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CHANGES IN FARM NUMBERS AND SIZES: NEW YORK STATE

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CHANGES IN FARM NUMBERS AND SIZES:

New York State*

Many questions are being asked about farm numbers, the future of the family farm and concentration of farm ownership. There is wide interest in the amount and nature of corporate activity in farming. Both farmers and city dwellers are asking questions about the ownership of our farmland and controls over its use. There are also the logical questions of what is counted as a farm and how this affects our statistics.

This paper will examine these questions for New York State and try to place recent changes in farm numbers and size distributions into a national perspective. The chief sources of state data are the Censuses of Agriculture conducted every ten years until 1930 and every five years since then. National estimates of farm numbers, land in farms and their distribution into size classes are made annually by the U.S.D.A.

The Structure Issue

People have been concerned for a long time about who owns farm resources, how these resources are distributed and how decisions are made about what is produced and where it is sold. These are important parts of the "structure issue" which are old but also current. The Civil War was fought over one of the most fundamental farm structure issues of all time. The current debate, while critically important, does not compare with the issues of slavery and plantation agriculture that tore up our country 120 years ago.

Secretary of Agriculture Bob Bergland has called for a national dialogue on the future of American agriculture. His speech to the National Farmers Union in March 1979 put it this way:

The truth is we really don't have a workable policy on the structure of agriculture. To the extent we talk about such a policy -- its focus is always on the number of farms. But on what basis do we decide whether we should have 1 or 3 million farms? Surely it is time to develop a national farm structure policy.

The current national interest in "structure" is natural and ongoing. The material which follows is intended to show what has happened over the years in New York State. It looks at farm numbers, different ways of measuring farm

* This paper benefited from the careful and critical reviews of Nelson Bills, Olan Forker, and Gerald White. Both the content and the presentation were improved by the work of Lois Plimpton and Cheryl Morse. They assembled the basic information from the Census, reviewed the manuscripts and helped with the final revisions. Dean David L. Call made the initial suggestion that such an analysis be made. The errors in judgment and fact are the responsibility of the author.

size and the patterns of ownership and control that have evolved in this state. A commitment is made to look at farm units where the primary income of the family comes from farming and separate them from units where farming is of much less importance to the family that operates them.

Farm Numbers

Farm numbers in New York State reached a peak late in the nineteenth century when 75 percent of the land area of 30.6 million acres was included in farms. Farm numbers began to decline at the turn of the century and some land began to move out of agriculture. Between 1920 and 1930 there was an important decline in farm numbers and land in farms. The rate of exodus slowed during the years of the great depression. But after World War II in the twenty years between 1950 and 1970 farm numbers were cut in half. The land area in farms was reduced by 35 percent. Part of the continuing concern about farm structure and the future of agriculture in New York is associated with these changes.

Table 1. NUMBER OF FARMS AND LAND IN FARMS
New York State, 1850-1978

Year	Number of farms*	All land in farms <u>million acres</u>
1850	170,600	19.1
1860	197,000	21.0
1870	216,300	22.2
1880	241,100	22.9
1890	226,200	22.0
1900	226,700	22.6
1910	215,600	22.0
1920	193,200	20.6
1930	159,800	18.0
1940	153,200	17.2
1950	136,000	17.0
1960	80,000	14.3
1970	58,000	11.1
1978	56,000	10.9

*Census definition of farms.

Source: U. S. Census, New York State Crop Reporting Service.

One of the natural questions to ask after studying table 1 is, "What happened to all the land that went out of farming between 1880 and 1970?" In an urban state one might expect that much of it went into housing, factories, stores, roads and airports; all are parts of the urbanization process. Important areas, including some of the most productive farmland have been lost to such uses. But most of it in fact has reverted to brush and forest.

Table 2.

MAJOR USES OF LAND
New York State, 1974

Land use category	Area <u>million acres</u>	Percent of total
Forest land	14.90	48.7
Rural parks, wildlife refuges	3.10	10.1
Cropland	5.97	19.5
Grassland pasture	1.23	4.0
Rural transportation areas, farmsteads and roads	<u>0.55</u>	<u>1.8</u>
Rural uses	25.75	84.1
Urban areas, industrial, defense and state institutions	1.94	6.3
All other uses	<u>2.92</u>	<u>9.6</u>
Urban-suburban	4.86	15.9
Total	30.61	100.0

Source: Frey, H. T., "Major Uses of Land in the United States," ESCS, Working Paper 34, August 1977.

After the Census of Agriculture was completed in 1974, Frey examined these data and made estimates of the major uses of land in each state as well as nationally. New York's land area is still primarily open country and forest -- about 84 percent. Urban-suburban areas, including all the unclassified uses of land, amount to only 16 percent of the total. Even if one added in all the roads, airports and transportation networks, the total is substantially less than 20 percent. The land lost from farming has primarily gone back to the woods and forest from whence it came, which is a special story in itself.

