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Cost of Marketing Utah Lambs at Alternative Markets

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COST OF MARKETING UTAH LAMBS AT ALTERNATIVE MARKETS

by

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INTRODUCTION

Importance of lamb marketings

The production and marketing of lambs is important in Utah's economy. In 1956, Utah ranked fifth in the United States in lambs produced and saved, with 1,038,000 head produced and 840,000 marketed for consumption, table 1. Cash receipts from the lamb marketings during the year amounted to over 10 million dollars, and in addition, the state's economy benefited through revenues, employment, and raw materials which were provided by the lamb industry.

Marketing decisions

Lamb producers and handlers are faced with many decisions in marketing their lambs. They not only must decide when and where to sell, but the question of what method of transportation to use must be answered.

In essence, the producer or handler can make direct ranch sale to slaughterers, lamb feeders, or speculators and can thereby pass on some of the decision making to the buyer; or he can sell through commission firms and competitive bidding at public livestock markets and retain the decision making himself. In the case of direct sale at the ranch, the buyer usually assumes the cost of marketing from that point until he relinquishes title. Generally, the buyer charges for this service by giving a lower price to the seller than would be received if the seller were to ship to the public livestock market.

Table 1. Rank of states in lambs produced and saved, U. S., 1956

State	Number	State	Number
	1000 head		1000 head
Texas	2,723	Tennessee	246
Wyoming	1,395	Washington	232
California	1,304	Nebraska	214
Montana	1,134	Wisconsin	198
Utah	1,038	Pennsylvania	147
Colorado	1,017	Oklahoma	154
Idaho	984	New York	131
South Dakota	922	Mississippi	52
Ohio	849	Louisiana	49
Iowa	826	Alabama	46
New Mexico	767	Arkansas	44
Minnesota	694	Maryland	42
Oregon	686	North Carolina	41
Missouri	668	Georgia	26
Kentucky	556	Maine	26
Illinois	458	New Jersey	11
North Dakota	446	Vermont	9
Indiana	396	Massachusetts	9
Kansas	378	New Hampshire	7
Nevada	329	Connecticut	6
Virginia	316	South Carolina	5
West Virginia	271	Florida	4
Michigan	264	Delaware	3
Arizona	260	Rhode Island	2
Total U.S.			20,398

Source: Calves born, and lambs and pigs saved, by states, 1956, USDA AMS, Statistical Bulletin No. 209, Washington D. C., 1956.

According to economic theory, if the price of lambs at an alternative market exceeded the price at a home market by an amount greater than the cost to move lambs between the markets, there would be a movement from the home market to the alternative market. Accepting this as true, sound marketing would suggest the selection of a market offering the greatest net return.

From a study of prices at five alternative markets over a four year period, it was determined that the spread between each market did not always represent the cost of movement between the markets, figure 1. The price cycle for 1956 showed a high from the third week in May to the second week in June, with a great variation in the spread between prices offered for lambs at each market. During the fourth week in May, there was a $1.50 difference between Ogden, Denver, and Omaha prices; while just one month later, the difference was under $.50. There were periods when one market had a definite price advantage over the others.

Marketing practices

Most of the lambs produced in Utah are marketed outside the state's boundaries, and a great percentage of those marketed within the state find their way to other states for ultimate consumption. During 1956, Utah consumers accounted for only five percent of the marketed lamb crop of the state (5).

Fat lambs shipped from the state were slaughtered in California, Iowa, Illinois, Pennsylvania, New York, and New Jersey; and as most lamb is consumed by professional people and people desiring kosher foods, the bulk of the lambs slaughtered in these states was distributed to and consumed in the larger metropolitan areas of the United States.

Feeder lambs shipped from the state were finished in California, Iowa, Kansas, Nebraska, and Illinois; where wheat fields, hay fields, and small grains were in abundance.

Lambs which were marketed and which remained in Utah were slaughtered as fats or were finished ready for slaughter in feedlots throughout the irrigated valleys of the state, with Utah and Sevier valleys feeding the most lambs.

