

**Entry and Exit in Missouri's Swine Industry
By Medium to Large Producers
1964-1968**



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For many years Missouri has ranked among the top states in production and marketing of hogs. Hogs are produced in every Missouri county, on 40 percent of the state's farms, and contribute over 20 percent of the cash farm income. With the prices experienced in recent years, information regarding the trend to larger numbers of hogs fed per farm, entry of new producers, and exit of existing firms is useful. Figure 1 shows the number of hogs on farms by county for the year 1970. The northern one-half of the state is the prime production area of market hogs.

Objectives

The objectives of this study are to analyze:

1. Changes in the number of producers and the number of hogs fed from 1964 to 1968.
2. Geographic distribution of Missouri's swine industry.
3. Distribution of producers by size group and district.
4. Increases and decreases in the number of hogs fed by producers and the entry and exit of producers in 1964 versus 1968.

Definition of Terms

District refers to one of the nine crop and livestock reporting areas of Missouri. These districts are identified as Northwest, North Central, Northeast, West Central, Central, East Central, Southeast, South Central, and Southwest.

Producer was any farmer that fed 300 or more hogs. Those producers who fed less than 300 hogs were excluded from the analysis.

Size Group was the division of producers based on the number of hogs fed per year into one of the following categories: 300-399, 400-599, 600-799, 800-999, 1,000-1,500, and greater than 1,500. These categories will be referred to as A, B, C, D, E, and F respectively.

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Increase refers to those producers that increased the number of hogs fed within their size group and those that increased the number fed into any larger size group.

Decrease refers to those producers that reduced the number of hogs fed within their size group and those that decreased the number fed into any lower size group.

Entry was any producer who reached at least the 300 hogs fed requirement per year.

Exit was a producer reducing the number of hogs fed below the minimum of 300 hogs per year.

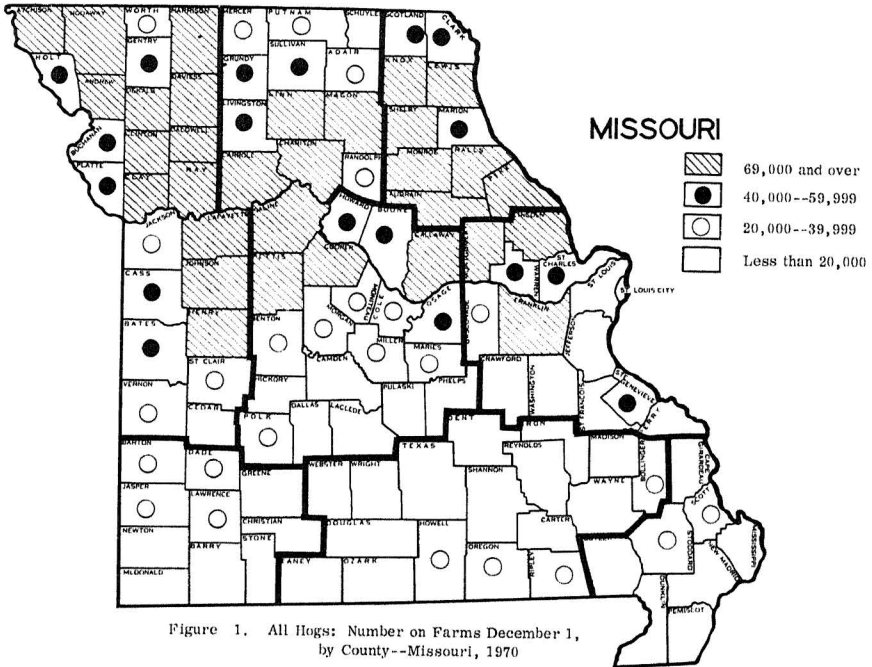


Figure 1. All Hogs: Number on Farms December 1, by County--Missouri, 1970

Source: Missouri Farm Facts--1971, Missouri Department of Agriculture, April, 1971, Page 25.

Changes in Producers and in Hogs Fed

Table 1 shows the number of producers and the number of hogs fed in Missouri by size groups from 1964 to 1968.¹ The total of all producers for the six size groups in 1964 included 2,309 producers of separate hog operations. In 1968 there were 3,525 hog producers feeding 300 or more hogs per year; hence for the 5 year period, the net entry was 1,216 producers. Likewise, the number of hogs fed by these producers increased from 1,049,670 head in 1964 to 1,704,490 head in 1968—a net increase of 654,820 hogs.

