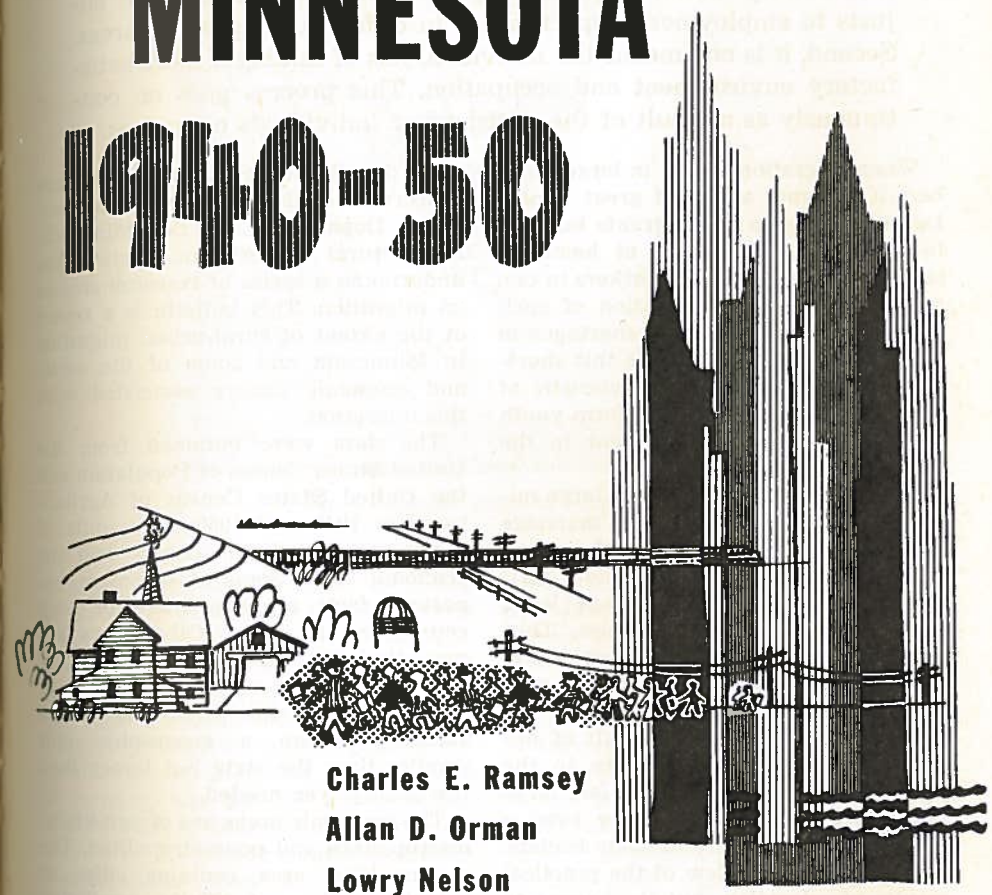
General merchandise associations, particularly cooperative stores, face a precarious future. The increased competition of large super-market chain stores operating on small margins enables only the most efficient to survive. The efficiency of the large retail chains in buying and handling groceries and other consumer goods may exceed the advantages of cooperation unless the cooperatives are also outstandingly efficient. Improvements in merchandising and operating methods are essential if cooperative stores are to survive and continue to render the services for which they were organized.

Station Bulletin 422 January 1954

MIGRATION IN MINNESOTA 1940-50



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Migration in Minnesota 1940-1950[1]

Charles E. Ramsey, Allan D. Orman, and Lowry Nelson[2]

MIGRATION performs at least two important functions in society. First, it is the way by which the labor force adjusts to employment opportunities in different geographic areas. Second, it is one means the individual has of finding a more satisfactory environment and occupation. This process goes on continuously as a result of the decisions of individuals or groups.

When migration occurs in large numbers it becomes a fact of great importance not only to the migrants but also to the people remaining at home. A sudden demand for new workers in one area may induce a migration of such volume as to create labor shortages in others. During some periods this shortage of labor has been characteristic of rural farm areas because of farm youth seeking industrial employment in the cities.

Another important result of large migration may be a decrease in marriage opportunities for one sex or the other. In Minnesota, for example, more girls than boys of marriageable age leave the farm for towns and cities. Thus marriage opportunities for farm boys are decreased, as are those for girls in the cities.

Still a third important result of migration is that the institutions in the place the migrants leave may lose large portions of their members or even a disproportionate share of their leaders.

These are only a few of the practical results of migration, but they serve to show that the subject is worthy of some concern. For this reason the Rural Sociology Department of the Minnesota Agricultural Experiment Station has undertaken a series of research studies on migration. This bulletin is a report of the extent of rural-urban migration in Minnesota and some of the social and economic factors associated with this migration.

The data were obtained from the United States Census of Population and the United States Census of Agriculture for 1940 and 1950. Two units of study were used, the county and the economic area. Some of the more important facts are presented for each county in the state. Other data are presented by economic area. These areas were delineated by the Bureau of the Census for presenting census statistics where a geographic unit smaller than the state but larger than the county was needed.

The economic areas are of two kinds: metropolitan and nonmetropolitan. The metropolitan area contains cities or urbanized areas of 100,000 population or more. These are identified by letter in figure 1. Minnesota has two such areas: Area A including Duluth, and Area B including the Twin Cities.

The remainder of the state is divided into eight nonmetropolitan areas. These nonmetropolitan areas are identified by number in the map and tables. Type of farming was one of the principal criteria used in delineating these areas, although population and industrial characteristics were also taken into account.

Economic Area 1, which is in the northwest corner of the state, is a cash grain area with a small amount of livestock. Area 2 is in the large cutover area in the northern and northeastern part of the state. It is generally a rather poor farming area.

