

Net Migration and Population Change in North Dakota, 1960-1970

Stanley W. Voelker and Thomas K. Ostenson

According to the latest U.S. Census of Population, the number of people in North Dakota decreased 2.3 per cent from 632,446 in 1960 to 617,761 in 1970, a continuation of the slow, downward trend of the past 40 years.

Between 1930 and 1970, North Dakota's population **decreased** nine per cent while the total U.S. population **increased** 65 per cent. Two states besides North Dakota—South Dakota and West Virginia—also experienced population declines during the 1960's, but North Dakota is the only one of the 50 states that now has fewer inhabitants than it had 50 years ago in 1920.

Previous reports have called attention to three factors involved in North Dakota's population trends: (1) annual mortality rates have been consistently lower in North Dakota than in the United States as a whole; (2) North Dakota's annual birth rates were higher than the U.S. average until about 1965, but have been slightly below the U.S. average since then; and (3) comparatively high birth rates and below-average death rates would have resulted in a rapidly growing population were it not for heavy out-migration, especially of young people seeking more attractive employment opportunities in other states (1).

This report presents estimates of net migration for North Dakota counties between 1960 and 1970 and describes the trends in the residential distribution of the state's population that result largely from migration.

Net Migration

Net migration is the difference between the number of people moving into a given geographic area and the number moving from that area during a specified time period. A fairly accurate estimate of the magnitude and direction of net migration can be computed from the numbers of people enumerated in the area on two different census dates, and the numbers of deaths and births among residents of the area during the intervening years.¹

The U.S. Bureau of the Census estimated the net out-migration from North Dakota during the 1940's at 121,000, or 18.8 per cent of the state's

1940 population. The Bureau's estimate of net out-migration during the 1950's was 105,000, or 16.9 per cent of the state's 1950 population. Only two states during the 1940's and only three states during the 1950's had higher rates of net out-migration than North Dakota (2).

A net migration estimate for the period April 1, 1960, to April 1, 1970, computed from U.S. Census of Population counts and data on births and deaths from the Division of Vital Statistics, North Dakota Department of Health,² is -94,900, or 15.0 per cent of the 1960 population. This indicates that both the amount and the rate of net out-migration from North Dakota have continued to decline during the past decade as they did during the 1950's. Nevertheless, it is expected that the U.S. Census Bureau's estimates of net migration to or from each of the 50 states during the 1960's, scheduled for release in late 1971, will show North Dakota among the top three or four states in rate of net out-migration, as it was during the 1940's and 1950's.

Population Change and Net Migration Estimates for Counties

Populations of Burleigh County and Grand Forks County increased 19.7 per cent and 25.5 per cent, respectively, between 1960 and 1970, due partly to natural increase (the difference between number of births and number of deaths) and partly to net in-migration (Table 1 and Figure 1). Four other counties (Cass, Rolette, Stark, and Ward) experienced population increases despite net out-migration. Population declined in all of the other 47 counties because net out-migration exceeded their natural increases. The net out-migration rates of these counties ranged from 11.2 per cent in Richland County to 34.8 per cent in Slope County. In 38 of the 47 counties the net out-migration rates were 20.0 per cent or more.

¹The algebraic equation for estimating net migration is:

$$NM = P_2 - P_1 + D - B, \text{ when:}$$

NM = net migration

P₁ = population at beginning of period

P₂ = population at end of period

D = number of deaths of residents during the period

B = number of live births to resident mothers during the period

The sign of the net migration estimate indicates the predominant direction of migration; that is, a negative sign indicates net out-migration and a positive sign indicates net in-migration.

²The authors acknowledge the help of Mrs. Margaret Watts, Director of the Division of Vital Statistics, North Dakota Department of Health, for providing tabulations of resident births and deaths in North Dakota.

Voelker is agricultural economist, Economic Development Division, Economic Research Service, U.S. Department of Agriculture, and Ostenson is assistant professor, Department of Agricultural Economics.