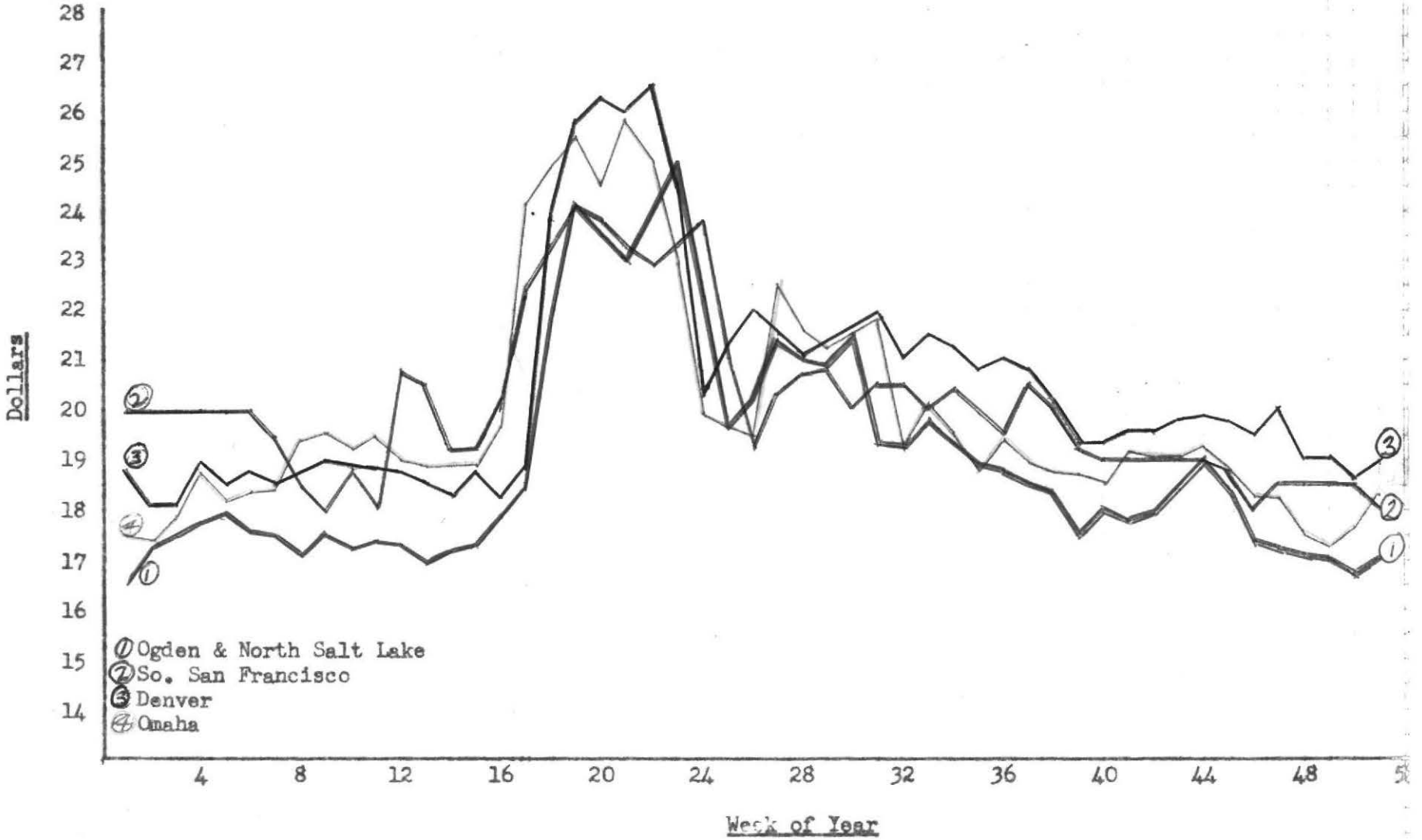

Figure 1. Weekly average of daily prices for fat lambs at five alternative livestock markets, 1956

OBJECTIVES AND SCOPE OF THE STUDY

The objectives of the study were (a) to ascertain and describe cost factors in marketing Utah lambs, and (b) to determine the cost to market lambs at selected public livestock markets from selected Utah shipping points by truck and by rail.

When cost factors between markets are known, marketing costs can be determined by applying current prices to the known factors. When prices change, an adjustment of the factor price can be made.

A knowledge of cost factors and their current price would not be an iron-clad guarantee against losses or mistakes, but would benefit lamb producers and handlers by enabling them to better estimate net returns.

REVIEW OF LITERATURE

Very little marketing information has been published on the cost of marketing Utah lambs. As far as the writer has been able to determine, there have been but two studies published in the past 42 years on costs relative to the marketing of Utah lambs; and these were very general in their scope.

In 1924, Ellsworth wrote his thesis at the Agricultural College of Utah on "Normal Spread between Local and Terminal Market Prices for Sheep" (9). He analyzed 101 shipments of ewes, wethers, and lambs as shipped from Ogden to livestock markets at Denver, Kansas City and St. Joe, Missouri, and Chicago. On lamb shipments, Ellsworth found there was a spread of $1.45 per hundred weight on lambs shipped between Ogden and Denver; $1.82 per hundred weight between Ogden and the Missouri River markets of Kansas City and St. Joe, and a spread of $2.20 per hundred weight on lambs shipped between Ogden and Chicago. Ellsworth described rail freight rates, feed and handling costs, and costs at the market.