Area 3 is slightly north and west of the center of the state. It has somewhat better land than the cutover, with some dairying. Area 4 is the dairying area to the north of the Twin Cities.

Area 5 is a diversified farming area in the west-central part of the state. It includes beef cattle, dairying, and some corn and hogs. Area 6, southwest of the Twin Cities, is an intensive dairying area with some poultry.

Area 7 is in the southeastern part of the state. Along with Area 8 in the southwest, it includes some of the best farming land in the state and specializes in corn, hogs, poultry, and cattle.

[1] Part of regional project NC-18, covering migration in the North Central Region.

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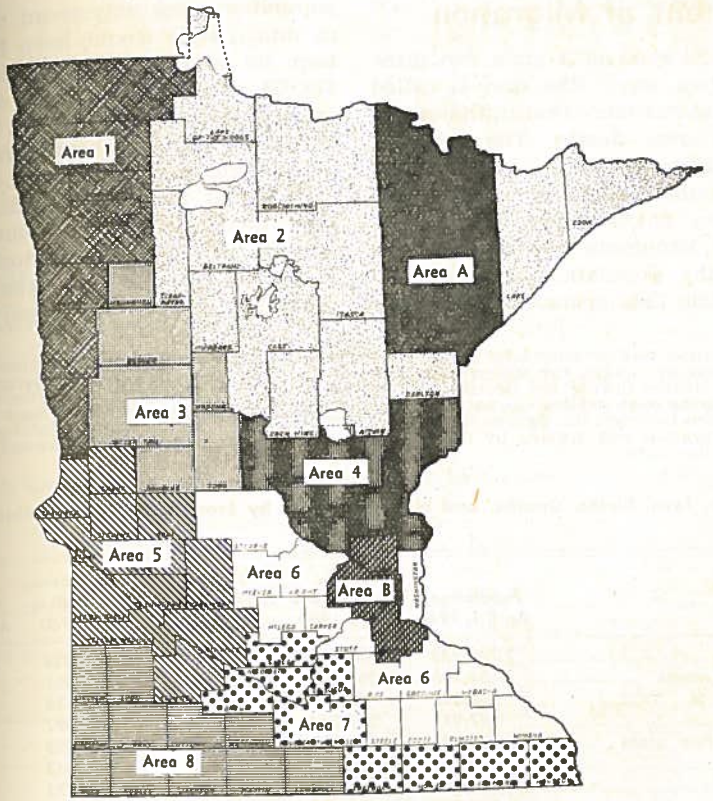

Fig. 1. Economic areas of Minnesota

Extent of Migration

The population of a state can grow in only two ways. The first is called the natural increase—that is, the excess of births over deaths. The other is through migration.[3]

During the decade ending in 1950 there were 364,594 more births than deaths in Minnesota (see tables 1 and 2). Yet the population increased by only 186,560. This means that the state's population grew only about two-thirds as much as it would have had there been no migration. It also means that 178,034 more people left the state than entered during the 1940's, and this number is equal to nearly half of the natural increase in the state.

It should be remembered that the migration figures throughout his report are net figures. The actual number of people moving from area to area, county to county, and state to state was much greater than indicated by the net effect of such movement. This is true for the reason that we have no record of the number of persons who moved in and out of a geographic area between the census years, nor of the persons who left and were replaced by others during the period.

[3] Migration was measured by the following steps: (a) **absolute increase** of the population was obtained by taking the differences between the 1940 and the 1950 population; (b) the number of deaths during the decade was subtracted from the number of births to get the **excess of births over deaths;** (c) **net increase through migration** was then obtained by getting the difference between the figures in step (a) and step (b); and (d) the net increase (step c) through migration was divided by the 1940 population to get the former expressed as a percentage of the latter.

Table 1. Total Births, Deaths, and Net Migration, by Economic Areas of Minnesota, 1940-1950

Area	Population, April 1, 1940	Births, April 1940 to April 1950	Deaths, April 1940 to April 1950	Net migration, April 1940 to April 1950	Population, April 1, 1950
Minnesota	2,795,923	632,983	268,389	—178,034	2,982,483
Metropolitan areas	1,154,316	266,681	115,987	17,561	1,322,571
A	206,397	42,317	20,516	—22,136	206,062
B	947,919	224,364	95,471	39,697	1,116,509
Nonmetropolitan areas	1,641,607	366,302	152,402	—195,595	1,659,912
1	152,751	34,180	13,080	—24,062	149,789
2	206,365	46,747	19,465	—32,275	201,372
3	147,770	32,151	14,720	22,456	142,745
4	126,136	25,622	11,605	—20,377	119,776
5	190,327	42,807	16,325	—27,514	189,295
6	390,738	87,004	38,499	—23,418	415,825
7	239,621	53,466	23,682	—18,699	250,706
8	187,899	44,325	15,026	—26,794	190,404

Table 2. Change in Total Population, by Economic Areas of Minnesota, 1940-1950

Area	1940 population	1950 population	Change, 1940-1950	
			Number	Per cent
Minnesota	2,795,923	2,982,483	186,560	6.7
Metropolitan areas	1,154,316	1,322,571	168,255	14.6
A	206,397	206,062	—335	—0.2
B	947,919	1,116,509	168,590	17.8
Nonmetropolitan areas	1,641,607	1,659,912	18,305	1.1
1	152,751	149,789	—2,962	—1.9
2	206,365	201,372	—4,993	—2.4
3	147,770	142,745	—5,025	—3.4
4	126,136	119,776	—6,360	—5.0
5	190,327	189,295	—1,032	—0.5
6	390,738	415,825	25,087	6.4
7	239,621	250,706	11,085	4.6
8	187,899	190,404	2,505	1.3

Migration of Various Residence Groups

The loss through net migration was very great in the rural population and small in the urban population. While there were 182,863 more births than deaths in the rural population in the 1940's, the population increase was only 25,215 (see tables 3 and 4). Thus the increase in the rural population was less than one-seventh what it would have been had there been no migration.