According to the Census of 1880 there were 17.7 million acres of cropland and pasture used for farming in New York State. Presumably the balance of the 22.9 million acres included in farms was in trees, brush, farmsteads and roads. By 1910 cropland and pasture amounted to about half of the state's 30.6 million acres. By 1974 cropland and pasture amounted to less than one quarter of the total (table 2). Much of the cropland and pasture that has gone out of the farmland total in the last 30 years remains in private holdings. As improved transportation and mechanization made the hill lands of New York less competitive with the "new" lands of the West, and horse power was no longer used for transportation, hay and pasture land dropped out of production. The best cropland was sold to other farms or rented out. Brush and trees appeared on the rest.

Definitions of Farms

Throughout our nation's history, census counts of farms have been designed to insure that almost any unit that might be considered a farm would be so counted. The definition used in 1850 set the pattern for subsequent years:

The returns of all farms or plantations, the produce of which amounts to one hundred dollars in value, are to be included in this schedule; but it is not intended to include the returns of small lots, owned or worked by persons following mechanical or other pursuits, where the productions are not one hundred dollars in value.

At this point in our history most people lived in the countryside or relatively small towns. Most had their own gardens. If they kept a cow, a pig and some chickens on a few acres it met the definition of a farm. Simply maintaining a family garden for home consumption did not qualify for status as a farm.

Over 100 years later the basic definitions used for the Censuses of Agriculture in 1959, 1964, and 1969 were quite similar to the one used in 1850:

Specifically a place was counted as a farm if it contained 10 acres or more and had an estimated value of \$50 or more for total value of products sold....If the place had less than 10 acres it was counted as a farm if it had an estimated total value of products sold of \$250 or more.

Essentially any unit of 10 acres or more that sold something agricultural was counted as a farm.

In 1974 a new definition was established by the Census and later adopted by the U.S.D.A. It eliminated some of the smallest of the small farms from the count:

A farm was defined to include all land in which agricultural operations were conducted at any time in the census year under the day-to-day control of an individual management, and from which \$1,000 or more of agricultural products were sold during the census year.

In this definition no acreage requirement was imposed. The two key criteria were (1) \$1,000 or more of sales and (2) operations under the control of one management.

An indication of the impact of what might be thought to be a relatively small change in the lower limit of what constitutes a farm is shown in table 3. Essentially the annual estimates for New York State made by the Crop Reporting Service indicate that 10,000 units had agricultural sales of less than \$1,000. In 1978 there is an 18 percent reduction in farm numbers when using the new definition to count farms in New York. Nationally this change in definition reduces farm numbers by 300,000 in 1978 or 11 percent.

Table 3. FARM NUMBERS AND ACRES: TWO DEFINITIONS
New York State, 1974-1979

Year	Old definition ^{1/}		New definition ^{2/}	
	Number of farms	All land in farms million acres	Number of farms	All land in farms million acres
1974	60,000	11.7	*	*
1975	59,000	11.5	49,000	10.7
1976	58,000	11.3	48,000	10.4
1977	57,000	11.1	47,000	10.2
1978	56,000	10.9	46,000	10.2
1979	*	*	45,000	10.0

* Not available.

^{1/} Farms are defined as operations under a single management. Places of less than 10 acres are included if the sales of agricultural products in a year were at least \$250. Places of 10 acres or more are included if the sales amounted to \$50 or more.

^{2/} Farms are defined as operations under a single management which had or would normally have annual sales of agricultural products of \$1,000 or more.

Source: New York Crop Reporting Service, New York Agricultural Statistics, 1978, Release 52, September 1979.

Size Distributions

Our national and state statistics for farms include everything from the many small units where part-time farming or retirement is central, to the very large commercial enterprises where farming is a full time employer. One way to get some perspective on these different units is to look at frequency distributions where farms are classified by some common measures of size. Two of the common classifications available in the Census are size measured in acres of land in farms and acres of harvested cropland. One other measure available in the census tabulation for the last 30 years is gross sales of agricultural products. This measure summarizes total output from the business in dollar terms and allows some comparison of size among livestock and crop operations. Over a period of years it has the disadvantage of incorporating inflation into the size classes based on sales.

Despite the fact that any single measure of size will not adequately represent true business activity and product, some study of the available size distribution data is necessary to get an understanding of farm structure as it exists today, how it evolved to its present position, and how it may continue to change in the future. Census data provide the key sources of information. Size distributions are not estimated annually on a state basis as they are by U.S.D.A. for the nation as a whole. National data will be used to supplement state data in examining gross sales per farm and family income by source.

Land in Farms

The most recent census tabulations available for New York are those for 1974. New data for 1978 have been collected but are yet to be published. The basic count of census farms in 1974 was 43,682. This differs from the U.S.D.A. estimate for 1975 of 49,000 by more than 10%. The census count in 1974 was based on a mail survey and missed an important number of farms in most states. Such cross checks as the number of farms reporting milk cows, and total milk sales in the census, when compared with actual milk sales compiled for the State provide the basis for a revised state estimate. Nevertheless the Census provides the best source of size distribution data available on a continuing basis.