The other publication on Utah lamb marketing costs was a study entitled "Marketing Sheep and Lambs in Utah, 1954-55" by Lloyd Holmes, written in 1956 (10). This work was concerned primarily with a description and analysis of marketing practices followed by Utah sheep producers, though general information on the total costs of marketing all sheep in the study were determined. Holmes concluded that out-of-pocket cost per sheep marketed averaged 21.5 cents, on direct sales, and 92.2 cents per sheep marketed at terminal markets.

The latest publication on lamb marketing costs by the United States Department of Agriculture, Agricultural Marketing Service, was issued April 1957 (1). This research publication gave the consumptive pattern for lamb in the United States, and the marketing costs and returns on lamb movements from selected lamb producers to selected lamb consumers. Current costs and prices were used in determining net returns to the various agencies associated with lamb marketing. It was concluded in the study that returns to the various marketing agencies and to producers was quite variable, but that an estimated distribution of the consumer's dollar spent for lamb was as follows: (a) return to retailer--25.9 percent, (b) return to packer-wholesaler--15.5 percent, (c) cost at terminal market--1.5 percent, (d) transportation costs--4.6 percent, and (e) return to rancher--52.5 percent.

A recent bulletin, published in 1956 by New Mexico Agricultural Experiment Station, gave feeding practices and the cost to market Pecos Valley, New Mexico lambs at Kansas City, Missouri (11).

Very little risk information, such as that on shrinkage, death loss, or crippling loss has been available for study. Aside from shrinkage information in Ellsworth's 1924 contribution, there was only one other publication found which considered the subject on lambs, and that was quite general. J. Stewart Wright wrote a thesis at Montana State College in 1942 on "Montana Sheep and Cattle Shrinkage in Transit" (13). Wright listed lamb shrinkages as high as 11.4 percent and as low as 2.9 percent on five day shipments between various Montana points.

Other publications containing statistical information on death and crippling losses on livestock were done by Rickenbacker (12), and The National Live Stock Loss Prevention Board (6).

METHOD OF PROCEDURE

Posted livestock markets and important shipping points which service the lamb producing areas of the state were first selected, figures 2 and 3, and then lamb marketing costs were determined by the following methods:

1. Mail questionnaires were sent to each posted livestock market to obtain current tariffs, rules and regulations, schedules of charges for yardage and services; and commission fees charged by marketing agencies, in order to determine costs at the market.

2. Trained enumerators were sent throughout the state and held personal interviews with lamb truckers who hauled Utah lambs during 1956. Thirty trucker groups, representing 103 truckers, were interviewed in order to gain trucking cost information. Transportation charges, trucking practices, and actual cost information on 1956 lamb shipments was obtained.

3. Personal interviews with livestock shipping agents for the Union Pacific and Denver & Rio Grande Western railroads were held to ascertain railroad shipping costs and practices. Freight rates for fat and feeder lamb shipments between selected points were obtained, and tariffs authorizing transit privileges on livestock were received.

4. Personal interviews were held with lamb buyers and handlers to gain lamb shrinkage information on an hours-in-transit and miles-traveled basis, tables 13 and 14. Actual shrinkage experience on lamb shipments was gathered from producers, commission agencies, packing companies, lamb truckers, and independent sheep companies.

Actual shrinkage experience on 98,459 lambs was obtained, comprising 141 fat lamb shipments and 55 feeder lamb shipments.