While the rural area of the state lost heavily because of migration, the urban population lost only slightly. The natural increase of the urban population was 181,731, but the total increase was 161,345 (see tables 5 and 6). Thus the urban population grew slightly less than 9/10 of what it would have done had there been no migration.

Table 3. Rural Births, Deaths, and Net Migration, by Economic Areas of Minnesota, 1940-1950

Area	Population, April 1, 1940	Births, April 1940 to April 1950	Deaths, April 1940 to April 1950	Net migration, April 1940 to April 1950	Population, April 1, 1950
Minnesota	1,396,688	299,361	116,498	—157,648	1,421,903
Metropolitan areas	142,752	36,864	14,060	44,988	210,544
A	54,124	10,533	4,880	—7,442	52,335
B	88,628	26,331	9,180	52,430	158,209
Nonmetropolitan areas	1,274,936	262,497	102,438	—202,636	1,211,359
1	123,488	25,101	9,674	—26,946	111,969
2	157,631	32,779	14,053	—27,800	148,557
3	121,106	24,595	9,212	—25,507	110,982
4	112,222	22,484	10,189	—20,497	104,020
5	165,855	35,145	13,393	—26,869	160,738
6	259,340	56,255	21,961	—25,942	267,692
7	167,324	34,328	13,912	—22,583	165,157
8	146,970	31,810	10,044	—26,492	142,244

Table 4. Change in Rural Population, by Economic Areas of Minnesota, 1940-1950

Area	1940 population	1950 population*	Change, 1940-1950	
			Number	Per cent
Minnesota	1,396,688	1,421,903	25,215	1.8
Metropolitan areas	142,752	210,544	67,792	47.5
A	54,124	52,335	—1,789	—3.3
B	88,628	158,209	69,581	78.5
Nonmetropolitan areas	1,253,936	1,211,359	—42,577	—3.4
1	123,488	111,969	—11,519	—9.3
2	157,631	148,557	—9,074	—5.8
3	121,106	110,982	—10,124	—8.4
4	112,222	104,020	—8,202	—7.3
5	165,855	160,738	—5,117	—3.1
6	259,340	267,692	8,352	3.2
7	167,324	165,157	—2,167	—1.3
8	146,970	142,244	—4,726	—3.2

* The 1950 population is classified according to the 1940 Census definitions of urban and rural.

Table 5. Change in Urban Population, by Economic Areas of Minnesota, 1940-1950

Area	1940 population	1950 population*	Change, 1940-1950 Number	Per cent
Minnesota	1,399,235	1,560,580	161,345	11.5
Metropolitan areas	1,011,564	1,112,027	100,463	9.9
A	152,273	153,727	1,454	1.0
B	859,291	958,300	99,009	11.5
Nonmetropolitan areas	387,671	448,553	60,882	15.7
1	29,263	37,820	8,557	29.2
2	48,734	52,815	4,081	8.4
3	26,664	31,763	5,099	19.1
4	13,914	15,756	1,842	13.2
5	24,472	28,557	4,085	16.7
6	131,398	148,133	16,735	12.7
7	72,297	85,549	13,252	18.3
8	40,929	48,160	7,231	17.7

* The 1950 population is classified according to the 1940 Census definitions of urban and rural.

Table 6. Urban Births, Deaths, and Net Migration, by Economic Areas of Minnesota, 1940-1950

Area	Population, April 1, 1940	Births, April 1940 to April 1950	Deaths, April 1940 to April 1950	Net migration, April 1940 to April 1950	Population, April 1, 1950
Minnesota	1,399,235	333,622	151,891	—20,386	1,560,580
Metropolitan areas	1,011,564	229,817	101,927	—27,427	1,112,027
A	152,273	31,784	15,636	—14,694	153,727
B	859,291	198,033	86,291	—12,733	958,300
Nonmetropolitan areas	387,671	103,805	49,964	7,041	448,553
1	29,263	9,079	3,406	2,884	37,820
2	48,734	13,968	5,412	—4,475	52,815
3	26,664	7,556	5,508	3,051	31,763
4	13,914	3,138	1,416	120	15,756
5	24,472	7,662	2,932	—645	28,557
6	131,398	30,749	16,538	2,524	148,133
7	72,297	19,138	9,770	3,884	85,549
8	40,929	12,515	4,982	—302	48,160

Only five counties escaped loss of rural population through migration (see table 7). All of these counties were in and around metropolitan areas: Anoka, Hennepin, Lake, Ramsey, and Washington. Some counties, particularly Mahnomen, Aitkin, and Lake of the Woods, lost nearly one-third of their 1940 population (see figures 2 and 3).

Of the economic areas, only one gained through net migration of the rural population. In Area B, which includes the Twin Cities, the rural population gained by approximately 60 per cent. The other metropolitan area, Area A including Duluth, lost about 14 per cent.

The extreme northwest corner of the state and the area just northwest of the center of the state, Areas 1 and 3, lost the most through rural net migration—approximately one-fifth of the number of rural people they had in 1940. The economic area southwest of the Twin Cities (Area 6) lost the least, 10 per cent of the population it had in 1940.

Thus the general tendency throughout the state, as evidenced by all of the data presented in this section, was for the areas with dense populations to gain and the areas with sparse populations to lose. The correlation between density and total migration (not rural alone) was .65 with Hennepin and Ramsey Counties omitted. (Since the data presented are for the total population rather than a sample, no sampling error was computed and all correlations are real.)

