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**PATTERNS OF LIVESTOCK PRODUCTION AND SLAUGHTER
IN THE UNITED STATES: AN OVERVIEW**

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INTRODUCTION

The material presented here introduces the scope of the livestock industry as a source of income to U.S. agriculture, and identifies some regional changes that have occurred with the passage of time. Although some information is provided for the poultry, dairy, and sheep industries, the focus of most of the material is on beef cattle and swine. After some introductory graphics about inventory cycles and the location and concentration of production, the discussion identifies changes that occurred in state and regional totals for cattle and hogs during the period 1960-1990. These changes are summarized in graphics that conclude the presentation.

SCOPE OF THE U.S. LIVESTOCK INDUSTRY

Twentieth Century cash receipts to farm marketings appear in Table 1. When these receipts are presented as percentages (columns 5-6) it is apparent that crops and livestock have contributed about equally to U.S. farm income for many years. (Individual states depart substantially from this pattern, as subsequent data will show.) The last five columns of Table 1 show cash receipts as a percent of total receipts (not as a percent of livestock

* This information set is one of a series used as teaching aids in AEC 522, Economics of the Livestock-Meat Industry, a course in the College of Agriculture at The Ohio State University. The monograph also has been distributed to County Agents and Extension Specialists in Ohio. Single copies may be obtained by requesting ESO 1934, Department of Agricultural Economics and Rural Sociology, The Ohio State University Columbus 43210

** Professor, Department of Agricultural Economics and Rural Sociology. The author is grateful to Professors Lynn Forster and Allan Lines for comments and suggestions concerning sources and interpretations, to Neal Blue for regression packages, to Maurice Klein for data retrieval, and to Janice DiCarolis and Karlene Robison for graphics and typing.

Table 1: UNITED STATES: Cash Receipts from Farm Marketings of Crops, Livestock, and Livestock Products, Excluding Government Payments, United States, Selected Years, 1920-1992

(Millions dollars)

Year	Cash Receipts			Percent of Cash Receipts 1/						
	Total	Crops	All L.S. and L.S. Products 2/	All Crops	All L.S. and L.S. Products 2/	Cattle and Calves 3/	Hogs and Pigs	Sheep and Lambs 4/	Dairy Products	Poultry and Eggs
1920	12,600	6,644	5,956	52.7	47.3	12.1	11.0	2.2	12.1	9.1
1925	11,021	5,545	5,476	50.3	49.7	11.4	12.0	2.8	13.7	9.4
1930	9,055	3,868	5,187	42.7	57.3	13.1	12.5	2.6	17.8	11.0
1935	7,120	2,977	4,143	41.8	58.2	14.9	9.6	3.1	18.4	11.3
1940	8,382	3,469	4,913	41.4	58.6	16.4	10.0	3.4	18.1	9.9
1945	21,663	9,655	12,008	44.6	55.4	15.3	10.4	2.1	13.9	13.0
1950	28,461	12,336	16,125	43.3	56.7	20.0	11.3	1.8	13.1	10.0
1955	29,490	13,523	15,967	45.9	54.1	17.8	9.1	1.4	14.3	10.9
1960	34,012	15,023	18,989	44.2	55.8	21.7	8.4	1.3	14.0	9.7
1965	39,365	17,479	21,886	44.4	55.6	22.7	9.2	1.1	12.8	9.1
1970	50,509	20,977	29,532	41.5	58.5	27.0	8.9	0.8	12.9	8.4
1975	88,902	45,813	43,089	51.5	48.5	19.7	8.9	0.5	11.2	7.7
1980	139,737	71,746	67,991	51.3	48.7	22.8	6.4	0.4	11.7	6.6
1981	141,616	72,465	69,151	51.2	48.8	20.9	6.9	0.4	12.8	7.0
1982	142,559	72,303	70,256	50.7	49.3	20.9	7.5	0.4	12.8	6.7
1983	136,603	67,165	69,438	49.2	50.8	21.1	7.2	0.3	13.7	7.3
1984	142,856	69,889	72,967	48.9	51.1	21.4	6.8	0.4	12.6	8.6
1985	144,115	74,293	69,822	51.5	48.5	20.1	6.3	0.3	12.5	7.8
1986	135,360	63,807	71,553	47.1	52.9	21.3	7.2	0.4	13.1	9.4
1987	137,844	61,851	75,993	44.9	55.1	24.4	7.5	0.4	12.9	8.4
1988	151,101	71,663	79,438	47.4	52.6	24.4	6.1	0.3	11.7	8.5
1989	161,027	76,879	84,148	47.4	52.6	22.9	5.9	0.3	12.0	9.5
1990	169,920	79,999	89,921	47.1	52.9	23.5	6.8	0.2	11.9	9.0
1991	167,290	80,547	86,743	48.1	51.9	23.7	6.6	0.2	10.8	9.0

1/ Components will not add to total because miscellaneous income sources are excluded. 2/ Livestock and livestock products. 3/ Includes dairy cattle. 4/ Includes wool through 1984.

Source: Since 1950, Economic Indicators of the Farm Sector: National Financial Summary, Economic Research Service, U.S. Department of Agriculture, November 1992.

receipts), but these will not add up to the livestock total because miscellaneous enterprises have been omitted. Notice that the dairy column is for dairy product sales only, and that dairy livestock sales are included with all cattle and calves. The increasing importance of cattle and calves as an income source reflects both the rise in U.S. beef consumption and the sell-off of dairy cows as a consequence of rapidly increasing per-cow productivity in the dairy industry. Dairy product sales have remained fairly constant throughout the century excepting a substantial but temporary rise during Depression and WW II years. Productivity improvements underlie the comparative decline in hogs as an income source also; per capita consumption of pork in the U.S. has not declined (see ESO-1935). Much the same can be said of the poultry industry; although its contribution as an income source remains unchanged, productivity gains have fueled substantial gains in U.S. poultry consumption (ESO-1935).

LOCATION OF U.S. LIVESTOCK PRODUCTION

Figures 1 through 10 offer a graphic summary of production locations and provide some insight into the relationship between livestock populations and feed availability. Beef cows, for example, consume only small amounts of concentrate; hence their production is as widespread as the availability of pasture and hay. The heavy hay harvest in Figure 1 is associated primarily with dairy cows (see Figure 4). Heavy concentrations of beef cows in the South, unaccompanied by heavy hay harvests, occur because the milder climate accommodates year-round grazing (Figure 2). Notice how heavy concentrations of hay, silage, and milk cows occur together in Figures 1, 3, and 4. Also, see the strong geographic connection between corn and hogs in Cornbelt states (Figures 5 and 6).

