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CATTLE FEEDLOT OPERATIONS IN NEVADA

By JOHN W. MALONE, JR.,
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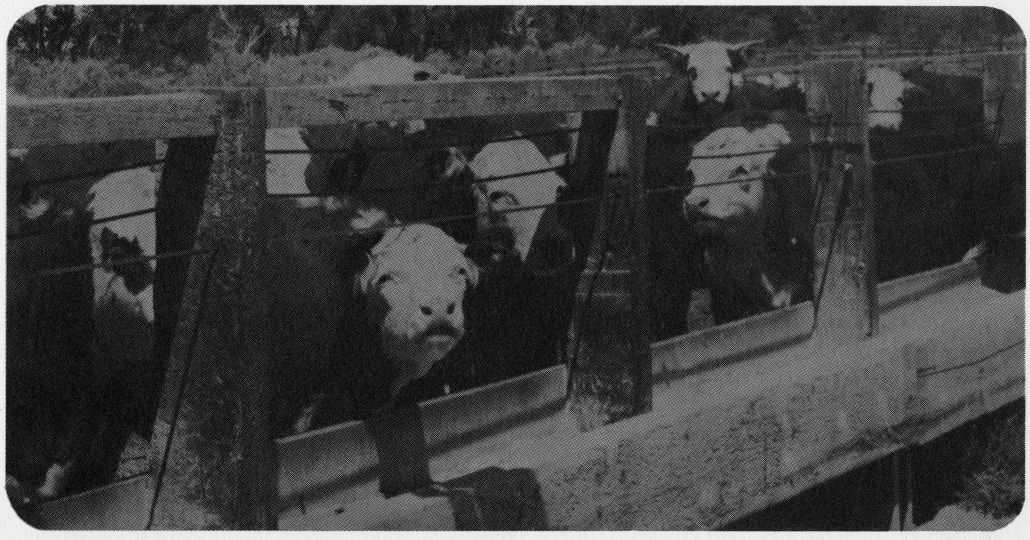

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CATTLE FEEDLOT OPERATIONS IN NEVADA[1]

by

John W. Malone Jr., and Herbert N. Friesen[2]

The Nevada feedlot industry is characterized by finishing and warm-up operations.[3] Approximately 80,000 cattle and calves were placed in finishing and warm-up feedlots during 1962.

Nevada cattle feedlot operations are important contributors to income realized by the state's livestock-meat industry. Gross receipts of cattle and calves marketed in 1962 amounted to roughly $28 million. An estimate of value added to cattle and calves placed in feedlots during 1962 was $5.9 million with $4.4 million and $1.5 million derived from finishing and warm-up operations, expectively.[4] The utilization of Nevada-grown alfalfa, the feeding of state-produced calves, and the processing of some finished animals by Nevada slaughter plants add considerably to the industry's income position.

Warm-up feeding, a method of marketing alfalfa hay through feedlot cattle, plays an important role in Nevada's agricultural economy. Warm-up lots comprised 73 percent of all feedlots in the state, while accounting for about 51 percent of all animals placed on feed. The production

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[1]The research on which this report is based is part of the Western Regional Livestock Marketing Research Project WM-48, "Livestock Marketing Efficiency and Pricing in the West".

[2]Associate Agricultural Economist, and Graduate Research Assistant, respectively, Department of Agricultural Economics and Agricultural Education, Agricultural Experiment Station, University of Nevada, Reno, Nevada.

[3]Finishing operations are defined as feedlot production of steers and of heifers for slaughter fed mainly grain and concentrates and are expected to grade Choice or Good. Warm-up operations are defined as feedlot production of steers and of heifers destined for finishing lots. A ration consisting mainly of forage is used.

[4]The $5.9 million estimate was derived from survey and published data. Price data included a 4 percent pencil shrink. The ratio of $28 million to $5.9 million tends to somewhat overstate the relative importance of the state's feedlot industry. A number of animals entering warm-up lots (35 percent), and finishing lots (11 percent), originated from feedlot operators' own herds and their value is not reflected in the $28 million of gross receipts from marketings.

of a high-quality alfalfa hay, and its alternative uses other than in Nevada beef cattle feeding enterprises, are major factors underlying warm-up operations in the state.[5]

Cattle finishing in Nevada has not expanded in contrast with many of the feeding areas of the United States during the past decade. Statistics are reported by the United States Department of Agriculture related to inventories of cattle on feed in Nevada, January 1. Data for the last 10 years do not reflect a clear-cut trend in the growth of Nevada's finishing industry.[6] The number of cattle on feed January 1, 1955, was 30,000. In 1956, the inventory of cattle on feed was reduced to 24,000, and from 1956 to 1960, numbers of cattle on feed went back up to 32,000. From 1960, cattle on feed decreased, reaching a low of 17,000 in 1963. The inventory of cattle on feed for January 1, 1964, increased to 24,000.[7]

Although the livestock industry in Nevada is the major source of agricultural income, the state is deficient in commercial meat slaughter. The primary role of the state's livestock industry is the production of feeder and stocker calves. A relatively small slaughter industry[8] and Nevada's position as a grain deficit area does not contribute to the growth of a large commercial cattle finishing industry.

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[5]Nevada's dairy industry utilizes about 15 to 17 percent of the state's yearly alfalfa production. Approximately 20 to 22 percent of Nevada's annual alfalfa supply during the last two years has been transported to California. (Hay Market News, USDA, AMS, and California Department of Agriculture, Sacramento, 1963 and 1964 issues.) In addition, range wintering operations use a portion of the alfalfa hay supply.

[6]United States Department of Agriculture, Cattle and Calves on Feed, AMS, USDA, Quarterly Issues, Washington, D. C.

[7]Numerous factors may explain the yearly variation in cattle on feed. Some of the major factors in Nevada, as in other areas, are: range conditions in the preceding two years, prices and production of alfalfa hay and grain, feeding margins of the previous year, current price of feeders and expected slaughter cattle prices, and the ratio of cattle owned in feedlots to cattle under custom feeding arrangements. Yearly data for Nevada cattle on feed are not sufficient in number to perform a statistical analysis related to major factors affecting cattle on feed.