Table 4. SIZE DISTRIBUTION, LAND IN FARMS
New York State, U. S. Census, 1974

Total acres in farm	Number of farms	Percent of total
1 - 9	2,257	5
10 - 49	5,093	12
50 - 69	2,903	6
70 - 99	<u>3,894</u>	<u>9</u>
Subtotal	14,147	32
100 - 139	5,378	12
140 - 179	4,360	10
180 - 219	3,828	9
220 - 259	<u>3,231</u>	<u>8</u>
Subtotal	16,797	39
260 - 499	9,234	21
500 - 999	2,987	7
1,000 - 1,999	450	1
2,000 and over	<u>67</u>	<u>*</u>
Subtotal	<u>12,738</u>	<u>29</u>
Total	43,682	100

* Less than one-half of one percent.

About one-third of the state's farms were of less than 100 acres in size in 1974 including the area in farmstead, cropland, forest, and waste. Another 39 percent of the farm units were between 100 and 260 acres. Each of these four classes in table 4 are of equal intervals -- 40 acres -- and farm numbers are quite evenly spread over this range. Farms with more than 260 acres accounted for 29 percent of the total or a little less than 13,000 farms. Most of these were likely to have been businesses where the principal occupation of the operator was farming. There were 517 farms with 1,000 or more acres of land operated as one unit. Included among these units would have been the institutional farms of various sorts as well as the largest commercial farms.

One way to get perspective on the distribution of farms by size classes, measured in terms of total acres, is to see how this distribution has changed through time. The substantial changes in the 35 years between 1940 and 1974 are shown in table 5. This is the period in history when total farm numbers declined most rapidly, particularly between 1950 and 1970.

Table 5. CHANGE IN SIZE DISTRIBUTION: ALL LAND IN FARMS
New York State, U. S. Census, 1940-1974

Total acres in farm	Census year				
	1940	1950	1959	1969	1974
	<u>percent of total farms</u>				
1 - 49	29	27	21	17	17
50 - 99	24	21	18	16	16
100 - 259	40	41	43	41	38
260 - 499	6	9	15	20	21
500 - 999	1	2	3	5	7
1,000 and over	*	*	*	<u>1</u>	<u>1</u>
Total	100	100	100	100	100
Number of farms	153,238	124,977	82,356	51,909	43,682

* Less than one-half of one percent.

More than half the units defined as farms were of less than 100 acres in 1940 compared with 33 percent in 1969 and 1974. Roughly 40 percent of the total units throughout the years were from 100 to 260 acres. There was an important shift in percentage terms to farms with 260 acres or more over the 1940-74 period.

The absolute number of farms with 260 acres or more has not changed much since 1940 (table 6). The number with 1,000 acres or more has steadily increased. So has the group with 500 to 1,000 acres. Undoubtedly the process of farm consolidation has shifted the land from the units with 260 acres or less into these larger units. The surprise is that the number of larger farms has not changed more over the time span. The big decrease in numbers occurred in the farms of less than 260 acres.

Table 6. CHANGES IN FARM NUMBERS: TOTAL ACRES
New York State, U. S. Census, 1940-1974

Total acres in farm	Census year				
	1940	1950	1959	1969	1974
	<u>number of farms</u>				
Under 260	142,315	111,425	67,350	38,790	30,944
260 - 499	9,557	11,397	12,245	10,181	9,234
500 - 999	1,196	1,824	2,415	2,548	2,987
1,000 and over	<u>170</u>	<u>231</u>	<u>346</u>	<u>390</u>	<u>517</u>
Total	153,238	124,977	82,356	51,909	43,682

Cropland Harvested

Total acres includes everything on the farm whether it is productive cropland, trees or open space. Information on harvested cropland provides a little more indication of actual size in terms of the capacity for crop production. Clearly, however, the production from an acre of irrigated vegetables or fruit is not equal to that from an acre of timothy hay even though they are counted equally in these tabulations.

Table 7. FARM REPORTING HARVESTED CROPLAND
New York State, U. S. Census, 1920-1974

Year	Farms reporting	Cropland harvested million acres
1920	(190,000)*	8.15
1930	154,900	6.96
1940	145,300	6.58
1950	114,000	5.79
1959	75,800	5.03
1964	62,000	4.74
1969	46,500	3.84
1974	41,100	4.16

* Estimated, not available in 1920.

Over the years since 1920 harvested cropland has been reduced by about 50 percent, from over 8 million acres in 1920 to over 4 million acres in 1974. In the same time span the number of farms reporting harvested cropland has been reduced to one fifth of the earlier number. The rate of decrease in cropland harvested during the 1970s has been much less than in earlier periods.