Agricultural Factors in Migration

Several kinds of movement by the rural population have been pointed

Table 7. Percentage of 1940 Population Gained or Lost Through Net Migration, 1940-1950

Counties Losing 20 Per Cent or More

County	Per cent of loss	County	Per cent of loss	County	Per cent of loss
Aitkin	29.7	Lake of the Woods	29.5	Pine	24.2
Becker	24.4	Mahnomen	30.4	Pipestone	20.2
Beltrami	24.6	Marshall	24.7	Polk	22.2
Benton	26.5	Morrison	25.4	Red Lake	27.1
Big Stone	21.2	Nobles	20.3	Roseau	20.0
Clearwater	23.2	Norman	22.3	Stevens	21.0
Jackson	20.3	Otter Tail	20.7	Wadena	25.2
Kittson	23.3	Pennington	21.0	Wilkin	23.2

Counties Losing 10 to 19.9 Per Cent

County	Per cent of loss	County	Per cent of loss	County	Per cent of loss
Blue Earth	17.1	Itasca	16.7	Rice	17.0
Brown	19.1	Kanabec	16.4	Rock	17.9
Cass	18.0	Koochiching	16.4	St. Louis	13.7
Chippewa	16.5	Lac qui Parle	18.0	Sherburne	15.7
Clay	15.4	LeSueur	11.1	Sibley	16.3
Cook	17.1	Lincoln	18.7	Stearns	16.8
Cottonwood	19.0	Lyon	19.6	Steele	13.8
Crow Wing	11.2	McLeod	12.4	Swift	16.5
Dodge	14.7	Martin	14.6	Todd	19.3
Douglas	12.6	Meeker	17.6	Traverse	17.7
Faribault	14.3	Mille Lacs	13.6	Wabasha	18.5
Fillmore	14.7	Murray	19.5	Waseca	18.5
Goodhue	10.5	Nicollet	15.9	Watonwan	16.7
Grant	14.3	Pope	16.1	Winona	13.3
Houston	13.3	Redwood	18.5	Wright	10.6
Hubbard	13.8	Renville	16.8	Yellow Medicine	16.3

Counties Losing Less than 10 Per Cent

County	Per cent of loss	County	Per cent of loss	County	Per cent of loss
Carlton	4.4	Freeborn	6.6	Mower	6.7
Carver	8.8	Isanti	8.7	Olmsted	2.0
Chisago	8.4	Kandiyohi	6.8	Scott	6.3
Dakota	3.1				

Counties Gaining

County	Per cent of gain	County	Per cent of gain	County	Per cent of gain
Anoka	76.9	Lake	9.5	Washington	28.7
Hennepin	62.8	Ramsey	100.8		

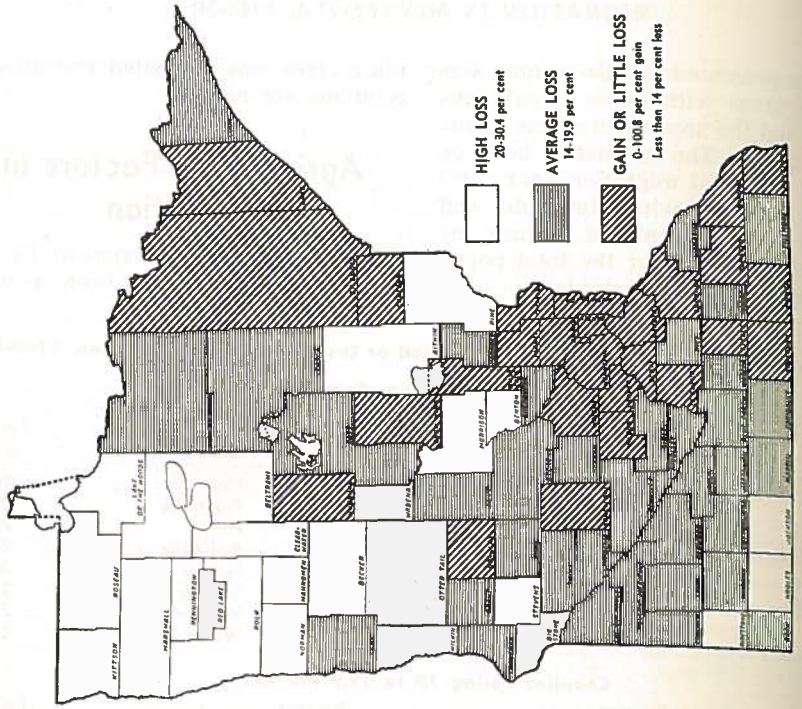

Fig. 3. Net loss of rural population through migration, 1940-50

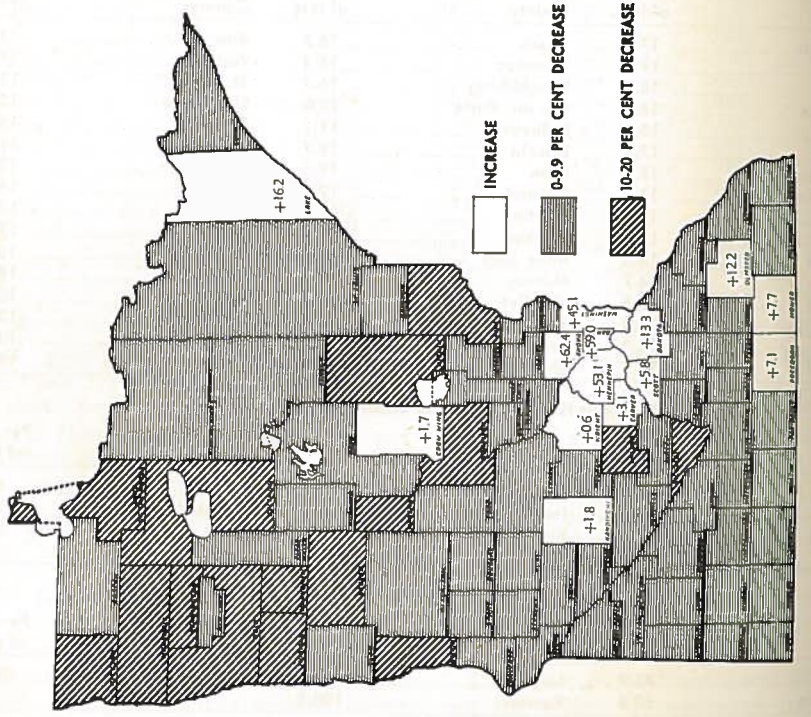

Fig. 2. Change in rural population, 1940-50

out elsewhere.[4] Five of these types of movement are given below, followed by the statistics for Minnesota.