[8]John W. Malone Jr., and Stanley Randall, Market Organization of the Nevada Slaughter Industry, Agricultural Experiment Station Bulletin No. 235, University of Nevada, Reno, Nevada, November, 1963.

Objectives and Procedures of Study

This publication ends the first phase of a research project concerned with Nevada cattle feedlot operations. The first objective of the study is to present a detailed description of the state's feedlot industry. Data pertaining to physical facilities, costs of operations, supply sources of feeder animals, and market destinations and outlets were obtained from a survey of feedlot operators. Information obtained from the first objective will form the basis for the second objective - a cost and return analysis of various size warm-up operations in the state.

Personal interviews of feedlot operators were conducted during 1963. Data for 1962 were obtained from 75 feedlots which included 55 warm-up and 20 finishing operations. All feedlots surveyed placed at least 100 or more steers and/or heifers during the year.[9]

Feedlots were classified as warm-up or finishing operations. The operations were stratified into Small, Medium, and Large groups.[10] Size of operation was measured in terms of capacity.[11] Warm-up enterprises were classified as Small (100-449), Medium (450-999), and Large (1,000-2,500).[12] Finishing operations were categorized as Small (100-599), Medium (600-2,499), and Large (2,500-12,000).

Nevada Warm-Up Operations

Warm-up feeding will probably continue to hold a fairly important position in Nevada's livestock industry. In general, warm-up feeding is

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[9]There were 102 potential feeders in the state fitting the criteria of this study. However, 16 did not feed in 1962, 7 lots fed mainly Holstein steers, and 4 did not wish to cooperate. Records were obtained from 95 percent of the operators fitting the criteria of the study.

[10]Feedlots were not stratified on a geographical basis for analytical purposes since sufficient numbers of feedlots were not available for each stratum. It should be pointed out that some differences in feed fed occurred between feedlots in northern and southern Nevada.

[11]Capacity is defined here as the maximum number of animals that could be fed during an average feeding period. Warm-up operations in Nevada generally consist of one lot or batch per year. The length of feeding period for warm-up lots averaged about 146 days. The length of feeding period for finishing lots averaged about 156 days.

[12]One warm-up lot had a capacity considerably larger than the range shown for the Large group. This lot was not used in the investment cost analysis, but was included in the Large group for descriptive measures, such as numbers placed, supply sources, marketings, etc.

only one of several enterprises of a farm or ranch operation. The production of alfalfa and maintenance of a herd, in many cases, are included in the entire operation. Nevada's warm-up operators, as contrasted to farm feeders in the Midwest, derive a relatively larger portion of their gross income from the livestock enterprise.

Farmers and ranchers engaged in feeding, market all or most of their alfalfa crops through cattle and calves. Although there is some yearly shifting in and out of warm-up feeding, there are many operators who have been feeding continuously over a considerable number of years. In some instances, changes in feed and livestock cost-price ratios have resulted in some shifts between warm-up and finishing operations.

The continued production of a high-quality alfalfa hay, adequate supplies of feeder calves, and a readily available market demand for feeder animals by finishers in California and Nevada will contribute to the future existence of warm-up feeding in Nevada.

Geographical and Size Distribution

The majority of warm-up operations (78 percent) were located in Area I, the western part of the state. (Table 1 and Figure 1.) This area of the state produces a large amount of alfalfa hay in its irrigated valleys.

TABLE 1

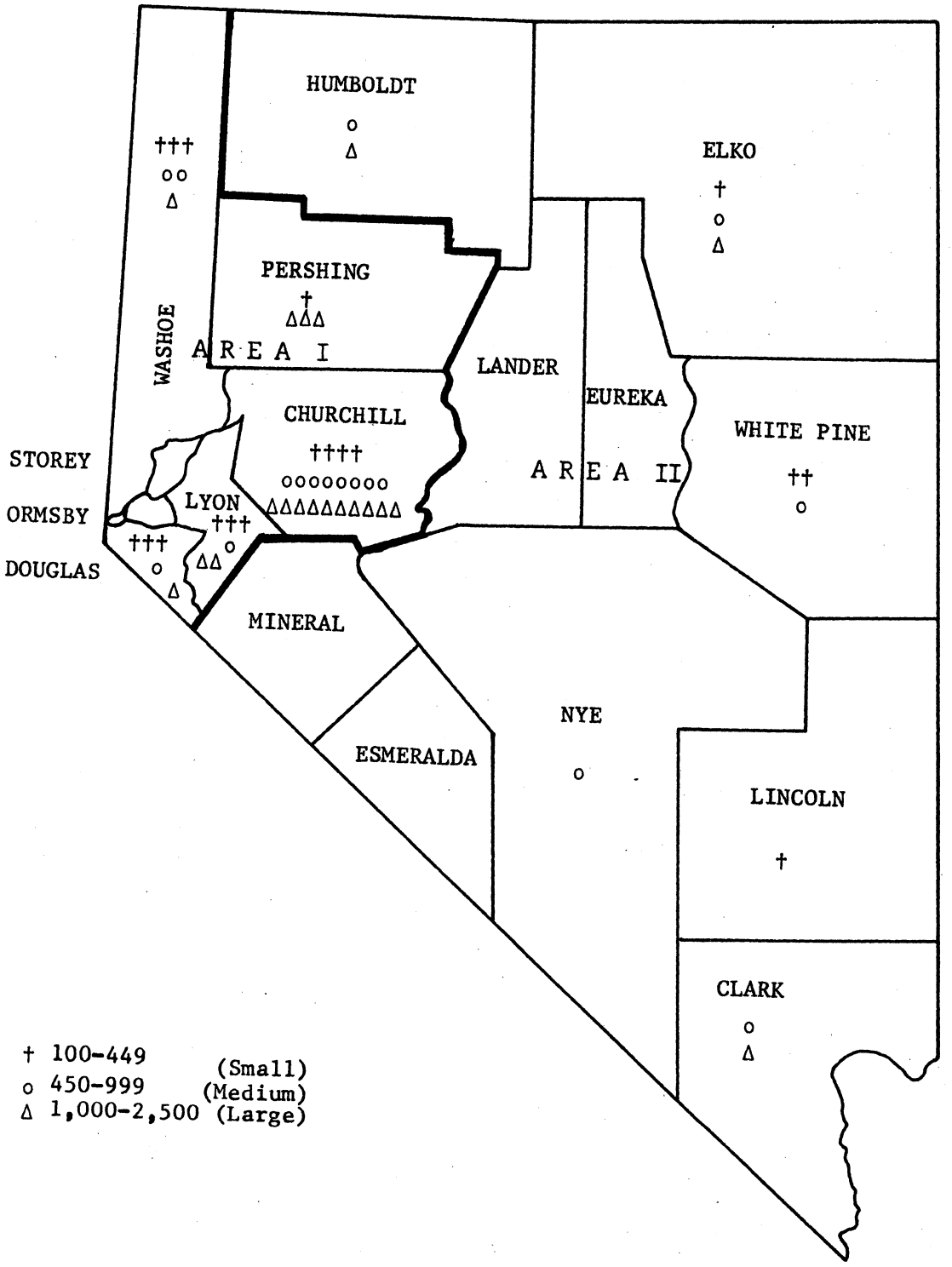
NUMBER AND SIZE OF NEVADA WARM-UP OPERATIONS BY GEOGRAPHICAL AREA. (1962)