A distribution of farms according to the amount of cropland harvested in 1974 is presented in table 8. More than 17,000 of the units harvested less than 50 acres of crops with quite a uniform distribution over that size range. Most farms in this size range would not have enough business to provide the family's principal source of income unless they were very intensively cropped or were associated with poultry or intensive meat production.

A substantial proportion (24 percent) had from 50 to 99 acres of crops in 1974. With a mix of forages and grains on this number of acres, the typical situation would be a part-time farm. Specialized fruit and vegetable farms of this size could be full-time operations. The smallest commercial dairy farms with 20 to 30 cows would also be in this group.

Farms with 100 or more acres of cropland harvested would typically be commercial operations where the operator was a full-time farmer. There were more than 14,000 such units in 1974. The majority had between 100 and 500 acres of crops and made up 33 percent of all the census farms.

Table 8. SIZE DISTRIBUTION: CROPLAND HARVESTED
New York State, U. S. Census, 1974

Acres harvested	Number of farms reporting	Percent of total
1 - 9	4,264	10
10 - 19	3,569	9
20 - 29	3,480	9
30 - 49	<u>5,777</u>	<u>14</u>
Subtotal	17,090	42
50 - 99	9,741	24
100 - 199	8,914	22
200 - 499	4,674	11
500 - 999	593	1
1,000 - 1,999	98	*
2,000 and over	<u>11</u>	<u>*</u>
Subtotal	<u>24,031</u>	<u>58</u>
Total	41,121	100

* Less than one-half of one percent.

About 700 farms had 500 or more acres of crops in 1974; and 109 of these harvested crops from 1,000 or more acres. There were no farms in New York that compared in size to the very large operations involving thousands of acres like those in parts of Hawaii, California or Arizona.

Substantial changes in technology have occurred in the years since 1950. Methods of tillage, planting, weed control and harvest involve very different chemicals, practices and machines. The mechanization and crop husbandry of 1950 is hard to remember in 1980. Some of these changes should be reflected in the number of acres of crops per farm over these years.

Table 9. CHANGES IN FARM NUMBERS: ACRES HARVESTED
New York State, U. S. Census, 1950-1974

Acres harvested	Number of farms reporting acres harvested			
	1950	1959	1969	1974
Under 100	100,272	59,911	32,840	26,831
100 - 199	11,798	12,869	9,675	8,914
200 - 499	1,844	2,856	3,640	4,674
500 - 999	73	174	323	593
1,000 and over	<u>16</u>	<u>20</u>	<u>40</u>	<u>109</u>
Subtotal	13,731	15,919	13,678	14,290
Total	114,003	75,830	46,518	41,121

Actual numbers of farms in each of the categories with 100 or more acres of cropland harvested is presented in table 9. The total number of farms with larger acreages of cropland harvested remained quite stable between 1950 and 1974. The shift to larger acreages per farm amongst these units is also clear. It is also quite logical to assume that important components of the cropland that were part of farms with less than 100 acres of cropland in 1950 are now part of the larger farms listed in 1974.

One other way to look at changes in size distribution for the most recent census years is to examine changes in the total acres of harvested cropland located in each of a set of size classes through time. In 1959 about 75 percent of the state's harvested cropland was located on farms with 100 to 500 acres^{1/} of land of all kinds. By 1974 this percentage had dropped to 64 percent. There was an important shift of cropland harvested to somewhat larger farms.

Table 10. HARVESTED CROPLAND BY SIZE OF FARM
New York State, U. S. Census, 1959-1974

Total acres in farm	Total acres, harvested cropland			
	1959	1964	1969	1974
	million acres			
Under 100	.57	.40	.28	.27
100 - 259	2.27	1.88	1.34	1.20
260 - 499	1.53	1.60	1.36	1.45
500 - 999	.52	.66	.64	.89
1,000 - 1,999	.12	.15	.16	.27
2,000 and over	.02	.05	.05	.08
Total	5.03	4.74	3.83	4.16

One of the reasons for presenting this table is to point out that the largest farms, those with 1,000 acres or more of land area, still make up only a modest share of the total. In 1959 only 3 percent of the harvested crops came from these largest units; in 1974 it had increased to a little more than 8 percent. Clearly a higher proportion of the total crops harvested are now on farms with 500 to 1,000 acres or more, but it was still about 21 percent of the total in 1974. By comparison to the rest of the country, concentration of production on large farms in New York is very small.

Gross Farm Sales

In recent years the most widely quoted measure of farm size has been gross farm sales. It is a single measure of farm output. It tells in one number how much was sold from the business a given year. It is quite similar to the way other businesses measure size or volume. Unfortunately because of inflation it is hard to make valid comparisons across time with this measure. Ten thousand dollars of sales in 1964 is roughly equal to \$20,000 of sales in 1977 because of commodity price changes.