¹A caveat should be indicated regarding the data. Although it was attempted to gather data for the entire population of producers producing 300 or more hogs each year, from a practical standpoint we might assume that some producers were not included in a particular year. Hence if and when these producers were discovered (in a subsequent year), the data would be indicated as a net entry, thus inflating the entry figures. It is thought that data for the lower size group might be more suspect than those in the larger size group.

Table 1
 NUMBER OF PRODUCERS AND NUMBER OF HOGS FED
 IN MISSOURI BY SIZE GROUP 1964-1968*

Year	300-399 A		400-599 B		600-799 C		800-999 D		1000-1500 E		Greater than 1500 F		Total	
	No. of prod.	No. hogs fed	No. of prod.	No. hogs fed	No. of prod.	No. hogs fed	No. of prod.	No. hogs fed	No. of prod.	No. hogs fed	No. of prod.	No. hogs fed	No. of prod.	No. hogs fed
1964	1,335	410,655	602	263,625	190	118,540	60	49,550	88	98,600	34	108,700	2,309	1,049,670
1965	1,388	427,050	713	314,725	210	131,290	86	70,650	116	131,650	52	156,700	2,565	1,232,065
1966	1,532	471,635	778	343,715	210	131,990	93	76,850	143	161,850	47	138,550	2,803	1,324,590
1967	1,772	544,985	924	409,445	256	161,290	127	104,750	170	193,550	51	141,800	3,300	1,555,820
1968	1,753	538,555	1,069	474,845	293	183,890	148	122,150	210	139,650	52	145,400	3,525	1,704,490
Net Change	418	120,900	467	211,220	103	65,350	88	76,600	122	141,050	18	36,700	1,216	654,820

*Producers with less than 300 hogs fed are not included in this table. Data for 1967 in Chariton County were missing. Data for 1968 in Perry County were missing. No data were generated by the missing data statistical techniques.

Source: Unpublished data collected for and by Glenn Grimes and others, Department of Agricultural Economics, University of Missouri-Columbia.

The number of producers in size groups A and B increased from 1,937 in 1964 to 2,822 in 1968, and the number of hogs fed increased from 674,280 to 1,013,400 in the same period. The net increases for size groups A and B were 885 new producers and 339,120 extra hogs fed comparing 1964 to 1968. Size group C had 103 new producers which fed 65,350 additional hogs when contrasting 1964 data to 1968. Combining groups D, E, and F for the period considered, the number of producers increased by 254,350. These data illustrate considerable activity in terms of the number of producers and the number of hogs fed in the 5 years under analysis.

Geographic Distribution

The principal hog feeding areas of Missouri are the Northwest, North Central, and the Northeast districts. Figure 2 shows the geographic location of Missouri's swine industry presenting the percentage of the total for the number of producers and the number of hogs fed² by district. In 1968 the Northwest district had 25.4 percent of all the producers and 25.9 percent of the hogs fed. The second area of concentration was the Northeast district with 19 percent of the state's producers feeding 18.1 percent of the total number of hogs fed in 1968. The North Central and Central districts each had about 15 percent of the producers and 15 percent of the hogs fed in 1968.