Size of Operation (Capacity*)	Area I		Area II	
	Number	Percent	Number	Percent
Small (100-449)	14	32.6	4	33.0
Medium (450-999)	12	27.9	5	42.0
Large (1,000-2,500)	17	39.5	3	25.0
Total	43	100.0	12	100.0
Percent distribution		78.2		21.8

*Capacity is defined as the maximum number of animals that could be fed during an average feeding period. Warm-up operations in Nevada generally consist of one lot per year.

FIGURE 1

LOCATION OF WARM-UP FEEDLOTS (ACTIVE) IN NEVADA. (1962)



In 1962, 84.5 percent of cattle and calves placed in warm-up lots were in Area I. (Table 2.) This area accounted for 82.9 percent of the available capacity for warm-up operations. Range production of livestock dominates in Area II. There are, however, feedlot operations scattered throughout the area.

Investment Costs in Feedlot Facilities

The majority of warm-up lots did not possess the same degree of mechanization in feeding equipment, milling equipment, and storage facilities as finishing lots. Alfalfa hay comprised the major portion of the total feed fed in warm-up operations. Silage and some grain and/or commercial feed mix were also used. The majority of warm-up lots used self-unloading trucks or wagons to distribute feed to fenceline bunks. (Table 3.)

Feedmill operations are not numerous in Nevada's feedlot industry. Feedmills were present in 12 of the state's 55 warm-up operations in 1962. (Table 4.)

Investment costs of fixed facilities varied by size of operation. In addition to the size relationship, investment costs differed considerably within each size group. (Table 5.) Different degrees of complexity and age differences in feedlot facilities accounted for the large variation between and within the size groups.

Average investment per head capacity was $30.50, $20.49, and $17.64 for Small, Medium, and Large lots, respectively. The decline in investment costs as feedlot capacity increases is indicative of economies realized by spreading investment over larger numbers of animals.

Average investment per head fed for Small, Medium, and Large lots was $36.90, $29.33, and $27.87, respectively. Investment costs per head fed were high since capacity of feedlots was not fully utilized in 1962. Small lots operated at 82.6 percent of capacity while Medium and Large lots used 69.9 and 63.3 percent of capacity. The ratio of animals fed during the year to capacity of lots will hardly ever exceed 1.0, since warm-up operators usually feed but one lot per year.

Supply Sources and Procurement of Feeders

Placement of feeders in Nevada warm-up lots during 1962 were most numerous in the fourth quarter of the calendar year. Approximately 90 percent of the placements were in the fall after the alfalfa harvest was completed. The remaining 10 percent of placements occurred in the first quarter of the year.

About 63 percent of the 40,563 animals on feed in warm-up lots in 1962 were procured from Nevada sources, 26 percent from California, and the remaining 11 percent were from other western states. (Table 6.) Many of the feeders obtained from California were fed on a custom basis

TABLE 2

WARM-UP OPERATIONS: NUMBERS OF CATTLE* AND CALVES PLACED IN FEEDLOTS, CAPACITY AND PERCENT CAPACITY UTILIZED BY AREA AND SIZE OF OPERATION. (1962)

Size of Operation (Capacity)	AREA I				AREA II			
	Numbers Placed	Percent	Capacity	Percent of Capacity Used	Numbers Placed	Percent	Capacity	Percent of Capacity Used
Small (100-449)	2,697	7.9	3,390	79.6	875	13.9	925	94.6
Medium (450-999)	5,102	14.9	7,400	68.9	2,319	36.8	3,200	72.5
Large (1,000-2,500)	26,470	77.2	40,800	64.9	3,100	49.3	6,500	47.7
Total	34,269	100.0	51,590	66.4	6,294	100.0	10,625	59.2
Percent distribution of total numbers placed and capacity	84.5		82.9		15.5		17.1	

*Includes 800 cows and bulls.