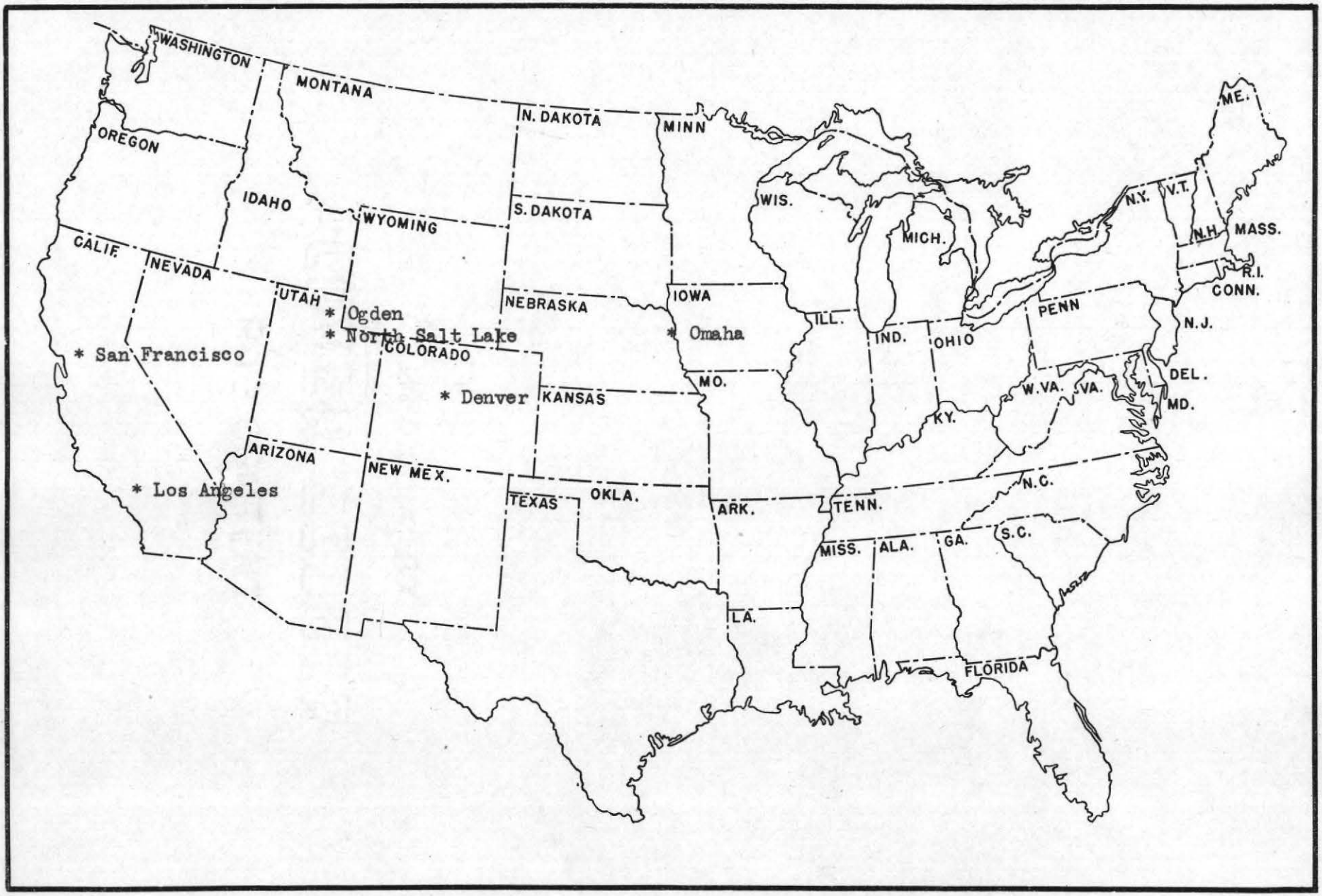

Figure 2. Location of six alternative livestock markets servicing Utah Lamb Producers, 1956