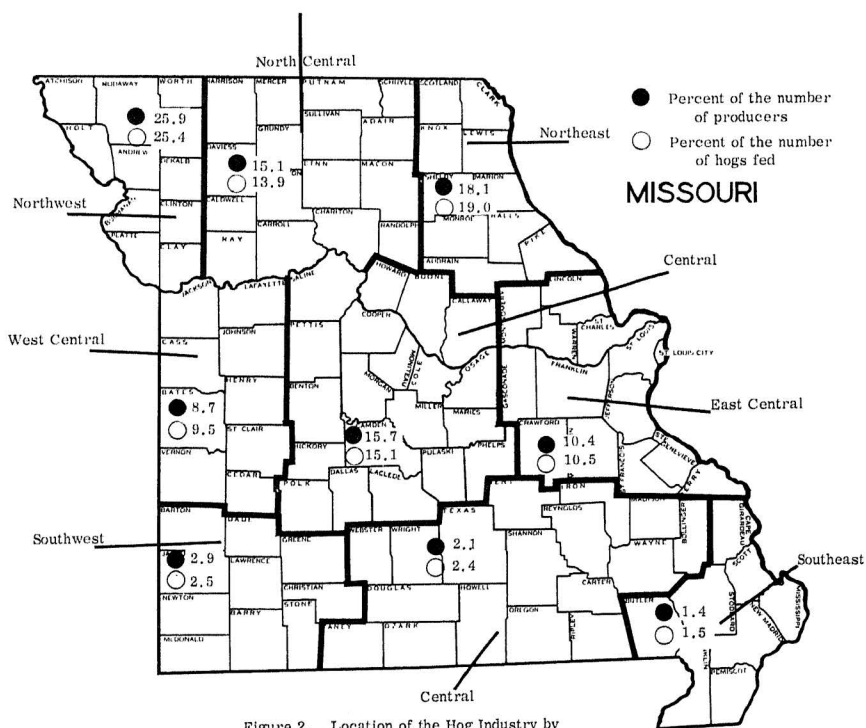


Figure 2. Location of the Hog Industry by Districts in Missouri, 1968

²Includes *only* those hogs fed by farmers producing 300 or more hogs annually.

Table 2 sets forth the number of producers and the number of hogs fed in the nine districts from 1964 to 1968. Of the state's 3,525 producers in 1968, 2,115 or 60 percent were located in the districts of the Northwest, North Central and Northeast. These 2,115 producers fed 987,670 head or 57.9 percent of the 1,074,490 hogs. Contrasting this to 1964 data, of the state's 2,309 producers, 1,330 or 57.6 percent were in the Northwest while North Central and Northeast districts fed 58.3 percent (612,445 hogs) of the state's total number of hogs fed.

In 1968, the number of producers and number of hogs fed in the Northwest, North Central and Northeast districts were: 894 producers and 441,135 hogs, 533 producers and 237,235 hogs, and 668 producers and 309,300 hogs, respectively. The Central district had 532 producers and these producers fed 267,370 hogs. The East Central had 366 producers and fed 178,785 hogs, while the West Central district had 306 producers who fed 161,405 hogs. Combining the Southwest, South Central and Southeast districts we find that this region had a total of producers or 7.5 percent of the state's total. These 226 producers fed 109,260 hogs or 6.4 percent of the total of the hogs fed.

Distribution by Size Group

Northern Districts. Table 3 presents the number of producers and number of hogs fed by size groups and by districts in Missouri. The Northwest district had 464 of the state's total of 1,753 producers in size group A. The Northwest, North Central and Northeast districts had 1,094 producers out of a total 1,753 producers in size group A. These same three districts had 623 producers of the state's 1,069 producers in size group B. For size groups C and D, the northern three districts had 171 and 70 of the state's total producers of 293 and 148 respectively. The Northwest, North Central and Northeast district had 127 producers of the state's 262 producers in size groups E and F.

Central Districts. In the greater than 1,500 size group (F), the Central district had 12 producers feeding 31,500 hogs in 1968. This was the largest of the nine districts in terms of the number of producers in size group F and second largest with regard to the number of hogs fed. For size group A, the West Central, Central and East Central had 126, 245 and 171 producers respectively. For the size groups B, C, D and E the West Central, Central and East Central had the following number of producers respectively: 98, 173, and 115; 30, 48, and 28; 24, 25, and 20; and 22, 29, and 26.

Southern Districts. There was only one producer in the Southern three districts that fed more than 1,500 hogs. For size group A in 1968 the Southwest, South Central and Southeast had 65, 33, and 19 producers feeding a total of 19,600, 10,000, and 6,050 hogs.

Number of Hogs Fed by Producers and Entry and Exit

For the period studied, four different events could occur with respect to the swine operation. A producer could increase within his size group or move to a larger size group (both cases are increases). A second event that could have taken place is a producer feeding less than 300 hogs increases the number fed and enters any one of the six size groups. Thirdly, a producer could have decreased within or to a smaller size group (both cases are classified as decreases). A fourth event could be a producer reducing the number fed and feeding less than the required 300 hogs. This was counted