TABLE 3

TYPE OF FEEDING SYSTEM
BY SIZE OF NEVADA WARM-UP OPERATIONS
(1962)

Size of Operation (Capacity)	Feeding System		
	Distributed to Bunks by Truck or Wagon	Hand-Fed	Self-Feeders
	Number	Number	Number
Small	10	7	1
Medium	13	3	1
Large	20	0	0
Total	43	10	2

TABLE 4

NUMBER AND TYPE OF FEEDMILLS
BY SIZE OF NEVADA WARM-UP OPERATION
(1962)

Size of Operation	Feedmill Operation		Type of Feedmill			
	With	Without	Automatic	Partially Automatic	Continuous	Batch
	Number	Number	Number	Number	Number	Number
Small	1	17	0	1	0	1
Medium	2	15	1	1	1	1
Large	9	11	7	2	6	3
Total	12	43	8	4	7	5

TABLE 5

FIXED INVESTMENT COSTS*
FOR NEVADA WARM-UP OPERATIONS
(1962)

	Size of Operation		
	Small	Medium	Large
Number of lots**	17	16	15
Average capacity (head)	242	631	1,653
Average number fed	200	441	1,047
Percent capacity used	82.6	69.9	63.3
Average investment	$7,381	$12,934	$29,170
Range of investment per lot	$2,500 to $16,500	$3,300 to $35,000	$9,800 to $72,000
Average investment per head (capacity)	$30.50***	$20.49***	$17.64***
Average investment per head (fed)	$36.90	$29.33	$27.87

*Fixed investment costs include land for feedlots, pens, milling equipment, storage facilities and feeding equipment. Most small and medium lots did not have milling facilities.

**There were seven lots not included in the calculation of investment costs. Three operations did not have sufficient cost data. The other four lots were primarily finishing operations in previous years, but during 1962 were only involved in warming up cattle. Inclusion of these operations would distort investment costs related to milling equipment and storage facilities for warm-up operations. The seven lots were included in other descriptive tables, such as numbers placed, supply sources, marketings, etc.

***A t-test was used to measure average or mean differences for investment costs per head (capacity) between size of feedlots. Differences in investment costs per head capacity between Small-Medium, Small-Large, and Medium-Large feedlots were significant at the .05 percent level. The use of the t-test assumes a random sampling procedure. Initially, the feedlots in this study comprised the total population of lots in the state. Some of the feedlots were eliminated from the population because of lack of cost data. Although some bias is introduced in the cost data, a general indication of differences in investment costs of different size feedlots is shown.

TABLE 6

FEEDER SUPPLY BY GEOGRAPHIC ORIGIN
FOR NEVADA WARM-UP OPERATIONS
(1962)

Size of Operation	Total Supply	Geographic Origin		
		California	Nevada	Other*
	No. of Head	Percent	Percent	Percent
Small	3,572	10.6	81.3	8.1
Medium	7,421	6.1	87.2	6.7
Large	29,570	32.5	54.8	12.7
Total	40,563	25.7	63.1	11.2

*"Other" origins include primarily Idaho and Oregon.

and then shipped back to California finishing lots. Others were fed on a custom basis for California packers who maintained their own finishing facilities.

Approximately 40 percent of the animals in warm-up lots were custom fed with Large size operations accounting for the largest share. The most common custom feeding arrangement was based on cost per pound of gain. The majority of animals custom fed were for finishing lots.

Feeder supplies from warm-up operators' own herds and directly from other farms and ranches accounted for about 60 percent of total supplies. (Table 7.) Small and Medium size operations supplied about half of their own animals for the feedlot. The warm-up lot in these two size groups is normally one enterprise on the farm or ranch which is coordinated with the operation of a relatively small cow operation and the production of alfalfa hay.

The Large warm-up lots procured about 71 percent of their feeder supplies from sources other than their own herds. In many cases, the Large operators, although maintaining some stock, concentrated more heavily on alfalfa production and the feedlot enterprise in contrast to the Small and Medium size operators.

Type of Feed Used in Warm-Up Operations

Alfalfa hay and silage constituted about 90 percent of the total feed fed in Nevada warm-up lots with alfalfa comprising 61 percent and

TABLE 7

FEEDER PROCUREMENT SOURCES FOR
NEVADA WARM-UP OPERATIONS
(1962)

Size of Operation	Total Supply	Source of Procurement				
		Own Herd	Farms & Ranches	Auctions	Order Buyer	Other*
	No. of Head	Percent	Percent	Percent	Percent	Percent
Small	3,572	52.9	33.8	5.5	2.2	5.6
Medium	7,421	51.6	28.5	18.6	0	1.3
Large	29,570	29.1	23.3	17.4	16.8	13.4
Total	40,563	35.3	25.2	16.5	12.5	10.5

*The "other" category includes unknown sources.

silage 29 percent.[13] Three cuttings of alfalfa per year in western Nevada are common. Silage, the second most important feed, was produced by half of the warm-up operators. Barley, commercial rations, and various other concentrates comprised the remainder of feed fed in warm-up lots. Average pounds fed daily per animal by type of feed and for different size operations are shown in Table 8.

Length of Time on Feed, Rate of Gain, Sex and Weights for Warmed-Up Cattle

Length of time on feed for animals in warm-up feedlots averaged 146 days. The ratio of steers to heifers placed in warm-up lots was approximately 1.56:1.0. Most animals were placed in October and left the lots during March.

The average daily rate of gain was 1.47 pounds for steers and 1.45 pounds for heifers. (Table 9.) However, there was a wide scatter in daily rates of gain for steers (.45 lbs.) and heifers (.51 lbs.). The dispersion for inweights, outweights, and length of time on feed for steers and for heifers was considerable. Observations were not sufficient in number to classify steers and heifers into different groups according to weights and length of time on feed. Average daily rates

[13]The contribution of the above feeds to total feed fed in terms of T.D.N. were: alfalfa (71 percent), silage (11.7 percent), and other concentrates (17.3 percent).