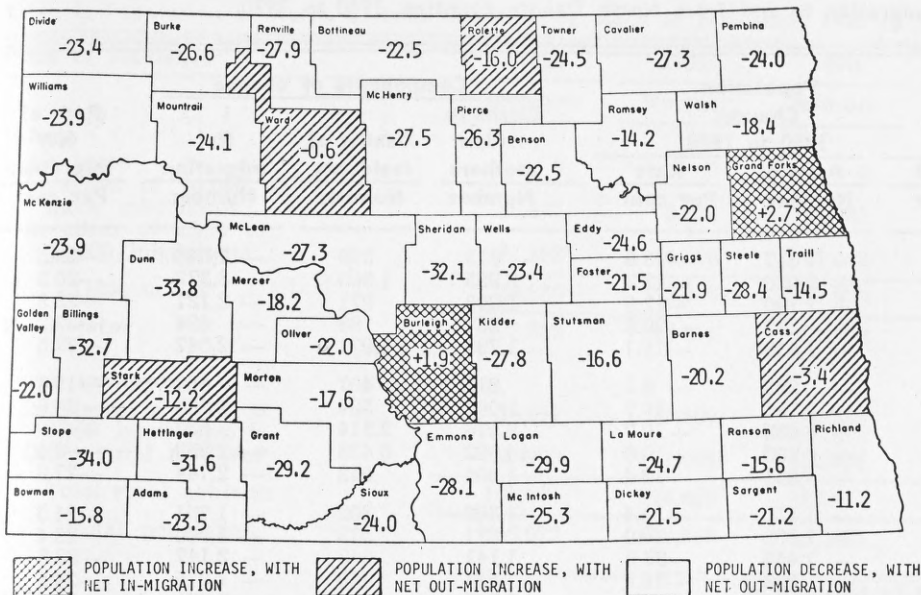


Fig. 1. Population change and net migration by counties, 1960 to 1970.

Figures are net migration rates, expressed as percentage of 1960 population.

Source: Advance Report, 1970 U.S. Census of Population and Division of Vital Statistics, North Dakota Department of Health.

Counties with both high and low net migration rates are found in all parts of the state and no definite geographic pattern of these rates is apparent. An inspection of Figure 1 indicates that net in-migration and low rates of net out-migration are characteristic of counties containing the larger and faster growing cities. This suggests that part of the explanation for variation among counties in net migration rates will be found in rural-urban migration patterns within the state, as well as migration to urban areas in other states.

Changes in Urban and Rural Population

Classification of the population into "urban" and "rural" components necessarily must be based on arbitrary rules and definitions. According to the definitions employed in recent decades by the U.S. Bureau of the Census, the urban population of North Dakota consists primarily of those living within incorporated municipalities with 2,500 or more inhabitants.³ The "rural" population, which comprises all those not included in the urban classification, is divided into "rural farm" and "rural nonfarm" on the basis of residence without regard to occupation. The 1970 populations of the Grand Forks and Minot Air Bases were 10,474 and 12,077,

respectively, and were classified as "urban," even though these places are not incorporated municipalities. In 1960 there were fewer than 2,500 people living on each of these air bases and their populations were classified as "rural."

North Dakota's urban population increased steadily from 88,000 in 1920 to 273,000 in 1970. The urbanites accounted for less than 14 per cent of the state's population in 1920, but for over 44 per cent in 1970. A small part of this change resulted from increased numbers of airmen, civilians, and their dependents on the two air bases in the last 10 years, but most of the increase was in that portion of the population living in cities of 10,000 or more inhabitants. There were eight cities of this size in 1970, but only three in 1920. Nearly five times as many people lived in cities of this size in 1970 as in 1920. The number of people in cities of 2,500 to 10,000 was less than at any time since 1920 (Figure 2 and Table 2).