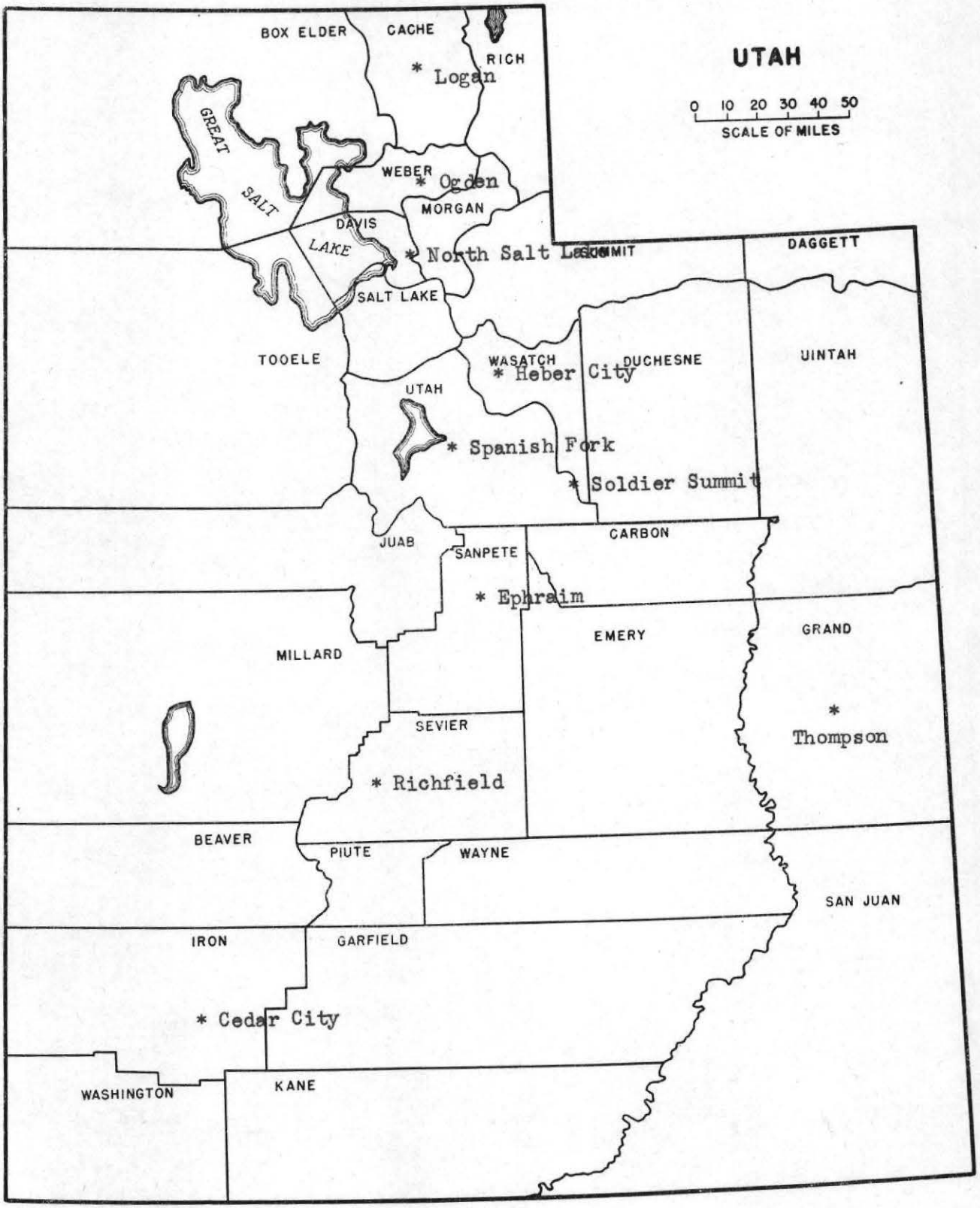

Figure 3. Location of 10 lamb shipping points in Utah, 1956

COST FACTORS IN MARKETING LAMBS

In presenting data on the cost of marketing Utah lambs, two major groupings have been selected. They are (a) cost factors in marketing lambs, and (b) cost of marketing lambs at selected markets.

Presentation of the first group gives a description and analysis of modes of transportation used in shipping Utah lambs, with analysis of cost factors in marketing lambs by rail and by truck. The second grouping has been presented to show the marketing cost on a standard car lot equivalent[1] of lambs at selected markets from Utah shipping points.

Cost factors have been grouped under the four following headings: (a) Transportation, (b) Intransit expenses, (c) Market expenses, and (d) Risk. Rail and truck cost is analyzed under each heading.

Transportation

An analysis of sheep and lamb receipts at six selected markets for 1955-56 shows that 55.0 percent arrived by rail and 45.0 percent by truck, table 2. The receipts at each market did not, however, follow the same proportions. North Salt Lake experienced 93.1 percent rail receipts while South San Francisco had only 5.7 percent arrive by rail.

The fact that North Salt Lake is a common feed and rest stop on the Union Pacific and Denver & Rio Grande Western railroads is a causal factor for the high rail receipts at North Salt Lake, but the

1. Two hundred ten wooled lambs averaging 100 pounds per head or 250 wooled lambs averaging 70 pounds per head.

reasons for the low rail receipts and high truck-ins at South San Francisco are quite complex and open for speculation.

Table 2. Receipts of sheep and lambs at six public markets by rail and by truck, 1955-56

Market & year	Total	Rail	Truck	Rail	Truck
	number	number	number	percent	percent
Denver:					
1955	1,481,091	619,253	861,838	46.8	53.2
1956	1,647,689	764,425	883,264	46.4	53.6
Ogden:					
1955	1,258,201	907,180	351,021	72.1	27.9
1956	1,390,030	1,043,628	346,402	75.1	24.9
Omaha:					
1955	953,402	488,081	464,321	51.2	48.8
1956	816,926	405,032	411,894	49.6	50.4
So. San Francisco:					
1955	338,554	19,265	319,289	5.7	94.3
1956	309,061	11,464	297,597	3.7	96.3
North Salt Lake:					
1955	392,702	365,596	27,106	93.1	6.9
1956	301,728	259,726	42,002	86.1	13.9
Los Angeles:					
1955	29,150	13,314	15,826	45.7	54.3
1956	58,547	39,887	18,660	68.1	31.9
Total	8,974,081	4,936,851	4,039,230		
Two year average				55.0	45.0

Source: Livestock receipts and disposition at public markets, 1956, USDA, AMS, Market News Livestock Division, Washington, D.C., February, 1957.