1. *"Movement away from farms of entire farm-operator families that were not replaced. This type of movement is directly reflected in the reduction of number of farms during the decade."*

Farms decreased 0 to 24 per cent in the nonmetropolitan areas of Minnesota during the 1940's and averaged about 9 per cent for the state as a whole.

2. *"Movement of sons and daughters of farm operators away from farms."*

There has always been an excess of births over deaths in the rural farm population. If there had been no migration from farms between 1940 and 1950, there would have been 175 young farm men reaching the age of 25 for every 100 older farm men leaving the labor force through death or retirement.[5]

3. *"Movement of hired farm workers and in some cases the families of hired workers from both farm and rural-nonfarm residence as a consequence of reduction in the need for hired farm labor due to increased mechanization."*

This type of migration is directly reflected in the 26 per cent reduction in farm wage expenditures between 1939 and 1949, after allowances are made for the increase in farm wage rates.

4. *"Movement of rural-nonfarm individuals and families from hamlets and villages to larger population centers as farmers come to rely more on larger centers for services and functions formerly provided by smaller centers."*

5. *"Movement to rural areas of persons with urban jobs because of their preference for rural residence, the housing shortage in cities, or other reasons. This was especially important in rural areas near the largest cities, but it also occurred in areas around other cities in which nonagricultural employment was expanding substantially."*

In only one economic area, Area B including the Twin Cities, was this type of migration large enough to offset the movement of the first four types.

Reduction in Number of Farms

Almost every county of the state had fewer farms in 1950 than in 1940. A few exceptions were noted in the southern half of the state (see table 8). These few exceptions, however, had very small gains in the number of farms, ranging from .5 to 4.0 per cent increases.

In Minnesota about 95 per cent of the farms have resident farm operators. Thus the reduction in the number of farms is a good indication of the net migration of the first type mentioned in the previous section. For the state as a whole there was a 9.2 per cent reduction in the number of farms of 10 acres or more and a 9.3 per cent reduction in all farms.

The greatest reduction in the number of farms occurred in Area A, the metropolitan area including Duluth. There the reduction was 41 per cent for the decade, and most of this reduction was in the postwar half of the decade.

The cutover area in northern and northeastern Minnesota and the metropolitan area including the Twin Cities had the next greatest reduction in the number of farms with approximately a 23 per cent loss each. In the Twin City area most of this loss occurred in the second half of the decade, but in the cutover area the reduction was about even for the two halves of the decade.

[4] Hagood, Margaret Jarman, and Sharp, Emmit F. *Rural-Urban Migration in Wisconsin, 1940-1950.* Wis. Agr. Expt. Sta. Bul. 176. August 1951. p. 25. This bulletin was designed as a model for the study of migration throughout the North Central Region of the United States.

[5] Taueber, Conrad. *Replacement Rates of Rural Farm Males, Aged 25-69 Years, by Counties, 1940-1950.* Bur. of Agr. Econ., Washington, D.C. December 1944.

Table 8. Number of Farms, by Economic Areas of Minnesota, 1940, 1945, and 1950

Area	Number of farms			Percentage change		
	1940	1945	1950	1940-45	1945-50	1940-50
Minnesota	197,351	188,952	179,101	−4.3	−5.2	−9.3
Metropolitan areas	17,028	15,298	11,710	−10.2	−23.5	−31.2
A	7,932	6,853	4,686	−13.6	−31.6	−40.9
B	9,096	8,445	7,024	−7.2	−16.8	−22.8
Nonmetropolitan areas	180,323	173,654	167,391	−3.7	−3.6	−7.2
1	18,867	18,121	17,408	−4.0	−3.9	−7.7
2	22,163	19,206	16,952	−13.3	−11.7	−23.5
3	19,374	18,578	17,676	−4.1	−4.9	−8.8
4	17,628	16,339	15,828	−7.3	−3.1	−10.2
5	23,144	22,980	22,946	−0.7	−0.1	−0.9
6	34,370	33,897	32,518	−1.4	−4.1	−5.4
7	23,426	23,047	22,600	−1.6	−1.9	−3.5
8	21,351	21,486	21,463	0.6	−0.1	0.5

The southwestern part of the state, including Areas 5 and 8, experienced very little migration of operators who were not replaced. No change in the number of farms for either five-year period nor for the decade was as much as 1 per cent. Both areas lost more than 15 per cent of the 1940 population figure through net migration. The fact that the part of this outward migration which was made by farm operator families was replaced with other farm operator families is doubtless due to the fact that these areas, particularly Area 8, are good farming areas.

The decade was one characterized by much industrial employment opportunity. It was a period also of rapid mechanization of farms and a tendency toward larger farm units. Thus there was no back-to-the-farm movement after the war. In fact, the reduction in the number of farms was slightly larger after the war than during the war years. This finding was contrary to that of neighboring Wisconsin, where the greatest reduction occurred during the war years.