The rural-nonfarm population increased from 165,000 in 1920 to 201,000 in 1960, and then declined to 187,000 in 1970. The rural-nonfarm population living in places of 1,000 to 2,500 almost doubled between 1920 and 1960, but has declined since then. Prior to 1960, most cities in this size range tended to be stable and many were experiencing modest population growth. The predominant situation during the 1960's, however, was that of population decline. Of the 48 cities in this size

³This general definition was modified in 1950 to include residents of densely settled fringe areas adjacent to cities of 50,000 or more inhabitants. No fringe areas were delineated in North Dakota for the 1950 census, but one such area adjacent to Fargo that contained 1,014 inhabitants was enumerated separately in 1960. Most of this fringe area subsequently was annexed to Fargo and no fringe areas in North Dakota were delineated for the 1970 census.

Table 1. Population change and net migration to and from North Dakota counties, 1960 to 1970.

County	Population		Population Change 1960 to 1970		Components of change			Rate of Net migration ²
	1960	1970	Amount	Rate ¹	Births to resident mothers	Deaths of residents	Net migration	Per cent
	Number	Number	Number	Per cent	Number	Number	Number	
Adams	4,449	3,832	- 617	-13.9	819	390	- 1,046	-23.5
Barnes	16,719	14,669	- 2,050	-12.3	2,925	1,603	- 3,372	-20.2
Benson	9,435	8,245	- 1,190	-12.6	1,908	971	- 2,127	-22.5
Billings	1,513	1,198	- 315	-20.8	267	88	- 494	-32.7
Bottineau	11,315	9,496	- 1,819	-16.1	1,799	1,071	- 2,547	-22.5
Bowman	4,154	3,901	- 253	- 6.1	812	407	- 658	-15.8
Burke	5,886	4,739	- 1,147	-19.5	1,012	594	- 1,565	-26.6
Burleigh	34,016	40,714	+ 6,698	+19.7	8,576	2,514	+ 636	+ 1.9
Cass	66,947	73,653	+ 6,706	+10.0	14,392	5,433	- 2,253	- 3.4
Cavalier	10,064	8,213	- 1,851	-18.4	1,805	912	- 2,744	-27.3
Dickey	8,147	6,976	- 1,171	-14.4	1,382	802	- 1,751	-21.5
Divide	5,566	4,564	- 1,002	-18.0	871	573	- 1,300	-23.4
Dunn	6,350	4,895	- 1,455	-22.9	1,141	449	- 2,147	-33.8
Eddy	4,936	4,103	- 833	-16.9	847	465	- 1,215	-24.6
Emmons	8,462	7,200	- 1,262	-14.9	1,745	626	- 2,381	-28.1
Foster	5,361	4,832	- 529	- 9.9	1,142	520	- 1,151	-21.5
Golden Valley	3,100	2,611	- 489	-15.8	494	300	- 683	-22.0
Grand Forks	48,677	61,102	+12,425	+25.5	15,114	3,995	+ 1,306	+ 2.7
Grant	6,248	5,009	- 1,239	-19.8	1,055	471	- 1,823	-29.2
Griggs	5,023	4,184	- 839	-16.7	727	465	- 1,101	-21.9
Hettinger	6,317	5,075	- 1,242	-19.7	1,239	486	- 1,995	-31.6
Kidder	5,386	4,362	- 1,024	-19.0	915	442	- 1,497	-27.8
LaMoure	8,705	7,117	- 1,588	-18.2	1,345	785	- 2,148	-24.7
Logan	5,369	4,245	- 1,124	-20.9	925	443	- 1,606	-29.9
McHenry	11,099	8,977	- 2,122	-19.1	1,936	1,006	- 3,052	-27.5
McIntosh	6,702	5,545	- 1,157	-17.3	1,117	581	- 1,693	-25.3
McKenzie	7,296	6,127	- 1,169	-16.0	1,211	633	- 1,747	-23.9
McLean	14,030	11,251	- 2,779	-19.8	2,278	1,225	- 3,832	-27.3
Mercer	6,805	6,175	- 630	- 9.3	1,191	581	- 1,240	-18.2
Morton	20,992	20,310	- 682	- 3.2	4,787	1,778	- 3,691	-17.6
Mountrail	10,077	8,437	- 1,640	-16.3	1,800	1,008	- 2,432	-24.1
Nelson	7,034	5,776	- 1,258	-17.9	1,111	825	- 1,544	-22.0
Oliver	2,610	2,322	- 288	-11.0	442	155	- 575	-22.0
Pembina	12,946	10,728	- 2,218	-17.1	2,189	1,300	- 3,107	-24.0
Pierce	7,394	6,323	- 1,071	-14.5	1,464	594	- 1,941	-26.3
Ramsey	13,443	12,915	- 528	- 3.9	2,730	1,343	- 1,915	-14.2
Ransom	8,078	7,102	- 976	-12.1	1,177	892	- 1,261	-15.6
Renville	4,698	3,828	- 870	-18.5	884	441	- 1,313	-27.9
Richland	18,824	18,089	- 735	- 3.9	3,156	1,784	- 2,107	-11.2
Rolette	10,641	11,549	+ 908	+ 8.5	3,597	983	- 1,706	-16.0
Sargent	6,856	5,937	- 919	-13.4	1,176	639	- 1,456	-21.2
Sheridan	4,350	3,232	- 1,118	-25.7	615	336	- 1,397	-32.1
Sioux	3,662	3,632	- 30	- 0.8	1,209	361	- 878	-24.0
Slope	1,893	1,484	- 409	-21.6	382	148	- 643	-34.0
Stark	18,451	19,613	+ 1,162	+ 6.3	4,808	1,402	- 2,244	-12.2
Steele	4,719	3,749	- 970	-20.6	792	420	- 1,342	-28.4
Stutsman	25,137	23,550	- 1,587	- 6.3	4,572	1,988	- 4,171	-16.6
Towner	5,624	4,645	- 979	-17.4	928	527	- 1,380	-24.5
Trail	10,583	9,571	- 1,012	- 9.6	1,667	1,147	- 1,532	-14.5
Walsh	17,997	16,251	- 1,746	- 9.7	3,255	1,697	- 3,304	-18.4
Ward	47,072	58,560	+11,488	+24.4	15,566	3,799	- 279	- 0.6
Wells	9,237	7,847	- 1,390	-15.0	1,624	850	- 2,164	-23.4
Williams	22,051	19,301	- 2,750	-12.5	4,372	1,859	- 5,263	-23.9
Total	632,446	617,761	-14,685	- 2.3	135,293	55,107	-94,871	-15.0