Table 2

NUMBER OF PRODUCERS AND NUMBER OF HOGS FED IN THE
NINE DISTRICTS OF MISSOURI, 1964-1968*

	1964		1965		1966		1967		1968		Net Change	
	No. of Prod.	No. Hogs Fed	No. of Prod.	No. Hogs Fed	No. of Prod.	No. Hogs Fed	No. of Prod.	No. Hogs Fed	No. of Prod.	No. Hogs Fed	No. of Prod.	No. Hogs Fed
Northwest	574	269,750	676	337,905	723	337,905	828	398,190	894	441,135	320	171,385
North Central	405	175,220	435	195,970	439	198,750	515	227,290	533	237,235	128	62,015
North East	351	167,475	352	172,625	452	207,525	541	250,000	668	309,300	317	141,825
West Central	198	92,960	227	109,805	255	125,630	297	146,080	306	161,405	108	68,445
Central	359	154,635	427	193,585	424	193,285	510	243,040	532	267,370	173	112,735
East Central	261	120,010	281	144,625	334	170,635	427	208,160	366	178,785	105	58,775
Southwest	63	25,580	66	29,000	69	29,350	70	26,550	102	42,100	39	16,520
South Central	50	22,270	52	26,020	59	37,720	68	33,720	75	41,370	25	10,100
Southeast	48	21,770	49	22,540	48	23,790	44	22,790	49	25,790	1	4,020
Total for State	2,309	1,049,670	2,565	1,232,065	2,803	1,324,590	3,300	1,555,820	3,525	1,704,490	1,216	654,820

*Producers with less than 300 hogs are not included in this table.

Table 3
 NUMBER OF PRODUCERS AND NUMBER OF HOGS FED BY
 SIZE GROUPS AND DISTRICTS-MISSOURI, 1968*

District	300-399 A		400-599 B		600-799 C		800-999 D		1000-1500 E		More Than 1500 F		Total	
	No. of prod	No. hogs fed	No. of prod	No. hogs fed	No. of prod	No. hogs fed	No. of prod	No. hogs fed	No. of prod	No. hogs fed	No. of prod	No. hogs fed	No. of prod	No. hogs fed
North West	464	144,190	245	109,105	80	50,940	30	24,800	64	73,500	11	38,600	894	441,135
North Central	303	92,885	151	67,050	44	27,300	14	11,500	14	17,200	7	21,300	533	237,235
North East	327	100,225	227	100,375	47	29,350	26	21,550	32	36,200	9	21,600	668	309,300
West Central	126	38,705	98	43,700	30	18,550	24	19,800	22	24,450	6	16,200	306	161,405
Central	245	74,600	173	76,870	48	30,700	25	20,200	29	33,500	12	31,500	532	267,370
East Central	171	52,300	115	50,335	28	17,300	20	16,650	26	29,000	6	13,200	366	178,785
South West	65	19,600	24	10,850	5	3,000	1	950	7	7,700	0	0	102	42,100
South Central	33	10,000	21	9,420	4	2,450	5	4,100	11	12,400	1	3,000	75	41,370
South East	19	6,050	15	7,140	7	4,300	3	2,600	5	5,700	0	0	49	25,790
Total for State	1,753	538,555	1,069	474,845	293	183,890	148	122,150	210	239,650	52	145,400	3,525	1,704,490

*Producers with less than 300 hogs are not included in this table

Data for 1968 in Perry County in East Central District were missing--no data were generated by the missing data statistical technique.

as an exit. Table 4 presents the data for the number of producers that increased and decreased with regard to the number of hogs fed and the number of producers that entered or exited by size group and district comparing 1964 to 1968.

Table 4, using the Northwest district and size groups A and B as an example, is read as follows:

- a. Column one, the 53 represents only those producers that have increased *within* the 300-399 size group. New entries in this size group(s) are excluded by definition even though new entries are increases in the number of hogs fed from less than 299 to 300 and more.
- b. In column two, the 231 represents the number of new hog producers that entered size group A. These producers entered (entry) the analysis by feeding at least 300-399 hogs per year.
- c. In column three, the 3 represents the number of producers that decreased the number of hogs fed within group A or decreased from a larger size group such as C to size group A.
- d. In column four, the 95 represents the number of producers that exited the hog industry by feeding less than 300 hogs per year.
- e. In column one of size group B, the 24 represents increases within size group B or producers who moved from size group A to size group B in the period involved. The number 18, in column four represents those producers that were in size group B in 1964 and then fed less than the 300 minimum in 1968 and exited the industry. The number 145 in the entry column for size group B represents entry from below 300 hogs fed per year to size group B.

The differences between columns two and four for each size group in Table 4 indicate the net entry in the number of producers for the period. For example, the total entries for the state were 1,838, minus 622 exits gives a net entry of 1,216 producers. For the size groups A, B, D, E, and F, the entries of producers from 1964 to 1968 were 524, 462, 99, 59, 67 and 9 respectively. Of the 1,216 new producers in the state, 986 occurred in size groups A and B.

Increases and decreases may also be analyzed from Table 4. Almost half of the adjustments for all districts occurred in size group A, with 156 producers increasing and 10 producers decreasing. For the nine districts, the increases and decreases in the number of producers affecting size group A were as follows: Northwest—53 and 3; Northeast—17 and 0; East Central—30 and 1; North Central—13 and 5; Central—22 and 1; West Central—10 and 0; Southwest—4 and 0; South Central—4 and 0; and Southeast—3 and 0.