FIGURE 1

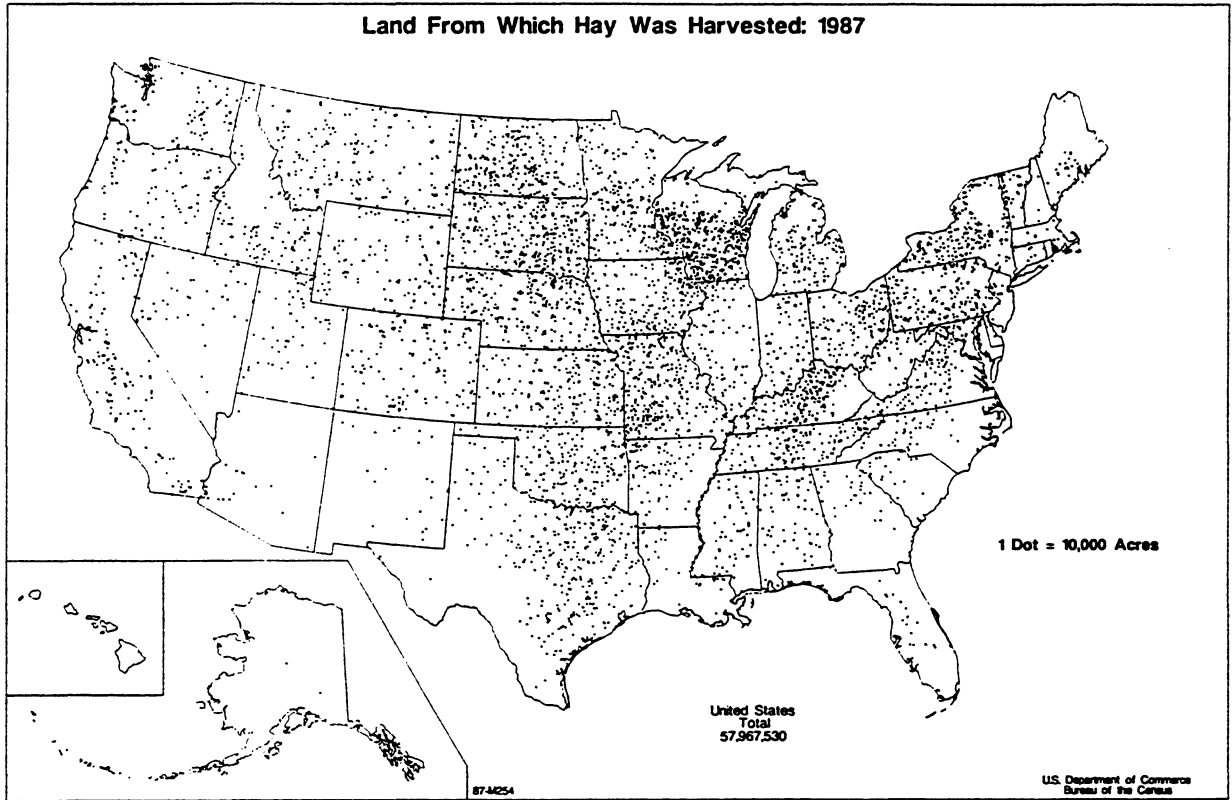


FIGURE 2

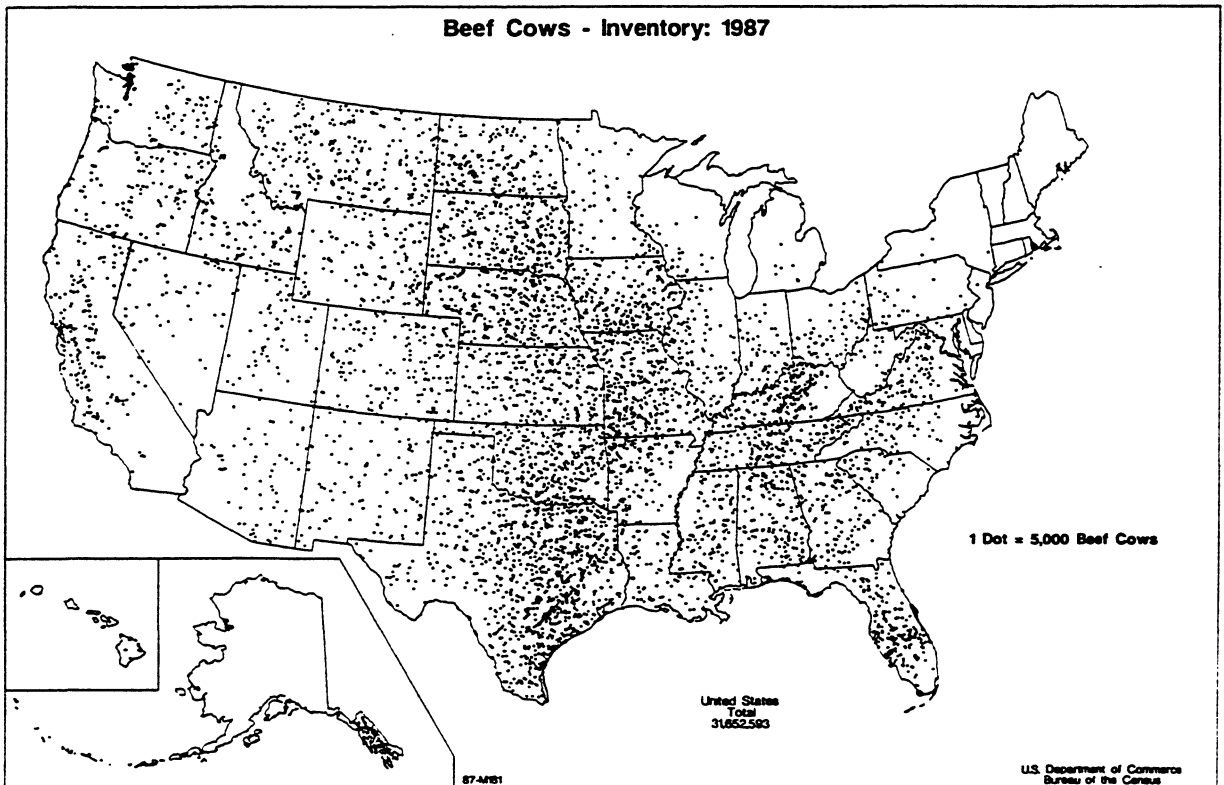


FIGURE 3

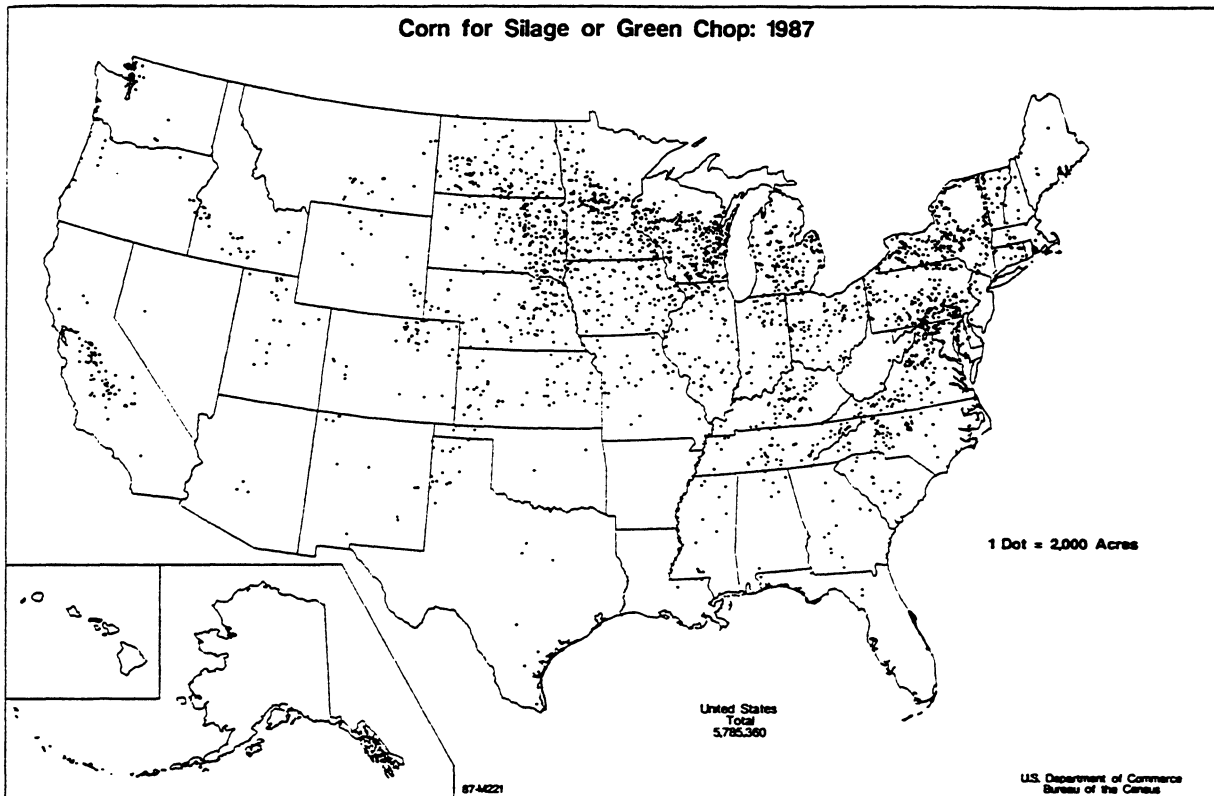


FIGURE 4

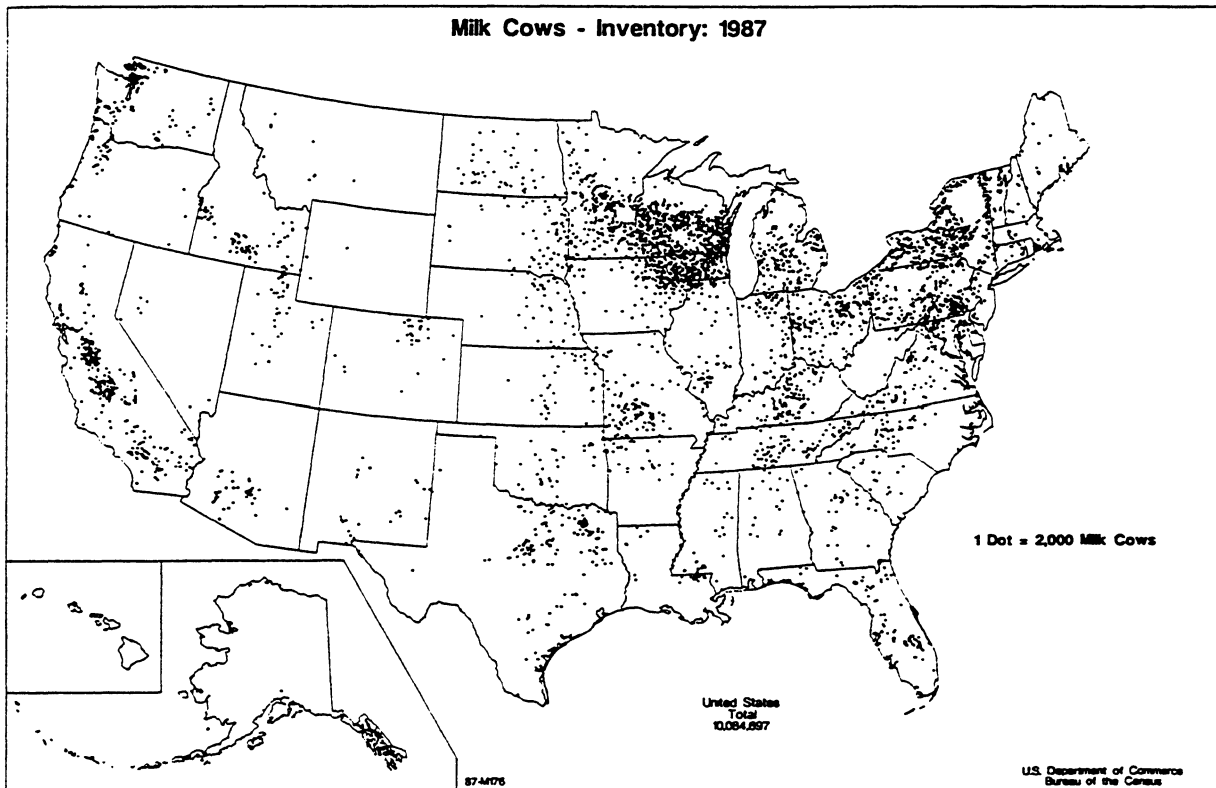


FIGURE 5

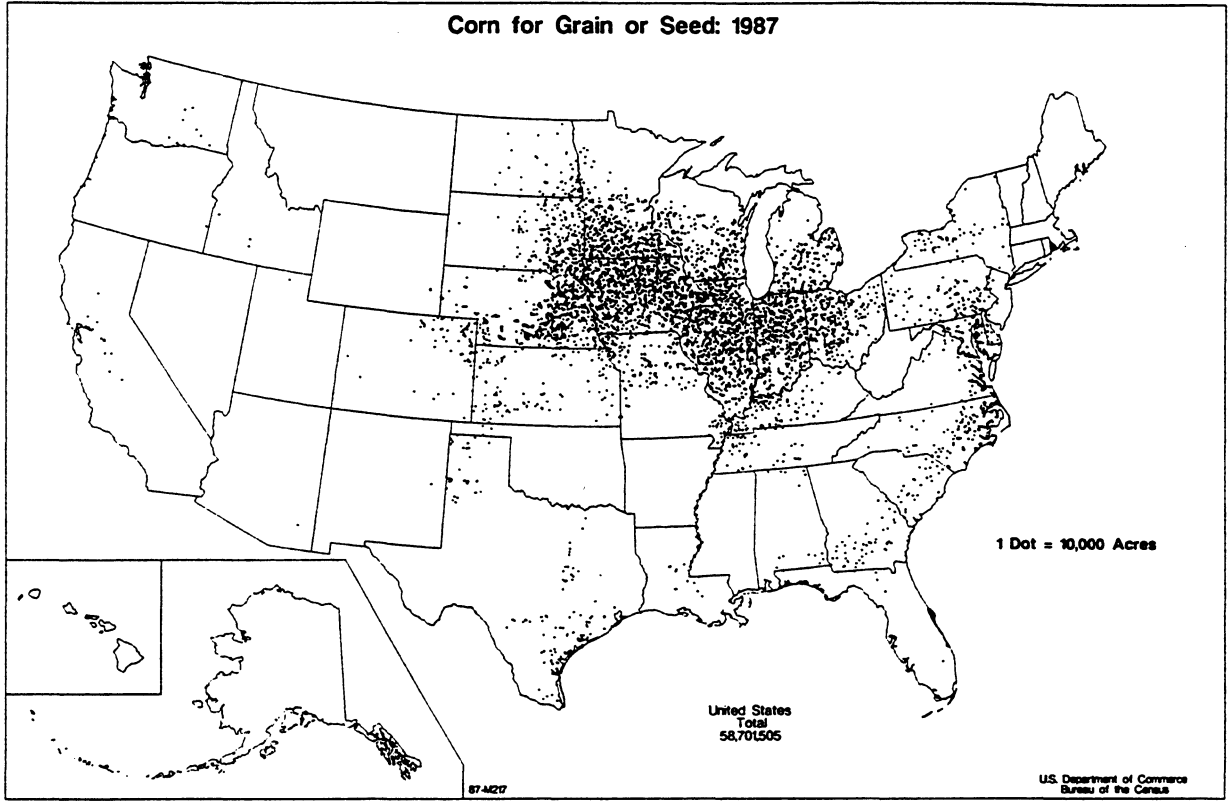


FIGURE 6

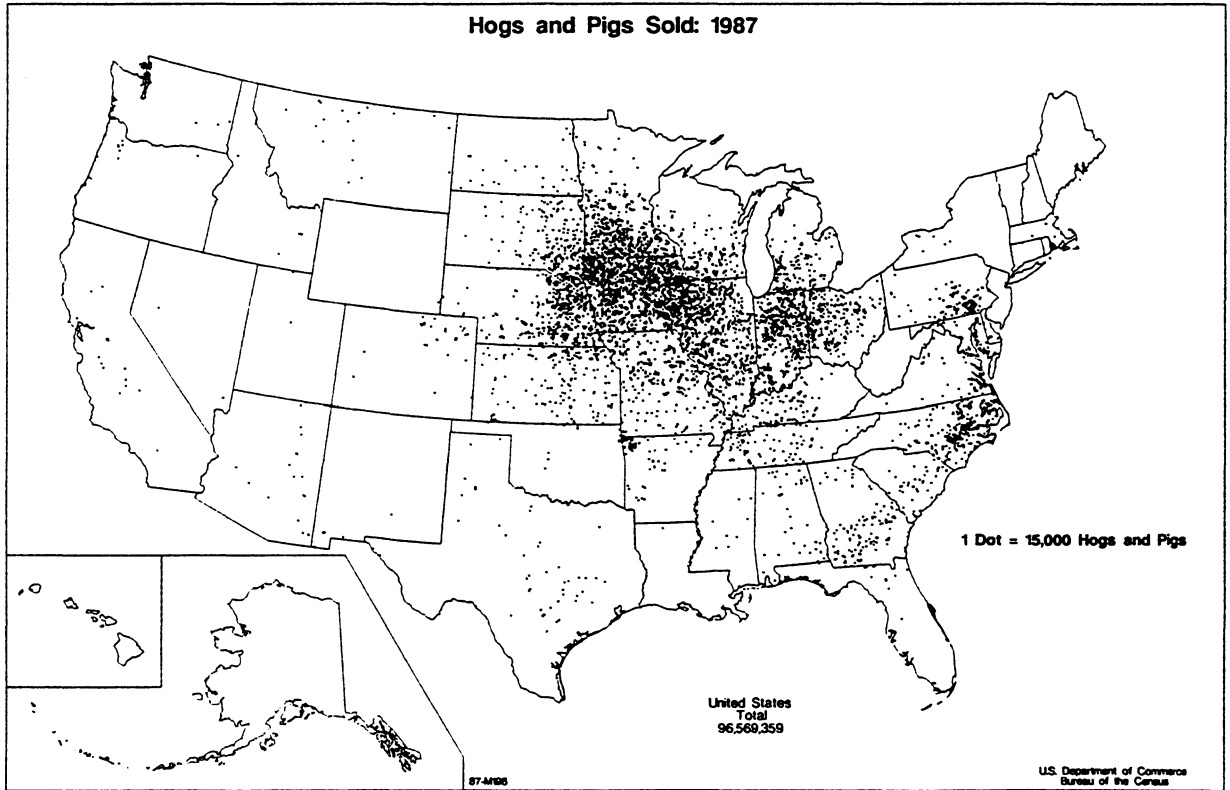


FIGURE 7

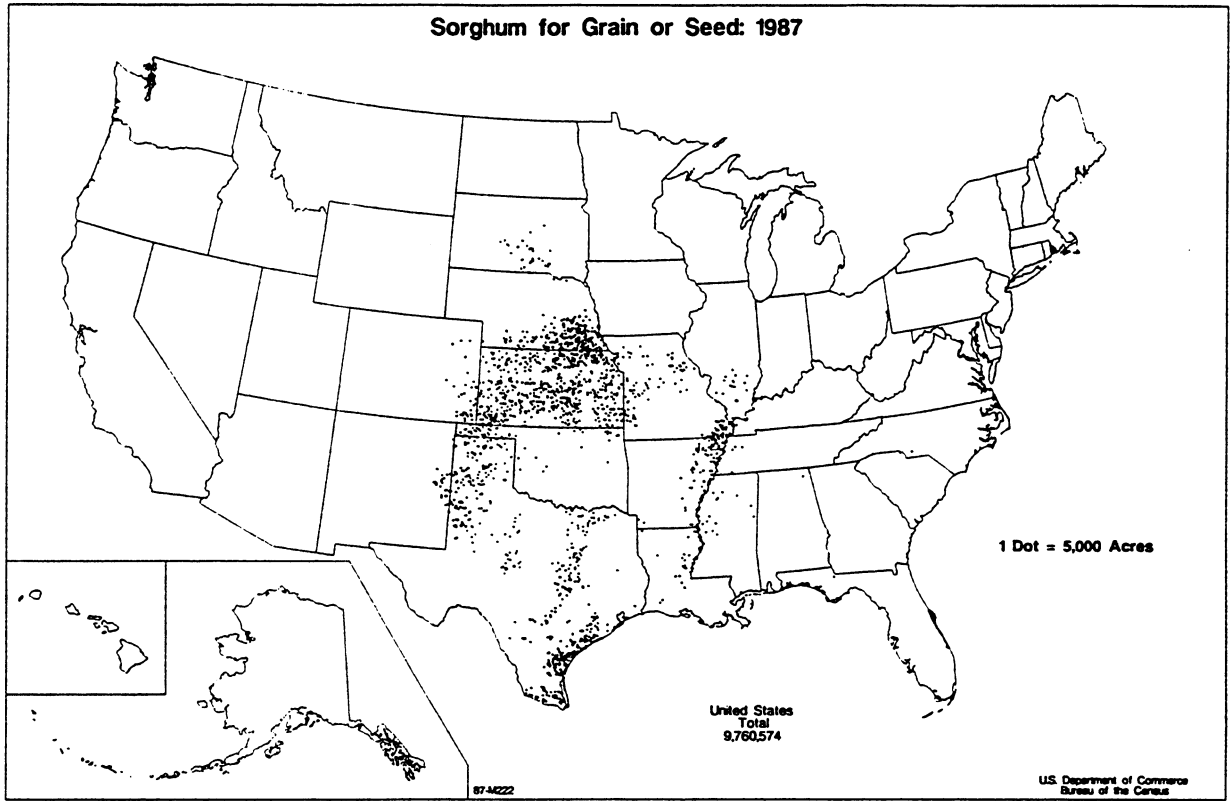


FIGURE 8

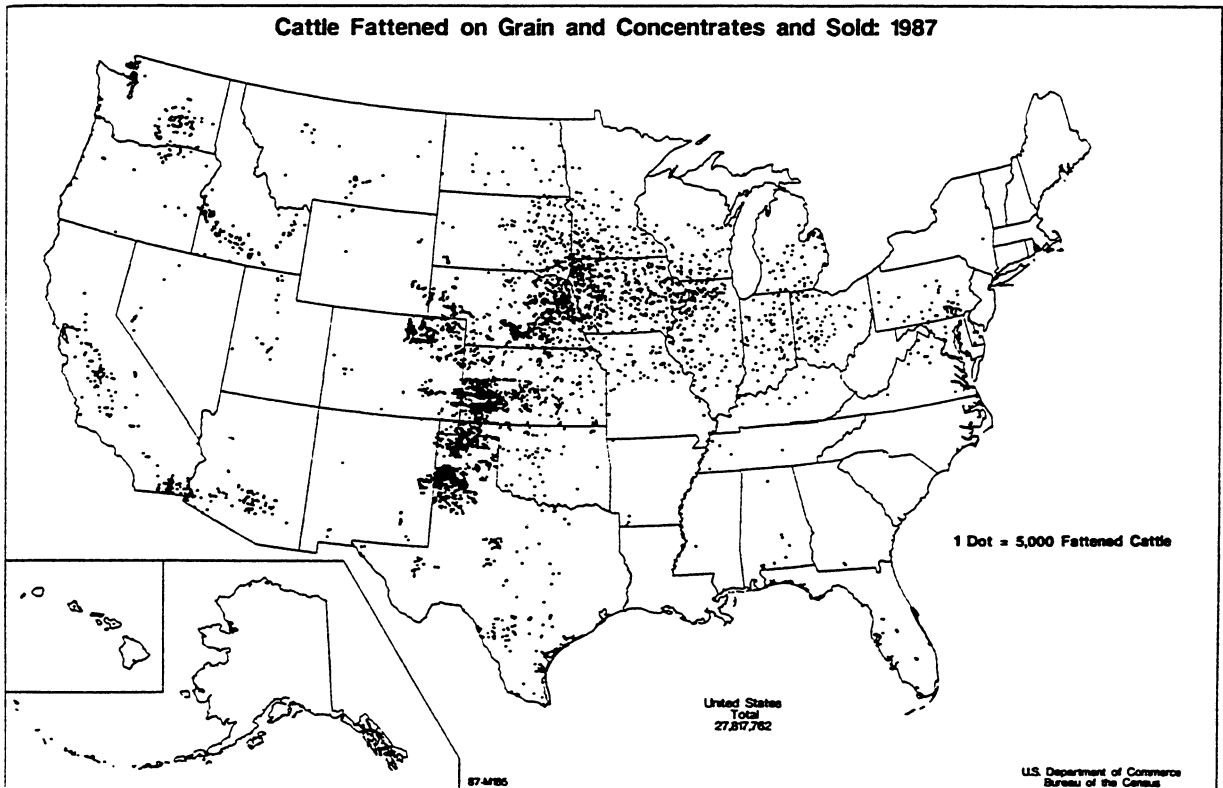


FIGURE 9

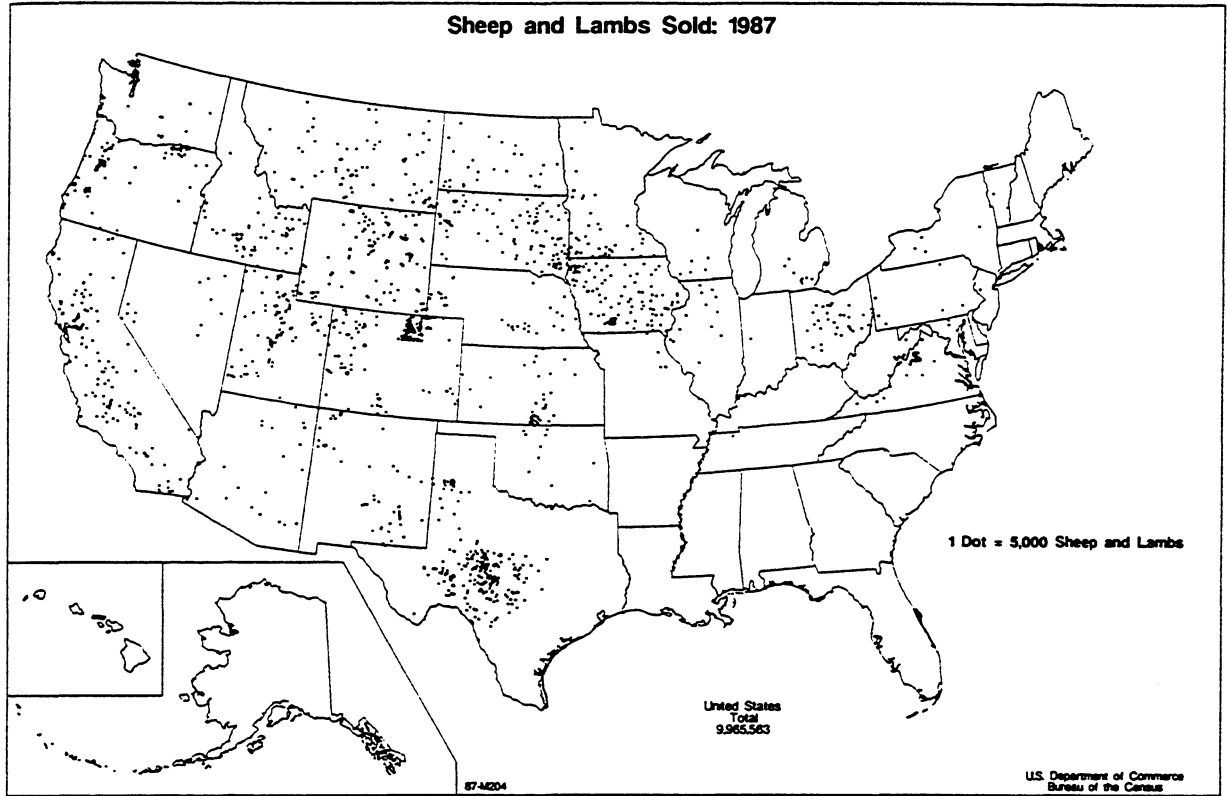
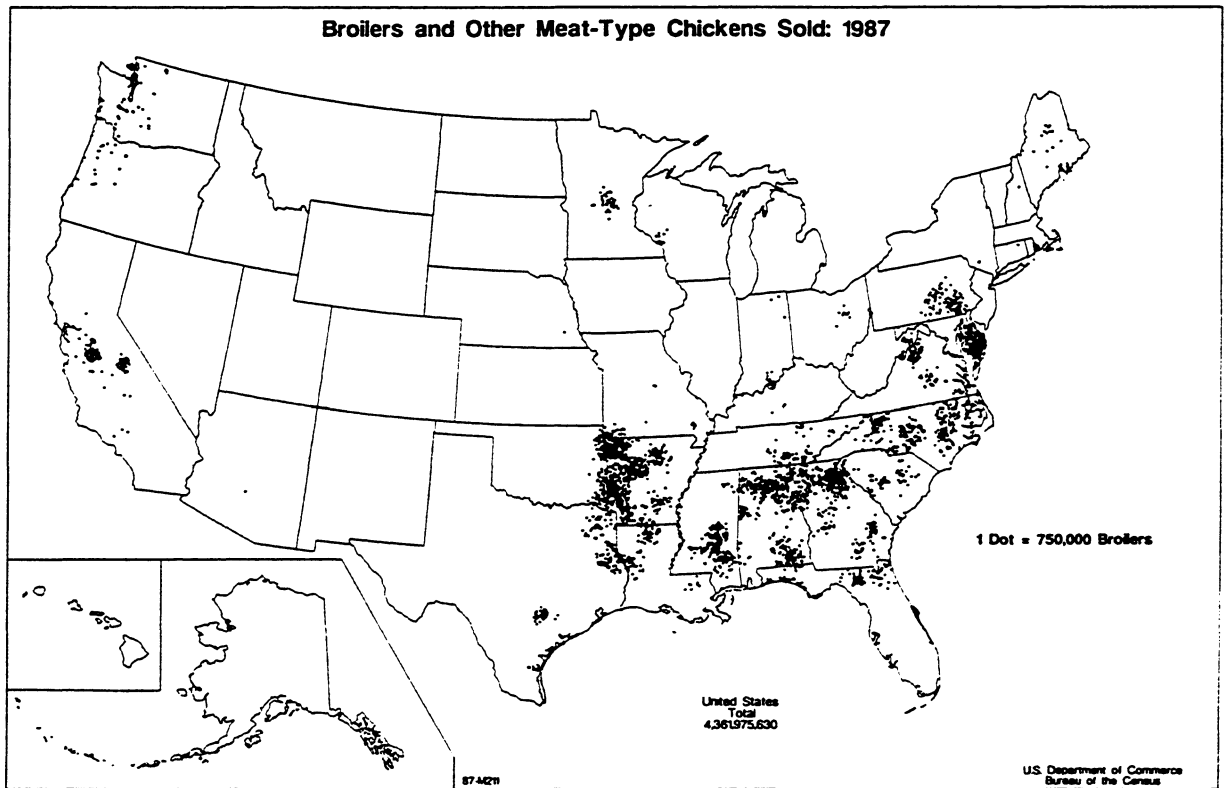


FIGURE 10



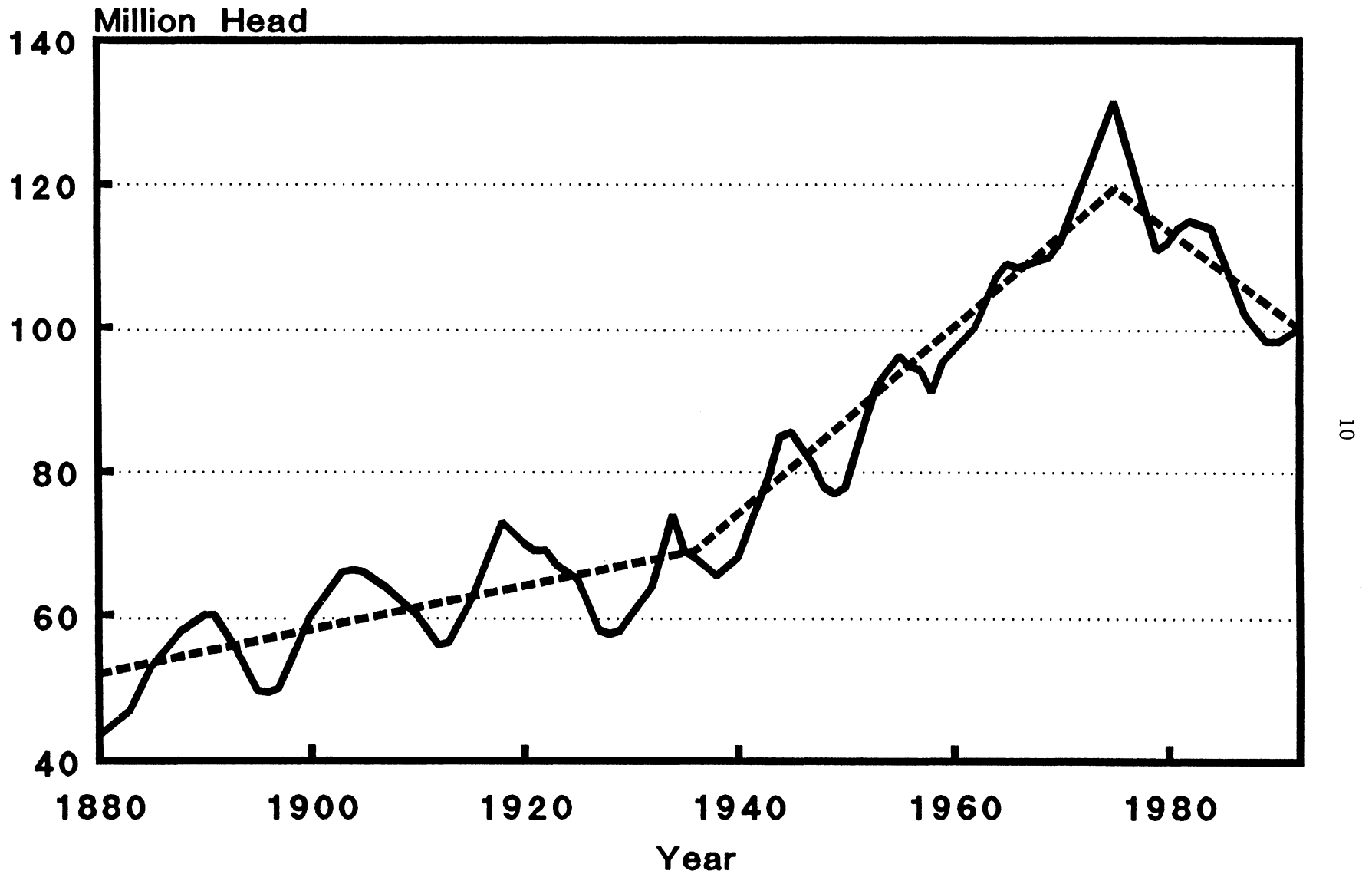
Fed cattle are finished on either corn or grain sorghum (and supplements), so feedlot locations tend to coincide with locations where corn and sorghum are produced (see Figures 5, 7, and 8). Sheep and broiler locations appear in Figures 9 and 10. As we shall see in pages that follow, these production locations tend over time to shift gradually rather than to remain constant.

CATTLE AND HOG INVENTORY CYCLES

The U.S. Department of Agriculture (USDA) regularly reports livestock populations on farms as a beginning inventory on January 1 (December 1 for hogs) of each year. Cattle and hog inventory numbers for more than a century appear in Figures 11 and 12. Trend lines fitted to these numbers show that the annual inventory of hogs has not changed much since WW I, but that cattle numbers increased for nearly a century (and quite rapidly after WW II) before turning down about 1976.

