2 | 9 | 3 |
| Kanabec | 6 | .. | .. | 1 | 1 | .. | 7 | 1 |
| Kandiyohi | 16 | 1 | 1 | 1 | .. | 1 | 17 | 3 |
| Kittson | 5 | 4 | 6 | 4 | .. | .. | 11 | 8 |
| Koochiching | .. | .. | 7 | .. | 8 | .. | 15 | .. |
| Lac qui Parle | 8 | .. | .. | 2 | .. | .. | 8 | 2 |
| Lake | 1 | 1 | 6 | .. | .. | .. | 7 | 1 |
| LeSueur | 9 | 1 | 1 | 1 | .. | 2 | 10 | 4 |
| Lincoln | 1 | .. | .. | .. | .. | .. | 1 | .. |
| Lyon | 4 | .. | 2 | .. | .. | .. | 6 | .. |
| McLeod | 4 | .. | .. | .. | .. | 1 | 4 | 1 |
| Mahnomen | .. | .. | 1 | .. | 1 | .. | 2 | .. |
| Marshall | 21 | 15 | 16 | 7 | 7 | 1 | 44 | 23 |
| Martin | 9 | 1 | 1 | 2 | .. | .. | 10 | 3 |
| Meeker | 13 | .. | .. | 1 | .. | 1 | 13 | 2 |
| Mille Lacs | 3 | 2 | 3 | .. | 3 | 2 | 9 | 4 |
| Morrison | 11 | 2 | 9 | 1 | 1 | 1 | 21 | 4 |
| Mower | 6 | 1 | 1 | 1 | .. | 1 | 7 | 3 |
| Murray | 4 | 1 | 1 | .. | .. | .. | 5 | 1 |
| Nicollet | 8 | .. | 1 | .. | .. | 2 | 9 | 2 |
| Nobles | 4 | .. | 2 | .. | .. | .. | 6 | .. |
| Norman | 10 | .. | 4 | 2 | 1 | 1 | 15 | 3 |
| Olmsted | 15 | 2 | .. | 1 | .. | 2 | 15 | 5 |
| Ottertail | 39 | 3 | 4 | 9 | .. | 5 | 43 | 17 |
| Pennington | .. | .. | 6 | .. | 2 | .. | 8 | .. |

APPENDIX E—Continued

Relation of the Discontinuance of Post Offices and the Disappearance of Farm Trade Centers, by Five-Year Periods; Minnesota, 1905-29

| County | 1905-09 | | 1910-19 | | 1920-29 | | All years | |
|---------------------|--------------|---------------|--------------|---------------|--------------|---------------|--------------|---------------|
| | Post offices | Trade centers | Post offices | Trade centers | Post offices | Trade centers | Post offices | Trade centers |
| Pine | 5 | 2 | 4 | 2 | 2 | .. | 11 | 4 |
| Pipestone | 1 | .. | .. | 1 | .. | .. | 1 | 1 |
| Polk | 13 | 7 | 7 | 9 | 2 | 2 | 22 | 18 |
| Pope | 8 | 1 | .. | .. | .. | 2 | 8 | 3 |
| Ramsey | 2 | 1 | 1 | 1 | 1 | .. | 4 | 2 |
| Red Lake | 4 | .. | 9 | 3 | 1 | .. | 14 | 3 |
| Redwood | 6 | 2 | .. | 2 | .. | .. | 6 | 4 |
| Renville | 11 | 1 | 1 | 2 | .. | 3 | 12 | 6 |
| Rice | 12 | 1 | .. | 2 | .. | 2 | 12 | 5 |
| Rock | .. | .. | 1 | .. | .. | 1 | 1 | 1 |
| Roseau | 3 | 2 | 15 | 3 | 5 | 1 | 23 | 6 |
| St. Louis | 5 | 1 | 35 | 1 | 17 | 2 | 57 | 4 |
| Scott | 14 | .. | .. | 2 | .. | .. | 14 | 2 |
| Sherburne | 2 | .. | 1 | .. | .. | .. | 3 | .. |
| Sibley | 3 | .. | .. | 1 | .. | .. | 3 | 1 |
| Stearns | 23 | .. | 1 | 5 | .. | .. | 24 | 5 |
| Steele | 9 | .. | 2 | .. | .. | .. | 11 | .. |
| Stevens | .. | 1 | .. | .. | .. | .. | .. | 1 |
| Swift | 5 | 1 | 1 | 1 | .. | .. | 6 | 2 |
| Todd | 6 | 1 | .. | .. | .. | 1 | 6 | 2 |
| Traverse | .. | .. | 1 | .. | .. | .. | 1 | .. |
| Wabasha | 5 | 1 | 2 | 2 | 1 | 1 | 8 | 4 |
| Wadena | 6 | 1 | 2 | 1 | .. | .. | 8 | 2 |
| Waseca | 2 | 1 | .. | .. | .. | .. | 2 | 1 |
| Washington | 6 | 1 | 2 | .. | .. | 1 | 8 | 2 |
| Watsonwan | 4 | .. | 1 | .. | 1 | 1 | 6 | 1 |
| Wilkin | 7 | 1 | 1 | 3 | 2 | .. | 10 | 4 |
| Winna | 17 | 5 | 3 | 2 | 2 | .. | 22 | 7 |
| Wright | 13 | 2 | 1 | 3 | .. | .. | 14 | 5 |
| Yellow Medicine ... | 2 | 1 | .. | .. | .. | .. | 2 | 1 |
| Total | 644 | 116 | 308 | 122 | 118 | 68 | 1,070 | 306 |