^{1/} No tabulation was published by the Census where total acres of harvested cropland were listed for each size group using harvested cropland as the basis for the distribution.

In 1974 using the new definition for a farm where the lower limit was \$1,000 of sales, 27 percent of the units had sales of \$2,500 or less. If one argues that a farm must sell at least \$10,000 of products or more to be anything other than a part-time farm, then 44 percent of the 43,700 farms in 1974 are certainly in this category.

Table 11. CHANGES IN FARM SIZE: GROSS FARM SALES
New York State, U. S. Census, 1959-1974

Gross farm sales	Number of farms			
	1959	1964	1969	1974
Under \$2,500	28,272	21,648	17,462	11,916
2,500 - 4,999	11,183	7,424	4,816	3,474
5,000 - 9,999	17,323	11,147	5,272	3,994
10,000 - 19,999	16,707	14,544	8,164	5,044
20,000 - 39,999	6,658	8,375	10,481	7,808
40,000 - 99,999	> 2,111	2,671	4,669	8,761
100,000 and over		647	1,002	2,647
Abnormal*	102	54	43	38
Total	82,356	66,510	51,909	43,682
Producer Price Index (1967=100)	94.8	94.7	106.5	160.1

* Abnormal farms include institutional, experimental and research farms and Indian reservations.

It is not easy to establish a set of averages or clear definitions to separate part-time farms from commercial operations. A farm with gross sales of \$40,000 or more has the potential to support a family from that business. The question about a lower limit arises for the farms with gross sales between \$10,000 and \$40,000 where 30 percent of all farm units in New York were found in 1974. With the price of milk at \$8.34 per cwt. and an average of 10,000 pounds of milk sold per cow, gross milk sales amount to \$824 per cow. With some additional livestock sales and crops one could roughly equate \$10,000 of sales to 10 cows, \$20,000 to 20 cows, etc. on specialized dairy farms.

If \$20,000 of gross sales is set as the lower limit for classification as a commercial farm there were a little less than 20,000 such units in 1974.^{2/} Allowing for some under reporting by the Census there were probably at least 20,000 such farms. Of this number between 2,600 and 2,700 had sales of \$100,000 or more in 1974. A further breakdown of these largest farms is as follows:

<u>Sales</u>	<u>Number</u>
\$100,000 - 199,999	1,896
200,000 - 499,999	605
500,000 and over	146
Total	2,647

^{2/} If a lower limit of \$15,000 were set the total number of "commercial" farms increases from 19,216 to 21,675 farms.

The 146 farms with sales of one half million dollars or more accounted for less than one percent of the commercial farm units and about five percent of gross farm sales in New York.

Comparisons of Sales Between Years

Comparisons between years using gross farm sales as a measure of size is difficult. Both technology and price have changed over the years. A simple examination of farm numbers in each of the sales categories overstates the shifts from smaller to larger size groups (table 11).

Between 1959 and 1974 increases in producer prices for the economy as a whole were modest at first but picked up rapidly in the early 1970s. Thus the index of producer prices in 1959 and 1964 were the same. In this time span relatively large numbers of small or part-time farms ceased agricultural production (table 11). The number of farms selling \$10,000 or more of agricultural products held quite steady; 25,476 such farms in 1959 and 26,237 in 1964. At the same time there was an important shift to increased output and greater sales among these farms.

There was a 12.5 percent increase in the Producer Price Index between 1964 and 1969. Farm numbers decreased again, most of the decrease coming from the small, part-time farms. The number with sales of \$10,000 or more decreased from 26,237 to 24,316. The important shifts, partly because of changes in price level but mostly because of greater output, were the moves of more farms into the sales categories with \$20,000 and over.

With a 50 percent increase in the price level in 5 years between 1969 and 1974, as well as a change in census definition for a farm, the next comparison is more complex. An effort was made to convert the original distributions of farms for 1969 and a much earlier census year, 1950, into gross farm sales categories based on 1974 prices.^{3/}

The results in table 12 suggest two kinds of changes occurring between 1969 and 1974. Among the small, part-time farms there is a continuing shift toward less production for sale. Simultaneously the larger, more commercial units continue to increase in size and physical output. There were 20,741 farms in 1969 with \$20,000 of sales or more (1974 prices). This number had decreased to 19,216 farms by 1974 but an important share of those remaining had shifted up one size group, no doubt in part by recombination of resources from some of the units dropping out of commercial production during those five years.

The comparisons between 1950 and 1974 are more complex. While prices doubled in those 25 years, and hence the construction of comparable gross sales categories were quite easily made, the results do not reflect all that happened. The proportion of inputs purchased by farmers, the substitution of machinery and technology for labor, and the reduction in margins over that 25 year span was substantial. Thus, many of the farms included in the \$10,000-19,999 (1974 dollars)

^{3/} The procedures used to convert the original 1969 distribution of farms into a new one inflated into 1974 prices is described in Appendix Table A. Similar procedures were used to convert the basic data for 1950 into comparable form.

category in 1950 would have been small, full-time commercial units. Nevertheless, more than 80,000 of the census farms as listed in 1950 had sales of less than \$10,000 (1974 dollars). All these were essentially part-time farms, of which approximately 30,000 would not have qualified for counting as farms using the 1974 census definition.