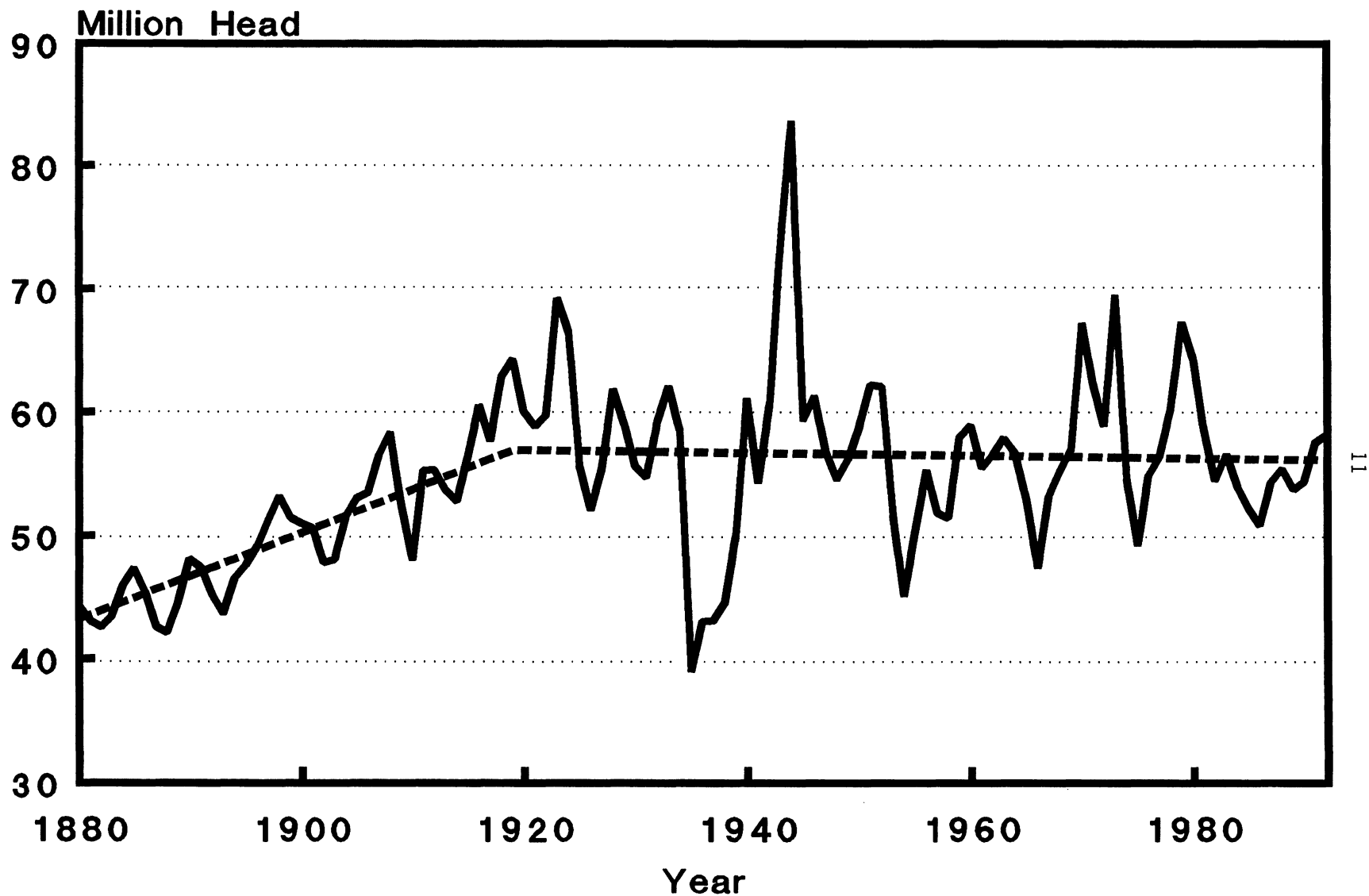
Inventory numbers for both cattle and hogs trace out a pattern that is distinctly cyclical. As producers (acting in response to price expectations for the future) decide to expand or contract their own livestock production, the physiological constraints of gestation and growth impose natural limits on their expansion plans. If the plan is to increase cattle production, for example, the first move is to withhold heifers from market to add to the breeding herd. Then gestation takes nine months, and the new calf will probably be at least a year old before it is slaughtered. So two years elapsed between the decision to increase production and the sale of the finished animal that replaced the heifer that was withheld, and one more steer or heifer (another year) will represent the first increase in production. Decisions to reduce herd size have similar lags. Over time, a 1-day popula-

**FIGURE 11: CATTLE: JANUARY 1 INVENTORY,
UNITED STATES, 1880-1992**



Source: Trend regressed on USDA inventory data.

**FIGURE 12: HOGS: JANUARY 1* INVENTORY,
UNITED STATES, 1880-1992**



* January 1 through 1969. December 1 thereafter.
Source: Trend regressed on USDA inventory data.

tion count like the January 1 inventory then records the cyclical consequence of these lags. Cattle cycles usually last about 10-14 years; hog cycles are shorter. Both cattle and hog cycles have tended to become smaller due to changes over the years that include younger marketing ages, multiple farrowings, and quicker decisions by fewer and larger production units.

Inventory numbers and cycles are useful mainly as a census and as an indicator of likely future developments in numbers and prices. Annual livestock production, however, is better indicated by livestock marketings, and annual meat production is best obtained from the record of livestock slaughter (see ESO-1935). But it will be useful to keep these inventory cycles in mind as we examine state and regional data on marketings and slaughter in pages that follow for the years 1960, 1975, and 1990. While these years may serve some convenient comparative purpose, were they good choices for making accurate comparisons of livestock numbers if the three years represent dissimilar points on cattle or hog cycles and therefore are not directly comparable?

SPECIALIZATION AND CONCENTRATION OF PRODUCTION

There are now only about one-third as many farms in the U.S. as there were early in the century (Table 2). Most people understand that this means existing farms have been consolidated into larger units, rather than that land has been switched over to nonfarm uses. What is less well known is that this consolidation into larger units has been accompanied by a strong trend toward specialization by individual farms on one or a few enterprises rather than on many, as was common many years ago. This means, for example, that the number of farms producing cattle or hogs has dropped even more rapidly than has the total number of farms. In 1900, 82 percent of all farms had cattle and 75

Table 2: INVENTORY: Number of Farms, Farms with Cattle and Hogs, Head per Farm, and Percentage Changes, United States, Selected Years, 1900-1991

Census Year	Thousand U.S. Farms	Cattle and Calves				Hogs and Pigs			
		Thousand Farms With Cattle	Percent of all Farms	Percent of 1900	Head per Farm	Thousand Farms With Hogs	Percent of all Farms	Percent of 1900	Head Per Farm
1900	5,740	4,730	82.4	100	14.3	4,335	75.5	100	14.5
1910	6,366	5,285	83.0	112	11.7	4,352	68.3	100	13.4
1920	6,454	5,358	83.0	113	12.5	4,851	75.2	112	12.2
1930	6,295	4,803	76.3	102	13.3	3,535	56.2	82	15.9
1935	6,812	5,481	80.5	116	12.5	3,971	58.3	92	9.4
1940	6,102	4,843	79.4	102	12.6	3,767	61.7	87	9.0
1945	5,859	4,689	80.0	99	17.6	3,314	56.6	76	14.1
1950	5,388	4,064	75.4	86	18.9	3,012	55.9	69	18.5
1959	3,711	2,672	72.0	56	34.6	1,847	49.8	43	36.8
1970	2,944	1,934	65.7	41	58.1	871	29.6	20	77.2
1980	2,428	1,623	66.8	34	68.5	667	27.5	15	96.7
1985	2,293	1,494	65.2	32	73.5	389	17.0	9	134.6
1990	2,140	1,289	60.2	27	76.2	275	12.9	6	197.7
1991	2,105	1,246	59.2	26	79.3	256	12.2	6	212.4

Source: Before 1970, Census of Agriculture, U.S. Department of Commerce. For 1970 and after, National Agricultural Statistics Service: for land in farms, Farm Numbers, Sp Sy 3, selected years; for Cattle and Hogs, MtAn 2 and 4, selected years.

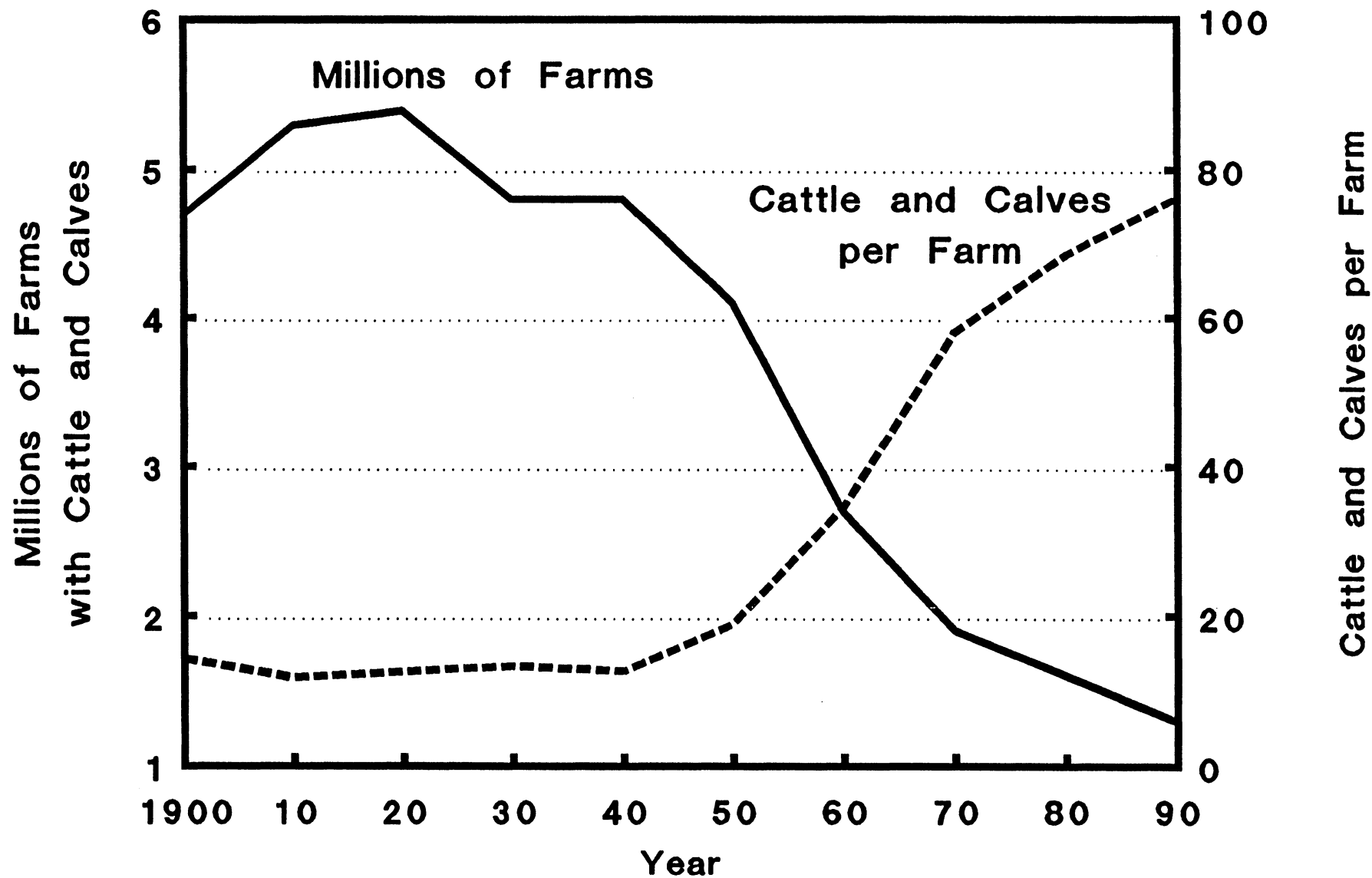
percent had hogs, but by 1991 only 59 percent of all remaining farms had cattle on them, and only 12 percent of them still raised hogs (Table 2). All the other farms that once raised cattle or hogs have abandoned them in favor of other specialties that look more attractive. Probably the most common alternative land use has become cash grain farming, and perhaps the most common alternative income-producer to replace livestock production has become nonfarm jobs to support the family unit that still comprises the farm household. (Certainly this has been the case in Ohio. See ESO-1980).

Clearly, the decline in number of farms producing cattle or hogs means that livestock populations on the production units that remain is rising rapidly. Most of this increase has occurred in the past few decades (Figures 13 and 14). Moreover, any measure of change based on average numbers per farm greatly understates the very startling shift toward the concentration of production of very large numbers of livestock by a few very large operations.

The number of very large producers of beef cattle and swine is much lower than is suggested by averages shown in Figures 13 and 14. Notice in Table 3 that, whereas almost 240,000 farm feedlots (less than 1,000 head capacity) accounted for nearly two-thirds of all fed cattle production in 1962, nearly 200,000 of those lots were gone by 1991, replaced by sharply expanded production in fewer than 2,000 commercial feedlots that accounted for nearly 85 percent of all fed cattle production.

