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31

**AN ECONOMIC ANALYSIS OF LIVESTOCK
AUCTIONS IN SOUTH DAKOTA**

BY

DONALD K. BENDT

**A thesis submitted
in partial fulfillment of the requirements for the
degree of Master of Science, Department of
Economics, South Dakota State
University**

June 1967

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AN ECONOMIC ANALYSIS OF LIVESTOCK
AUCTIONS IN SOUTH DAKOTA

This thesis is approved as a creditable and independent investigation by a candidate for the degree, Master of Science, and is acceptable as meeting the thesis requirements for this degree, but without implying that the conclusions reached by the candidate are necessarily the conclusions of the major department.

Thesis Adviser

Date

Head, Economics Department

Date

2661
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DKB

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CHAPTER I

INTRODUCTION

The structure of the livestock industry in the United States has undergone change in the past three decades. Integration, scale economies, changed eating habits, production and processing innovations, decentralization and increased demand for services have all affected the market structure. During this change, however, livestock auctions have remained important outlets for marketing livestock.

Since the establishment of the first auction at Yankton in 1930, livestock auctions in South Dakota have become increasingly important.¹ By 1937 the number had increased to 34. In 1964 there were 58 auctions operating in the state handling an annual volume of almost three million head of livestock. The growth in annual receipts at auctions for the period 1937-1964 is shown in Figure 1.

In the early stages of development of the auction industry, existing conditions in transportation and production largely limited the distance from which firms could procure livestock. As a result, most firms were too small to attain any significant degree of efficiency in their operations. High costs of operation were usually passed on to the producers through the charges that were assessed by the auctions for handling and selling the livestock.

¹ Dale E. Roth, Livestock Auctions in South Dakota, Unpublished Master's Thesis, Department of Economics, South Dakota State College, June 1959, Brookings: p. 14.

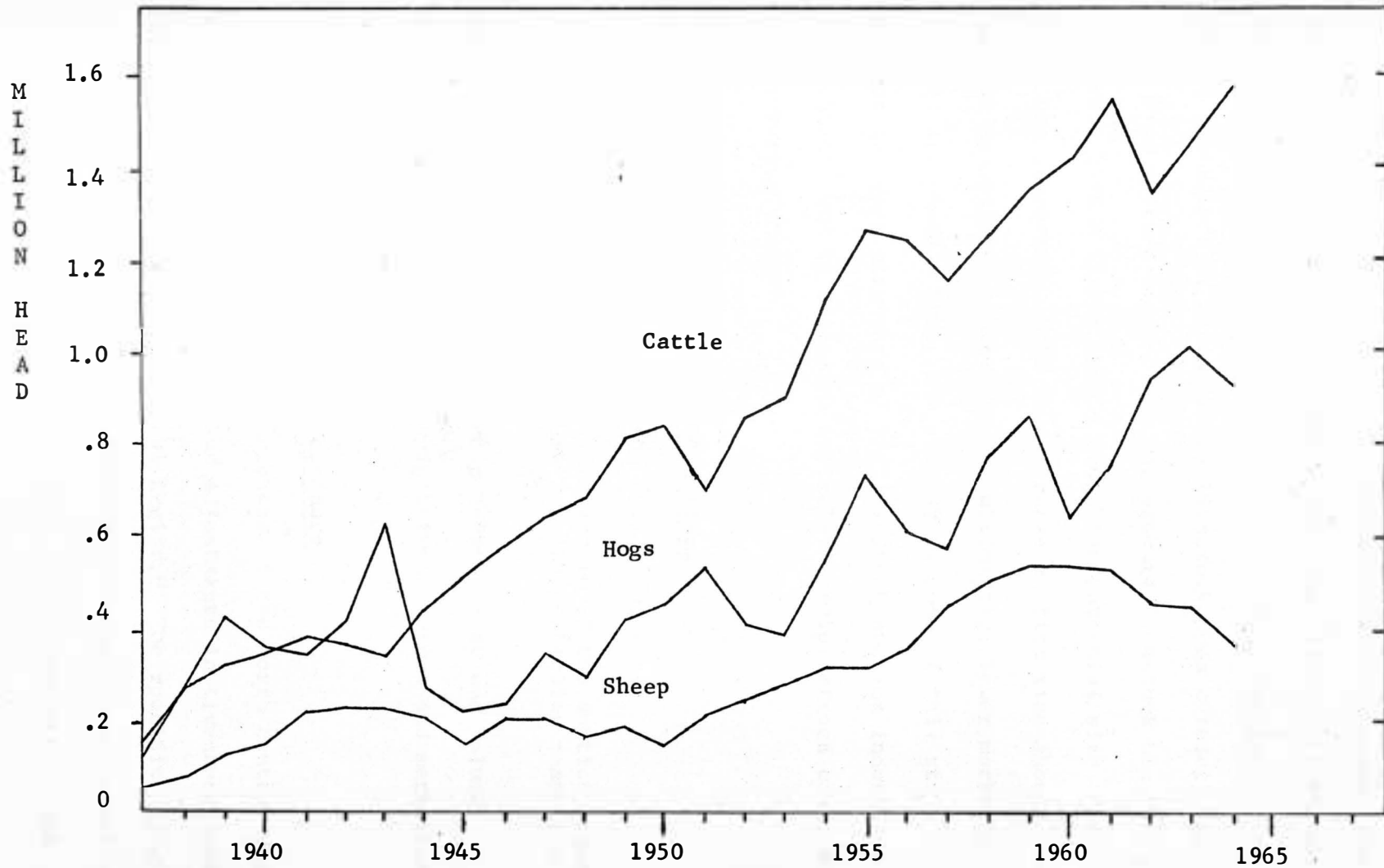


Figure 1. Number of Cattle, Hogs and Sheep Marketed Through Livestock Auctions, South Dakota, 1937-1964. (See Appendix A, Table 4)

In recent years, however, the continual development and improvement in roads and truck transportation, along with the trend in livestock production toward fewer but larger producers, has reduced the time and cost of transporting livestock. As a result, the distance from which auction firms can procure livestock has become greater. With a larger supply area, the potential size of auction firms has increased. With the increase in firm size should come greater operational efficiency and ultimately, lower marketing charges and costs. Thus, the primary purpose of this study is to examine the cost structure of the livestock auction industry in South Dakota and to determine any relationship between cost, volume and marketing charges.

Objectives

The specific objectives of this study are:

- (1) To examine the development and growth of the auction industry in South Dakota in recent years with particular respect to change in industry and firm size.
- (2) To determine the relationship between cost and volume.
- (3) To determine the relationship between volume and marketing charges.

Procedure

This study represents one phase of the North Central Regional Project NCM-36 entitled "Long Run Adjustments in Livestock Market Organization in the North Central Region." The specific objective of this phase of the regional project was to compare operational costs for alternative systems of marketing. In accordance with the

regional project, one objective of this study was to estimate the operational costs for livestock auctions of various sizes.

Managers of the 58 auctions were contacted by personal interviews and asked to supply information pertaining to volume, operating costs and marketing charges of the auctions. Additional data were also obtained with regard to changes in the operation of auctions for the period 1956-1964. Usable schedules were obtained from 50 auctions. To obtain more complete cost information, grouped data were supplied by the regional office of the Packers and Stockyard Commission. Due to differences in the methods of reporting and classifying costs, the cost data obtained from the Packers and Stockyards Commission and those from the schedules were not identical. The analysis in this study is based primarily on the cost data obtained from the Packers and Stockyard Commission.

In order to make size comparisons, the auctions were divided into three categories on the basis of the number of livestock marketing units handled in 1964. To be consistent with previous North Central Regional studies, a marketing unit was defined as one head of cattle, three hogs and five sheep.² One limitation of this definition is that the cost to the auction of handling a marketing unit of one species of livestock may not be exactly the same as for a marketing unit of some

² Richard R. Newberg, Livestock Marketing in the North Central Region III: Auction Markets, Ohio Agricultural Experiment Station Research Bulletin 932 and North Central Regional Research Publication 149, December 1963, p. 19.

other species. However, for the purposes of this study it was decided that the above definition was satisfactory. The size groups selected were:

Large auctions: 50,000 or more marketing units.
Medium auctions: 30,000 to 49,999 marketing units.
Small auctions: less than 30,000 marketing units.

Because of differences in both the type of livestock marketed and the proportion which each species makes up of the total volume in various areas of the state, the auctions were also grouped by geographic area. For example, in one part of the state slaughter hogs account for a much larger proportion of total volume than in the rest of the state. It was believed that such differences might have a major effect on operational costs. The auctions were grouped into five areas (Figure 2) determined on the basis of similarity in both the types and species of livestock marketed. For convenience, county lines were used to establish boundaries.

Average costs were classified into variable and fixed costs. For each auction size group, the costs were placed on a per marketing unit basis.

Due to differences in the methods used to assess marketing charges, it was necessary to base marketing charges on specific classes of livestock. Most auctions assess charges on a straight per-head basis. However, a substantial number assess charges, especially for cattle, on the value of the livestock. Charges based on value are usually assessed either on a straight percentage of the gross value of the livestock consignment or on the per-head value. Auctions

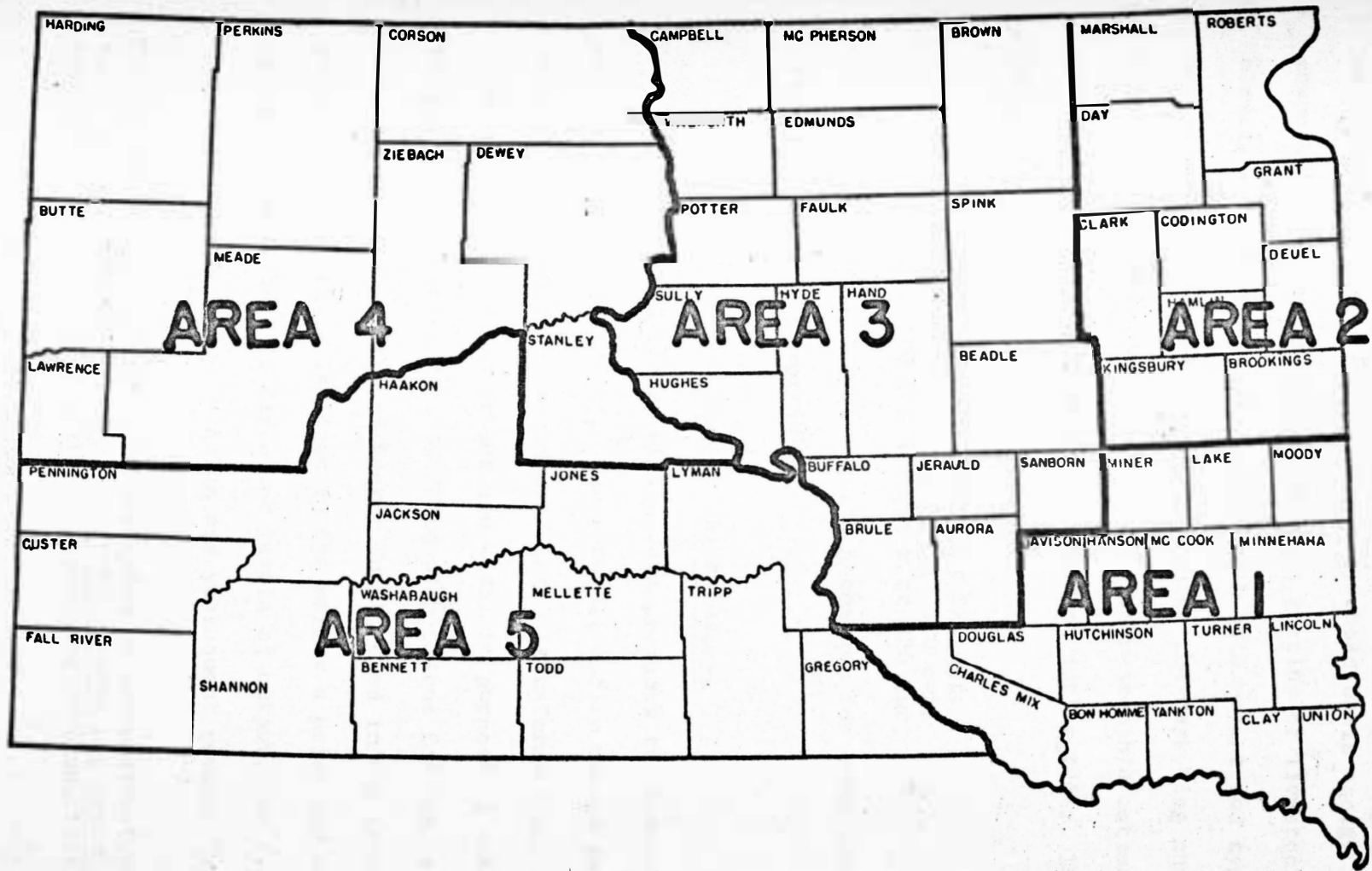


Figure 2. Selected Geographic Areas.

which assess charges on a straight per-head basis assign specified charges for different classes of each species of livestock. The classes are delineated on the basis of both weight and type. The specific classes of livestock upon which the marketing charges in this study are based were believed to be reasonable estimates of the prices for these classes of livestock during 1964. The classes chosen were:

Cattle: 500 lb. feeder at \$24 cwt.
Hogs: 200 lb. slaughter at \$20 cwt.
Sheep: 100 lb. slaughter at \$20 cwt.