Table 12. REDISTRIBUTION OF FARM NUMBERS BY GROSS FARMS SALES
IN 1974 CONSTANT DOLLARS
New York State, Adjusted Census Data, 1950, 1969, 1974

Gross farm sales, 1974 dollars	Number of farms		
	1950	1969	1974
Producer Price Index (1967=100)	81.8	106.5	160.1
Under \$1,000	(30,037)	(7,909)	(*)
\$1,000 - 2,499	14,049	7,183	11,916
2,500 - 4,999	14,789	4,710	3,474
5,000 - 9,999	22,793	4,447	3,994
10,000 - 19,999	26,761	6,161	5,044
20,000 - 39,999	10,262	9,830	7,808
40,000 - 99,999	> 6,135	9,434	8,761
100,000 and over		1,477	2,647
Abnormal	151	43	38
Total farms*	94,940	44,000	43,682

* The 1974 census definition counts as farms those with sales of \$1,000 or more.

In a manner similar to the distributions made for land in farms (table 6) and harvested cropland (table 9), there is surprising stability in the numbers of farms with gross farm sales of \$20,000 or more as adjusted in table 12. Even in 1950 there were as many as 16,400 farms with businesses of this size. Changes in mechanization and technology have encouraged shifts to units with greater volume as shown in all these tables. The number of such farms is much more stable than would have been expected even though the proportion that these farms make up of the total number of farms counted by the U.S.D.A. and the Census has become larger and larger as the smallest units have dropped out of production.

Herd Size on Dairy Farms

The most important type of farming in New York State is dairying. In most years sales of milk and dairy animals accounts for about 60 percent of cash receipts generated by farming in the state. Thus changes in herd size over time provide another means of looking at changes in size of farm.

Substantial efforts have been made to follow changes in the structure of dairy farms and to generate estimates of changes in supply before they occur. A major study of supply response was initiated in 1960 by Conneman with direct

support from the Administrator of the New York-New Jersey Milk Marketing Area and cooperation of all other markets in the state. The series presented in table 13 was developed from an annual survey made in 1960 through 1968 and updated each year since then.

Table 13. CHANGES IN HERD SIZE ON NEW YORK DAIRY FARMS--1960-1980

Cows per farm	Actual				Projected
	1960	1965	1970	1975	1980
	<u>number of farms</u>				
Under 20	12,620	5,650	2,800	800	250
20 - 29	11,020	8,050	3,800	2,000	1,000
30 - 39	8,040	7,350	5,500	4,000	2,000
40 - 49	4,420	4,400	4,500	3,000	2,500
50 - 59	1,980	2,400	2,200	2,500	2,500
60 - 99	1,720	2,050	2,400	3,075	3,000
100 - 149	260	400	450	625	800
150 - 199	80	150	225	325	450
200 and over	<u>40</u>	<u>50</u>	<u>125</u>	<u>175</u>	<u>250</u>
Total Farms	40,180	30,500	22,000	16,500	13,000
Total Cows	1,200,000	1,100,000	950,000	905,000	840,000

Source: Original research of George J. Conneman, Toward the Year 1985, Special Cornell Series Number 15, New York State College of Agriculture and Life Sciences, Cornell University, 1977.

More than half of the dairy herds in the state had less than 30 cows in 1960; less than 12 percent will in 1980. Specialization in dairying has increased. A typical dairy farm in 1960 had 25 or 30 cows. In 1980 it will more likely have from 50 to 70 cows. A similar indication of change in average size is provided by the annual dairy farm management business summaries prepared by the Department of Agricultural Economics in cooperation with farmers and extension agents. In 1958 average herd size for participants in the summary was 33 cows. In 1978 it was 71. In that same time span, man equivalent per farm increased from 1.8 to 2.4 and crop acres harvested from 104 to 217.^{4/}

The changes described in table 13 are substantial. A large number of farms stopped shipping milk in these 20 years. Some changed to other types of farming. The majority sold their cows and some of their resources to other dairymen. Total milk production in 1978 was 10.5 billion pounds from about 900,000 cows in comparison to 10.1 billion pounds in 1960 from 1,250,000 cows.^{5/} Most of the drop-outs occurred on farms with less than 40 cows.

^{4/} Bratton, C. A., "Dairy Farm Management Business Summary, New York, 1978," Department of Agricultural Economics, A. E. Res. 79-6, pp. 50.

^{5/} New York Crop Reporting Service, New York Agricultural Statistics, 1978, Release 52, September 1979.