Source: U.S. Bureau of the Census, "1970 U.S. Census of Population: Final Population Counts," PC(VI)-36, October 1970; and unpublished tabulations of the Division of Vital Statistics, North Dakota Department of Health.

¹Population change, expressed as a per cent of 1960 population.

²Net migration, expressed as a per cent of 1960 population. A plus sign (+) indicates net in-migration and a minus sign (-) indicates net out-migration.

Table 2. Population of North Dakota, classified by place of residence, 1920 to 1970.

Place of residence	1920	1930	1940	1950	1960	1970
	Number	Number	Number	Number	Number	Number
Urban:						
Air bases	0	0	0	0	3,968	22,551
In cities of 10,000 or more inhabitants	46,447	72,920	84,881	116,461	177,955 ¹	209,584
In cities of 2,500 to 10,000 inhabitants	41,792	40,386	47,042	48,356	44,753	41,307
Total urban	88,239	113,306	131,923	164,817	226,676	273,442
Rural farm	393,622	396,871	327,498	254,487	204,398	157,500 ²
Rural nonfarm:						
In places of 1,000 to 2,500 inhabitants ³	38,051	38,980	49,538	69,413	75,108	65,434
Other rural nonfarm ⁴	126,960	131,688	132,976	130,919	126,264	121,385 ²
Total rural nonfarm	165,011	170,668	182,514	200,332	201,372	186,819
Total population	646,872	680,845	641,935	619,636	632,446	617,761
In per cent of total population						
Urban:						
Air bases	0	0	0	0	0.6	3.7
In cities of 10,000 or more inhabitants	7.2	10.7	13.3	18.8	28.1	33.9
In cities of 2,500 to 10,000 inhabitants	6.5	5.9	7.3	7.8	7.1	6.7
Total urban	13.7	16.6	20.6	26.6	35.8	44.3
Rural farm	60.8	58.3	51.0	41.1	32.3	25.5 ²
Rural nonfarm:						
In places of 1,000 to 2,500 inhabitants ³	5.9	5.7	7.7	11.2	11.9	10.6
Other rural nonfarm ⁴	19.6	19.4	20.7	21.1	20.0	19.6
Total rural nonfarm	25.5	25.1	28.4	32.3	31.9	30.2
Total population	100.0	100.0	100.0	100.0	100.0	100.0