It was assumed that marketing charges for other classes of livestock would be comparable.

Theoretical Framework

Conventional theory of the firm provides the framework for the analysis of this study.³ In general, a firm may be defined as an institution which buys raw materials, transforms them, and then resells the new product or service with the purpose of making a profit. An operating firm is faced with prices for the resources it uses which are the costs of factor inputs used in the transformation process. Also, there is given in the market a price for the finished product or service. At different levels of output, the firm is faced with varying costs of production and subsequent revenue from its sale.

³ For a more detailed discussion of conventional theory of the firm, see Richard H. Leftwich, The Price System and Resource Allocation, Second Edition (New York: Holt, Rinehart and Winston, 1966), Chapter 8.

The productive inputs may be partitioned into: (1) those inputs that are a function of time and, therefore, independent of the volume of products or services provided and (2) those inputs that vary with the volumes of products or services forthcoming. When these inputs are combined in the production process, they provide a physical production function which describes the relationship between the level of inputs and the level of outputs for a particular firm and time period.

When the relevant prices are applied, the inputs appear as fixed and variable costs. Fixed costs include such items as depreciation, taxes and insurance while variable costs include items such as labor, utilities and supplies. Together the variable and fixed costs reflect changes in costs of operation for different levels of output. The cost relationships may be expressed by either total cost curves or average cost curves.

The short-run average cost curves (SAC) shown in Figure 3 represent the short-run average cost curves for individual firms operating at various levels of output with a given plant size. They show the changes in average costs of a firm at different levels of output. An increase in output of A to B results in a more efficient combination of variable and fixed resources and reflects increasing returns to factor inputs. Economies such as these result from the spreading of the overhead, or fixed, costs over a larger output. Beyond this level of output, per unit costs increase because the decreasing returns which occur as factor inputs are added more than offset the advantages of spreading the overhead costs over a greater output.

Average Cost

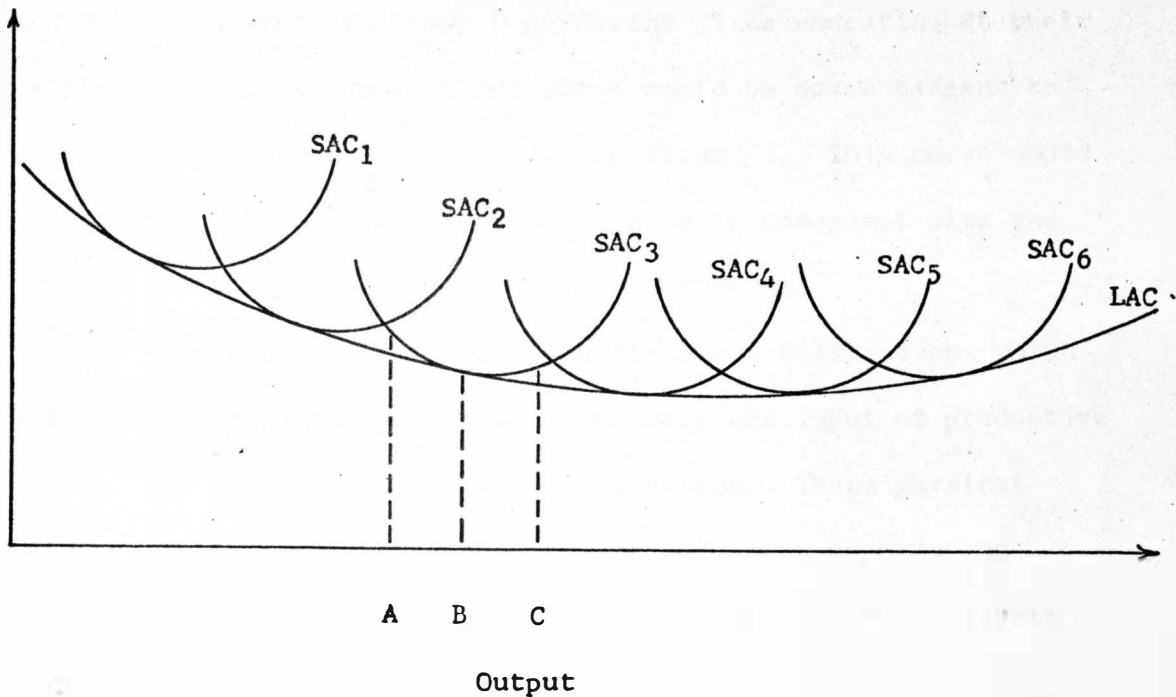


Figure 3. Hypothetical Short-Run Average Cost Relationships.

In the long-run, however, all costs or inputs are variable. Therefore, by making appropriate adjustments in plant size, firms can operate at optimum levels for different outputs. This is illustrated by the lower per unit costs of plant IV compared to plant III. The reductions in per unit costs which result from appropriate adjustments in plant size are referred to as economies of scale. These economies may result from improvements in the organization or methods of production made possible by a larger scale of operations resulting in savings in the labor, material, or equipment requirements per unit of output. They may also result from purchasing supplies and materials in large quantities. However, when the firm becomes so large that management can no longer be operated efficiently, unit costs rise and diseconomies occur.

If it were possible to obtain short-run average cost curves for an infinite number of firms of different sizes operating at their most efficient outputs, an envelope curve could be drawn tangent to these individual plant curves as shown in Figure 3. This curve would show the cost changes associated with changes in the plant size and could be called a long-run planning curve for firms.

In any particular firm there are technical restrictions which control and determine the relationship between the input of productive factors and the outputs of products and services. These physical restrictions in auctions may include the arrangement of pens and equipment, the integration of the total operation and the abilities of the manager and laborers.

There are several characteristics of auction firms which differ from production-oriented firms. Although these differences do not seriously influence the applicability of theory to auction operations, an awareness of them is essential.

First, auction firms are providers of services rather than producers of goods, acting as selling agents for consignors of livestock. As service establishments, factor inputs consist only of resources necessary to provide the services. Since auction firms do not procure and transform raw materials into finished products, they must look to their internal operations for all efficiencies and to increased volume for higher levels of revenue.

Second, auction firms usually operate only one or two days per week. This severely affects operational efficiency and leads to

higher unit costs. Based on a five-day week, a plant operating only one day a week is operating at only 20 per cent of its potential capacity. This means that fixed costs of auctions are approximately five times as large per unit as would be if they operated daily with comparable sale volumes.

Third, compared to production-oriented firms, auction firms have little advance knowledge of, or control over, their supply. As public agencies, they must accept all livestock delivered to them on or before the day of the sale. As such, auction operators usually construct facilities sufficient to handle the maximum volume of livestock that is expected to be received on any one day. However, because of weekly and seasonal fluctuations in marketing, the average volume handled per sale is usually much less than the maximum and, consequently, auctions operate through most of the year with considerable excess capacity. This excess capacity causes higher fixed costs.

Lack of prior knowledge of supply also affects labor efficiency and costs. Prior to the day of the sale, an auction operator must arrange for a labor force to handle the volume of livestock that he anticipates will be received. The number of employees hired may be greater or less than that required to handle the actual volume. This means that labor costs per unit will be higher than would be if the supply of livestock for any one sale day could be regulated.

CHAPTER II

GROWTH OF AUCTIONS

Industry Size

Cattle are the high volume species of livestock sold through South Dakota auctions. In 1964 over 1.5 million cattle were sold through auctions, an increase of 26 per cent over 1956.⁴ The 930,000 hogs sold at auctions in 1964 represents a 53 per cent increase over the 1956 volume. Sheep and lamb transactions were about the same with 334,000 head handled in both 1956 and 1964 (Table 1).

The proportion of livestock moving through auctions has increased also. The proportion of South Dakota livestock marketed through auctions in 1964 shows an increase over 1957 of 14 per cent for cattle, 3 per cent for hogs and 15 per cent for sheep (Table 2).⁵ The proportion of cattle and hogs moving through the terminal market decreased substantially as did that of cattle and sheep marketed directly to other farmers.

The volume of livestock sold at auctions is influenced to some extent by traders who move livestock from one auction to another. No estimate was made of the number of these transactions but auction operators reported that some double counting did exist.

4 Fiscal years.

5 Calendar years--years used hereafter are fiscal years.

TABLE 1
 NUMBER OF CATTLE, HOGS AND SHEEP MARKETED
 AT AUCTIONS, 1956 AND 1964

	Cattle	Hogs	Sheep	Marketing Units
		(thousands)		
1956	1,253	606	384	1,532
1964	1,584	930	384	1,971

Source: South Dakota Livestock Sanitary Board, Annual Report of the South Dakota Livestock Sanitary Board, State Office Building, Pierre, South Dakota, 1957 and 1965.

TABLE 2
 METHODS OF MARKETING LIVESTOCK IN
 SOUTH DAKOTA, 1957 AND 1964

	Terminal 1957-1964		Auctions 1957 1964		Packers 1957 1964		Other Farmers 1957 1964		Other 1957 1964	
	(Per cent)									
Cattle	38	29	34	48	6	11	18	9	4	3
Hogs	50	42	20	23	26	28	2	3	2	4
Sheep	28	31	19	34	17	14	30	15	6	6

Source: South Dakota Crop and Livestock Reporting Service, South Dakota Agriculture 1965, Sioux Falls, South Dakota, 1965, pp. 46-48.

Firm Size

Volume

The number of auctions in operation in South Dakota has remained relatively constant during the period 1956-1964. Although some firms have left the industry, new ones have taken their place. There were 58 auctions operating in both 1956 and 1964. The firms in 1964, however, handled a much larger volume of livestock.

In 1956 more than two-thirds (69 per cent) of the firms handled less than 30,000 marketing units of livestock. By 1964 only 52 per cent of the auctions fell in this category (Table 3). The percentage of firms handling over 50,000 marketing units during this period doubled with 24 per cent of the firms in this category in 1964. The average marketing units per auction increased from 26,410 units in 1956 to 33,976 in 1964. The largest increase was in the sale of cattle. Cattle sales averaged 21,603 head per auction in 1956 compared to 27,309 head in 1964. A similar, but smaller, increase is also shown for hogs, while sheep transactions remained relatively unchanged (Table 4).

TABLE 3
 NUMBER AND PER CENT OF AUCTIONS IN EACH SIZE
 CATEGORY, SOUTH DAKOTA, 1956 AND 1964

Auction Size	1956	1964	1956	1964
	(number)		(per cent)	
Small	40	30	69	52
Medium	11	14	19	24
Large	7	14	12	24

TABLE 4
 AVERAGE NUMBER OF ANIMALS HANDLED
 PER AUCTION, 1956 AND 1964

	Cattle	Hogs	Sheep	Marketing Units
1956	21,603	10,442	6,620	26,410
1964	27,309	16,030	6,615	33,976

Operations

Personnel

With relatively large increases in volume during the period, many firms were forced to hire additional personnel. One-half of the auctions employed more workers in 1964 than in 1956 (Table 5). Two auctions doubled the number of workers employed while four auctions indicated increases of over 50 per cent.

TABLE 5

PER CENT OF LIVESTOCK AUCTIONS EXPANDING FACILITIES
AND PERSONNEL DURING THE PERIOD, 1956-1964

Type of Expansion	(Auction Size)			All Auctions
	Large	Medium	Small	
	(Per Cent)			
Personnel	50	50	52	51
Yards	75	93	83	82
Barns	25	36	7	16

Very few full-time or part-time personnel were employed. Small auctions employed an average of one full-time worker, medium auctions--two, and large auctions--five (Table 6).