Business Organization

One of the continuing concerns raised in questions about control of farm resources is the role of non-farm, family corporations in the structure of farming. Direct information on this topic is limited. A recent study by the Economics, Statistics and Cooperative Services, U.S.D.A. has summarized preliminary information for 1978 from a sample of 37,000 owners of privately held land.^{6/} Regional information was provided for the Northeastern States as well as nationally. Non-family partnerships and non-family corporations held title to 3.9 percent of the farm land in the region as a whole, compared to 4.3 percent nationally.

Table 14. FORM OF BUSINESS ORGANIZATION: FARMS WITH SALES OVER \$2,500
New York State, U. S. Census Data, 1974

Total acres in farm	Form of Business Organization			Total
	Individual or family	Partnership	Corporations and others	
		number of farms		
1 - 99	6,432	354	346	7,132
100 - 259	11,942	720	202	12,864
260 - 499	7,542	1,058	174	8,774
500 - 999	2,191	575	156	2,992
1,000 - 1,999	268	102	73	443
2,000 and over	29	13	21	63
Total farms	28,404	2,822	972	32,198
Total acres	6,828,000	1,064,000	393,000	8,285,000

The form of business organization was summarized for all farms selling \$2,500 or more of farm products in 1974 (table 14). Individuals and families operated 88 percent of the businesses as proprietorships on 82 percent of the land area used by all these groups. Partnerships of all kinds were the next most important business form with 9 percent of the business units and 13 percent of the land area. Corporations, both family owned and all others as well as 45 miscellaneous arrangements made up the remaining 972 businesses in farming. They accounted for 3 percent of the businesses and 5 percent of the land area.

The distribution by size of holding provides a way to respond to the common assumption that larger blocks of land tend to be operated by corporations or partnerships. A substantial proportion of both the corporations and partnerships were operating units of less than 500 acres. Most of these, perhaps 90 percent, were family business arrangements. Of the 506 farm businesses of more than 1,000 acres, 41 percent were operated by partnerships or corporations. The proportion of these which were controlled by corporate interests outside farming was not tabulated, but is not large.

^{6/} ESCS, U.S.D.A., "Who Owns the Land?", ESCS 70, September 1979, 21 pp.

Off-Farm Income and Farm Numbers

Families have combined income obtained from non-farm activities with farming from the beginnings of settlement in the new world. Part-time farming is part of our pioneer heritage. The great need is to recognize this reality, accept it as natural and then make our national and state statistics as understandable as possible in making policy for people who live in rural areas and for those whose principal livelihood comes from farming.

An effort has been made annually to estimate total family income of individuals living on farms of all kinds by size classes nationally. Results for the most recent year for the United States are shown in table 15.

Table 15. OFF-FARM AND NET FARM INCOME PER FAMILY
Averages by Size Class, U. S., 1978

Gross farm sales	Percent of total farm families	Off-farm income	Net farm income	Total family income	Percent of family income from farming
<u>average per farm family</u>					
Under \$2,500	35	\$17,205	\$ 1,738	\$18,943	9
2,500 - 4,999	11	16,151	1,905	18,056	11
5,000 - 9,999	11	13,573	3,281	16,854	19
10,000 - 19,999	12	10,068	5,917	15,985	37
20,000 - 39,999	12	7,802	11,745	19,547	60
40,000 - 99,999	13	6,846	21,636	28,482	76
100,000 and over	6	10,850	52,337	63,187	83
All farms	100	12,829	10,037	22,866	44

Source: ESCS, Farm Income Statistics, Statistical Bulletin 627, October 1979.

As gross farm sales increase, the average family income within that size class which comes from farming also increases. At one end of the scale farms with \$2,500 of sales or less get an average of 9 percent of family income from farming. At the other end of the spectrum the largest farms get most of their family income (83 percent) from agriculture. One interesting insight is the relative similarity of average family incomes in the first 5 size classes. The lowest average is found in the group of families where between \$10,000 and \$20,000 of farm products are sold. It is easy to speculate that a fair number of families in this group may be among the poorest of the poor, struggling on limited resource farms with quite small contributions coming in from outside. But the majority in this class as well have substantial off-farm earnings.

Comparable data to that shown in table 15 for New York State are not available. In the 1974 Census questionnaire, a set of questions were asked about off-farm income and its sources. About half of the families responding shared this kind of information. A summary of these results are compared with the U.S.D.A. statistics for farms of the same sizes in table 16. In general off-farm income in New York provided a little more income per family in each of the size classes than nationally. The patterns of the two distributions were very similar. One can assume that it is somewhat easier to find off-farm jobs in this state to combine with part-time farming than in most regions.