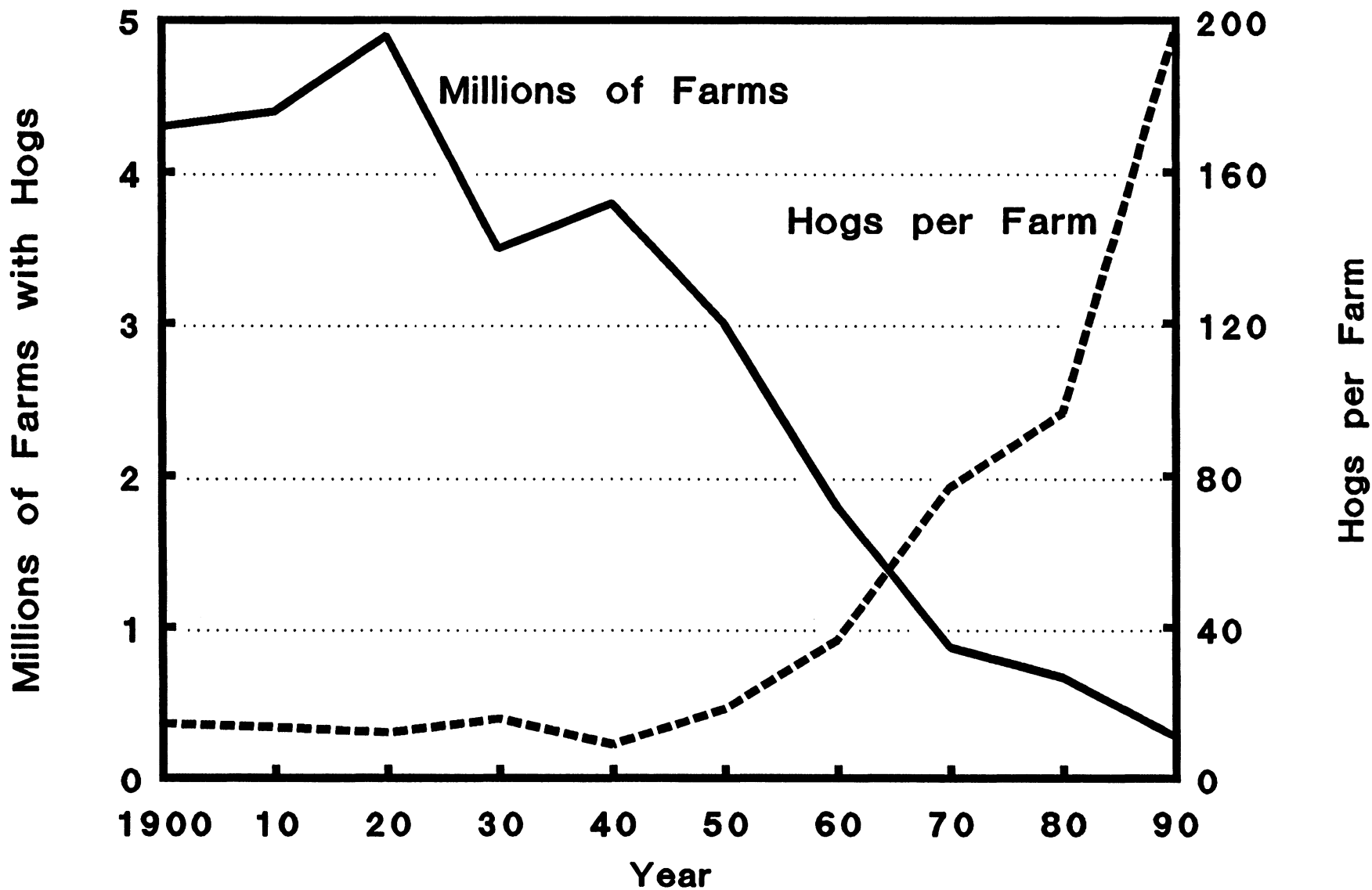
Table 4 summarizes similar concentrations of swine production: by 1991, 44 percent of hog production occurred on only 4.3 percent, or about 11,000 of the 256,000 hog operations reported in Table 2, and these units each produced over a thousand hogs. These numbers still understate the extent of concentra-

FIGURE 13: FARMS WITH CATTLE AND CALVES, AND CATTLE AND CALVES PER FARM, UNITED STATES, SELECTED YEARS, 1900-1990



Source: Table 2.

FIGURE 14: FARMS WITH HOGS AND HOGS PER FARM, UNITED STATES, SELECTED YEARS, 1900-1990



Source: Table 2.

Table 3: Number of Cattle Feedlots and Fed Cattle Marketings by Size of Feedlots, Principal Feeding, States, U.S. 1962-1988

Year	Feedlots More Than 1,000 Capacity			Feedlots Less Than 1,000 Capacity		
	Number of Lots	Cattle Marketed (1,000 Head)	Pct. of All Cattle Marketed	Number of Lots	Cattle Marketed (1,000 Head)	Pct. of All Cattle Marketed
1962	1,517	5,572	36.5	234,646	9,689	63.5
1964 ^a	1,668	7,050	38.9	223,071	11,094	61.1
1966	1,921	9,026	44.3	215,296	11,336	55.7
1968	2,080	10,823	47.0	206,516	12,217	53.0
1969 ^b	2,181	12,688	51.5	198,200	11,957	48.5
1970 ^c	2,242	13,675	55.0	181,508	11,205	45.0
1972	2,107	16,536	61.7	152,429	10,275	38.3
1974	1,922	15,069	64.6	135,815	8,261	35.4
1976	1,796	16,244	67.2	130,739	7,926	32.8
1978	1,902	18,103	67.9	131,904	8,542	32.1
1980	2,148	16,803	72.4	111,178	6,406	27.6
1981	2,241	6,152	73.3	102,168	6,152	26.7
1982	1,935	16,795	77.0	64,822	5,004	23.0
1984 ^d	1,712	18,247	80.9	56,885	4,293	19.1
1986	1,931	18,742	82.1	42,661	4,094	17.9
1988	1,646	19,643	83.7	45,516	3,816	16.3
1990	1,622	19,015	84.4	44,519	3,511	15.6
1991	1,701	19,001	84.9	45,150	3,387	15.1

^a Two estimating series report marketings before and after 1964. The early series reports 1962-64 marketings at 14.361, 15.314, and 17.704 million head. The later series reports 1964 at 18.144 million head, 6.27 percent higher. The figures were adjusted by 6.27 pct. in older series to 15.261, 16.274, and 18.144 million head.

^b Marketings are reported for 32 states through 1968. In 1969, marketings from feedlots with more than 1,000 head were reported for 22 states. Figures for 1969 reported here include 1968 data for 10 states excluded from 1969 report. In the 22 states reported, feedlots with more than 1,000 head marketed 51.8percent of total.

^c Twenty-three states only for 1970 and subsequent years.

^d Thirteen states only for 1984-1988.

Sources: For Fed Cattle Marketings in feedlots with less than 1,000 head in 1962-63, annual supplements to Livestock and Meat Statistics, Statistical Bulletin 333, SRS, USDA, July 1963. For all other 1962-66 data, Number of Cattle feedlots by Six Groups, SRS-14, Crop Reporting Board, SRS, USDA, January issues 1969-71. For 1972-1976 data, Livestock and Meat Statistics, annual supplements. For 1978 data, Cattle on Feed, Crop Reporting Board, ESCS, USDA, January 1979. For 1982-83 data, Livestock and Meat Statistics, 1983, Statistical Bulletin 715. For 1984 and later data, Cattle on Feed, Crop Reporting Board, SRS, USDA, January issues, 1986-1992.

Table 4: Hogs and Pigs: Percent of Hog Operations and Inventory, by Size Groups, United States, Selected Years, 1979 - 1991

Year	Operations Having				Inventory per Operation			
	1-99 Head	100- 499 Head	500- 999 Head	1000+ Head	1-99 Head	100- 499 Head	500- 999 Head	1000+ Head
	- - - Percent - - -				- - - Percent - - -			
1970	NA ¹	NA	NA	-	NA	NA	NA	-
1979	76.8	19.0	4.2	-	16.5	43.1	40.4	-
1980	77.3	18.5	4.2	-	15.8	41.9	42.3	-
1985	73.5	19.3	6.9	-	10.3	34.0	55.7	-
1986	72.4	20.5	7.1	-	9.6	34.1	56.3	-
1987	70.1	22.3	5.0	2.6	8.8	34.2	22.1	34.9
1988	67.9	23.1	6.0	3.0	8.4	32.0	23.5	36.1
1989	66.2	24.2	6.1	3.5	7.1	30.4	23.2	39.3
1990	64.7	25.0	6.5	3.8	6.5	28.0	23.5	42.0
1991	62.0	26.0	7.7	4.3	5.5	26.5	24.0	44.0

¹ NA = Not available.

Source: Hogs and Pigs, NASS, USDA, December issues through 1986; January issues thereafter.

tion in the hog industry. Perhaps 20 percent of all production already comes from units with annual sales of more than 5,000 (or 10,000 ?) head.

It has become popular to speak of this transformation as the industrialization of livestock production. It began more than a generation ago with broiler production, spread through the 1960s and 1970s into fed cattle production, and now promises to transform U.S. swine production. One corporation headquartered in North Carolina presently produces somewhat less than two percent of all slaughter hogs in the country. The number seems modest until arithmetic startles us into the realization that 50 such operations could almost account for all production. Industrialization seems an appropriate description compared to early days when it took hundreds of thousands of farms to realize the same results that are accomplished by just a few large units today.

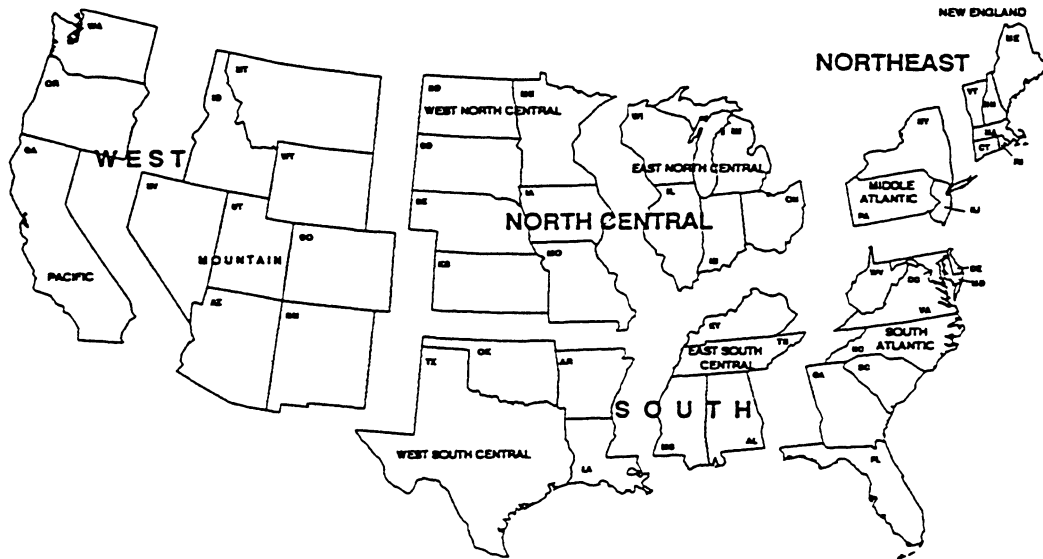
Realistically, we should not suppose that industrialization will eliminate opportunities for individual producers. Although only 55 firms now account for 98 percent of all broiler production, this is integrated production that involves thousands of individual operators producing birds on contract at the many locations shown in Figure 10. Indeed, when broiler integration methods begin to spread through the swine industry, many contracted operators will regard their individual prospects as better than they had been as uncontracted producers.

REGIONAL DIVISIONS OF THE UNITED STATES

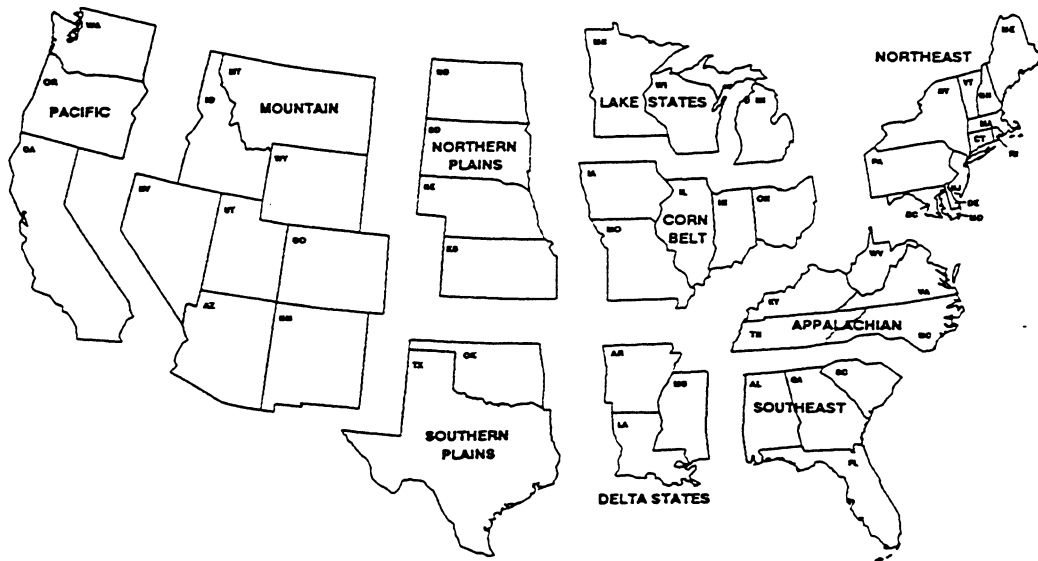
State and regional data distributed by the federal government usually employ one of the regional divisions shown in Figure 15. Note that the regions developed by the USDA divide the states into regions that have much in common as producers of agricultural products, the Northern Plains for small

FIGURE 15: REGIONAL DIVISIONS OF THE UNITED STATES

USDC CENSUS REGIONS



USDA FARM PRODUCTION REGIONS



grains, for example, the Lake States where dairy production is dominant, or the Cornbelt (see Figures 1-10). With the exception of Maryland and Delaware, which the Census puts in the South and the USDA puts in the Northeast, these differing regional groups can be consolidated into the same four major regions: Northeast, South, North Central, and West. Where these consolidations appear in pages that follow, Maryland and Delaware have been included in the Northeast.

In Tables 5 - 14, regional comparisons of 1960, 1975, and 1990 are made for cattle and hog inventory, marketings, and slaughter. Inventory represents the beginning annual population. Marketings and slaughter represent total output for the year. The choice of years is arbitrary, representing a recent year and preceding years at evenly spaced intervals. Regional totals in each table are the sum of leading states plus 'all other' states, which lumps into one category a number of states whose regional contributions are modest. For the reader wanting more information for states not shown separately, each section begins with a 1991 table without subtotals that offers the most recent published information for every state. These 1991 tables, therefore, allow the curious reader to calculate regional 1991 data to compare to the 1990 information shown with 1960 and 1975.