TABLE 8

AVERAGE POUNDS OF FEED FED PER ANIMAL PER DAY
BY TYPE OF FEED FOR DIFFERENT SIZE NEVADA WARM-UP OPERATIONS
(1962)

Size of Operation	Avg. No. Fed	Avg. Days Fed	Type of Feed Fed: Alfalfa No. of Lots* Rptg.	Alfalfa Avg. Lbs. Per Animal Per Day	Silage No. of Lots* Rptg.	Silage Avg. Lbs. Per Animal Per Day	Barley No. of Lots* Rptg.	Barley Avg. Lbs. Per Animal Per Day	Commercial Ration No. of Lots* Rptg.	Commercial Ration Avg. Lbs. Per Animal Per Day	Other Concentrates No. of Lots* Rptg.	Other Concentrates Avg. Lbs. Per Animal Per Day
Small	200	131	18	16.6	7	9.3	6	2.0	5	2.0	6	2.6
Medium	441	149	17	15.5	9	10.9	8	3.1	3	2.8	3	3.8
Large	1,047	147	20	10.1	12	12.6	6	1.6	2	4.2	8	6.5
Total number of lots reporting type of feed used.			35		28		20		10		17	

*All operators were interviewed concerning type of feed fed. The number of lots reporting are those specifically feeding the type of feed in question.

TABLE 9

AVERAGE LENGTH OF TIME ON FEED, DAILY RATE OF GAIN,*
AND INWEIGHTS AND OUTWEIGHTS BY SEX FOR NEVADA WARM-UP OPERATIONS
(1962)

Sex	Percent on Feed	Length of Time on Feed		Daily Rate of Gain		Inweight		Outweight	
		Average	Standard Deviation**	Average	Standard Deviation**	Average	Standard Deviation**	Average	Standard Deviation**
		Days	Days	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds
Steers	60.6	146.6	38.6	1.47	.45	408.4	83.8	619.6	105.8
Heifers	39.4	144.8	34.1	1.45	.51	376.8	82.0	581.2	97.8

*Pounds added during feeding period as reported by warm-up operators.

**The standard deviation of daily rates of gain measures how closely grouped individual feedlot daily rates of gain are in relation to the average daily rate of gain for all feedlots. The average daily rate of gain for steers in all feedlots was 1.47 with a standard deviation of $\pm$ .45 pounds. This indicates that about two-thirds of the steers had an average daily rate of gain of 1.47 $\pm$ .45 pounds, or a range of 1.02 to 1.92 pounds.

of gain for steers and for heifers should be interpreted in light of the large dispersion in daily rates of gain.

Market Destinations and Outlets for Feeder Steers and Heifers

Feeder steers and heifers were generally marketed from warm-up lots late in the first quarter of the year at average weights of 620 and 581 pounds, respectively. California finishing lots absorbed 65.5 percent of Nevada's feeders. (Table 10.) Feeders leaving warm-up lots entered finishing lots in California around the second quarter, the period when California placements peak. Small Nevada warm-up lots marketed over half of their feeders within the state. Medium size lots shipped 55.7 percent of their feeders to California, while Large feedlots marketed about 72 percent of their feeder steers and heifers to California.

Approximately 70 percent of all feeders from warm-up lots were shipped direct to finishers. (Table 11.) The majority of finishers were in California. Packers were the second largest outlet for Nevada warmed-up cattle (16.2 percent). Most of these feeders were finished in packers' feedlots. Some feeders were placed back on grass (11.1 percent), while a small number (2.6 percent) were sold through auction markets.

Small warm-up lots shipped 85 percent of their animals to finishing lots and packers. Small lots sold a larger percentage of feeders through auction markets than did Medium and Large lots. Medium size warm-up lots shipped about two-thirds of their feeders to finishers and packers, and returned almost 29 percent of their animals back to grass. Large feedlots transported almost 80 percent of their feeders direct to finishing lots.

TABLE 10

MARKET DESTINATIONS BY GEOGRAPHICAL AREA
FOR FEEDER STEERS AND HEIFERS PLACED IN NEVADA WARM-UP LOTS
(1962)

		Destination		
Size of Operation	Total Marketings	California	Nevada	Other*
	Number	Percent	Percent	Percent
Small	3,527	29.3	54.0	16.7
Medium	7,290	55.7	29.2	15.1
Large	29,365	71.6	28.0	.4
Total	40,182	65.5	30.5	4.5

*"Other" includes primarily Idaho and Oregon.

TABLE 11

MARKET OUTLETS USED FOR FEEDER STEERS
AND HEIFERS BY NEVADA WARM-UP OPERATIONS

		Market Outlet			
Size of Operation	Total Marketings	Finisher	Packer	Auction	Back on Grass
	Number	Percent	Percent	Percent	Percent
Small	3,527	51.9	33.1	12.2	2.8
Medium	7,290	41.2	24.8	5.1	28.9
Large	29,365	79.6	12.0	.6	7.8
Total	40,182	70.1	16.2	2.6	11.1

Nevada Finishing Operations

Commercial feedlots are operations which generally purchase all feed used, employ a large amount of hired labor, and custom feed the majority of animals placed in the feedlot. Commercial feedlots, as defined above, are not numerous in Nevada. In 1962, there were 20 feedlots which could be classified as finishing operations. (Table 12.) There were only a few finishing lots in Nevada that would nearly approach the above definition ascribed to commercial feedlots. These lots were in the Large size category, purchasing most all feed used and engaged in considerable custom feeding. Most finishing lots in Nevada are located in the west-central portion of the state. (Figure 2.)

With the exception of one Medium feedlot, all cattle placed in Small and Medium lots were owned by the feedlot operator. A large number of these feedlots were coordinated with a livestock and alfalfa crop enterprise. The majority of grain and concentrates used in the feed ration were purchased.