TABLE 6

AVERAGE NUMBER OF WORKERS EMPLOYED
BY SOUTH DAKOTA AUCTIONS, 1964

Type of Worker	Large	Medium	Small
Sale day only	34	21	18
Full time	5	2	1
Part time	<u>1</u>	<u>2</u>	<u>1</u>
Total	40	25	20

Large auctions employed an average of 40 workers as compared to 25 and 20 for medium and small auctions, respectively. Most of the additional workers of large auctions were employed only on the sale day. However, large auctions hired an average of less than twice as many sale day employees as small auctions for a volume of more than four times as large. Medium auctions handled an average volume of livestock more than twice as large as small auctions with only a small increase in personnel. Comparing the ratio of sale day workers to total volume may be somewhat misleading because the average length of time to complete auction sales usually increases, although less than proportionally, as volume increases. This may be one reason for the relatively small increase in number of sale day employees for the larger volumes handled by medium and small auctions.

Growth and Utilization of Facilities

In order to handle increasing volumes, many auctions expanded the size of their existing facilities. Since 1956, firms have substantially increased their investment in facilities and equipment. In 1964 the average investment in fixed facilities and equipment was \$108,925 for large auctions, \$70,572 for medium auctions and \$40,498 for small auctions.⁶ This represented an investment of \$1.58, \$1.74 and \$2.29 per marketing unit for large, medium and small auctions, respectively.

⁶ After accumulated depreciation.

During this period, 41 auctions expanded their facilities to handle larger volumes of livestock. Over 80 per cent of the auctions increased the capacity of their yards and 16 per cent added additional barns (Table 5). One auction increased its yard facilities to handle three times as large a volume. Two auctions built additional rings while several added overhead walkways. Many of the auctions made major improvements in existing facilities.

It may be that many of the firms have expanded their facilities to handle expected increases in volume rather than present volumes. This is certainly suggested by the utilization of their facilities in 1964.

Estimates were received from the auction managers as to the number of marketing units that could be handled in their yards at any given time. This amount was multiplied by 52 (one sale per week) to determine the potential capacity. There is some subjectivity in basing potential capacity on one sale per week because some auctions hold two or more sales each week. However, the yards and facilities are available for use each day of the week whether they are used or not.⁷ Auctions with limited yard space have the alternative of either expanding or more fully utilizing existing yards by holding additional sales.

⁷ On this basis the potential capacity could be based on six sales per week. This would decrease the per cent of utilization but would not change the relationships between auctions. However, the market supply available each week would not warrant daily sales.

The degree to which auctions utilized their yard capacity was computed by dividing the number of marketing units sold in 1964 by the potential number they could have handled. On this basis auctions only utilized their yards an average of 22 per cent of capacity (Table 7).

TABLE 7
PER CENT OF YARD CAPACITY UTILIZED BY AUCTIONS,
BY SIZE AND AREA, SOUTH DAKOTA, 1964

Area	Large	Medium	Small	All Auctions
	(Per cent)			
I	44	30	25	31
II	30	7	23	20
III	29	20	21	24
IV	25	18	11	18
V	23	17	13	18
Average	29	18	18	22

The facilities of large auctions were more fully utilized than those of medium and small auctions. One reason for this may be because a greater percentage of large auctions held two or more sales per week. All large auctions in Area I held two sales per week which partially accounts for their higher degree of capacity utilization. However, all size groups of auctions in Area I utilized their yard capacity more than auctions in other areas, especially in Areas IV and V.

The differences in the utilization of yard capacity in the various areas probably reflects the varying degrees of seasonality in marketing. The seasonal marketing pattern affects the auctions in Areas IV and V more than in other areas because a major portion of the volume consists of feeder cattle which are usually marketed in the fall or early winter. Auctions in other areas are not as dependent upon any one type of livestock. Auctions in Area I are less affected by seasonality because they handle substantial volumes of both cattle and hogs.⁸ This probably explains their high utilization of facilities.

Although this study did not obtain data on the degree to which auctions utilized their other facilities and equipment a close correlation was assumed between the utilization of yard and other facilities.

The relatively low degree of utilization of yard capacity shown above indicates that much of the expansion which occurred during the period was not warranted by the volume of livestock marketed in 1964.

Advertising

One of the major reasons why the auction industry has experienced increasing volumes and a larger share of the market during the period 1956-1964 may be because of the increased emphasis placed

⁸ Auctions in Area I accounted for over one-half of the total hog receipts of auctions in 1964.

on advertising. The increase in advertising which has taken place in the industry during this period indicates that competition among auctions and between auctions and other marketing agencies for consignments of livestock is increasing.

Approximately three-fourths (70 per cent) of the medium and small auctions had expanded their programs compared to one-half of the large auctions. There are three possible explanations for this: (1) more managers of medium and small auctions are realizing the value of advertising, (2) auction marketing is becoming more competitive, thus, medium and small auctions are finding it necessary to publicize their firm in order to maintain their present volume and (3) medium and small auctions are trying to attain a larger and more efficient operating volume.

Area Served

The changes which have taken place in the size of the supply area served by auctions indicate that competition for livestock consignments is increasing. One-half of the auction managers interviewed stated that for their particular auction, the average distance livestock was transported had increased since 1956. More than one-third, 36 per cent, indicated there had been no change in distance while the remaining managers reported a decrease.

Several reasons were given for the expanded supply areas. In order of frequency they were: (1) fewer but larger producers, (2) improved or new facilities, (3) new management and (4) better

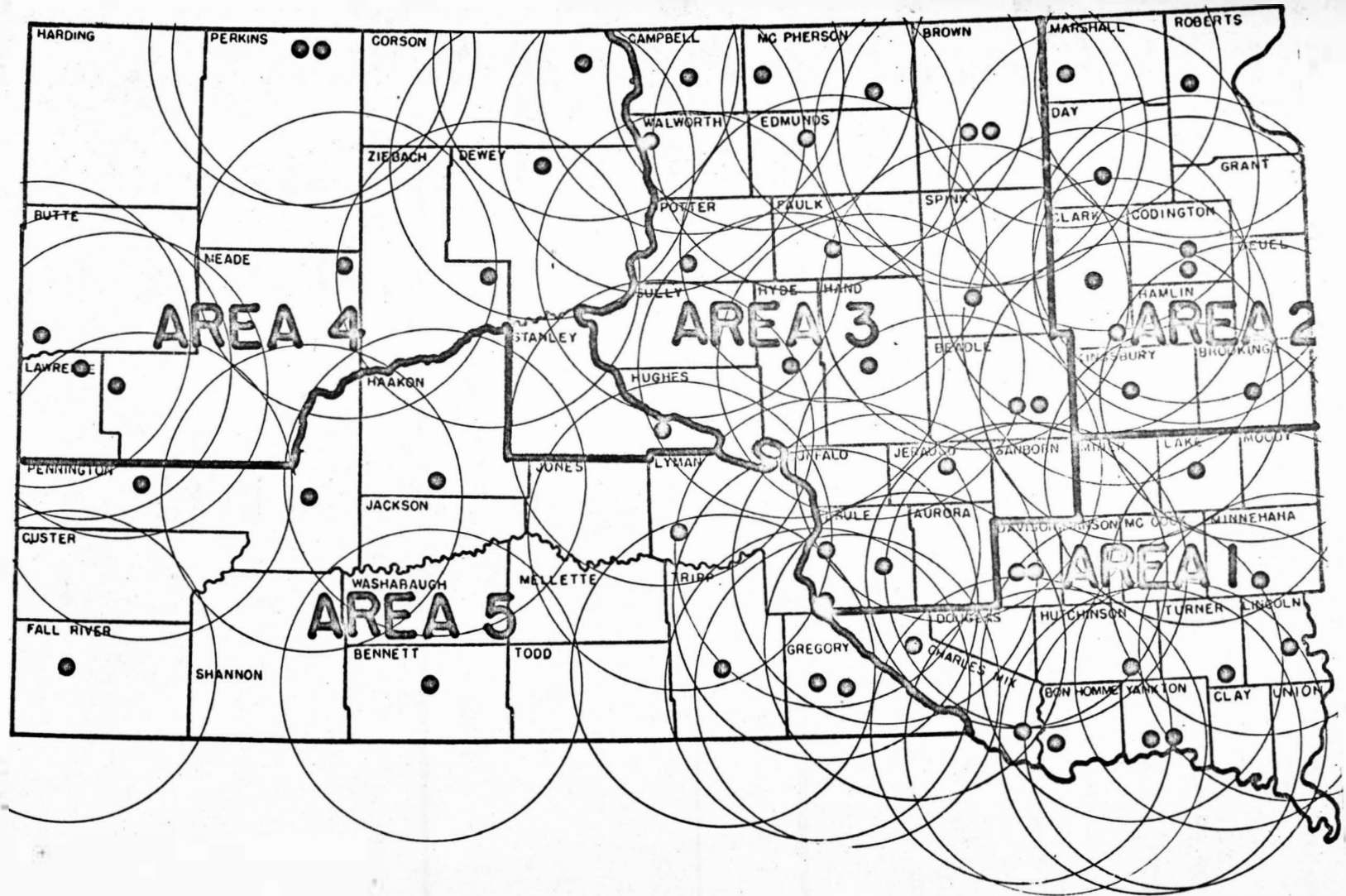
transportation. The managers of auctions for which the average distance has decreased attributed this primarily to increased competition from other auctions.

Livestock auctions are generally located near producers in contrast to terminal market which, because they were originally established at rail centers, are near concentrations of consumers. This locational aspect of auctions, coupled with the development of the motor truck method of transportation, has been a contributing factor in the growth and popularity of auctions.

All of the livestock received at auctions in South Dakota are transported either by commercial or farm trucks. Commercial trucks are used more as hauling distance becomes greater. Two auctions indicated that livestock was sometimes transported from the auction by rail.

Generally, auctions in this state are so distributed that it is unnecessary for consignors to transport their livestock more than 50 miles. The only exception to this is in the West River areas (Figure 4). In 1964 approximately 72 per cent of the livestock marketed through auctions originated within a 50-mile radius. Only eight per cent were received from distances greater than 100 miles.

A direct relationship was found between auction size and size of procurement area. Only about 15 per cent of the livestock received by auctions in the small size category was transported more than 50 miles. Large auctions received about one-third of their livestock



- Livestock Auction
- 50 Mile Radius from Auctions

Figure 4. Location and Primary Supply Areas of South Dakota Auctions, 1964.

from over 50 miles (Table 8). About 10 per cent of this volume was received from over 100 miles.

No attempt was made to determine the distances each species was transported to auctions. However, in a study made in 1957 it was found that cattle and sheep were transported greater distances than hogs. Only six per cent of the hogs were transported over 50 miles.⁹

TABLE 8
DISTANCES LIVESTOCK ARE TRANSPORTED
TO SOUTH DAKOTA AUCTIONS, 1964

Distance	Large	(Auction Size)		All Auctions
		Medium	Small	
			(Per cent)	
0-49 miles	66	72	84	72
50-99 miles	24	21	13	20
100 miles or over	10	7	3	8
Total	100.0	100.0	100.0	100.0

⁹ Roth, op. cit., p. 35.

CHAPTER III

OPERATIONAL COSTS

In this chapter the existing relationship between volume and operating costs is examined. To the degree that costs are influenced by physical relationships, the cost comparisons made in this chapter can be used as measures of comparative physical efficiency. Variable and fixed costs are examined separately.

Variable Costs

Variable costs are costs that vary with volume. For livestock auctions, variable costs include payments for labor, publicity and public relations, supplies, utilities, repair and maintenance, and miscellaneous expenses.¹⁰ Firms unable to meet these costs will minimize losses by discontinuing operations.

Variable costs averaged \$1.65 per marketing unit for all auctions included in the study. This represented about 78 per cent of the total operating cost. These costs decreased with increases in auction size averaging \$1.84 for small auctions, \$1.70 for medium auctions and \$1.54 for large auctions (Appendix A, Table 1).

¹⁰ Repair and maintenance costs could be classified as either a variable or a fixed cost. However, in most previous studies, these costs have been classified as variable costs.

While labor was the largest single cost item and accounted for about 56 per cent of the variable costs, other major cost items included publicity and miscellaneous expense. Expenditures for publicity and public relations represented 15 per cent of the variable costs while miscellaneous items accounted for 16 per cent. Supplies, utilities, and maintenance and repair were relatively minor costs making up only 13 per cent of variable costs. Figure 5 shows the average per unit cost of these items for each auction size category.