There are two strong farmer cooperatives at the San Francisco market which have strong drawing power from surrounding areas of California and Nevada, which, coupled with the fact that truck is

used more than rail on most range and feedlot movements, might account for the high rate of truck-ins at the San Francisco market.

Irrespective of the variation in receipts by rail and truck at individual markets, both are strong competitors for the lamb transportation dollar, and with this in mind, a description and analysis of both rail and truck is given.

Rail. Currently, there are four sizes of stock cars used by the railroads. Table 3 gives minimum weight limits and dimensions of these cars with the recommended number of sheep and lambs to haul in each. The 36 foot double deck car is most generally used for transporting lambs, though during rush seasons or at the discretion of the railroads, other cars may be substituted.

Recommended numbers for the 36 foot car are 210 wooled lambs averaging 100 pounds per head, or 250 wooled lambs averaging 70 pounds per head. These numbers are those recommended by Live Stock Conservation Inc., and Western Weighing and Inspection Bureau of Chicago. As the size of the lambs varies or as the amount of wool varies, the optimum numbers to be loaded would change, but these are recommended numbers under ordinary conditions and will constitute a standard car lot equivalent in this study.

Several privileges are available to the lamb shipper who ships by rail. Some of the more important are two way transportation for attendant; consolidation stops of up to 10 days; stops to try a market for a ten day period; special feeder rates; and the privilege of stopping feeder stock intransit for up to 12 months for feeding and grazing. Also, if 25 cars can be consolidated, a special train will be provided for a through-run to market or destination. These considerations plus the fact that railroad facilities are at the disposal

of lamb shippers for loading, unloading, and handling purposes aid in making rail a favorable competitor to truck in the lamb transporting line.

Table 3. Minimum weight standards and recommended sheep numbers for different length livestock cars, 1956

Length of car	Minimum weight	Weight per head in pounds					
		50	75	100	125	150	180
	pounds	no.	no.	no.	no.	no.	no.
36'6" Double-deck	20,000	310	250	210	192	170	150
40'6" Double-deck	21,100	340	275	232	208	188	166
36'6" Single-deck	12,000	155	125	105	96	85	75
40'6" Single-deck	13,300	170	138	116	104	94	83

Source: Livestock Shipping Guide and Directory, Union Pacific Railroad, Department of Traffic, Number 3, Reissued April 15, 1956.

Rail transportation costs consist of freight charges, taxes levied, and bedding fees for cars. The freight charge is the largest item in the group and is determined after mileage is figured. The shortest rail mileage is used to compute the basic rate figure, with the mileage of other railroads serving the same points taken under consideration. After the basic rate is figured, type of car and kind of stock is considered to arrive at a final rate figure.

A three percent federal tax is levied on all freight charges by rail regardless of origin or destination. The tax is levied, however, only against the freight charge and is not augmented by service or intransit charges.

The cost of bedding, or the cost of sanding cars as it is sometimes known, is the third item considered under transportation by rail, and very extensive rules are set forth in railroad tariff publications. Specifically, these regulations state that all cars transporting

livestock must have proper bedding on the decks, whether sand, straw, hay, or other similar material. A minimum amount of one inch of sand, or 200 pounds of hay or straw per deck is provided and charged for under tariff regulations. The shipper may, of course, order more than the minimum, but he is charged an additional fee. Also, the shipper may furnish both the material and labor at no charge; the labor only, at a portion of the full charge; or he may pay the full charge and have the railroad furnish both labor and bedding material.

There are conditions under which the railroad may furnish cars other than those ordered, and in such cases bedding charges are assessed on the basis of cars originally ordered, i. e., if a single deck car were ordered and a double deck car furnished, with only one deck used, the bedding charge would be on the basis of the single deck car. Also, when sheep and lambs are stopped enroute to comply with the 28 hour law, no additional charge is made for bedding. When, however, sheep and lambs are stopped enroute at the request of the shipper to try a market (and if cars containing new bedding are provided) the shipper is charged the usual bedding fee. These bedding charges are listed in tables 9 and 10 as intransit expenses, and are different for interstate and intrastate shipments.