Rise in Farm Levels of Living

The farm level of living index is based on the following items: (1) the percentage of farms with electricity in the farm dwelling, (2) the percentage of farms with a telephone in the farm dwelling, (3) the percentage of farms with automobiles, and (4) the average value of products sold or traded in the preceding year per farm reporting (adjusted for changes in purchasing power). The indexes show only the average level of living for a county and do not throw any light on the differences among farm operator families within the county.

The average level of living of farm operators in the state rose by 41 per cent during the decade of the 1940's. The index in 1950 for the state as a whole was 151, which means it was half again as high for Minnesota as for the United States as a whole in 1945.

Generally the decade saw the most rapid increase in level of living in those areas which had the lowest level in 1940. For example, Areas 1 and 2 in the northern part of the state had increases of over 50 per cent during the 1940's. Metropolitan Area A, including Duluth, had an even higher increase. This equalization tendency was noted in the counties also.

The type of migration where farm operator families leave an area and are not replaced tends to raise the level of living. Their operations are taken over by other operators in the area, thus increasing the size of their farms and hence their incomes.

This relationship was evidenced by a correlation of −.54 between the percentage of change in the number of farms and percentage change in the level of living (see figure 4). This moderately high correlation was computed using economic areas. The correlation means that where there was an increase in the level of living, there was a decrease in the number of farms.

To show further the relationship between levels of living and migration, the two factors were correlated by county. No other factor seemed to be more highly related to rural migration than farm level of living. The general principle noted in the correlation was that those counties which had the lowest level of living in 1940 lost the most through migration during the decade. Conversely, those counties which had the highest level of living in 1940 either gained or lost little through net migration of the rural population.

Changes in the Use of Hired Labor

During the first half of the decade there was a considerable increase in the number of farmers who used some hired labor on their farms. The increase was from 48 per cent to 63 per

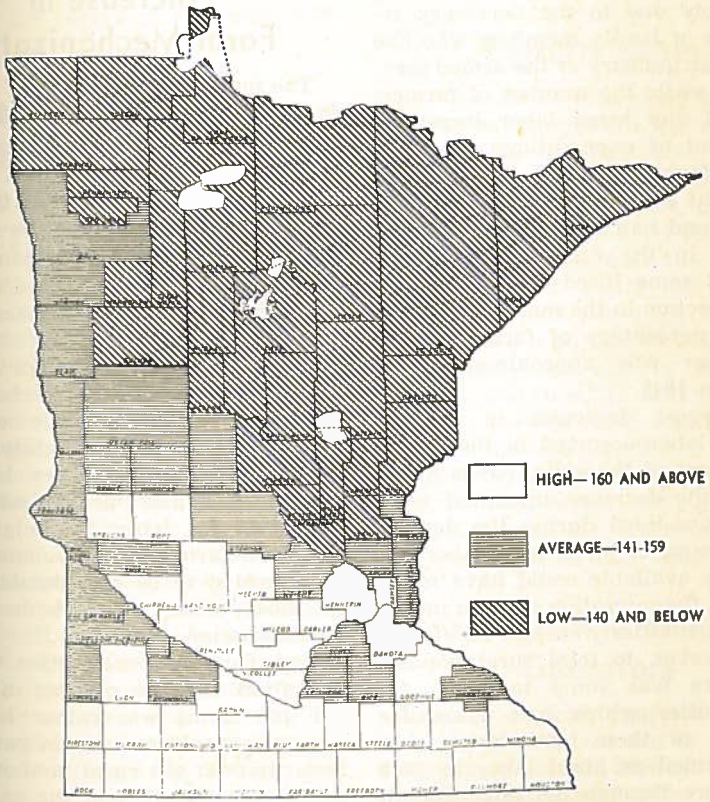

Fig. 4. Farm operator family level of living, 1950

Table 9. Number of Farms with Tractors and Number of Tractors on Farms, by Economic Areas of Minnesota, 1940-1950

Area	Farms with tractors				Tractors on farms			
			Increase, 1940-50				Increase, 1940-50	
	1940	1950	Number	Per cent	1940	1950	Number	Per cent
Minnesota	95,960	143,084	47,124	49.1	105,075	204,361	99,286	94.5
Metropolitan areas	5,468	7,837	2,369	43.3	5,856	9,796	3,940	67.3
A	2,376	2,875	499	21.0	2,520	3,279	759	30.1
8	3,092	4,962	1,870	60.5	3,336	6,517	3,181	95.4
Nonmetropolitan areas	95,960	135,247	44,755	46.6	99,219	194,565	95,346	96.1
1	11,249	14,864	3,615	32.1	13,223	24,370	11,147	84.3
2	4,986	10,295	5,309	106.5	5,292	12,281	6,989	132.1
3	6,103	13,347	7,244	118.7	6,430	16,298	9,868	153.5
4	4,662	11,469	6,807	146.0	4,836	12,909	8,073	166.9
5	16,500	20,492	3,992	24.2	18,277	31,776	13,499	73.9
6	16,929	26,336	9,407	55.6	17,955	35,734	17,779	99.0
7	14,458	19,093	4,635	32.1	15,758	29,488	13,731	87.1
8	15,605	19,351	3,746	24.0	17,448	31,708	14,260	81.7

cent of all farm operators. This increase was largely due to the necessary replacement of family members who had left for war industry or the armed services. But while the number of farmers who used any hired labor increased, the amount of expenditures for labor used by farm operators decreased by 27 per cent during the war.

The second half of the decade saw a reduction in the number of farmers who used some hired labor, but due to the reduction in the number of farms the total percentage of farmers using hired labor was approximately the same as in 1945.

The largest decreases in amount spent for labor occurred in the southwestern part of the state, Areas 5 and 8, where the decrease amounted to as much as one-third during the decade.