Labor

Average unit costs for labor decreased with the increasing size of auctions. Labor costs for large auctions were seven cents per unit lower than for small auctions. This was not true for all of the components of labor, however.

Labor expenditures consist of payments to owners and officers, yard labor, office labor and auctioneers. Yard labor (includes yardmen, starters, weighmen and ringmasters) was the largest labor cost item and accounted for about one-half of the total labor costs (Table 9). This cost remained relatively constant for all size categories averaging \$.45 per unit.

Large auctions had lower per unit costs for office labor and auctioneers than did the small auctions. Office labor decreased from \$.23 per unit at small auctions to \$.15 per unit at large auctions. Auctioneer costs followed the same pattern decreasing from \$.14 per unit at small auctions to \$.08 per unit at large auctions.

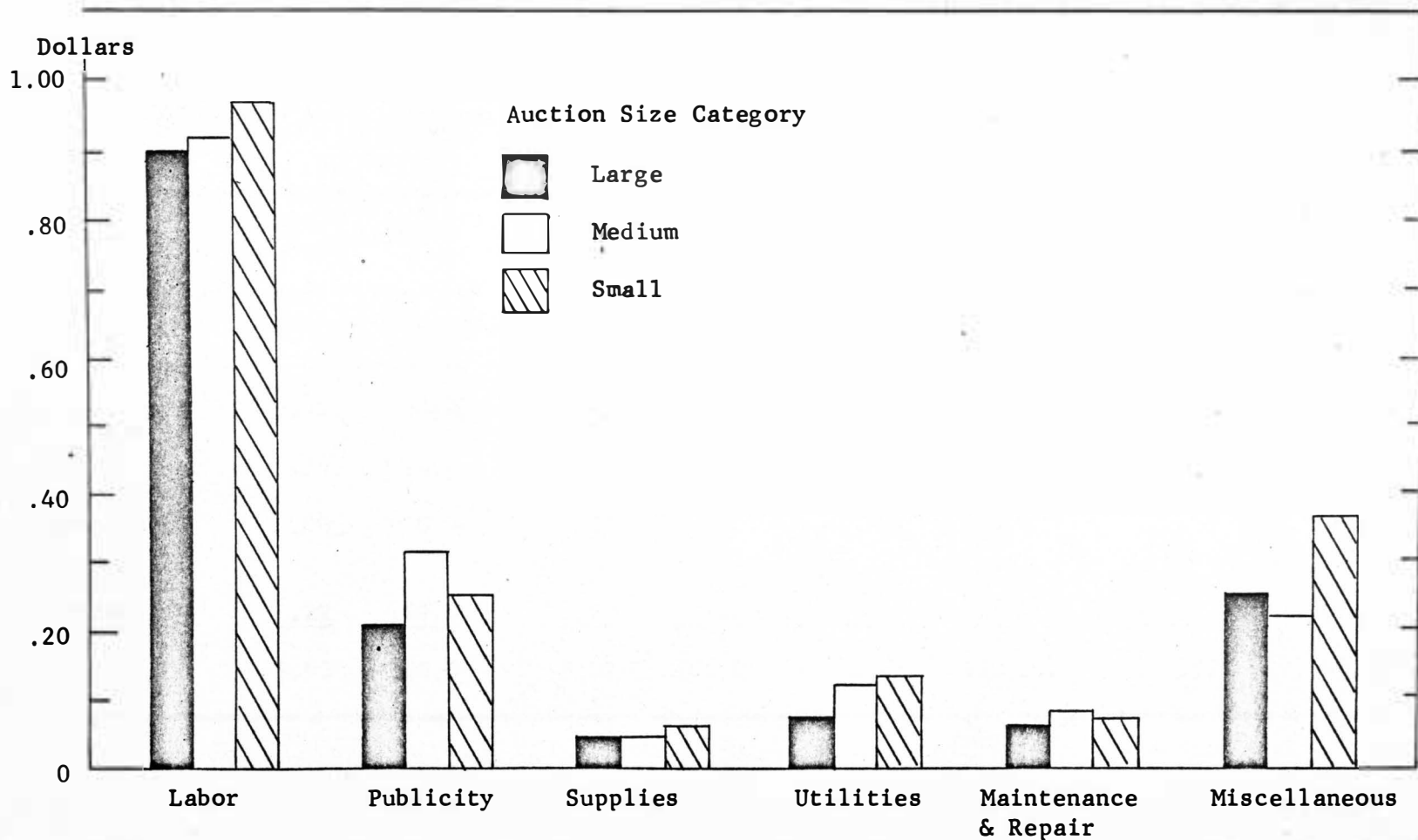


Figure 5. Average Variable Costs Per Marketing Unit for South Dakota Livestock Auctions, by Cost Items, 1964. (See Appendix A, Table I)

TABLE 9

LABOR COST PER MARKETING UNIT FOR SOUTH DAKOTA
LIVESTOCK AUCTIONS, BY COST ITEMS, 1964

Cost Item	Large		Medium		Small		All Auctions	
	Ave. Cost	Per cent of total	Ave. Cost	Per cent of total	Ave. Cost	Per cent of total	Ave. Cost	Per Cent of Total
Yard labor	\$.45	50.0	\$.48	52.2	\$.44	45.4	\$.45	49.0
Office labor	.15	16.7	.17	18.5	.23	23.7	.18	19.5
Auctioneer	.08	8.9	.07	7.6	.14	14.4	.09	9.8
Owners and Officers	<u>.22</u>	<u>24.4</u>	<u>.20</u>	<u>21.7</u>	<u>.16</u>	<u>16.5</u>	<u>.20</u>	<u>21.7</u>
Total	\$.90	100.0	\$.92	100.0	\$.97	100.0	\$.92	100.0

The salary of owners and officers was the only labor item in which per unit costs were lower for small auctions than for large auctions. Higher per unit costs at large auctions for this item may result from differences in ownership arrangements. Over one-half of the small auctions are individually owned compared to 17 per cent of the large auctions and 23 per cent of the medium auctions. Auctions owned under a partnership or corporate arrangement usually have two or more owners or officers on salary while proprietorships have only one.

Publicity and Public Relations

Expenditures for publicity and public relations do not necessarily vary directly with increases in volume. Many auction managers indicated that expenditures for this item were based on a specified percentage of expected cash receipts. The amount which a particular auction spends on publicity and public relations depends upon the firm's goals and the amount of competition for livestock. Firms which face a high degree of competition or have goals of substantially expanding their volume probably spend more for publicity and public relations than do other auctions of the same size.

Medium size auctions in 1964 spent proportionally more on publicity and public relations than either the large or small auctions. Approximately 18 per cent of the variable costs at medium auctions was for publicity compared to less than 14 per cent at large and small auctions. The average cost for this item was ten cents per unit higher for medium auctions than for large auctions.

About two-thirds of the publicity costs for all auction groups was for direct advertising via radio, television and newspapers. Most of the remaining cost was derived from the publicizing of auction services through personal contact. This included expenditures for travel, entertainment and auto expense. Other methods of advertising such as donations, gifts of pencils, calendars, etc. were minor costs for all size categories. Medium auctions had the highest per unit cost for both direct advertising and personal contact (Table 10).

TABLE 10

PUBLICITY AND PUBLIC RELATIONS COST PER MARKETING UNIT
FOR SOUTH DAKOTA AUCTIONS, BY COST ITEMS, 1964

Cost Item	Auction Size		
	Large	Medium	Small
		(Dollars)	
Direct advertising	.13	.19	.17
Personal contact	.07	.11	.07
Other	<u>.01</u>	<u>.01</u>	<u>.01</u>
Total	.21	.31	.25

Utilities

Utilities included expenditures for heat, lights, water and telephone. Total utility costs increased as the volume of livestock handled increased. These costs increased proportionally with increases in volume until auctions reached a volume of about 50,000 marketing units. However, after attaining this volume, much

larger volumes could be handled with relatively small increases in utility costs. Utility costs for auctions in the large size category averaged \$.05 per marketing unit compared to \$.12 and \$.13 respectively for auctions in the medium and small size categories.

Supplies

Supplies included both office and yard supplies. This cost averaged about five cents per unit for all auction size categories and represented about three per cent of the variable costs.

Repair and Maintenance

The cost required to maintain equipment and facilities depends primarily upon the age, size, and degree of utilization. Expenditures for this item were about the same for all size categories, averaging six, eight and seven cents per unit for large, medium and small auctions, respectively.

Miscellaneous Variable Expenses

Miscellaneous variable costs included those items that could not be classified in any of the other variable cost categories. Included in this category were such items as legal and accounting fees, unemployment insurance, bad debts, trucking and hauling, bank service charges, veterinarian fees and other minor or infrequent items. These items represented about 20 per cent of the variable costs for small auctions, 16 per cent for large auctions and 13 per cent for medium auctions. Small auctions spent an average of \$.36 per unit on these items, large auctions \$.25 and medium auctions \$.22.

The variation found in miscellaneous costs was greater than for any other category of cost items. This may be due to differences in the composition of this category. Unemployment insurance, legal costs and accounting fees were generally minor costs at all auctions. Bad debts, while negligible or non-existent at many auctions, were relatively large at others. These usually resulted from receiving bad checks for the purchase of livestock. Large auctions are more subject to receiving bad checks than small auctions because of the greater number of buyers at sales and less knowledge of the buyers' financial status. The amount of a bad check, when incurred, was usually larger at large auctions than at small auctions.

Expenditures for bank service charges varied considerably among auctions. Much of this variation may have been due to differences in check writing policies of banks. The higher per unit costs for bank services at small auctions probably results from the receipt of smaller consignments of livestock which necessitated the writing of more checks.

TABLE 11

MISCELLANEOUS VARIABLE COSTS PER MARKETING UNIT FOR
SOUTH DAKOTA AUCTIONS, BY COST ITEMS, 1964

Cost Item	Auction Size		
	Large	Medium	Small
		(dollars)	
Unemployment insurance	.01	.01	.03
Legal and accounting fees	.02	.03	.02
Bad debts	.04	--- ^a	.02
Bank charges	.02	.03	.05
Trucking and hauling	.05	.02	.11
Other	<u>.11</u>	<u>.13</u>	<u>.13</u>
Total	.25	.22	.36

a Less than one cent per unit.

Most of the difference in miscellaneous expenses between large and small auctions resulted from the difference in trucking and hauling expenses. Expenses for this item resulted primarily from the transportation of livestock. Auction managers frequently buy livestock to be sold at a later sale when the expected volume will be too small to attract a sufficient number of buyers. Some managers also have a policy of buying livestock to protect prices. Five auctions did provide trucking services to their consignors.

Expenses classed as "other" in this category included such items as trading losses, social security payments, veterinarian fees

and public liability insurance. With the exception of trading losses, most of these items were minor. Trading losses at some auctions amounted to as much as \$4,000. These losses resulted from the policy of buying livestock when no bid higher than the starting bid was received.

Fixed Costs

Fixed costs are those which, for a given size firm, remain constant regardless of the volume handled in a given year. These costs included such items as depreciation, insurance, cost of capital investment, rent and miscellaneous. Miscellaneous fixed costs were expenditures for taxes, licenses, bonding and interest paid.

Fixed costs represented 22 per cent of the total operating cost for auctions in the state, averaging \$.48 per unit. The average of all fixed costs was approximately the same for all size categories (Figure 6). With the exception of rent, the average of all fixed cost items were slightly lower for large auctions than for small auctions.¹¹

Rent costs increased with auction size from an average of two cents per unit at small auctions to six cents per unit at medium auctions and eleven cents per unit at large auctions. Most of the auctions in the large and medium size categories with substantial rent expenses leased part of their facilities from one or more members of the corporation. One leased the facilities from a private owner. The

¹¹ Cost of capital investment was the cost of the capital invested in land, buildings and equipment because it cannot yield a return from an alternative use. Costs were assessed at a rate of five per cent per annum.