REGIONAL DISTRIBUTION OF CATTLE AND HOG INVENTORY

Table 5 helps to explain why some states are lumped into an 'all other' category in tables that follow. Figure 15 helps to sort individual states into regional groups. Table 6, for example, separately identifies only Pennsylvania among hog producing states in the Northeast. Figure 15 guides the reader to search through Table 5 for other states in the Northeast (but unmentioned in Table 6). The search discloses that the inventory for all

Table 5: INVENTORY: Thousands of U.S. Cattle and Calves and Sheep and Lambs on Farms, January 1, 1991, and Thousands of U.S. Hogs and Pigs on Farms, December 1, 1990

State	Cattle & Calves	Sheep & Lambs	Hogs & Pigs	State	Cattle & Calves	Sheep & Lambs	Hogs & Pigs
Alabama	1,800	12	400	Montana	2,330	683	185
Alaska	8	3	1	Nebraska	6,000	165	4,300
Arizona	840	250	110	Nevada	540	99	14
Arkansas	1,690	-	760	New Hampshire	46	11	9
California	4,600	1,015	195	New Jersey	70	11	25
Colorado	2,750	710	300	New Mexico	1,340	462	27
Connecticut	74	10	7	New York	1,550	92	103
Delaware	28	-	31	North Carolina	950	17	2,800
Florida	1,900	-	130	North Dakota	1,700	222	265
Georgia	1,420	-	1,100	Ohio	1,580	305	2,000
Hawaii	214	-	36	Oklahoma	5,550	135	215
Idaho	1,740	272	60	Oregon	1,480	466	80
Illinois	2,000	145	5,700	Pennsylvania	1,820	140	920
Indiana	1,225	100	4,400	Rhode Island	7	-	5
Iowa	4,700	465	13,800	South Carolina	580	-	410
Kansas	5,700	213	1,500	South Dakota	3,400	640	1,770
Kentucky	2,500	35	920	Tennessee	2,250	14	620
Louisiana	1,020	16	50	Texas	13,300	2,000	550
Maine	119	18	10	Utah	810	508	33
Maryland	320	30	162	Vermont	280	28	5
Massachusetts	70	17	33	Virginia	1,730	157	430
Michigan	1,200	115	1,250	Washington	1,340	81	56
Minnesota	2,760	300	4,500	West Virginia	515	85	30
Mississippi	1,290	-	149	Wisconsin	4,170	103	1,200
Missouri	4,400	134	2,800	Wyoming	1,190	830	20
				Total U.S.	98,896	11,200	54,477

¹ Eight states not reported separately had a total of 88 thousand head on January 1, 1991.

Source: Derived from Meat Animals: Production, Disposition and Income, MtAn 1-1, April, 1992, and Sheep and Goats, LrGr 1, February, 1992, NASS, USDA.

Table 6: HOG AND PIG INVENTORY: Thousands of Hogs and Pigs on Farms, with Percentage Distributions and Changes, by Regions and Selected States, United States, January 1, 1960, and December 1, 1974 and 1989

Region and State	1960		1974		1989		1989 as Percent of 1960
	Thousand Head	Percent of U.S.	Thousand Head	Percent of U.S.	Thousand Head	Percent of U.S.	
NORTHEAST	1,075	1.8	918	1.7	1,198	2.2	111.4
Pennsylvania	558	0.9	633	1.2	975	1.8	174.7
All Other	517	0.9	285	0.5	223	0.4	43.1
NORTH CENTRAL	43,957	74.5	42,687	77.6	42,840	79.7	97.5
Ohio	2,707	4.6	1,950	3.5	2,080	3.9	76.8
Indiana	4,949	8.4	4,300	7.8	4,350	8.1	87.9
Illinois	7,469	12.7	6,500	11.9	5,700	10.6	76.3
Michigan	797	1.3	715	1.3	1,260	2.3	158.1
Wisconsin	1,963	3.3	1,400	2.5	1,150	2.1	58.6
Total ENC	<u>17,885</u>	<u>30.3</u>	<u>14,865</u>	<u>27.0</u>	<u>14,540</u>	<u>27.0</u>	<u>81.3</u>
Minnesota	3,594	6.1	3,700	6.7	4,450	8.3	123.8
Iowa	12,951	22.0	13,400	24.4	13,500	25.2	104.2
Missouri	4,232	7.2	3,900	7.1	2,700	5.0	63.8
N. Dakota	288	0.5	322	0.6	280	0.5	97.2
S. Dakota	1,328	2.2	1,700	3.1	1,720	3.2	129.5
Nebraska	2,502	4.2	3,050	5.5	4,200	7.8	167.9
Kansas	1,177	2.0	1,750	3.2	1,450	2.7	123.2
Total WNC	<u>26,072</u>	<u>44.2</u>	<u>27,822</u>	<u>50.6</u>	<u>28,300</u>	<u>52.7</u>	<u>108.5</u>
SOUTH	12,568	21.3	10,266	18.7	8,753	16.3	69.6
N. Carolina	1,520	2.6	1,890	3.4	2,570	4.8	169.1
Georgia	1,780	3.0	1,590	2.9	1,200	2.2	67.4
Kentucky	1,474	2.5	1,100	2.0	975	1.8	66.1
Tennessee	1,453	2.5	780	1.4	700	1.3	48.2
Arkansas	478	0.8	270	0.5	710	1.3	148.5
All Other	5,863	9.9	4,636	8.4	2,598	4.8	44.3
WEST	1,426	2.4	1,129	2.0	990	1.8	69.4
48 STATES	59,026	100.0	55,000	100.0	53,781	100.0	91.1

Source: For January 1, 1960 and December 1, 1974, Livestock and Meat Statistics, Annual Summaries, SRS, ERS, USDA. For December 1, 1989, Meat Animals: Production, Disposition, and Income, NASS, USDA, April, 1992.

Table 7: CATTLE AND CALF INVENTORY: Thousands of Cattle and Calves on Farms, with Percentage Distributions and Changes, by Regions and Selected States, United States, 1960, 1975 and 1990

Region and State	1960		1975		1990		1990 as Percent of 1960
	Thousand Head	Percent of U.S.	Thousand Head	Percent of U.S.	Thousand Head	Percent of U.S.	
NORTHEAST	5,285	5.5	4,726	3.6	4,083	4.2	77.3
Pennsylvania	1,913	2.0	1,960	1.5	1,860	1.9	97.2
All Other	3,372	3.5	2,766	2.1	2,223	2.3	65.9
NORTH CENTRAL	43,383	45.1	53,420	40.6	38,325	39.1	88.3
Ohio	2,250	2.3	2,350	1.8	1,650	1.7	73.3
Indiana	2,062	2.1	2,125	1.6	1,250	1.3	60.6
Illinois	3,981	4.1	3,200	2.4	1,950	2.0	49.0
Michigan	1,701	1.8	1,640	1.3	1,225	1.3	72.0
Wisconsin	4,253	4.5	4,640	3.5	4,170	4.2	98.0
Total ENC	<u>14,247</u>	<u>14.8</u>	<u>13,955</u>	<u>10.6</u>	<u>10,245</u>	<u>10.5</u>	<u>71.9</u>
Minnesota	3,975	4.1	4,430	3.4	2,600	2.7	65.4
Iowa	6,660	7.0	7,350	5.5	4,500	4.6	67.6
Missouri	3,980	4.1	6,800	5.2	4,400	4.5	110.6
N. Dakota	1,758	1.8	2,635	2.0	1,700	1.7	96.7
S. Dakota	3,262	3.4	4,950	3.8	3,380	3.4	103.6
Nebraska	5,072	5.3	6,900	5.2	5,800	5.9	114.4
Kansas	4,429	4.6	6,400	4.9	5,700	5.8	128.7
Total WNC	<u>29,136</u>	<u>30.3</u>	<u>39,465</u>	<u>30.0</u>	<u>28,080</u>	<u>28.6</u>	<u>96.4</u>
SOUTH	30,277	31.5	50,329	38.2	36,391	37.1	120.2
Texas	9,106	9.5	16,600	12.6	13,200	13.4	145.0
Oklahoma	3,378	3.5	6,500	4.9	5,250	5.4	155.4
Arkansas	1,374	1.4	2,680	2.0	1,700	1.7	123.7
Tennessee	1,858	1.9	3,300	2.5	2,420	2.5	130.2
Kentucky	2,053	2.1	3,750	2.9	2,300	2.3	112.0
All Other	12,508	13.1	17,499	13.3	11,521	11.8	92.1
WEST	17,291	17.9	23,092	17.6	19,150	19.6	110.8
California	4,121	4.3	5,200	4.0	4,800	4.9	116.5
Colorado	2,267	2.3	3,375	2.6	2,900	3.0	127.9
New Mexico	1,198	1.2	1,720	1.3	1,360	1.4	113.5
Idaho	1,415	1.5	2,150	1.6	1,660	1.7	117.3
Montana	2,245	2.3	3,340	2.5	2,300	2.3	102.4
All Others	6,045	6.3	7,307	5.6	6,130	6.3	101.4
48 STATES	96,236	100.0	131,567	100.0	97,949	100.0	101.8

Source: For 1960 and 1974, Livestock and Meat Statistics, Annual Summaries, USDA for 1960 and 1975. Data for 1990 are from Meat Animals: Production, Disposition, and Income, NASS, USDA, April, 1992.

other Northeast states combined is less than half the number shown for Pennsylvania alone. Further, Table 6, offering comparisons with other years, shows that the importance of hogs has increased in Pennsylvania while it has declined in all other Northeast states, and that the whole region is a very small part of the national total. The national center of hog production is the Cornbelt (see Figure 15). In fact, the twelve North Central states account for nearly 80 percent of total hog inventory and this percentage has not changed much over the years (Table 6). But there is a qualifier here: when this apparently stable North Central status is examined closely, it becomes clear that it is a consequence of growth in the West North Central states balanced by a decline in East North Central states. Growth and decline is indicated in the right-hand column where 1990 inventory is shown as a percentage of 1960 inventory. Notice the dramatic growth of inventory in non-cornbelt states like North Carolina or Arkansas, and cornbelt-fringe states like Michigan and the Northern Plains.

Cattle inventories also record regional shifts in the 1960-1990 period (Table 7), showing declines in the Northeast and East North Central, but marked mostly but rising numbers in the South and West, and especially in the Southern Plains. Tables that follow will identify most of this change with shifts in the location of cattle feeding.

REGIONAL DISTRIBUTION OF CATTLE AND HOG MARKETINGS

Perhaps the best place to begin an examination of cattle and hog marketings is with the bottom-right corners of inventory Tables 6 and 7 and the bottom-right corners of marketing Tables 9 and 10. National hog inventories in 1990 were only 91 percent of their 1960 levels - down 9 percent - but hog marketings during that same period were up nearly 12 percent. Similarly,

Table 8: MARKETINGS: Thousands of Head Marketed of Cattle, Calves, Sheep, Lambs, and Hogs, by States, United States, 1991

State	Cattle	Calves	Sheep	Lambs	Hogs
Alabama	699	141	1	3	722
Alaska	1	0	-	-	1
Arizona	595	63	52	158	185
Arkansas	698	267	-	-	1,440
California	2,087	162	130	583	357
Colorado	2,435	87	143	480	559
Connecticut	18	17	2	5	9
Delaware	6	2	-	-	55
Florida	200	733	-	-	228
Georgia	315	290	-	-	1,805
Hawaii	60	13	-	-	46
Idaho	825	110	28	223	103
Illinois	832	121	24	132	9,427
Indiana	450	101	21	68	7,315
Iowa	2,584	75	143	376	22,802
Kansas	4,942	1	25	180	2,469
Kentucky	970	559	17	15	1,472
Louisiana	168	302	2	5	76
Maine	33	20	6	8	16
Maryland	75	47	5	15	283
Massachusetts	11	19	3	9	39
Michigan	350	43	14	64	1,930
Minnesota	1,140	179	35	209	7,847
Mississippi	254	320	-	-	232
Missouri	775	938	31	66	4,780
Montana	981	272	94	412	366
Nebraska	5,443	65	36	146	7,313
Nevada	150	97	24	39	26
New Hampshire	8	11	2	5	8
New Jersey	12	20	8	21	30
New Mexico	1,055	250	70	149	47
New York	205	446	34	33	155
N. Carolina	192	170	2	7	5,717
N. Dakota	404	470	17	156	509
Ohio	405	140	46	166	3,375
Oklahoma	2,904	306	11	66	419
Oregon	472	190	44	262	114
Pennsylvania	448	268	31	60	1,290
Rhode Island	2	2	-	-	6
S. Carolina	171	40	-	-	687
S. Dakota	1,353	380	86	438	3,201
Tennessee	671	347	6	5	1,112
Texas	7,470	125	204	954	810
Utah	310	72	62	305	49
Vermont	48	97	10	12	8
Virginia	539	165	13	100	721
Washington	616	50	16	53	71
W. Virginia	127	103	21	44	55
Wisconsin	1,049	676	11	67	1,971
Wyoming	850	114	137	465	35
All other	-	-	14	33	-
Total U.S.	46,408	9,485	1,680	6,597	92,293

Source: Derived from Meat Animals: Production, Disposition and Income, Mt An 1-1, NASS, USDA, April 1992.

Table 9: SLAUGHTER HOG MARKETINGS: Thousand Head Marketed, with Percentage Distributions and Changes, by Regions and Selected States, United States, 1960, 1975 and 1990¹

Region and State	1960		1975		1990		1990 as Percent of 1960
	Thousand Head	Percent of U.S.	Thousand Head	Percent of U.S.	Thousand Head	Percent of U.S.	
NORTHEAST	1,074	1.3	1,075	1.5	1,716	1.9	159.8
Pennsylvania	593	0.7	715	1.0	1,424	1.6	240.1
All Other	481	0.6	360	0.5	292	0.3	60.7
NORTH CENTRAL	64,265	80.4	58,114	78.5	70,422	78.8	109.6
Ohio	4,064	5.1	2,766	3.7	3,455	3.9	85.0
Indiana	7,348	9.2	5,649	7.6	7,106	7.9	96.7
Illinois	10,651	13.2	9,492	12.8	8,930	10.0	83.8
Michigan	1,096	1.4	949	1.3	2,014	2.3	183.8
Wisconsin	3,335	4.2	2,357	3.2	1,900	2.1	57.0
Total ENC	<u>26,494</u>	<u>33.1</u>	<u>21,213</u>	<u>28.6</u>	<u>23,405</u>	<u>26.2</u>	<u>88.3</u>
Minnesota	5,660	7.1	5,053	6.8	7,689	8.6	135.8
Iowa	18,457	23.1	16,821	22.7	21,994	24.6	119.2
Missouri	5,709	7.1	5,222	7.1	4,485	5.0	78.6
N. Dakota	487	0.6	469	0.6	429	0.5	88.1
S. Dakota	2,236	2.8	2,481	3.4	3,027	3.4	135.4
Nebraska	3,577	4.5	4,411	6.0	6,917	7.7	193.4
Kansas	1,645	2.1	2,444	3.3	2,476	2.8	150.5
Total WNC	<u>37,771</u>	<u>47.3</u>	<u>36,901</u>	<u>49.9</u>	<u>47,017</u>	<u>52.6</u>	<u>124.5</u>
SOUTH	12,947	16.2	13,120	17.7	15,476	17.3	119.5
N. Carolina	1,527	1.9	2,343	3.2	5,044	5.6	330.3
Georgia	1,867	2.3	1,934	2.6	1,805	2.0	96.7
Kentucky	1,794	2.2	1,485	2.0	1,532	1.7	85.4
Tennessee	1,610	2.0	1,186	1.6	1,254	1.4	77.9
Arkansas	496	0.6	457	0.6	1,391	1.6	280.4
All Other	5,653	7.2	5,716	7.7	4,450	5.0	78.7
WEST	1,652	2.1	1,688	2.3	1,759	2.0	106.5
48 STATES	79,938	100.0	73,997	100.0	89,373	100.0	111.8

¹ Excludes intrastate interfarm sales.