Truck. Advantages in the form of speed and accessibility are available to the lamb shipper who trucks his lambs. Speed is important because of the shrinkage problems associated with lamb movement, and also because of the rapid fluctuations in market prices between various markets. Because lambs are often shipped from out-of-way places, accessibility, and the fact that truckers provide portable chute equipment places the trucker in a favorable position with lamb shippers.

In this study, 30 trucker groups representing 103 individual truckers were interviewed to gain cost information and general handling practices on Utah lamb shipments.

In 1956, these 103 truckers hauled a total of 275,400 fat lambs and 244,700 feeder lambs for a grand total of 520,100 head. This number was equal in amount to 61.9 percent of total Utah lamb marketings for the year.

A great variety of truck models and makes hauled Utah lambs during 1956, but of the truckers interviewed, truck classifications fell into the groups listed in table 4.

Table 4. Description of trucks used to haul Utah lambs, 1956

Type Truck & Ton Size	No. Trucks	Average No. Decks	Average Ton Size	Average Length
				feet
Standard:				
1.5 tons	8	2.2		
2.0 tons	45	2.2		
2.5 tons	6	2.0		
3.0 tons	2	2.0		
Total or Ave.	61	2.1	2.25	18.0
Semi:				
2.0 tons	5	2.0		
2.5 tons	17	2.0		
3.0 tons	2	2.0		
5.0 tons	10	2.3		
10.0 tons	8	2.0		
Total or Ave.	42	2.1	4.50	30.0

Sixty-one standard trucks and 42 semi units were represented. The standards averaged 2.25 tons with an average length of 18 feet, while the semi group averaged 4.5 tons with a 30 foot average length.

Ton sizes ranged from 1.5 to 3.0 tons on the standards, and from 2.0 to 10.0 on the semi trucks. The 10-tonners were more often used on longer hauls.

A few of the truckers in the one to two ton standard class, and a few in the five ton semi class used trucks with three decks. In order to accomplish this they had to lay each sheep down as it was loaded. More sheep could be hauled by this method, but most truckers felt maximum weight limits were reached with just two decks. Truckers also mentioned that the extra time and work involved, coupled with the feeling that lambs hauled in this manner often looked more undesirable when unloaded, did not merit use of the three deck method.

It was found that an average of 50 fat lambs, or 58 feeder lambs could be hauled per deck on the standard trucks, and an average of 81 fats or 91 feeders could be hauled per deck on the semi units, table 5.

Table 5. Average numbers of lambs hauled per load on trucks hauling Utah lambs, 1956

Type Truck & Ton Size	Fats	Feeders
	No.	No.
Standard:		
1.5 tons	80	94
2.0 tons	100	114
2.5 tons	108	122
3.0 tons	116	130
Average	101	115
Semi:		
2.0 tons	122	142
2.5 tons	142	162
3.0 tons	160	180
5.0 tons	182	202
10.0 tons	210	230
Average	163	183

It is generally considered good practice to provide a minimum of 2.8 square feet for a 100 pound wooled lamb and 2.3 square feet for a 70 pound wooled lamb (8).

Those interviewed were asked to give the time required to load and unload their trucks under normal conditions, table 6.

Table 6. Average time to load and unload a truck of Utah lambs, 1956

Type Truck	Loading Time	Unloading Time
	minutes	minutes
Standard	22	11
Semi	40	18

It took an average of 22 minutes to load the standards and an average of 40 minutes to load the semi units. This was an 18 minute defference. On the unloading end, it took an average of 11 minutes for the standards and 18 minutes for the semi units for only a seven minute spread.

One variable factor causing the difference in ranges might be "method of loading." Those familiar with lamb handling methods know that if lambs are properly handled, once started, they can fill a 36 foot railroad car in three or four minutes; the same goes for unloading. In loading trucks however, it is a general practice to partition the decks every eight or ten feet to prevent lambs from crowding and smothering. This requires added time and sometimes interrupts the loading process. When it comes to unloading, however, the truckers can stand outside their trucks and unloose the partitions without interrupting the moving lambs. As there are more partitions on the

semi units, it is possible to have a greater spread in loading time than in unloading time.

Trucker habits relative to road speeds are recorded in table 7. Truckers were asked to give speeds traveled on three types of roads: (a) surfaced highways, (b) graveled roads, and (c) mountain roads. Such information is valuable in estimating the time enroute to determine estimated shrinkage and transit expenses.

The average speeds for all trucks were 42 miles per hour on type one roads, 30 miles per hour on type two roads, and 12 miles per hour on type three roads.