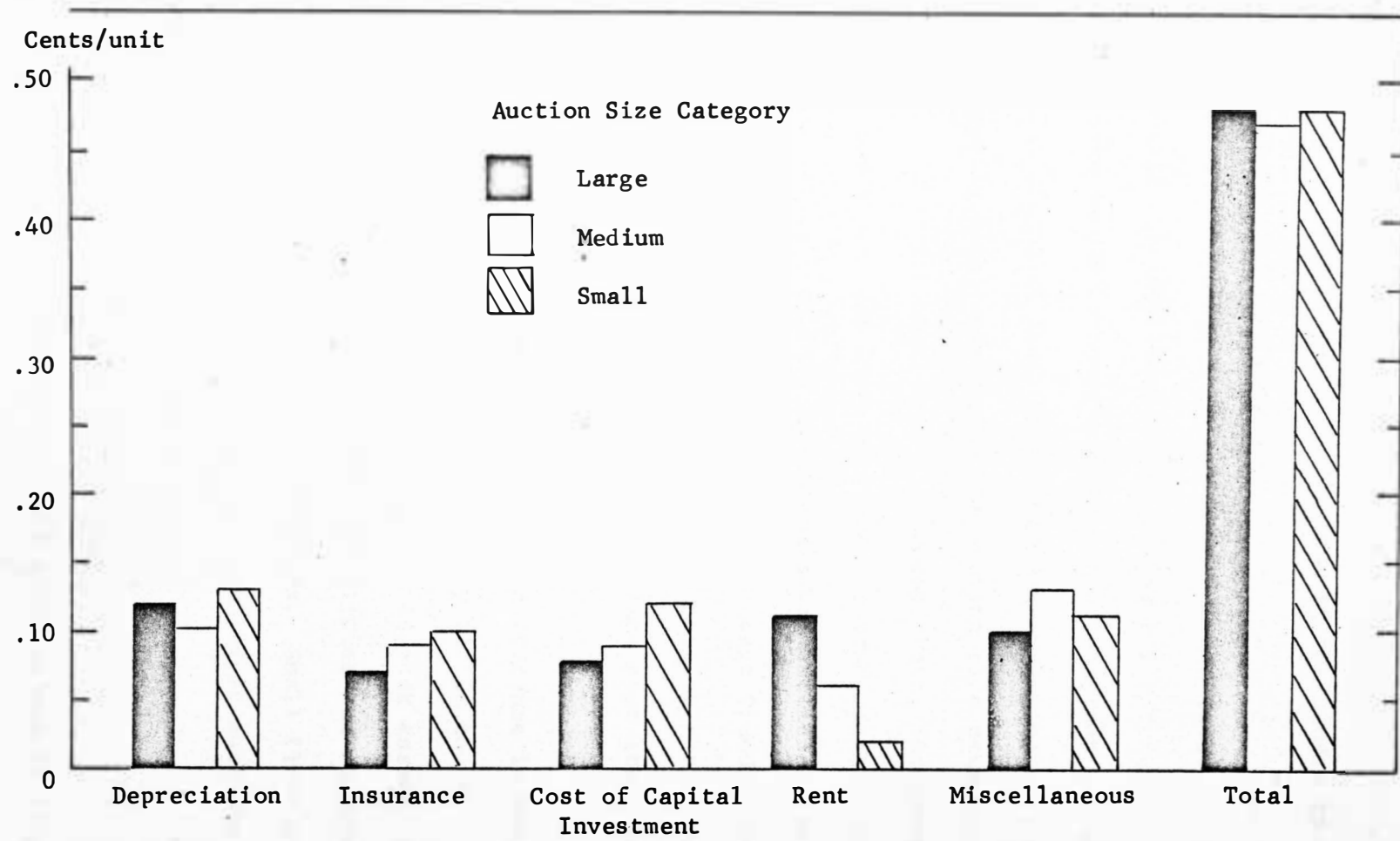


Figure 6. Average Fixed Cost Per Marketing Unit for South Dakota Livestock Auctions, by Cost Items, 1964. (See Appendix A, Table II)

practice of renting facilities from members of the corporation may be an insurance measure against total loss to the owners in case of a law suit against the corporation.

Although average fixed costs were found to be the same regardless of size category, there is some reason for thinking that average fixed costs should be lower for large auctions than for small auctions. First, the amount of fixed investment per marketing unit decreased substantially with increases in the auction size category. This should result in lower per unit costs for depreciation, insurance and cost of capital investment for large auctions. Second, large auctions utilized their facilities more than medium and small auctions. As total fixed costs are spread over a larger volume, average fixed costs should decrease. Further, larger auctions rented part of their facilities and equipment which should result in other fixed cost items being lower than at auctions which do not rent.

Some explanation for the lack of difference in average fixed costs between auction size categories may lie in the methods used in computing depreciation and in the amount of risk assumed by the firm. Small auctions may depreciate their facilities and equipment over a longer period of time than large auctions. Small firms may also be assuming more of the risk themselves than larger auctions thereby reducing total insurance costs.

Total Costs

The average total cost for all auctions was \$2.13 per marketing unit. Total per unit costs decreased as auction size increased. Small

auctions had total costs of \$2.32 per unit, medium auctions \$2.17 and large auctions \$2.02 per unit. These differences were due almost entirely to differences in average variable costs as shown in Figure 7.

An attempt was made to determine if there was any association between costs and specialization in species of livestock handled. A comparison of the average total costs of 21 auctions from which usable cost data were obtained did not reveal any such relationship.

Cost Variation Within Auction Size Categories

When the auctions were grouped by size and area it was found that the differences in per unit costs were greater within each size category than between them. Average total costs ranged from \$1.78 to \$2.30 per unit among large auctions, \$1.95 to \$2.76 among medium auctions and \$2.08 to \$2.77 among small auctions. Extensive differences existed in both average variable and average fixed costs. The differences in variable and fixed per unit costs within each size category are shown in Tables 12 and 13, respectively.

An examination of auctions by geographic area suggests that location does affect fixed costs. In Area I, the auctions of each size category had lower average fixed costs than auctions of other areas in the same category. The lower fixed costs of auctions in this area may result from a greater utilization of facilities. The absence of consistently high or low average variable costs of auctions of all size categories in any one area suggests, however, that geographic location has little effect on variable costs.

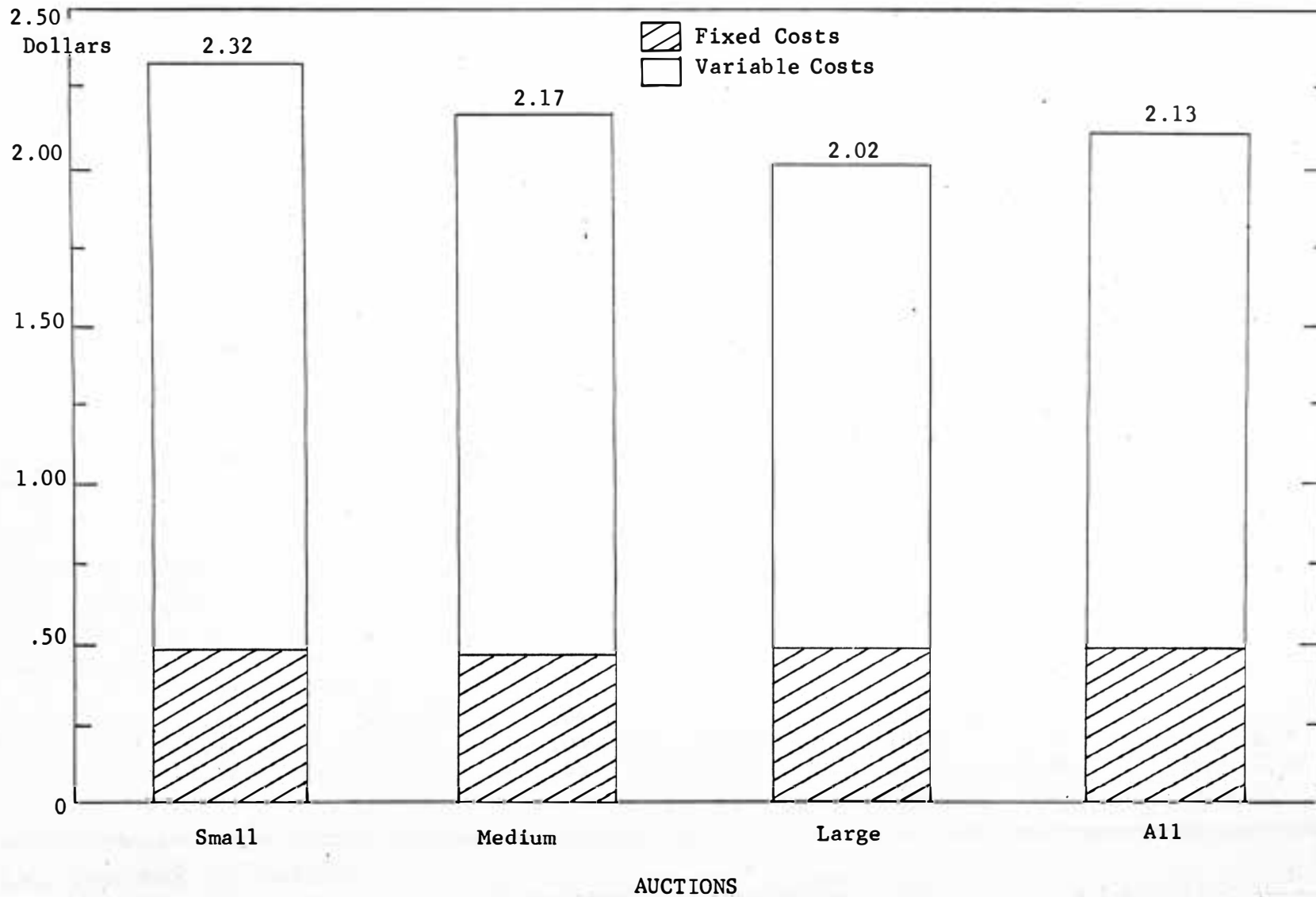


Figure 7. Per Unit Fixed and Variable Costs for South Dakota Auctions, by Size Category, 1964.

TABLE 12

AVERAGE COST PER MARKETING UNIT OF VARIABLE COST ITEMS
FOR SOUTH DAKOTA AUCTIONS, BY AREA, 1964

Size and Area	Labor	Publicity	Supplies	Utilities	Repair Maint.	Misc.	Total Var. Cost
	(dollars)						
Large							
I	.95	.18	.05	.06	.09	.11	1.44
II	.96	.20	.05	.04	.04	.14	1.43
III	.80	.21	.04	.06	.04	.31	1.46
IV	1.10	.29	.05	.09	.13	.16	1.82
V	.85	.18	.06	.09	.04	.52	1.74
Medium							
I	.82	.27	.03	.10	.13	.51	1.86
II	1.21	.38	.03	.12	.02	.16	1.92
III	1.07	.29	.06	.14	.06	.19	1.81
IV	.79	.33	.05	.12	.08	.13	1.50
V	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Small							
I	.92	.19	.06	.11	.07	.34	1.68
II	.80	.31	.04	.15	.11	.49	1.90
III	.97	.21	.04	.10	.05	.39	1.76
IV	1.32	.35	.05	.17	.10	.21	2.20
V	.93	.26	.08	.12	.08	.35	1.82

n.a.--Cost data not available.

TABLE 13

AVERAGE COST PER MARKETING UNIT OF FIXED COST ITEMS
FOR SOUTH DAKOTA AUCTIONS, BY AREA, 1964

Subgroup Size and Area	Depreciation	Insurance	Cost of Capital Investment	Rent	Misc.	Total Fixed Costs
	(dollars)					
Large						
I	.09	.09	.04	--- ^a	.12	.34
II	.11	.06	.08	---	.13	.38
III	.14	.06	.12	.17	.10	.59
IV	.18	.08	.07	.01	.07	.41
V	.07	.07	.03	.34	.05	.56
Medium						
I	.03	.15	.08	.01	.07	.34
II	.12	.17	.30	---	.26	.85
III	.10	.06	.08	.07	.14	.45
IV	.11	.08	.07	.10	.11	.47
V	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Small						
I	.12	.08	.10	.01	.10	.41
II	.15	.13	.13	---	.17	.58
III	.10	.08	.12	.02	.13	.45
IV	.22	.12	.18	---	.06	.58
V	.13	.10	.12	.05	.11	.51

a Denotes less than one cent per marketing unit.

n.a.--Cost data not available.

The larger differences in average operating costs within auction size categories than between them indicate that greater cost advantages might be obtained by auctions through greater internal operational efficiency than through increased volume.

Economies of Scale in Operation

A major objective of this study was to examine the cost-volume relationship to determine if auctions with greater volumes experience lower unit costs than those with smaller volumes. The evidence presented earlier tends to indicate that there is a scale effect.