Source: U.S. Census of Population for the designated years, except as noted otherwise.

¹Includes urban fringe area of Fargo.

²The division of rural population outside of places with 1,000 to 2,500 inhabitants into rural farm and other rural nonfarm is based on estimates made by the authors.

³Total population of places with 1,000 to 2,500 inhabitants, less the number of residents in those places who were classified as "rural farm;" namely, 252 in 1930, 323 in 1940, and 257 in 1950. Similar data for adjusting the figures for 1920 and 1960 are not available from published reports of the U.S. Bureau of the Census.

⁴Mostly residents of incorporated municipalities and unincorporated villages of less than 1,000 inhabitants.

range in 1960, 18 remained stable, 26 experienced population decreases of five per cent or more, and four had population increases of five per cent or more.

The population component classified as "other rural nonfarm" consists mainly of residents of unincorporated villages and incorporated cities with less than 1,000 inhabitants, although this class also includes some open-country residents. The number of people in this classification has been declining since 1940 and was 4.4 per cent less in 1970 than it had been in 1920. Almost 80 per cent of the incorporated cities with less than 1,000 inhabitants in 1960 experienced population declines of five per

cent or more during the past decade.

The number of people classified as "rural farm" was about the same in 1930 as in 1920, but decreased steadily thereafter from 397,000 in 1930 to an estimated 157,000 in 1970, a decrease of 60 per cent. The rural farm component accounted for 61 per cent of the total population in 1920, but for less than 26 per cent in 1970 (Figure 2 and Table 2). This continuing decline of the rural farm population is one of the important causes of the population decreases among villages and small cities.

Implications for the 1970's

Population change and migration data for North Dakota from 1940 to 1970 are summarized