Size group B had 86 increases and 35 decreases with the majority of the adjustments occurring in the northern and central districts. This size group was the second most important group from the standpoint of adjustments. Size group C had 39 increases and 18 decreases for the 5-year period. For size groups D, E, and F increases and decreases were 12 and 15; 11 and 14; and 6 and 9 respectively.

The majority of the adjustment occurred in the northern three districts. The total increases and decreases for selected districts for all size groups show the Northwest with 90 increases and 24 decreases; the Northeast with 36 increases and 17 decreases; and the Central with 44 increases and 14 decreases.

Table 4

PRODUCERS THAT INCREASED AND DECREASED THE NUMBER
OF HOGS FED, AND THE NUMBER OF PRODUCERS ENTERING
AND EXITING BY SIZE GROUP AND DISTRICT IN MISSOURI
1964 vs. 1968

District	Size Group A 300-399				Size Group B 400-599				Size Group C 600-799			
	Inc*	Entry	Dec**	Exit	Inc	Entry	Dec	Exit	Inc	Entry	Dec	Exit
North West	53	231	3	95	24	145	8	18	9	35	6	8
North Central	13	127	5	74	12	71	6	15	5	18	1	5
North East	17	215	0	54	8	137	7	21	6	25	4	8
West Central	10	67	0	21	16	48	1	13	5	14	1	3
Central	22	102	1	57	12	100	6	22	5	27	2	6
East Central	30	120	1	71	9	71	6	35	7	16	4	9
South West	4	42	0	16	1	13	0	5	0	4	0	2
South Central	4	20	0	9	3	10	1	7	1	3	0	0
South East	3	6	0	9	1	10	0	7	1	1	0	3
Total for Size Groups	156	930	10	406	86	605	35	143	39	143	18	44

Table 4 (continued)

District	Size Group E 1000-1500				Size Group F More Than 1500				Total for District			
	Inc*	Entry	Dec**	Exit	Inc	Entry	Dec	Exit	Inc	Entry	Dec	Exit
North West	3	21	3	2	0	4	2	3	90	450	24	130
North Central	3	1	2	2	1	0	1	0	38	224	18	96
North East	1	12	1	0	0	1	2	2	36	404	17	87
West Central	2	8	0	0	2	2	1	0	35	147	3	39
Central	1	13	5	3	3	4	0	1	44	262	14	89
East Central	0	9	3	2	1	2	0	2	51	224	15	119
South West	1	4	0	0	0	0	0	1	7	63	0	24
South Central	1	7	0	1	0	1	0	0	9	42	1	17
South East	0	3	1	1	0	0	0	0	0	22	1	21
Total for Size Group for State	12	78	15	11	7	14	6	9	315	1,838	93	622

*Increased

**Decreased

Summary

The principal producing area measured by the number of producers was the Northwest district. The next three districts ranked by the number of producers were the North Central, Northeast, and Central. The Northwest district was first in total hogs fed followed by the North Central district.

For the state, the total number of producers and the total number of hogs fed in 1964 and 1968 were 2,309 and 1,049,670; and 3,525 and 1,704,490 respectively. For the 5 years, there was a net increase of 1,216 producers and a net increase of 654,820 hogs fed. These changes represent almost a 55 percent increase in the number of producers and 62 percent increase in the number of hogs fed.

Changes in both the number of producers and the number of hogs were measured: (1) by entries and exits; (2) by increases or decreases between size groups; and (3) by increases or decreases within a size group. The analysis revealed most of the activity occurred in the 300-399 size group and in three Northern districts of Missouri. Table 5 gives a summary of the net entry of the number of producers entering the industry in 1964 as compared with 1968 by size group and the net entry of producers by district. The three Northern districts had the majority of the new producers and if analyzed by size groups, A and B size groups had the most net entries with 524 and 462 producers.

Table 5

NET INCREASES IN NEW PRODUCERS BY SIZE GROUP AND DISTRICT, MISSOURI 1964-1968

Size Group	Entry	District	Entry
300-399	524	Northwest	320
400-499	462	North Central	128
500-699	99	Northeast	317
700-999	59	West Central	108
1000-1500	67	Central	173
1500 and up	5	East Central	105
	<u>1,216</u>	Southwest	39
		South Central	25
		Southeast	1
		State Total	<u>1,216</u>