TABLE 12

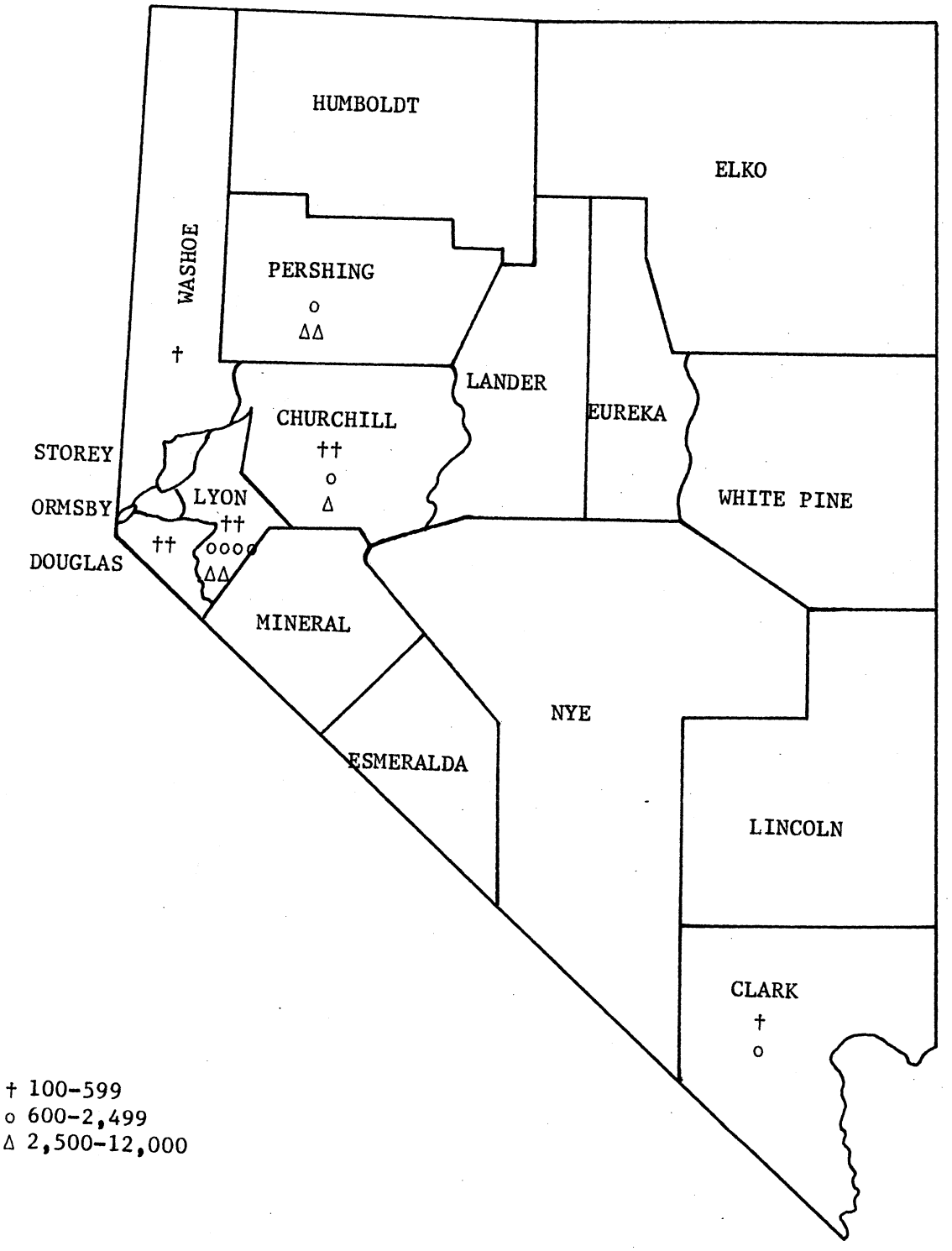
NUMBER, SIZE OF OPERATION, NUMBERS PLACED, AND RATIO OF NUMBERS PLACED TO CAPACITY* FOR NEVADA FINISHING LOTS (1962)

Size of Operation (Capacity)	Number of Operations	Numbers Placed	Capacity	Ratio of Numbers Placed to Capacity
Small (100-599)	8	1,575	2,100	.75
Medium (600-2,499)	7	5,410	8,800	.61
Large (2,500-12,000)	5	31,918	30,200	1.06
Total	20	38,903	41,100	.95

*Capacity is defined as the number of head a feedlot could carry through one feeding period.

FIGURE 2

LOCATION OF FINISHING LOTS (ACTIVE) IN NEVADA. (1962)



Investment in Feedlot Facilities

Finishing lots in Nevada have relatively more facilities and possess a greater amount of complexity in milling and feeding equipment and storage facilities than warm-up operations. (Tables 13 and 14.) Since a large portion of feed fed consists of grain and concentrates, finishing operations necessarily require a heavier investment in facilities.

TABLE 13

TYPE OF FEEDING SYSTEM
BY SIZE OF NEVADA FINISHING LOTS
(1962)

Size of Operation	No. of Lots	Feeding System		
		Distributed to Bunks By Truck or Wagon	Hand-Fed	Self-Feeders
Small	8	5	2	1
Medium	7	7	0	0
Large	5	5	0	0
Total	20	17	2	1

TABLE 14

NUMBER AND TYPE OF FEEDMILLS
BY SIZE OF NEVADA FINISHING LOTS
(1962)

Size of Operation	Feedmill Operation		Type of Feedmill			
	With	Without	Automatic	Partially Automatic	Continuous	Batch
Small	3	5	0	3	0	3
Medium	6	1	5	1	6	0
Large	5	0	4	1	5	0
Total	14	6	9	5	11	3

Seventeen of the 20 finishing operations interviewed used self-unloading trucks or wagons for feed distribution. None of the feedlots possessed a completely mechanized feed distribution system, i.e., the utilization of augers or feed tubes to convey feed directly from a storage bin to feed bunks.

Fourteen of the feedlots operated a feedmill. Investment in mills ranged from $12,000 to $100,000 per unit. Value of mills varied with size and age of the unit. The other six lots used commercial feedmills and hand-mill equipment.

Total fixed investment costs for finishing lots displayed considerable variation between and within size groups. (Table 15.) Average investment per head capacity was $36.79 for Small lots, and $30.36 and $27.96 for Medium and Large lots, respectively. A decrease in investment cost per head capacity was observed as the feedlot operation increased in size from about a 260-head capacity lot to one capable of feeding approximately 1,400 animals. The decrease in investment cost per head capacity was relatively less as capacity of the lot increased from 1,400 to 6,000 animals.