Source: For 1960 and 1974, Livestock and Meat Statistics, Annual Summaries, SRS, ERS, USDA. For 1990, Meat Animals: Production, Disposition, and Income, NASS, USDA, April, 1992.

Table 10: CATTLE MARKETINGS: Thousand Head Marketed, with Percentage Distributions and Changes, by Regions and Selected States, United States, 1960, 1975 and 1990¹

Region and State	1960		1975		1990		1990 as Percent of 1960
	Thousand Head	Percent of U.S.	Thousand Head	Percent of U.S.	Thousand Head	Percent of U.S.	
NORTHEAST	920	2.7	854	1.5	853	1.8	92.7
Pennsylvania	413	1.2	402	0.7	510	1.1	123.5
All Other	507	1.5	452	0.8	343	0.7	67.7
NORTH CENTRAL	17,565	51.1	23,182	42.8	19,944	42.5	113.5
Ohio	680	2.0	858	1.6	480	1.0	70.6
Indiana	835	2.4	686	1.3	445	1.0	53.3
Illinois	2,194	6.4	1,312	2.4	854	1.8	38.9
Michigan	453	1.3	465	0.8	334	0.7	73.7
Wisconsin	735	2.1	923	1.7	894	1.9	121.6
Total ENC	4,897	14.2	4,244	7.8	3,007	6.4	61.4
Minnesota	1,592	4.6	1,798	3.3	1,060	2.3	66.6
Iowa	3,712	10.7	4,153	7.6	2,473	5.3	66.6
Missouri	1,304	3.8	2,085	3.9	927	2.0	71.1
N. Dakota	431	1.3	962	1.8	458	1.0	106.3
S. Dakota	1,192	3.5	2,275	4.2	1,489	3.2	124.9
Nebraska	2,251	6.5	4,014	7.4	5,478	11.6	243.4
Kansas	2,186	6.4	3,651	6.8	5,052	10.7	231.1
Total WNC	12,668	36.8	18,938	35.0	16,937	36.1	129.2
SOUTH	8,365	24.3	18,291	33.8	15,050	32.1	179.9
Texas	3,207	9.3	8,091	15.0	7,410	15.9	231.1
Oklahoma	1,237	3.6	3,286	6.1	2,440	5.2	197.3
Arkansas	328	1.0	755	1.4	719	1.5	219.2
Tennessee	443	1.3	1,097	2.0	680	1.4	153.5
Kentucky	494	1.4	1,042	1.9	865	1.8	175.1
All Other	2,656	7.7	4,020	7.4	2,936	6.3	110.5
WEST	7,528	21.9	11,760	21.9	11,084	23.6	147.2
California	2,221	6.5	2,904	5.4	2,236	4.7	100.7
Colorado	1,360	4.0	2,583	4.8	2,935	6.3	215.8
New Mexico	584	1.7	1,397	2.6	1,059	2.3	181.3
Idaho	497	1.4	859	1.6	827	1.8	166.4
Montana	703	2.0	1,069	2.0	1,082	2.3	153.9
All Other	2,163	6.3	2,948	5.5	2,945	6.3	136.2
48 STATES	34,378	100.0	54,087	100.0	46,931	100.0	136.5

¹ Excludes intrastate interfarm sales.

Source: Derived from Livestock and Meat Statistics, Annual Summaries, USDA for 1960 and 1975. Data for 1990 are from Meat Animals: Production, Disposition, and Income, NASS, USDA, April, 1992.

cattle inventories in 1990 were only 2 percent higher than in 1960 but cattle marketings were up 36 percent. Productivity gains in individual states appear in some cases to be quite striking but comparisons of inventory and marketings on a state basis are unreliable because there are substantial interstate shipments of livestock, such as the movement of feeder animals from states where they were born to states where they were fed and marketed as finished animals. Temporal changes in state or regional marketings offer useful insights. Iowa remains the leader in hog marketings, accounting for nearly one-fourth of the national supply. No state has grown faster than North Carolina which now markets more hogs than Ohio (Table 9). Increased cattle and hog marketings in states like Kansas and Nebraska are related to the advent of irrigation and the increased production of feed grains. The rise in hog marketings in Michigan, the only growth state in the ENC region, has been associated with a rise in slaughter capacity (see Table 13).

Cattle marketings in Table 10 include beef cattle, dairy cattle and nonslaughter cattle. It is instructive to look more specifically at developments in fed cattle alone. Notice in Table 11 that the USDA published fed cattle marketings for 26 states in 1964 and 1968, and that fed cattle in those years represented about 44-49 percent of total cattle marketings (Table 11, bottom row). But the cattle feeding industry was consolidating and relocating. For the years 1972, 1976 and 1980, the USDA was reporting fed cattle marketings for only 23 states, but their percentage of total marketings was unchanged. In 1984, 1988 and 1990 USDA reported fed cattle marketings for only 13 states, but these states still accounted for the same share of total cattle marketings. This geographic shift accompanied the change from farm feedlot to commercial feedlot finishing of fed cattle that appears in Table 3.

Table 11: FED CATTLE: Thousands of Head Marketed, United States, Selected Years, 1964-1990

State	1964	1968	1972	1976	1980	1984	1988	1990
Ohio	447	453	438	387	244	---	---	---
Indiana	459	482	478	365	344	---	---	---
Illinois	1,371	1,276	1,003	935	880	870	715	520
Minnesota	745	905	935	804	760	600	530	490
Iowa	3,174	4,369	4,896	2,905	2,690	2,069	1,717	1,845
Missouri	586	716	604	346	185	---	---	---
South Dakota	590	660	561	579	600	625	605	525
Nebraska	2,436	3,461	3,990	3,458	3,825	4,240	5,140	5,060
Kansas	1,031	1,332	2,405	3,084	3,015	3,530	4,095	4,245
Texas	971	1,970	4,308	3,947	4,160	4,960	5,200	4,740
Colorado	951	1,438	2,291	2,134	1,951	2,240	2,370	2,220
Arizona	600	703	899	795	554	577	457	328
California	2,061	2,068	2,062	1,844	1,253	1,127	835	855
Oklahoma	270	419	626	678	650	650	755	800
Pennsylvania	123	139	130	114	88	---	---	---
Michigan	208	243	251	271	218	---	---	---
Wisconsin	175	202	214	182	202	---	---	---
North Dakota	182	118	85	71	73	---	---	---
Montana	128	157	247	104	83	---	---	---
Idaho	255	412	428	340	568	479	553	604
Utah	133	100	---	---	---	---	---	---
Wyoming	59	69	---	---	---	---	---	---
New Mexico	166	316	376	306	332	---	---	---
Nevada	38	60	---	---	---	---	---	---
Washington	290	332	375	364	400	487	484	421
Oregon	147	181	143	157	134	---	---	---
Total¹	17,596	22,581	27,745	24,170	23,209	22,454	23,456	22,653
Fed Cattle as a Pct. of All Cattle Marketed	43.7	49.2	54.4	43.6	50.4	44.1	48.8	48.3

¹ 26 states in 1964 and 1968; 23 states in 1968-1980; 13 states thereafter.

Sources: For 1964: LIVESTOCK AND MEAT SITUATION, ERS, USDA, May, 1967 [no longer extant]. For 1968: LIVESTOCK AND MEAT STATISTICS, Supplement for 1969 to Statistical Bulletin No. 333, ERS, USDA, July, 1970. For 1972: LIVESTOCK AND MEAT STATISTICS, ERS, USDA, Statistical Reporting Service, Agricultural Marketing Service (Statistical Bulletin No. 522), July, 1973. For 1976: LIVESTOCK AND MEAT STATISTICS, Supplement for 1976 to Statistical Bulletin No. 522, ERS, USDA, Statistical Reporting Service, Agricultural Marketing Service, June, 1977. For 1980: LIVESTOCK AND MEAT STATISTICS, Supplement for 1981 to Statistical Bulletin No. 522, ERS, USDA, October 1982. For 1984-90: January issues of CATTLE ON FEED, USDA, National Agricultural Statistics Service (and predecessor, Statistical Reporting Service.)

Total Marketing Figures: For 1968: LIVESTOCK AND MEAT STATISTICS, ERS, USDA, Statistical Reporting Service, Agricultural Marketing Service (Statistical Bulletin No. 522), July, 1973. For 1972-1984: LIVESTOCK AND MEAT STATISTICS, 1984-88, ERS, USDA, September, 1989. For 1988 (Preliminary data): AGRICULTURAL STATISTICS 1989, USDA, 1989. For 1990 (Preliminary data): AGRICULTURAL STATISTICS 1991, USDA, 1991.

REGIONAL DISTRIBUTION OF CATTLE AND HOG SLAUGHTER

Commercial slaughter includes all slaughter activity in the U.S. except farm slaughter, which is for home consumption and has declined to very small amounts. In some states commercial slaughter information for the whole year is not reported to the public because the industry is so small or there are so few firms that public disclosure may identify useful information about competitors (state totals minus *my* firm equals information about *that* firm). So estimates have sometimes been made in Tables 13 and 14. Table footnotes explain.

Most of the commercial slaughter activity in the East has disappeared. Pennsylvania accounts for nearly all the slaughter activity in all the Northeast (Table 13). Increases in slaughter in Virginia and North Carolina accompany local growth in hog marketings. Nearly one-fourth of U.S. population - and pork consumption - is in the Northeast region. Most of that demand is supplied by long-distance shipments from the WNC region. There may be a basis for sustained or increased packer activity, and for integrated hog production, in states nearer to the massive Northeast market if packers and integrated producers act together to make geographic advantages work for them.

Shifts in packer location tend to coincide with shifts in livestock population. The long term interest of the packing industry is to be located as close to the livestock as transportation and storage technologies will allow. Once bound to cities and consumers, packers have ever been sensitive to developments in railroads, refrigeration, trucks, highways, and comparative freight rates that would allow them closer access to livestock, their raw material. So packer migrations for much of this century have been from East to West, from urban to rural, and more recently into the South. As individual

Table 12: COMMERCIAL SLAUGHTER: Thousands of Head Slaughtered of Cattle and Calves, Sheep and Lamb, and Hogs, by States, United States, 1991¹

State	Cattle	Calves	Sheep & Lambs	Hogs	State	Cattle	Calves	Sheep & Lambs	Hogs
Alabama	350	-	-	142	Nevada	2	-	-	2
Arizona	32	-	2	14	New England ²	51	80	32	43
Arkansas	1,082	-	-	254	New Jersey	22	-	104	-
California	2,236	84	-	1,850	New Mexico	133	-	-	5
Colorado	43	-	1,559	38	New York	74	217	78	56
Del/Maryland	73	19	-	254	N. Carolina	-	-	1	-
Florida	-	29	-	83	N. Dakota	-	-	1	91
Georgia	-	-	2	-	Ohio	222	95	27	2,625
Hawaii	46	-	-	43	Oklahoma	45	3	2	169
Idaho	-	-	6	-	Oregon	42	4	10	132
Illinois	-	115	-	8,647	Pennsylvania	960	196	137	2,089
Indiana	84	-	34	3,785	S. Carolina	-	-	-	-
Iowa	1,652	-	-	27,628	S. Dakota	490	-	139	4,836
Kansas	6,027	-	312	451	Tennessee	-	-	1	438
Kentucky	90	-	14	-	Texas	5,607	35	-	293
Louisiana	34	36	6	57	Utah	-	-	-	-
Michigan	-	51	-	-	Virginia	27	1	22	4,844
Minnesota	1,083	-	306	7,738	Washington	786	38	-	-
Mississippi	108	-	-	-	W. Virginia	16	-	1	19
Missouri	273	3	-	-	Wisconsin	1,089	223	12	363
Montana	19	-	4	28	Wyoming	5	-	2	5
Nebraska	6,310	-	2	5,514					
					Total U.S. ³	32,690	1,436	5,721	88,169

¹ Includes slaughter in federally inspected and in other slaughter plants, but excludes animals slaughtered on farms. ² New England includes CT, ME, MA, NH, RI, and VT. ³ States with no data printed are still included in U.S. total, not printed to avoid disclosing individual operations.

Source: Livestock Slaughter, 1991 Summary, Mt An 1-2-1, NASS, USDA, March 1992.

Table 13: COMMERCIAL HOG SLAUGHTER: Thousands of Head Slaughtered, with Percentage Distributions and Changes, by Regions and Selected States, United States, 1960, 1975 and 1990

Region and State	1960		1975		1990		1990 as Percent of 1960
	Thousand Head	Percent of U.S.	Thousand Head	Percent of U.S.	Thousand Head	Percent of U.S.	
NORTHEAST	6,590	8.3	3,599	5.2	2,153 ¹	2.5	32.7
Pennsylvania	2,725	3.4	2,452	3.6	1,963 ¹	2.3	72.0
All Other	3,865	4.9	1,142	1.6	190	0.2	4.9
NORTH CENTRAL	52,406	66.3	46,274	67.4	64,413	75.7	122.9
Ohio	4,558	5.8	3,397	5.0	2,575	3.0	56.5
Indiana	5,024	6.4	2,975	4.3	3,624	4.3	72.1
Illinois	5,003	6.3	4,438	6.5	8,834	10.4	176.6
Michigan	1,536	1.9	4,060	5.9	3,836	4.5	249.7
Wisconsin	3,441	4.4	3,050	4.4	358	0.4	10.4
Total ENC	19,562	24.8	17,920	26.1	19,227	22.6	98.3
Minnesota	5,428	6.9	4,428	6.4	5,878	6.9	108.3
Iowa	14,455	18.3	15,190	22.2	25,785	30.3	178.4
Missouri	3,879	4.9	2,415	3.5	2,798	3.3	72.1
N. Dakota	18	-	22	-	97	0.1	538.9
S. Dakota	2,154	2.7	2,029	3.0	4,416	5.2	205.0
Nebraska	4,044	5.1	2,907	4.2	5,401	6.3	133.6
Kansas	2,866	3.6	1,363	2.0	811	1.0	28.3
Total WNC	32,844	41.5	28,354	41.3	45,186	53.1	137.6
SOUTH	15,704	19.9	15,064	21.9	16,149 ¹	19.0	102.8
Virginia	2,101	2.7	2,798	4.1	4,551	5.4	216.6
N. Carolina	1,141	1.4	1,687	2.4	2,749	3.2	240.9
Georgia	1,859	2.4	1,488	2.2	1,556 ¹	1.8	83.7
Kentucky	1,477	1.9	1,456	2.1	2,732 ¹	3.2	185.0
Tennessee	2,380	3.0	2,901	4.2	809	1.0	34.0
Texas	1,758	2.2	1,098	1.6	334	0.4	19.0
All Other	4,988	6.3	3,636	5.3	3,418	4.0	68.5
WEST	4,336	5.5	3,750	5.5	2,421	2.8	55.8
48 STATES	79,036	100.0	68,687	100.0	85,136	100.0	107.7

¹ Estimated by the author by distributing U.S. residual among unreported states according to their share reported in first seven months of 1990.