The amount of hired farm labor opportunities available could have much to do with the migration of farm males. Such opportunities were not highly related, however, to total rural population. There was some tendency for those counties which had a smaller proportion of their total farm labor force classified as hired labor in 1940 to lose more through net migration of the total rural population.

Increase in Farm Mechanization

The number of tractors per 100 farms increased by 95 per cent between 1940 and 1950 (see table 9). Increases were greatest in the areas which had the least mechanization in 1940, the northern and central areas of the state. All of the areas with more than 130 per cent increase in tractors had migration losses from the rural population of over 17 per cent.

The number of tractors per 100 farms was used as an index of mechanization. Mechanization is commonly believed to be closely related to migration. Since mechanized farms require less manpower and since mechanization is a substitute for labor, the migration of the rural farm male population would be expected to be considerably higher in those counties which have more mechanization.

However, the correlation between migration and the number of tractors per 100 farms was rather low, −12. This was doubtless due in part to the facts that (1) the rural nonfarm population was included in the calculation of rural migration and (2) a large share of the outward migration of the rural farm population occurs in the female population. In neither of these groups would mechanization be an important factor in migration.

More Farm Products Sold

In spite of heavy migration from rural areas, a decrease in the number of farms, and a sharp reduction in the amount spent for hired labor, Minnesota farmers increased their production substantially in the last decade.

The increase in the aggregate value of farm products sold was 17 per cent between 1939 and 1949. This includes an adjustment for changes in prices. The lowest rate of gain was in the cut-over area, 3.9 per cent, and the next lowest in the corn and hay area, 10.6 per cent.

Percentage of Farm Homes Near Hard-Top Roads and Distance to Trade Centers

Both the percentage of farms on hard-top roads and the average distance of farms from trade centers are factors which appear important in migration during the last decade. Generally, the relationship of these measures of geographic isolation to migration may be stated as follows: the greater the isolation the greater the outward migration.

The range of average distance of farms from trade centers was small, as would be expected, from 5 to 11 miles. But the small differences seemed to be important. The correlation between outward migration and distance from trade centers was −.33. In the 24 counties which lost the most through migration, no average distance was less than six miles and most were more than six miles. In the 17 counties which either lost the least through migration or gained, only one county had an average distance of more than six miles.

The correlation between percentage of farms on hard-top roads and migration was even higher than the correlation described above. Generally, those counties with the smallest proportion of their farms on hard-top roads lost the most due to migration. The correlation was +.52 in 1940 and +.55 in 1950.

Of the 64 counties having the most outward migration in 1950, only two had as much as 20 per cent of their farms on hard-top roads. Of the 18 rural counties losing the least or gaining through migration, 10, or over half, had as much as 20 per cent of their farms on hard-top roads.

Fertility Ratio

Those counties which had more children under five per 1,000 women of child-bearing age (fertility ratio) lost the most due to migration. If the 1940 fertility ratio is used, the correlation is + .48 (see figure 5). Of the 22 rural counties losing the most due to migration, none had under 416 children under five years per 1,000 women of child-bearing age. In the 21 counties having the least loss or some gain through migration, 12 had under 416.

Among the ten rural counties losing the most through migration, none had less than 451 children of this age per 1,000 women, while among the ten counties losing the least or gaining, only one had a fertility ratio this high.

Average Age of Farm Operators

The age of farm operators, particularly the owners, seemed to be closely related to migration. The age of tenants seemed to have very little relation to migration.

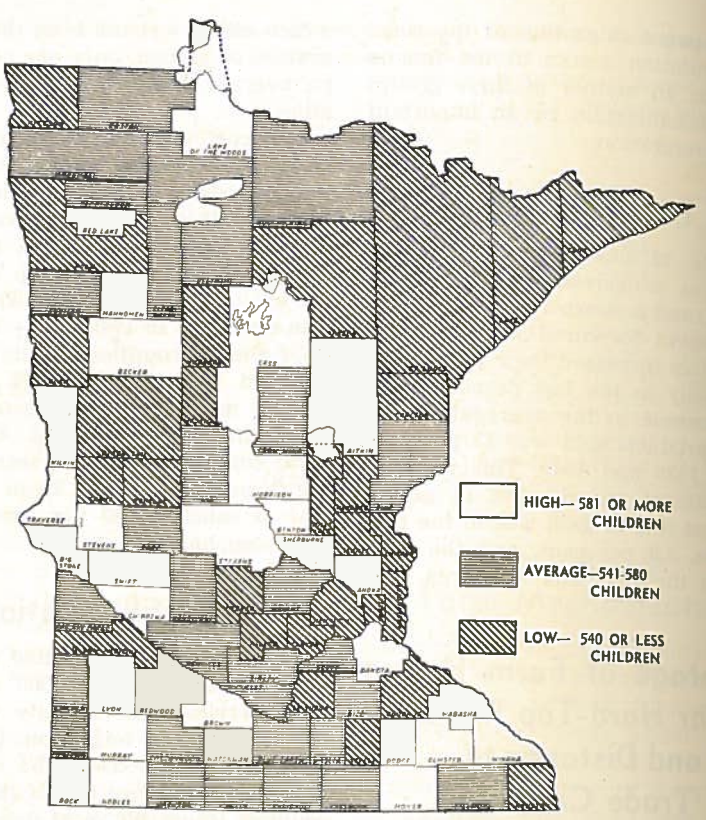

Fig. 5. Fertility ratio of the rural farm population, 1950

The range of average age was very small—within about three years on either side of 50 years. But the correlations were high: age of owners with migration was .61, age of tenants with migration was .16, and all operators, regardless of tenure, with migration was .41. The general tendency in all three correlations was for migration loss to become less as average age of operators increased.