Table 16. OFF-FARM INCOME PER FARM FAMILY
New York Census and ESCS National Estimate, 1974

Size of farm, gross farm sales	U. S. Census for New York		ESCS ^{2/} national estimate off-farm income
	Farms reporting	Average ^{1/} off-farm income	
Under \$2,500	\$ *	\$ *	\$12,411
\$2,500 - 4,999	2,969	12,128	11,566
\$5,000 - 9,999	2,885	10,649	9,640
\$10,000 - 19,999	3,133	9,100	7,444
\$20,000 - 39,999	4,150	6,555	5,512
\$40,000 - 99,999	4,352	5,588	4,997
\$100,000 and over	1,125	8,572	8,060

^{1/} Average obtained by dividing total off-farm income by number of farms so reporting.

^{2/} Source: ESCS Statistical Bulletin 627, October 1979.

One central point that can be made using the data in tables 15 and 16 is that part-time farms get most of their family income and much of their motivation for decisions from non-farm sources. To include all the farms with gross farm sales below \$10,000 for example in state or national totals or averages may confuse rather than help citizens think about specific policy issues related to farming. It is particularly important to think about two important groups:

- (1) families who operate farms as their primary source of income
- (2) families who carry on some farming on a part-time or recreational basis.

The emphasis on families and business operations is intentional because this is usually where policy debate is centered. Statistics should reflect as accurately as possible what has occurred and is now occurring for these two important groups.

Summary Observations

1. Most of the agricultural output in New York State during the 1970s has come from about 20,000 commercial farms where the principal business of the operator is farming.
2. Part-time farms are a very important component of the number of farms in New York as listed in the official statistics. They make up a smaller part of the total than 20 years ago but are still very important in terms of the people involved, the land area covered and political decisions.
3. Corporations and partnerships are important business arrangements increasingly used by families engaged in farming in New York.
4. Non-farm family corporations have some holdings in the state. Most are connected in some way to a processing or food retailing business. Until now, these units have had very small impacts on farm structure in this state.

5. Most of the reduction in numbers of farms in the official statistics during the past 30 years has been in part-time units. Much of this change has been gradual as some member of the family has continued to live on the farm but work full-time elsewhere.
6. There has been surprising stability in the numbers of farms with 100 or more acres of cropland harvested or the equivalent of \$20,000 or more of gross farm sales in current dollars.

Appendix Table A

REDISTRIBUTION OF FARM NUMBERS FOR 1969,
BASED ON GROSS FARM SALES, REVALUED TO 1974 DOLLARS

Gross farm sales ^{a/}	Number of farms ^{a/}	Percentage to new ^{b/} class	Gross farm sales, 1974 (1969 equivalent) ^{c/}	Number of farms
Under \$1,000 ^{d/}	11,298	70-30	Under \$1,000	7,909
\$1,000 - 1,499	2,949	100	(Under 667)	
1,500 - 1,999	2,113	40-60	\$1,000-2,499	7,183
2,000 - 2,499	1,791	100	(667-1,666)	
			2,500-4,999	4,710
2,500 - 4,999	4,127	40-60	(1,667-3,333)	
5,000 - 7,499	2,816	70-30	5,000-9,999	4,447
7,500 - 9,999	2,456	100	(3,334-6,666)	
			(10,000-19,999)	6,161
10,000 - 14,999	4,086	70-30	(6,667-13,333)	
15,000 - 19,999	4,078	100	20,000-39,999	9,830
20,000 - 29,999	6,465	70-30	(13,334-26,666)	
30,000 - 39,999	4,016	100	40,000-99,999	9,434
			(26,667-66,666)	
40,000 - 59,999	3,035	100		
60,000 - 79,999	1,109	40-60	100,000-199,999	1,477
80,000 - 99,999	525	100	(67,667-133,333)	
			200,000 and over	715
100,000 - 199,999	718	40-60	(133,334 and over)	
200,000 and over	284	100		
Abnormal	43	100		43
Total	51,909			51,909

a/ Detailed distribution of gross farm sales and farm numbers from 1969 census of agriculture.

b/ In redistributing farm numbers from the original frequency distribution to a new equivalent to 1974 dollars it was necessary to divide the class interval into two parts. This column indicates the percentages from the original distribution allocated to each of the new classes. (For \$1,500-1,999 with 2,113 farms, 40 percent or 845 farms were allocated to the 1974 interval of \$1,000-2,499 and 60 percent or 1,268 farms to the \$2,500-4,999 interval for 1974).

c/ Two class intervals are listed in each case. The equivalent 1974 census interval for gross farm sales in 1974 dollars is listed first. Underneath is the equivalent interval in 1969 dollars which is two-thirds of the 1974 numbers. The Producer Price Index (1967=100) was 160.1 in 1974 and 106.5 in 1969, almost exactly a 50 percent increase in prices in 5 years.

d/ A difference in the definition for a farm between 1969 and 1974 must be accounted for. A minimum of \$250 of sales or \$50 of sales and 10 acres of land was the base in 1969. This lower limit was raised to \$1,000 in 1974. It is assumed that about 70 percent of the observations in the first class interval in 1969 would not have qualified in 1974 under the new definition.