As size of feedlot increases, within a range, it would be expected that reductions in investment per head capacity would occur because of more specialized use of facilities. It may be possible, using cost data from feedlot records, that investment costs per head capacity increase as size of operation increases from a 1,000- to 2,000-head capacity lot to one capable of feeding 5,000 animals.[14] Investment larger than necessary, or differences in installation dates of feedlot facilities may reflect higher investment costs per head capacity for a group of feedlots having a larger capacity than other groups.

Average investment costs per head fed were high for Small ($49.36) and Medium lots ($56.07), since most operations fed one group per year. In addition, most of these lots did not fully utilize their capacity. Average investment per head fed for Large size lots was $26.57. The average rate of turnover in Large Nevada finishing lots was slightly over one.[15] If an average rate of turnover were increased to 1.5 for Large finishing lots, average investment costs per head fed would be reduced to $18.64 per head fed. Operation of finishing lots in Nevada at less than full capacity and an average turnover rate of less than 1.0 resulted in high average investment costs per head fed. During any

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[14]Willard F. Williams, and James McDowell, Characteristics and Growth of Cattle Feedlot Operations in Oklahoma, Oklahoma State University, Stillwater, Processed Series P-418, June, 1962; John A. Hopkin, Cattle Feeding in California, Bank of America, Economics Department, San Francisco, California, February, 1957.

[15]The rate of turnover is defined as the ratio of total head fed during the year to total capacity for one feeding period.

TABLE 15

FIXED INVESTMENT COSTS*
FOR NEVADA FINISHING LOTS
(1962)

	Size of Operation		
	Small (100-599)	Medium (600-2,499)	Large (2,500-12,000)
Number of lots	8	6**	5
Average capacity (head)	263	1,367	6,040
Average number fed	196	740	6,357
Ratio of total numbers fed to total capacity	.74	.54	1.05
Average investment per lot	$9,676	$41,492	$168,880
Range of investment per lot	$3,660 to $26,494	$15,450 to $74,000	$74,500 to $287,500
Average investment per head (capacity)	$36.79***	$30.36***	$27.96***
Average investment per head (fed)	$49.36	$56.07	$26.57

*Fixed investment costs include land for feedlots, pens, milling equipment, storage facilities, and feeding equipment.

**One feedlot in the Medium group did not have sufficient data on investment costs to include in the analysis.

***Results of t-tests indicated no significant differences (.05 percent level), in a statistical sense, for average investment costs per head capacity between Small-Medium, Small-Large, and Medium-Large feedlots.

given feeding year, however, there may be reason for operating below capacity as a result of unfavorable market price relations with respect to cattle and feed.

Supply Sources for Feeder Steers and Heifers

The majority of feeder steers and heifers were placed in Nevada finishing lots in the fourth quarter (65.1 percent). Percentages of feeders placed during the rest of the year were: first quarter, 17.1; second quarter, 11.1; and third quarter, 6.7. Approximately 93 percent of the animals were placed in Small lots in the fourth quarter since these operators allocated their spring and summer labor to the operation of a cow herd and alfalfa hay production. Large and Medium lots, on the average, placed 65 percent of their feeders in the fourth quarter.

Finishing lot operators obtained 79 percent of their feeder steers and heifers from Nevada sources in 1962. (Table 16.) The remaining feeder animals were from California and a wide distribution of other western and southwestern states.

Feeder procurement sources varied by size of finishing operation. (Table 17.) Small operators obtained the majority of feeders from their own herd (68.4 percent) and from auction markets (26.2 percent). Medium and Large size finishing lots secured most feeders direct from farms and ranches (62.3 and 88.3 percent, respectively). This source of feeder cattle accounted for roughly 81 percent of all cattle placed in Nevada finishing lots. Approximately 62 percent of all animals obtained direct from farms and ranches came from cow-yearling operations where warm-up lots were not established.[16]

In 1962, about 50 percent of the cattle in Nevada finishing lots were custom fed. The Large size lots accounted for over 95 percent of the custom feeding. Most custom feeding in these lots was for farmers and ranchers including warm-up lot operators. Custom arrangements for cattle in finishing lots were either on a cost-per-ton of feed or cost-per-pound of gain basis. Three of the five finishing lots employed the cost-per-ton of feed arrangement in the custom operation.

Type of Feed Used in Finishing Operations

Nevada finishing lots usually fed a ration in which barley and various other concentrates accounted for approximately 62 percent of

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[16]These animals will range from 550 to 650 pounds in weight and, in many cases, will coincide with the weights of feeders coming out of warm-up lots.

TABLE 16

FEEDER SUPPLY BY GEOGRAPHIC ORIGIN
FOR NEVADA FINISHING OPERATIONS
(1962)

Size of Operation	Total Supply No. of Head	Geographic Origin California	Nevada	Other*
		Percent	Percent	Percent
Small	1,575	0	100.0	0
Medium	5,410	22.2	77.8	0
Large	31,918	2.8	78.2	19.0
Total	38,903	5.4	79.0	15.6

*"Other" includes Idaho, Oregon, and other western and southwestern states.

TABLE 17

FEEDER PROCUREMENT SOURCES
FOR NEVADA FINISHING OPERATIONS
(1962)

Size of Operation	Total Supply No. of Head	Source of Procurement Own Herd	Farm & Ranches	Auction	Order Buyer	Other*
		Percent	Percent	Percent	Percent	Percent
Small	1,575	68.4	5.4	26.2	0	0
Medium	5,410	19.6	62.3	8.9	0	9.2
Large	31,918	7.8	88.3	2.0	1.9	0
Total	38,903	11.9	81.4	3.9	1.5	1.3

*"Other" includes unknown sources.

the total feed fed. The remaining 38 percent of feed used was alfalfa hay (33 percent) and silage (5 percent).[17]

Finishers in Nevada used more alfalfa hay in the overall ration than is true for drylot operations in many other feeding areas. In addition, three operations relied heavily on silage in the feed ration. Small and Medium feedlots utilized larger amounts of alfalfa and silage than Large size lots. (Table 18.) Barley and concentrates comprised the major portion of the ration used by Large feeding operations.