Of the 22 counties losing the most through migration, only one had an average age of 52 or over among its inhabitants. Among the 21 counties losing the least or gaining through migration, nine had average ages of 52 years and older.

Industrial Factors

Many kinds of industrial factors are related to migration, but only the number of workers hired in manufacturing was used in this analysis.[6] Only three counties failed to gain in number of persons employed in manufacturing during the decade (see figure 6). These were Red Lake, Benton, and Itasca. All three of these lost more than 15 per cent of their 1940 population through net migration, and the first two mentioned lost more than one-fourth in this manner.

Two evidences of the relationship between the manufacturing employment opportunities and migration were observed:

First, those counties which gained the most in number of persons so employed lost the least or gained through net migration. The mean number of employees gained in manufacturing in the 44 counties losing the most due to net migration was 212. The mean was 1,574 in the 43 counties losing the least or gaining through net migration (including counties in metropolitan areas).

A similarly high relationship was found in comparing the counties with respect to the number of employees in manufacturing in 1939 and 1947. The tendency was for those counties which had the largest amount of such employment to lose the least or gain through net migration.

[6] United States Government Printing Office. *A Statistical Abstract Supplement, County and City Data Book, 1949*. Washington, D.C. p. 190. 1952.

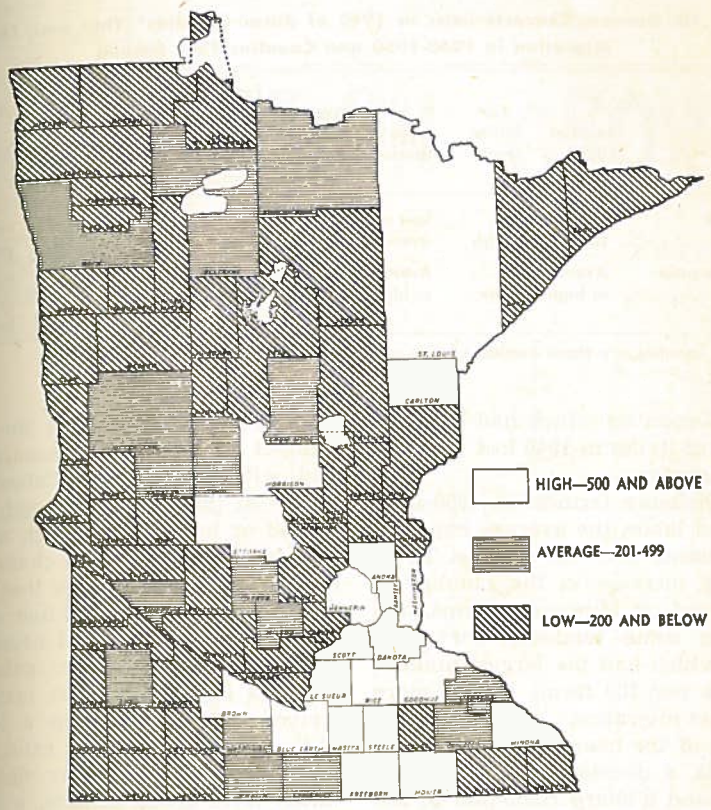

Fig. 6. Amount of increase in number of hired workers in manufacturing, 1940-50

Summary

Loss through net migration was heavy in Minnesota during the 1940's. It was much greater in the rural areas than in the urban areas. Generally people tended to leave the sparsely populated areas and move to the densely populated areas.

This migration was reflected in a reduction in the number of farms. Nearly every county of the state had fewer farms in 1950 than in 1940, but gener-

Table 10. General Characteristics in 1940 of Rural Counties* That Lost Through Migration in 1940-1950 and Counties That Gained

Net migration	Level of living	Fertility ratio	Age of owners	Average distance to trade centers	Percentage of farms on hard roads	Number of workers in manufacturing		Urban centers
						Number	Number gained	
Counties with heaviest loss	Low	High	Low or average	Far	Low	Small	Small	None or small only
Counties with gain or least loss	Average or high	Low	Average or high	Near	High	Large	Large	Some tendency to have large centers

* Rural counties are those outside of Metropolitan Areas A and B.

ally those counties which had the lowest levels of living in 1940 lost the most due to migration.

Although more farmers in 1950 used some hired labor, the average expenditure decreased over the decade. There was a big increase in the number of tractors used on Minnesota farms, and there was some tendency for those counties which had the largest number of tractors per 100 farms to lose more through net migration.

In spite of the heavy migration from rural areas, a decrease in the number of farms, and a sharp reduction in the amount spent for hired labor, Minnesota farmers increased their production substantially in the decade.

Those counties which had the smallest proportion of farmers on hard-top roads and which had the greatest average distance of farms from trade centers lost the most due to migration. Those counties having the highest number of children under five years per 1,000 women of child-bearing age also lost the most due to net migration. The counties in which the average age of farm operators was high lost the least or gained through migration.

Only one kind of industrial factor was studied in relation to migration: the number of workers in manufacturing. Those counties with the greatest number of workers in manufacturing and with the greatest "absolute" increase in the number of such workers gained or lost little through migration.

In table 10 the general characteristics of the 22 rural counties that lost the most through net migration are compared with the 22 rural counties that either lost the least or gained. The counties losing the most may be described as counties with a low level of living, a high fertility ratio, younger farm owners, a greater distance of farms from trade centers, a low percentage of farms on hard-top roads, and a small number of laborers employed in manufacturing. Such counties had only a small to moderate rise in the number of laborers employed in manufacturing.

The counties losing the least or gaining may be described as having an average or better level of living, low fertility ratio, older farm owners, farms close to trade centers, a high proportion of farms on hard roads, and a large number of workers in manufacturing. These counties had a large "absolute" increase in the number of workers in manufacturing and are more likely to contain large cities than are counties losing by migration.