Per unit total costs varied from a high of \$2.78 for one group of small auctions to a low of \$1.73 for one group of large auctions. The average for the size groups decreased from \$2.32 for small auctions to \$2.02 for large auctions. This reduction indicates that economies of scale do exist.

This scale effect is illustrated in the scatter diagram of the average total per unit costs of 21 selected auctions (Figure 8). The average total costs are lower than those presented earlier in this chapter. There are, however, two possible explanations for these differences. First, this group of auctions was selected on the basis of the availability of relevant cost data and therefore might not be representative of the population. Second, the cost data obtained from the Packers and Stockyard Commission are not exactly comparable to cost data obtained from the questionnaires because of different reporting procedures. However, the latter is sufficient for illustrative purposes.

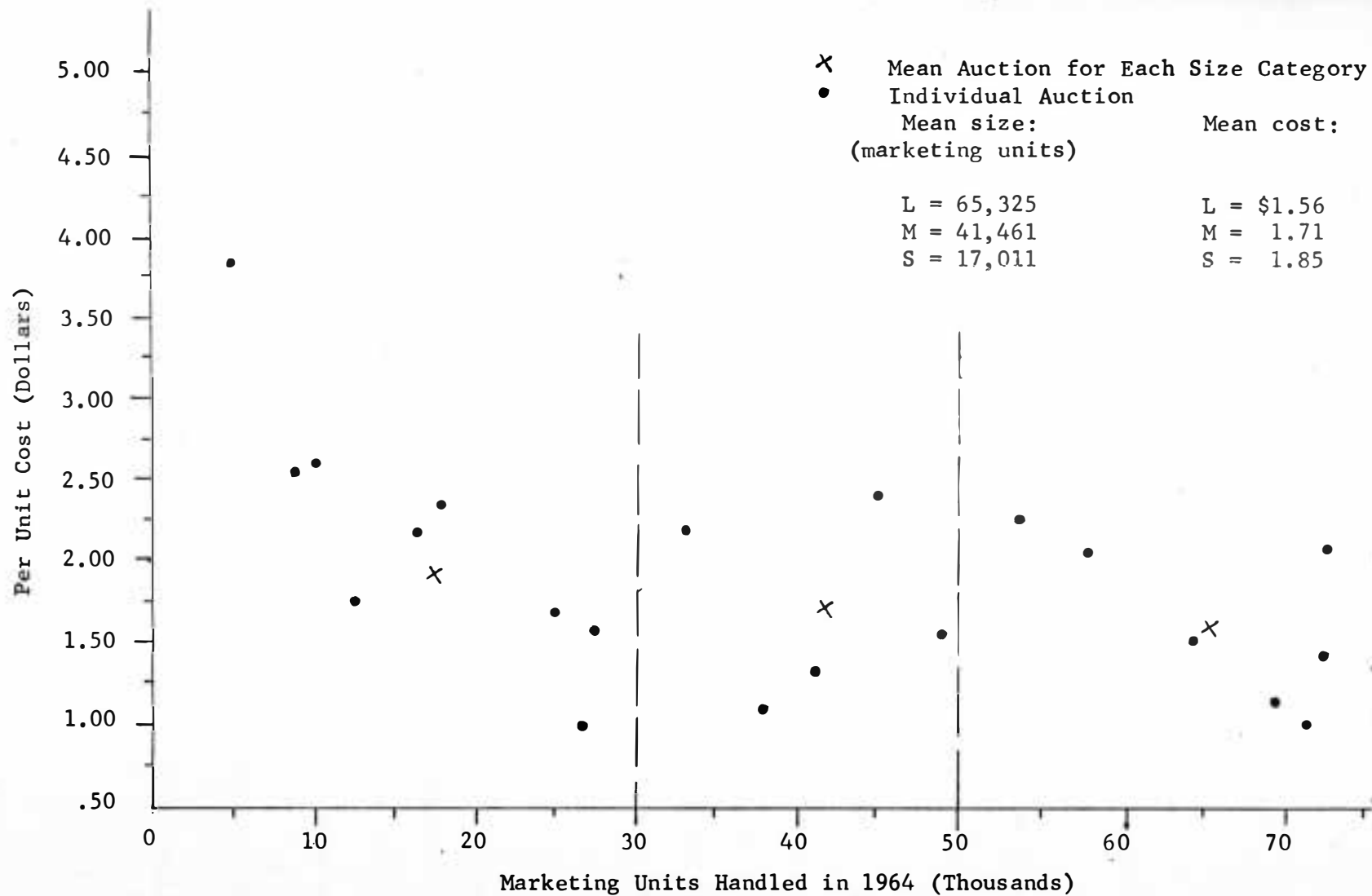


Figure 8. Scatter Diagram of Total Cost Per Marketing Unit of Twenty-one Selected Auctions in 1964.

CHAPTER IV

MARKETING CHARGES

The principal source of income for most livestock auctions consists of charges assessed against consignors. The charges most commonly assessed are commission, yardage, feed and veterinary inspection. Some auctions also assess fees for livestock insurance and brand inspection.¹²

Most auctions list a separate charge for each service. Some, however, combine charges for one or more services under the commission or yardage charge. This practice was frequently followed by auctions in the small size category. All auctions listed fees for commission and veterinary inspection. Only four auctions did not list a charge for yardage. Most auctions listed a feed charge for cattle only.¹³

Three methods were used to assess commission fees. These methods were: (1) per head, (2) per cent of gross value of livestock consignment and (3) value per head. Assessing commission charges on a per-head basis for all species of livestock was found to be the most commonly used method. However, the other methods were used more

¹² Livestock insurance when listed was usually ten cents per head for cattle and two to three cents per head for hogs and sheep.

¹³ Eight auctions did not assess a feed charge for cattle, 31 did not list this charge for hogs while 28 did not list a feed charge for sheep.

frequently to assess commission for cattle than for hogs and sheep.¹⁴ Because of the numerous differences in the type, size, and quality of the livestock consignments and because of the different methods used in assessing commission, it was necessary to standardize the charges for specific classes of livestock as explained in Chapter I. Some auctions quote discounts for consignments of a specified number of head or value. For such consignments, the rates would be lower than those computed in this study.

The total charges assessed by auctions varied widely. Rates for cattle were higher and varied more than rates for hogs and sheep. The average charge for cattle was \$2.50 per head with a range from \$1.90 to \$3.73. Rates for hogs and sheep averaged \$.77 and \$.60 per head, respectively (Table 14).

TABLE 14

TOTAL PER-HEAD MARKETING CHARGES ASSESSED BY SOUTH DAKOTA
AUCTIONS FOR CATTLE, HOGS AND SHEEP, 1964

Species of Livestock	Large	Medium	Small	All Auctions
	(dollars)			
Cattle: Average	2.47	2.50	2.50	2.50
Range	2.10-2.95	2.06-3.40	1.90-3.73	1.90-3.73
Hogs: Average	.75	.75	.78	.77
Range	.58-.93	.40-.97	.56-1.18	.40-1.18
Sheep: Average	.61	.57	.61	.60
Range	.47-.79	.20-1.00	.43-.75	.20-1.00

14 Thirty auctions used the per-head method for cattle, 42 for hogs and 52 for sheep.

The average rates charged were not significantly different for the various size categories. Charges for cattle and hogs averaged three cents per head less at large auctions. The average rates for sheep were the same for large and small auctions while charges averaged four cents per head less at medium auctions. The average marketing charge for cattle and hogs tended to increase with the decreasing auction size.

The average and range of individual charges for cattle, hogs and sheep are listed in Tables 15 through 17 for the three size categories of auctions. Caution should be used in comparing rates of individual charges between size categories because of the practice by some auctions of combining two or more services under one charge. This may partially account for the higher commission charges assessed by small auctions for cattle and hogs.¹⁵

¹⁵ Six small auctions do not assess a feed charge for cattle. Twenty-one do not assess this charge for hogs.

TABLE 15

PER-HEAD MARKETING CHARGES ASSESSED FOR CATTLE BY
SOUTH DAKOTA AUCTIONS, BY SPECIFIC CHARGE, 1964

Charge	Large	(Auction Size)	
		Medium	Small
(dollars)			
Commission			
Average	1.64	1.66	1.77
Range	1.25-2.30	1.25-2.30	1.15-2.88
Yardage			
Average	.41	.48	.40
Range	.15-.60	.15-.60	.00-.76
Feed^a			
Average	.37	.30	.26
Range	.20-.50	.00-.60	.00-.50
Inspection			
Average	.05	.06	.07
Range	.05-.10	.05-.10	.05-.10

^a Not included: One large auction charges feed at cost and one medium auction charges feed at cost plus ten per cent.

TABLE 16

PER-HEAD MARKETING CHARGES ASSESSED FOR HOGS BY
SOUTH DAKOTA AUCTIONS, BY SPECIFIC CHARGE, 1964

Charge	Large	(Auction Size)	
		Medium	Small
(dollars)			
Commission			
Average	.53	.55	.59
Range	.40-.80	.40-.80	.40-1.00
Yardage			
Average	.11	.15	.12
Range	.09-.15	.00-.20	.00-.25
Feed^a			
Average	.08	.02	.03
Range	.00-.20	.02-.20	.00-.25
Inspection			
Average	.03	.03	.04
Range	.02-.03	.02-.05	.02-.06

a Not included: One large auction charges feed at cost and one medium auction charges feed at cost plus ten per cent.

TABLE 17

PER-HEAD MARKETING CHARGES ASSESSED FOR SHEEP BY
SOUTH DAKOTA AUCTIONS, BY SPECIFIC CHARGE, 1964

Charge	Large	(Auction Size)	
		Medium	Small
		(dollars)	
Commission			
Average	.40	.40	.42
Range	.25-.50	.20-.75	.25-.50
Yardage			
Average	.13	.11	.12
Range	.09-.25	.00-.20	.00-.25
Feed^a			
Average	.05	.04	.03
Range	.00-.10	.00-.10	.00-.10
Inspection			
Average	.03	.03	.04
Range	.02-.04	.02-.05	.02-.06

a Not included: One medium auction charges feed at cost plus ten per cent, one small auction charges feed at cost.

Effect of Specialization on Marketing Charges

Many of the auctions sell primarily one or two species of livestock. To determine whether the level of marketing charges assessed is affected by the volume of a species sold, average charges were weighted on the basis of the proportion of each species sold by each auction. The average charges on this basis are shown in Table 18.

TABLE 18

AVERAGE MARKETING CHARGES PER HEAD FOR CATTLE, HOGS AND SHEEP
BY SOUTH DAKOTA AUCTIONS BASED ON THE PROPORTION
OF EACH SPECIES HANDLED PER AUCTION, 1964

Species of Livestock	Large	Medium	Small	All Auctions
			(dollars)	
Cattle	2.43	2.54	2.54	2.49
Hogs	.66	.75	.78	.72
Sheep	.49	.60	.59	.56

A comparison of average charges for large auctions (Tables 14 and 18) shows that charges weighted by proportion of each species handled were lower. This means that large auctions which handle a large volume of one species of livestock have lower charges for that species than other large auctions which handle a smaller volume. A similar comparison of average charges for medium and small auctions did not show this same relationship. On the basis of proportion, the average charges of large auctions in 1964 were from ten to twelve cents per head lower than the average charges of medium and small auctions.

Profitability of Auction Operations

To get some idea of the profitability of auction firms, an attempt was made to estimate the average net returns for auctions of different size categories. Total revenue was computed by multiplying the average marketing charges for cattle, hogs and sheep of each size category (Table 15) by the volume handled. Total costs obtained from the Packers and Stockyards Commission for each size category of auctions were adjusted to account for any discrepancy in feed costs.¹⁶

As might be expected, average net returns increased with size (Table 19). It should be noted that the salaries of owners and

TABLE 19

AVERAGE NET RETURNS FROM OPERATION OF SOUTH DAKOTA
AUCTIONS, BY SIZE CATEGORIES, 1964

Size Category	Avg. Total Revenue	Avg. Total Cost	Avg. Net Return
		(dollars)	
Large	163,311	151,438	11,873
Medium	95,833	86,672	9,211
Small	42,788	38,101	4,687

officers, and a five per cent return on investment are included in total costs.

¹⁶ While total revenue included total revenue from feed, total cost data obtained from the Packers and Stockyards Commission included only net feed costs. Therefore, to adjust total costs, the estimates of total feed costs furnished by auction managers on the questionnaires were added to the total costs provided by the Packers and Stockyards Commission less net feed costs.