Length of Time on Feed, Daily Rate of Gain, Sex and Weight for Finished Cattle

Average length of time on feed for fed cattle in Nevada was 156 days. The ratio of steers to heifers in Nevada finishing lots was 2.85:1.0. The ratio of steers to heifers was probably greater than normal because of the retention of heifers for herd expansion on farms and ranches in Nevada during 1962.

The average daily rate of gain for steers was 2.91 pounds and for heifers 2.67 pounds. (Table 19.) The standard deviations for daily rates of gain were .57 pounds for steers and .52 pounds for heifers. Standard deviations for daily rates of gain for steers and for heifers in finishing lots were relatively less than those for steers and for heifers in warm-up lot operations. (Table 9.) Inweights and outweights of steers and of heifers and length of time on feed displayed considerable dispersion.

Market Destinations and Outlets for Slaughter Steers and Heifers

Geographical destinations of slaughter cattle from Nevada finishing lots approximated those for feeder steers and heifers leaving warm-up lots. Slaughter cattle shipped to California represented 65 percent of total cattle from Nevada finishing lots (Table 20), while intrastate shipments accounted for most all the remaining slaughter cattle. Small size feedlots transported 70.9 percent of their slaughter cattle intrastate, while Medium lots shipped 44.1 percent within the state. Most of the remaining cattle were shipped to California. Large feedlots transported about two-thirds of their fed cattle to California with one-third of the animals being shipped to intrastate destinations.

About 83 percent of fed cattle for slaughter were transported direct to packers. (Table 21.) California packers received 61.3 percent of all slaughter cattle while most of the remaining animals were

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[17]The contribution of the above feeds to total feed fed in terms of T.D.N. were: alfalfa (26.8 percent), silage (1.3 percent), and barley and other concentrates (71.9 percent).

TABLE 18

AVERAGE POUNDS OF FEED FED PER ANIMAL PER DAY
BY TYPE OF FEED FOR DIFFERENT SIZE NEVADA FINISHING LOT OPERATIONS
(1962)

Size of Operation	Avg. No. Fed	Avg. Days Fed	Type of Feed Fed: Alfalfa No. of Lots* Rptg.	Alfalfa Avg. Lbs. Per Animal Per Day	Silage No. of Lots* Rptg.	Silage Avg. Lbs. Per Animal Per Day	Barley No. of Lots* Rptg.	Barley Avg. Lbs. Per Animal Per Day	Commercial Ration No. of Lots* Rptg.	Commercial Ration Avg. Lbs. Per Animal Per Day	Other Concentrates No. of Lots* Rptg.	Other Concentrates Avg. Lbs. Per Animal Per Day
Small	196	140	8	10.9	2	12.5	4	8.0	0	0	5	7.0
Medium	771	176	7	9.8	**	**	4	6.3	0	0	7	6.7
Large	6,357	154	5	7.2	**	**	5	8.7	**	**	4	10.9
Total number of lots reporting type of feed used.			20		2		13		**		16	

*All operators were interviewed concerning type of feed fed. The number of lots reporting are those specifically feeding the type of feed in question.

**Data was omitted in order not to disclose statistics of individual operator.

TABLE 19

AVERAGE LENGTH OF TIME ON FEED, DAILY RATE OF GAIN,*
AND INWEIGHTS AND OUTWEIGHTS BY SEX FOR NEVADA FINISHING OPERATIONS
(1962)

Sex	Percent on Feed	Length of Time on Feed		Daily Rate of Gain		Inweight		Outweight	
		Average	Standard Deviation**	Average	Standard Deviation**	Average	Standard Deviation**	Average	Standard Deviation**
		Days	Days	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds
Steers	74.4	159.7	33.7	2.91	.57	577.4	93.7	1,037.6	89.9
Heifers	25.6	146.7	34.4	2.67	.52	529.6	97.6	920.7	71.7

*Pounds added during feeding period as reported by finishing lot operators.

**The standard deviation of daily rates of gain measures how closely grouped individual feedlot daily rates of gain are in relation to the average daily rate of gain for all feedlots. The average daily rate of gain for steers in all feedlots was 2.91 pounds with a standard deviation of $\pm$ .57 pounds. This indicates that about two-thirds of the steers had an average daily rate of gain of 2.91 $\pm$ .57 pounds or a range of 2.34 to 3.48 pounds.

TABLE 20

MARKET DESTINATIONS BY GEOGRAPHICAL AREA
FOR SLAUGHTER STEERS AND HEIFERS
PLACED IN NEVADA FINISHING LOTS
(1962)

Size of Operation	Total Marketings	Destination		
		California	Nevada	Other*
	Number	Percent	Percent	Percent
Small	1,554	29.1	70.9	0
Medium	5,381	55.2	44.1	.7
Large	31,646	68.6	31.4	0
Total	38,581	65.1	34.8	.1

*"Other" includes primarily Idaho and Oregon.

TABLE 21

MARKET OUTLETS FOR SLAUGHTER STEERS AND HEIFERS
PLACED IN NEVADA FINISHING LOTS
(1962)

Size of Operation	Total Marketings	Market Outlet			
		Finisher*	Packer**	Auction	Other***
	Number	Percent	Percent	Percent	Percent
Small	1,554	13.5	66.6	1.2	18.7
Medium	5,381	.7	98.4	0	.9
Large	31,646	19.3	81.7	0	0
Total	38,581	15.7	83.4	a	a

*Most animals went into packer feedlots for a short period of time.

**Includes consignments to packers which account for 2.9 percent of total slaughter cattle marketed.

***"Other" category accounts for unknown outlets.

[a]Less than 1 percent combined.

slaughtered in Nevada. Approximately 16 percent of all cattle leaving finishing lots in Nevada were shipped to other finishing lots. Most of these animals entered packers' feedlots for additional feeding. The few auction markets in Nevada accounted for an insignificant volume of fed cattle marketings.