Source: For 1960 and 1975, derived from Livestock and Meat Statistics, Annual Summaries, SRS, ERS, USDA. For 1990, Livestock Slaughter, 1990 Summary, NASS, USDA, March, 1991

Table 14: COMMERCIAL CATTLE SLAUGHTER: Thousand Head Slaughtered, with Percentage Distributions and Changes, by Regions and Selected States, United States, 1960, 1975 and 1990

Region and State	1960		1975		1990		1990 as Percent of 1960
	Thousand Head	Percent of U.S.	Thousand Head	Percent of U.S.	Thousand Head	Percent of U.S.	
NORTHEAST	1,934	7.7	1,721	4.2	1,103	3.3	57.0
Pennsylvania	830	3.3	939	2.3	962	2.9	115.9
All Other	1,104	4.4	782	1.9	141	0.4	12.8
NORTH CENTRAL	13,743	54.5	20,744	51.0	19,122	57.6	139.1
Ohio	1,186	4.7	1,124	2.8	233	0.7	19.6
Indiana	653	2.6	540	1.3	109	0.3	16.7
Illinois	1,442	5.7	1,459	3.6	1,144 ¹	3.4	79.3
Michigan	717	2.8	756	1.9	406 ¹	1.2	56.6
Wisconsin	979	3.9	1,442	3.5	1,149	3.5	117.4
Total ENC	4,977	19.7	5,321	13.1	3,041	9.1	61.1
Minnesota	1,424	5.6	1,547	3.8	1,045	3.1	73.4
Iowa	2,499	9.9	4,167	10.2	1,830	5.5	73.2
Missouri	1,103	4.4	1,078	2.7	327	1.0	29.6
N. Dakota	18	0.1	283	0.7	169	0.5	938.9
S. Dakota	418	1.7	745	1.8	569	1.7	136.1
Nebraska	2,137	8.5	4,777	11.7	5,882	17.7	275.2
Kansas	1,167	4.6	2,826	7.0	6,259	18.9	536.3
Total WNC	8,766	34.8	15,423	37.9	16,081	48.5	183.4
SOUTH	4,520	17.9	10,359	25.5	7,212	21.8	159.6
Texas	1,492	5.9	5,297	13.0	5,681	17.1	380.8
Oklahoma	334	1.3	787	1.9	64	0.2	19.2
Tennessee	392	1.6	770	1.9	85 ¹	0.3	21.7
All Other	2,302	9.1	3,505	8.6	1,382	4.2	60.0
WEST	5,027	19.9	7,836	19.3	5,750	17.3	114.4
California	2,476	9.8	2,892	7.1	1,172	3.5	47.3
Colorado	1,046	4.2	1,986	4.9	2,079	6.3	198.8
Washington	436	1.7	551	1.4	802	2.4	183.9
All Other	1,069	4.2	2,407	5.9	1,697	5.1	158.7
48 STATES	25,224	100.0	40,660 ²	100.0	33,187	100.0	131.6

¹ Estimated by the author by distributing U.S. residual among unreported states according to their share reported in first seven months of 1990.

² Corrected. Error in source total.

Source: For 1960 and 1975, derived from Livestock and Meat Statistics, Annual Summaries, SRS, ERS, USDA. For 1990, Livestock Slaughter, 1990 Summary, NASS, USDA, March, 1991.

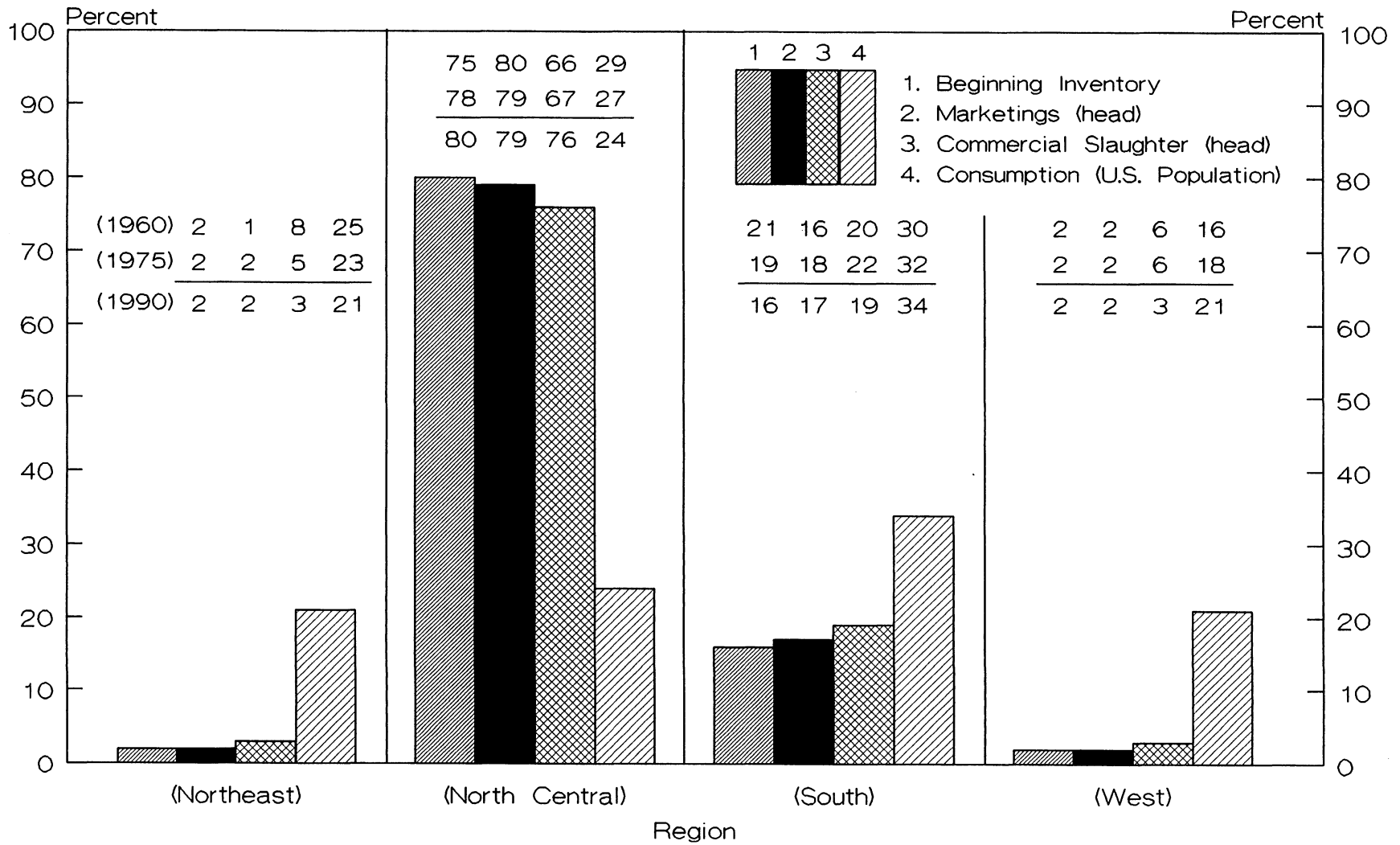
plants have grown larger, a few relocations can have a large impact on changing state totals in slaughter volume. Michigan, Illinois, and South Dakota provide hog slaughter examples in Table 13. Most of the relocation of cattle slaughter has been toward proximity with commercial feedlots in Texas, Oklahoma, Kansas, Nebraska and Colorado (Table 14).

A GRAPHIC OVERVIEW

Figures 16 and 17 provide a graphic summary of Tables 5-14. Each figure is divided into the four major census regions. Each region has four bars representing the regional *percentages* of U.S. total (1) beginning inventory, (2) marketings, (3) slaughter, and (4) population (population is used here as a proxy for meat consumption). Percentages flow across the top panels of each figure; the 1990 percentage shows the height of the bar beneath it. For example, we read in Figure 16 that in 1990 the Northeast accounted for 2 percent of U.S. hog and pig inventories, the North Central for 80 percent, the South for 16 percent, and the West for 2 percent. We also see changes in these percentages compared to 1960 and 1975. In the last bar we see human population shifts out of the Northeast and North Central and into the South and West. We see that the North Central region dominates the swine industry; all other regions have surplus population (and pork demand) relative to regional capacities to supply that demand. The North Central region ships pork to all other regions, and this fact has not changed for 30 years.

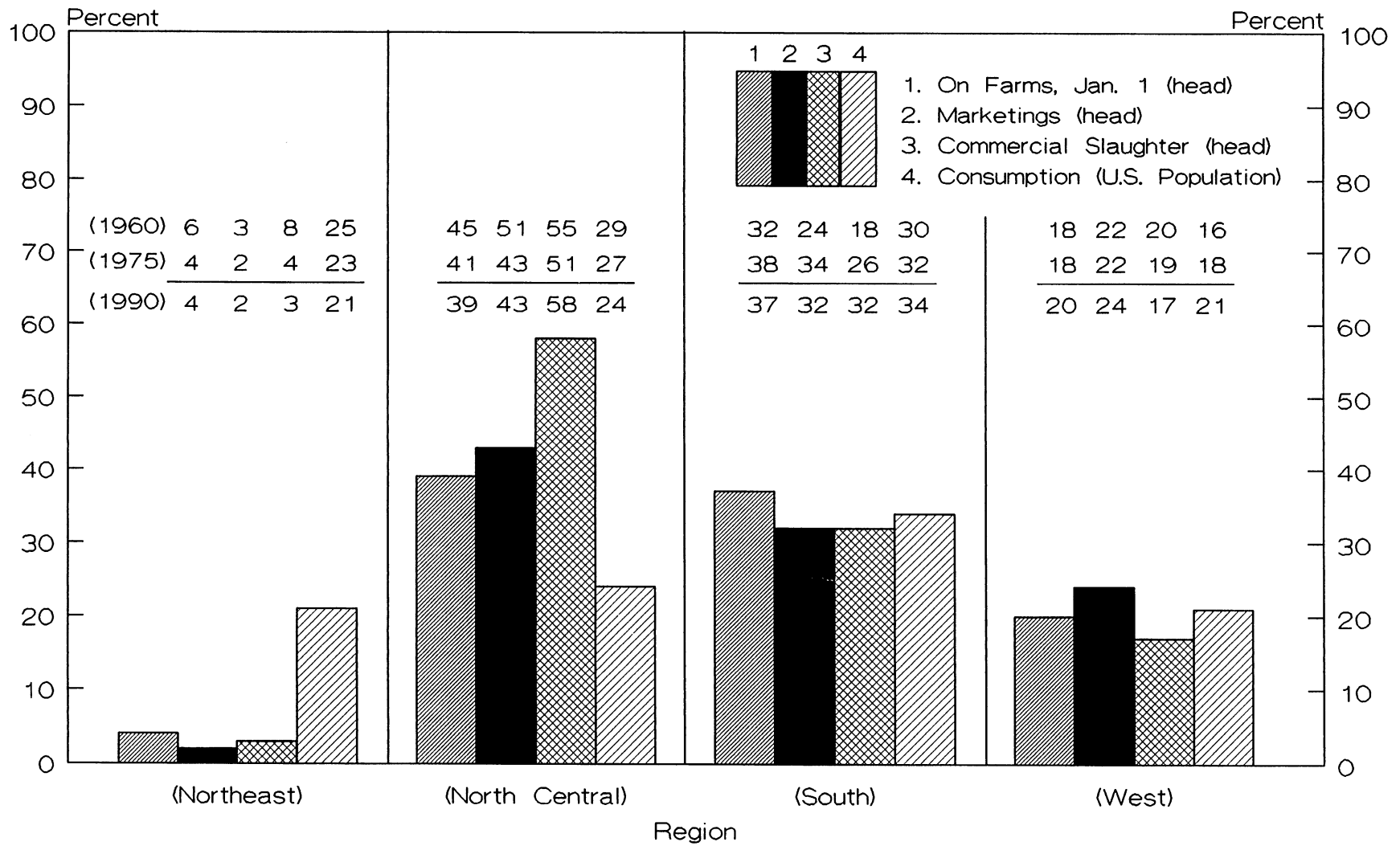
The beef industry is more evenly spread through the four census regions (Figure 17), but a qualifier is useful here. The cattle feeding industry centered in the 'high plains' region spans parts of five states - Texas, Oklahoma, Kansas, Nebraska, Colorado - and these states are in three of these census regions (see Figure 15). As with pork, the Northeast depends for its

FIGURE 16. HOGS AND PORK: REGIONAL PERCENTAGE DISTRIBUTION OF INVENTORY, MARKETINGS, SLAUGHTER, AND PORK CONSUMPTION, 1960, 1975 AND 1990



Source: Tables 6, 9, 13, and U.S. Census.

FIGURE 17. CATTLE: REGIONAL PERCENTAGE DISTRIBUTION OF INVENTORY, MARKETINGS, SLAUGHTER, AND BEEF CONSUMPTION, 1960, 1975 AND 1990



Source: Tables 7, 10, 14, and U.S. Census.

beef on shipments from other regions. The apparent over-capacity of beef slaughter in the North Central region suggests that this is the source of beef shipments to the Northeast. But, barring some dairy slaughter in Wisconsin, there is no excess slaughter capacity in any of the ENC states (Table 10). Slaughter is in fact inadequate even for local needs. For individual ENC states like Ohio where marketings now exceed slaughter capacity this means there is a strong tendency for cattle and hogs to be shipped west to slaughter, only to travel as beef and pork back east across the state on its way to consumption in the Northeast. Such heavy freight charges have a price-depressing effect that further discourages long term prospects for livestock production in these ENC states, and induces producers to continue to switch toward more specialization in cash grain production.

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