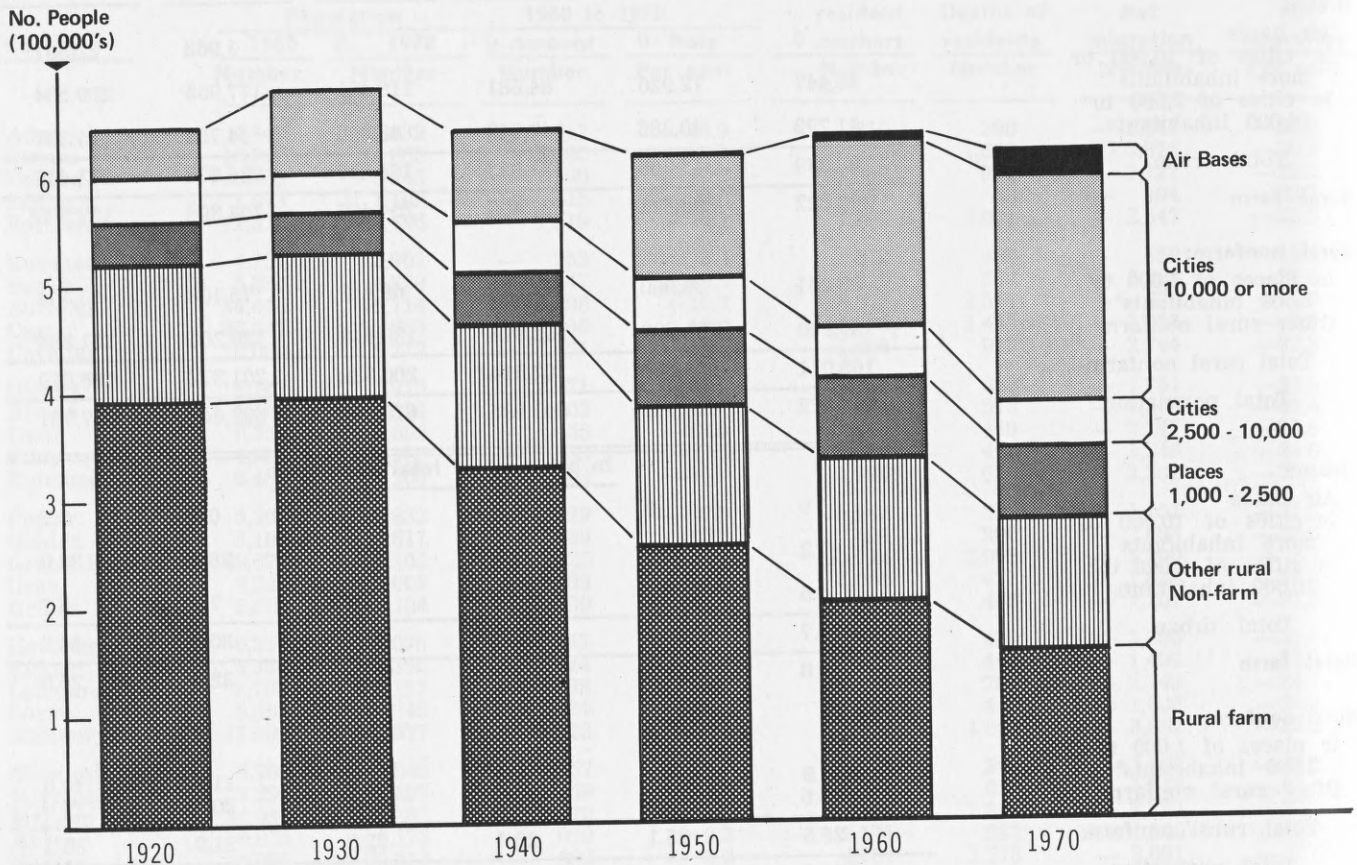


Figure 2. North Dakota Population by Place of Residence.

Source: U.S. Census of Population

in Table 3, together with projections of the components of change from 1970 to 1980. The 1980 population projection of 590,000 represents a decline of 28,000, or 4.5 per cent, from 1970. This projection

Table 3. Population change and net out-migration from North Dakota, by decades, 1940 to 1980.

	1940 to 1950	1950 to 1960	1960 to 1970	Projec- tions, 1970 to 1980
	(000)	(000)	(000)	(000)
Population:				
At beginning of decade	642	620	633	618
At end of decade	620	633	618	590
Population change	- 22	+ 13	- 15	- 28
Components of change:				
Number of births	147	170	135	115
Number of deaths	52	52	55	58
Natural increase	95	118	80	57
Net migration	-117	-105	- 95	- 85

is based on three assumptions: (1) out-migration from the state will continue, although at a slightly lower rate than during the 1960's; (2) birth and death rates for each age group in North Dakota will continue at present levels; and (3) the current trends towards urbanization will continue.

Projected population decline and associated urbanization imply more concentration of residents in the larger cities of the state and fewer people in the rural areas.

REFERENCES

1. "North Dakota's Human Resources: A Study of Population Change in a Great Plains Environment," N.D. Agr. Expt. Sta. Bul. No. 476, May 1968; and "Recent Changes in North Dakota's Population," North Dakota Farm Research Vol. 27, No. 1, Sept.-Oct. 1969.
2. U.S. Bureau of the Census, **Current Population Reports**, Series P-25, No. 247, April 1962.