A substantial portion of the net revenue for some auctions is derived from the service of providing feed. Total revenue from feed was computed for those auctions which listed separate feed charges on a per head basis. The average net revenue derived from feed is shown in Table 20.

TABLE 20

NET REVENUE FROM FEED FOR TWENTY-TWO
SELECTED AUCTIONS, 1964^a

	Large	(Auction Size) Medium	Small
Number of auctions	7	5	10
Net Revenue	\$7,027	\$2,309	\$3,238

^a Based on charges for the classes of livestock used previously in this chapter.

Break-Even Points

Usable estimates of operational costs were obtained from 21 livestock auctions. Using these cost estimates and the marketing charges assessed by each auction, break-even points were estimated. These are shown in Figure 9. In 1964 most of the 21 auctions operated with volumes above their respective break-even point. However, the break-even points for auctions which handled less than 10,000 marketing units suggest that firms of this size would have difficulty in maintaining profitable operations. An auction which incurs the costs required to handle 10,000 marketing units of livestock annually would

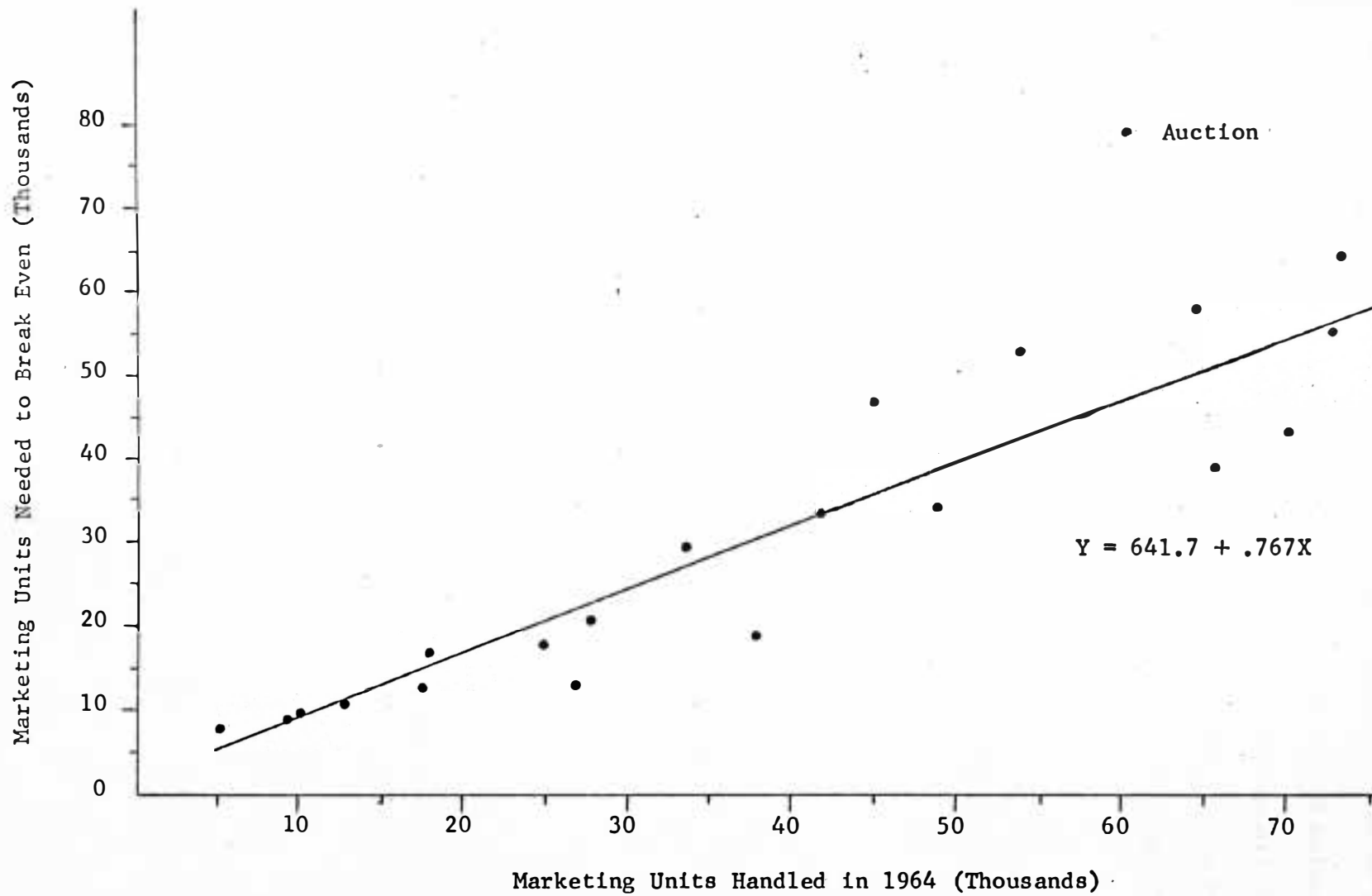


Figure 9. Break-even Points of Twenty-one Selected Auctions, 1964.

have a break-even point of 8,300 units whereas an auction of 60,000 marketing units would have a break-even point of 46,000 units. The line, derived by the least squares method, shows the number of marketing units required to break even for the various size categories based upon per unit charges and costs incurred during the 1964 marketing year.

CHAPTER V

SUMMARY AND CONCLUSIONS

Summary

Since the first livestock auction was established at Yankton in 1930, livestock auctions have become increasingly important outlets for marketing South Dakota livestock. If present trends continue, auctions in South Dakota can be expected to be even more important in the years ahead.

In the last eight years the size of both the auction industry and firms within the industry have grown considerably. In 1964 livestock auctions marketed 331,000 more cattle and 324,000 more hogs than in 1956. Sheep receipts remained unchanged.

Auctions handled approximately 48 per cent of the cattle, 23 per cent of the hogs and 34 per cent of the sheep marketed in the state in 1964. This represented increases of 14 per cent for cattle, 3 per cent for hogs and 15 per cent for sheep since 1957.

Fifty-eight auctions were operating in the state in both 1956 and 1964. However, the auctions in 1964 handled an average of 7,566 more marketing units per auction. In 1956, more than two-thirds (69 per cent) of the auctions handled fewer than 30,000 marketing units annually compared to 52 per cent in 1964.

During this period, many auctions expanded their facilities and operations. Over 80 per cent of the auctions expanded their

yard capacity. About one-half of the auctions hired additional personnel while two-thirds of the auctions expanded their advertising programs. One-half of the auctions increased the distance from which they procure livestock.

Large auctions have higher fixed investment in facilities and equipment than small auctions. Small auctions, however, have a higher fixed investment per marketing unit. The average investment per unit was \$1.58, \$1.74, and \$2.29 for large, medium and small auctions, respectively.

Large auctions employ an average of twice as many workers as small auctions but handle a volume four times as large. Most of the additional workers are employed only on the day of the sale.

South Dakota auctions receive approximately 72 per cent of their livestock from within a 50-mile radius. As auction size increases, the proportion of total volume originating from beyond this distance becomes greater.

Operating costs for all auctions averaged \$2.13 per marketing unit. Variable costs represented approximately three-fourths of total costs and fixed costs one-fourth. Labor was the largest single cost item and accounted for almost 45 per cent of total costs. Publicity and miscellaneous variable expenses were the next largest cost items.

A major objective of this study was to determine if auctions with greater volumes experience lower per unit costs than those with smaller annual volumes. The evidence presented in this study indicates that there is a scale effect and that small auctions do have

higher operating costs than large auctions. These differences, however, are not large. The total cost per marketing unit averaged \$2.32 for small auctions, \$2.17 for medium auctions and \$2.02 for large auctions.

Differences in average total costs between size categories were due primarily to lower variable costs. Large auctions had the greatest cost advantages in labor, utilities and miscellaneous variable cost items. For large auctions, per unit cost for labor averaged seven cents, utilities six cents, and miscellaneous variable expense eleven cents less than at small auctions. Lower labor costs for larger operations were due primarily to more efficient use of office personnel and auctioneers.

Although the differences in average operating costs between auction size categories were not large, there were relatively large cost differences within size categories. Average total costs ranged from \$1.78 to \$2.30 per unit for large auctions, \$1.95 to \$2.76 for medium auctions and \$2.08 to \$2.77 for small auctions. Large differences in both average variable and average fixed costs were found among the auctions within each category. Differences in labor, miscellaneous variable expenses and rent costs were larger than differences of other individual cost items.

The results of this study showed that auction owners can probably reduce costs more by increasing the internal efficiency of their operations than by increasing volume.

Marketing charges varied widely among auctions in the state. Average rates for all auctions were \$2.50 per head for cattle, \$.77 per

head for hogs and \$.60 per head for sheep. Average rates for all species of livestock were about the same for all size categories.

Among medium and small auctions there was very little relationship found between the volume of a species handled and the rate assessed. However, large auctions which handled a large volume of one species of livestock had lower rates for that species than other large auctions which handled a smaller volume. For the total volume of livestock marketed through auctions in 1964, the average charges for the livestock sold through large auctions were from ten to twelve cents per head less than the average charges for livestock sold through medium and small auctions.

There was some evidence found which indicated that auction firms must handle over 10,000 marketing units annually to be profitable.

Conclusions

The growth in the volume of livestock marketed through South Dakota auctions indicates a trend toward the decentralization of livestock marketing and also an increasing acceptance of this method of selling by livestock consignors.

It was found in this study that the average marketing charges of large auctions were only slightly lower than the charges of small auctions while the charges for medium auctions were about the same as small auctions. Yet, both large and medium auctions procured a much larger proportion of their livestock from over 50 miles than did small auctions. This suggests that factors other than marketing

charges may be more important in determining consignment of livestock. These are: (1) condition and adequacy of the firm's facilities, (2) average volume handled per sale, (3) number of buyers present and (4) operational policies and practices of the firms. If these are determining factors, then it means that competition among auctions is of a non price nature.

Evidence indicates that auctions which handle a volume of more than 10,000 marketing units of livestock annually should be able to compete successfully if the firms are operated efficiently. It was found that firms handling less than 10,000 marketing units required approximately 8,300 units to reach the break-even point. The proportion of the total units needed to break even decreased with an increase in size of firm. Thus, auction firms which handle volumes of less than 10,000 marketing units will probably encounter some difficulty in continuing their operations.

On the basis of the evidence found in this study, the greatest opportunity for livestock auctions to reduce unit costs probably lies in increasing their operational efficiency. The economies which auctions can obtain through increased scale are limited. A large increase in volume is necessary for firms to obtain even small reductions in per unit costs. The presence of wide variations in per unit costs among auctions within each size category shows the need for improvement in operational efficiency.

In general, to the degree that livestock auctions can keep their costs low, and can provide the quantity and quality of services

demanded by buyers and consignors, livestock auctions will probably continue to play an important role in the marketing of livestock in South Dakota.

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APPENDIX A

TABLES

APPENDIX TABLE 1

VARIABLE COSTS PER MARKETING UNIT FOR SOUTH DAKOTA
LIVESTOCK AUCTIONS, BY COST ITEMS, 1964

Cost Item	Large		Medium		Small		All Auctions	
	Avg. cost	Per cent of total	Avg. cost	Per cent of total	Avg. cost	Per cent of total	Avg. cost	Per cent of total
Labor	\$.90	58.4	\$.92	54.1	\$.97	52.7	\$.92	55.8
Publicity	.21	13.6	.31	18.2	.25	13.6	.25	15.1
Supplies	.05	3.3	.05	3.0	.06	3.2	.05	3.0
Utilities	.07	4.6	.12	7.1	.13	7.1	.10	6.1
Repair and Maint.	.06	3.9	.08	4.7	.07	3.8	.06	3.6
Miscellaneous	<u>.25</u>	<u>16.2</u>	<u>.22</u>	<u>12.9</u>	<u>.36</u>	<u>19.6</u>	<u>.27</u>	<u>16.4</u>
Total	\$1.54	100.0	\$1.70	100.0	\$1.84	100.0	\$1.65	100.0

APPENDIX TABLE 2

FIXED COSTS PER MARKETING UNIT FOR SOUTH DAKOTA
LIVESTOCK AUCTIONS, BY COST ITEMS, 1964

Cost Item	(Auction Size)							
	Large		Medium		Small		All Auctions	
	Avg. cost	Per cent of total	Avg. cost	Per cent of total	Avg. cost	Per cent of total	Avg. cost	Per cent of total
Depreciation	\$.12	25.0	\$.10	21.2	\$.13	27.0	\$.12	25.0
Insurance	.07	14.6	.09	19.2	.10	20.8	.08	16.7
Interest on Investment	.08	16.7	.09	19.2	.12	25.0	.09	18.7
Rent	.11	22.9	.06	12.8	.02	4.3	.08	16.7
Miscellaneous	<u>.10</u>	<u>20.8</u>	<u>.13</u>	<u>27.6</u>	<u>.11</u>	<u>22.9</u>	<u>.11</u>	<u>22.9</u>
Total	\$.48	100.0	\$.47	100.0	\$.48	100.0	\$.48	100.0

APPENDIX TABLE 3

DISTRIBUTION OF AUCTION MARKETS AND VOLUME OF SALES
BY SIZE CATEGORIES, SOUTH DAKOTA, 1964

Size Category	Number of Auctions	Total Marketing Units	Volume of Sales		Per Cent of Total Volume
			Average Marketing Units Per Auction	Range In Volume (1,000)	
Large (50,000 marketing units or more)	14	968,807	69,200	53.8-117.3	49.2
Medium (30,000-49,999 marketing units)	14	529,109	37,794	30.0-48.6	26.9
Small (less than 30,000 marketing units)	<u>30</u>	<u>472,671</u>	<u>15,756</u>	<u>4.6-29.7</u>	<u>24.9</u>
Total	58	1,970,587	33,976	4.6-117.3	100.0

APPENDIX TABLE 4

TOTAL CATTLE, HOG AND SHEEP RECEIPTS
FOR SOUTH DAKOTA AUCTIONS, 1937-64

Year ^a	Cattle	Hogs	Sheep
		(1,000)	
1937	134.5	178.7	47.0
1938	287.2	287.0	69.0
1939	326.5	422.2	129.7
1940	352.1	374.8	148.4
1941	391.5	358.7	220.4
1942	384.8	411.1	237.8
1943	338.4	618.8	232.6
1944	422.6	286.3	208.6
1945	510.7	215.3	141.9
1946	584.6	246.7	206.1
1947	616.6	355.9	207.8
1948	668.0	298.5	179.6
1949	801.6	429.0	194.8
1950	813.6	458.2	165.3
1951	703.8	516.0	212.5
1952	818.7	407.0	255.2
1953	893.2	395.4	289.7
1954	1,111.3	547.7	311.4
1955	1,283.4	724.4	312.5
1956	1,252.9	605.6	384.0
1957	1,175.2	582.2	453.4
1958	1,281.0	780.0	520.7
1959	1,374.3	867.9	542.3
1960	1,404.6	652.8	541.3
1961	1,556.5	776.3	531.5
1962	1,335.5	926.6	464.8
1963	1,467.1	1,005.1	457.8
1964	1,583.9	929.7	383.7

Source: South Dakota Livestock Sanitary Board

^a Fiscal year.

APPENDIX TABLE 5

NAME AND LOCATION OF LIVESTOCK AUCTION MARKETS
OPERATING IN SOUTH DAKOTA, 1964

<u>Name of Auction</u>	<u>Location</u>
Aberdeen Livestock Sales Co.	Aberdeen
Avon Livestock Sale	Avon
Belle Fourche Livestock Exchange	Belle Fourche
Bowdle Livestock Auction	Bowdle
Britton Sales Pavilion	Britton
Brookings Livestock Auction	Brookings
Burke Livestock Auction Co.	Burke
Campbell County Livestock Auction	Herreid
Canton Livestock Sales Co.	Canton
Centerville Livestock Sale	Centerville
Chamberlain Livestock Sales	Chamberlain
Cheyenne River Sales Pavilion	Eagle Butte
Clark Livestock Sales Co.	Clark
Corsica Sales Company	Corsica
DeSmet Livestock Exchange	DeSmet
Edgemont Livestock Commission Co.	Edgemont
Eureka Livestock Sales Co.	Eureka
Faith Livestock Commission Co.	Faith
Fort Pierre Livestock Commission Co.	Fort Pierre
Gettysburg Livestock Sales Co.	Gettysburg
Gregory Livestock Auction Co.	Gregory
Highmore Livestock Exchange	Highmore
Hub City Livestock Sales Pavilion	Aberdeen
Kimball Livestock Exchange	Kimball
Lemmon Livestock Sales	Lemmon
Leola Livestock Sales	Leola
Livestock Auction Management, Inc.	Philip
Loken's Watertown Sales Pavilion	Watertown
Madison Livestock Auction Co.	Madison
Madden's Livestock Auction Market	St. Onge
Magness-Faulkton Livestock Exchange	Faulkton
Magness-Huron Livestock Exchange	Huron
Martin Livestock Sales	Martin
McLaughlin Sales Company	McLaughlin
Menno Livestock Auction Co.	Menno
Miller Livestock Auction Co.	Miller
Mitchell Livestock Sales Co.	Mitchell
Mobridge Livestock Commission	Mobridge
Palace City Auction Co.	Mitchell
Platte Livestock Auction Co.	Platte
Presho Livestock Auction Co.	Presho
Rapid City Livestock Commission Co.	Rapid City
Redfield Livestock Sales Co.	Redfield
Schnell Livestock Auction	Lemmon

APPENDIX TABLE 5 (continued)

NAME AND LOCATION OF LIVESTOCK AUCTION MARKETS
OPERATING IN SOUTH DAKOTA, 1964

<u>Name of Auction</u>	<u>Location</u>
Sioux Falls Livestock Auction Co.	Sioux Falls
Sisseton Livestock Sales Pavilion	Sisseton
South Dakota Livestock Sales	Watertown
Stockman's Auction Company	Huron
Stockmen's Livestock Auction	Yankton
Sturgis Livestock Exchange	Sturgis
Timber Lake Livestock Company	Timber Lake
Wagner Livestock Sales Co.	Wagner
Webster Livestock Exchange	Webster
Wall Livestock Auction	Wall
Wessington Springs Auction	Wessington Springs
Willow Lake Sales	Willow Lake
Winner Livestock Auction Co.	Winner
Yankton Livestock Sales	Yankton

APPENDIX B
QUESTIONNAIRE

QUESTIONNAIRE

AUCTIONS

Name _____

Manager _____

Location _____

Ownership Arrangement _____

1. Number of years firm has been in business? _____
2. Are the facilities owned by the manager? _____
3. What is the capacity of your facilities for cattle, hogs, or sheep in your pens at one time? Cattle _____ Hogs _____ Sheep _____
4. Total volume of Livestock

	<u>Feeder</u>	<u>Slaughter</u>	<u>Breeding</u>
A. Cattle			
Total Vol. _____			
Per Cent _____	_____	_____	_____
Average No/Consignment _____	_____	_____	_____
B. Hogs			
Total Vol. _____			
Per Cent _____	_____	_____	_____
Average No/Consignment _____	_____	_____	_____

	<u>Feeder</u>	<u>Slaughter</u>	<u>Breeding</u>
C. Sheep			
Total Vo. _____			
Per Cent _____	_____	_____	_____
Average No/Consignment _____	_____	_____	_____

5. Day(s) on which regular sale(s) are held:

Cattle	_____	_____
Hogs	_____	_____
Sheep	_____	_____

Are there any other days which seasonal sales are held? _____

6. No. of rings used on sale day? _____

7. What per cent of livestock is received from

Less than 50 miles _____

From 50 to 100 miles _____

Over 100 miles _____

What would you consider to be your supply area in miles? _____
(Use map)

8. What is the distance traveled by regular buyers?

	<u>Nearest</u>	<u>Greatest</u>
A. Auction	_____	_____
B. Slaughter	_____	_____
C. Order Buyers	_____	_____
D. Dealers	_____	_____
E. Producers	_____	_____

9. What is the average number of buyers present for each sale?

	<u>Cattle</u>	<u>Hogs</u>	<u>Sheep</u>
Total			
Other Auctions	_____	_____	_____
Slaughter	_____	_____	_____
Order Buyers	_____	_____	_____
Dealers	_____	_____	_____
Producers	_____	_____	_____

10. Is livestock sorted by the auction? _____ Can the seller approve or change the sorting done by auction? _____

11. Type of transportation used by livestock.

<u>Distance</u>	<u>CATTLE</u>					
	<u>To Auction</u>			<u>From Auction</u>		
	<u>Commercial Farm</u> Truck	<u>Commercial Farm</u> Truck	Rail	<u>Commercial Farm</u> Truck	<u>Commercial Farm</u> Truck	Rail- Road
0-49 miles						
50-100 miles						
Over 100 miles						

<u>Distance</u>	<u>HOGS</u>					
	<u>To Auction</u>			<u>From Auction</u>		
	<u>Commercial Farm</u> Truck	<u>Commercial Farm</u> Truck	Rail	<u>Commercial Farm</u> Truck	<u>Commercial Farm</u> Truck	Rail- Road
0-49 miles						
50-100 miles						
Over 100 miles						

<u>Distance</u>	<u>SHEEP</u>					
	<u>To Auction</u>			<u>From Auction</u>		
	<u>Commercial Farm</u> Truck	<u>Commercial Farm</u> Truck	Rail	<u>Commercial Farm</u> Truck	<u>Commercial Farm</u> Truck	Rail- Road
0-49 miles						
50-100 miles						
Over 100 miles						

12. Do you own any livestock trucks? _____

Type _____

Charge _____

13. Which size lot is preferable in the ring at one time?

Feeder cattle	_____	Hogs	_____
Cows	_____	Sheep	_____
Fat cattle	_____		

14. What is the average length of time to make one complete sale of the preferred lot size?

Feeder cattle	_____	Hogs	_____
Cows	_____	Sheep	_____
Fat cattle	_____		

15. Number of employees (other than managers)?

		Average Wage Rate
Sale Day	_____	_____
Full Time	_____	_____
Part Time	_____	_____

16. What are the Annual Costs?

Advertising	_____	Feed	_____
Total Wages	_____	Telephone	_____
Taxes	_____	Insurance	_____
Repairs	_____	Power & Lights	_____
Transportation Ins.	_____	Bonds	_____
Travel by Personnel	_____	Gas & Oil	_____
Postage	_____	Office Supplies	_____
News Media	_____	Others	_____

17. What are the tariff charges for selling livestock?

	Selling Charge					Total
	Per Head	Yardage	Feed	Vet.	Ins.	
<u>CATTLE</u>						
Feeders	_____	_____	_____	_____	_____	_____
Fat cattle	_____	_____	_____	_____	_____	_____
Cows (beef)	_____	_____	_____	_____	_____	_____
Cows with calves	_____	_____	_____	_____	_____	_____
Bulls	_____	_____	_____	_____	_____	_____
<u>HOGS</u>						
Hogs	_____	_____	_____	_____	_____	_____
Bred sows	_____	_____	_____	_____	_____	_____
Boars	_____	_____	_____	_____	_____	_____
<u>SHEEP</u>						
Feeders	_____	_____	_____	_____	_____	_____
Ewes & Lambs	_____	_____	_____	_____	_____	_____
Buck	_____	_____	_____	_____	_____	_____

18. Are your yards available for use by persons not directly employed by auction? _____

19. Has there been any changes during the past eight years in:
(Explain)

A. Quality of livestock received?

B. Total volume of livestock received? (Explain) (Is this information available to us by month?)

1958	_____	1960	_____	1962	_____	1964	_____
1959	_____	1961	_____	1963	_____		

C. Size of the average consignment sold?

D. Distances from which livestock are received?

E. New requests by buyers and sellers?

20. Do you solicit business during the week? How?

21. Does the seller have the option of setting a minimum price?

22. What is the auction's policy with regard to a price that is considered too low for a particular lot?

23. Have you expanded your facilities in the past eight years? _____

Yards _____ Advertising _____
Barns (rings) _____ Personnel _____

24. Do you plan to expand the facilities in the future? _____
How much? _____

Yards _____

Barns (rings) _____

Advertising _____

Personnel _____

25. Are the numbers and prices of each sale published? _____

Newspaper _____ TV _____ Personal mailing _____
Radio _____ Teletype _____ Posters _____

26. How extensive is your personal mailing list now? _____

	<u>Number</u>	<u>Greatest Distance</u>
Producers	_____	_____
Order Buyers	_____	_____
Packers	_____	_____
Dealers	_____	_____

If this is not being done at present, have you considered adding this practice? _____ When? _____

27. Are teletypes available for information of other markets?

28. What different services do you perform that other auctions don't?

29. What changes would you like to see in production or marketing that would help you most?

30. How many dealers are close? (Name if possible)