Table 7. Average road speeds by road type and truck class, 1956

Type Truck & Ton Size	No. Trucks	Surfaced	Graveled	Mountain
		mph	mph	mph
Standard:				
1.5 tons	8	45	31	14
2.0 tons	45	42	30	13
2.5 tons	6	53	31	13
3.0 tons	2	42	33	8
Average		43	31	12
Semi:				
2.0 tons	5	46	27	12
2.5 tons	17	40	32	10
3.0 tons	2	35	30	10
5.0 tons	10	47	33	18
10.0 tons	8	40	--	--
Average		42	28	12

Transportation cost items by rail were freight, federal tax, and bedding charges; but under transportation by truck, the cost items are all included under freight charge.

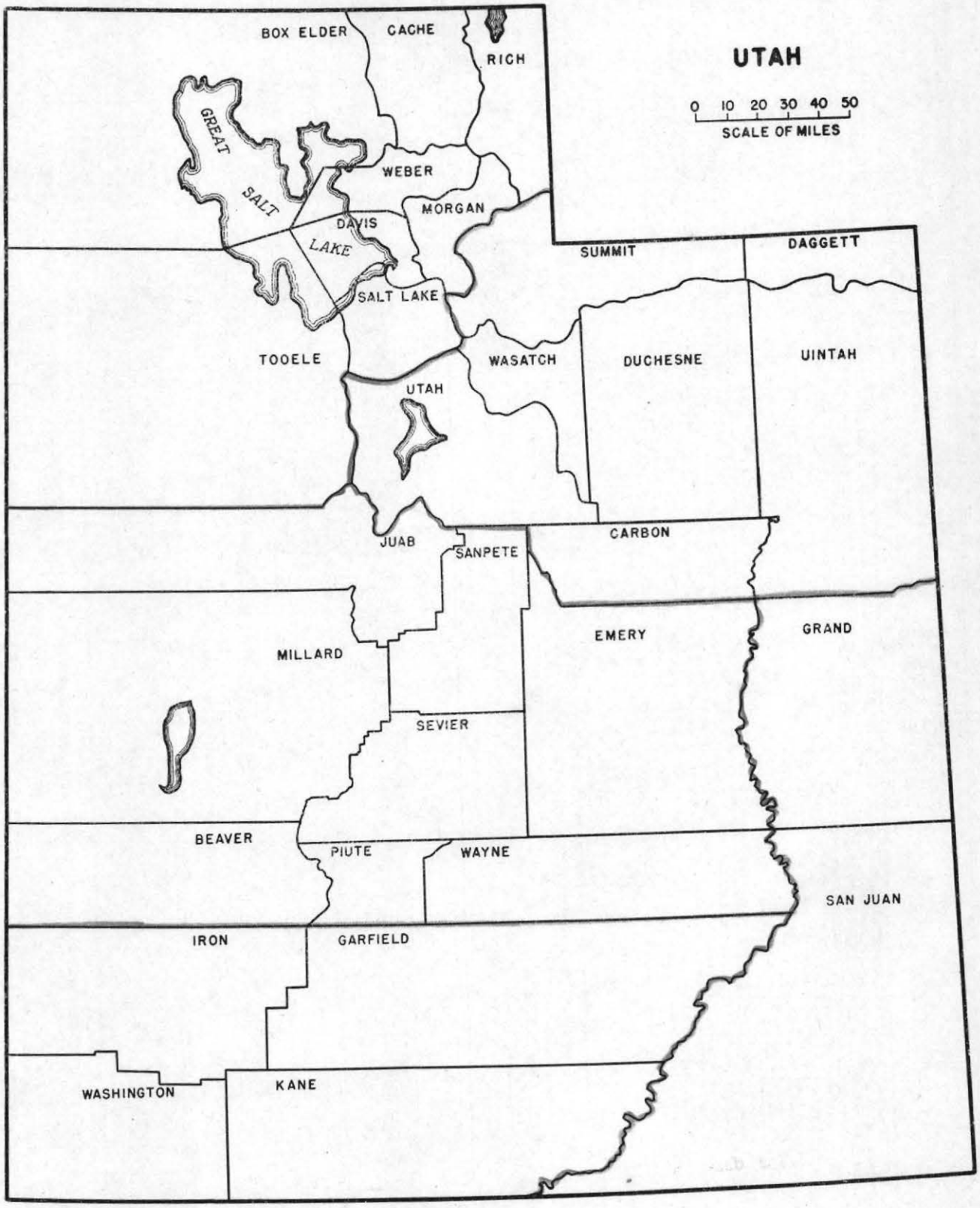

Figure 4. Areas of delineation used in determining lamb trucking cost, 1956

Rail and truck freight costs are included in the appendix, and in most every instance, truck rates were higher than rail rates, which suggests that items such as tax and bedding charges might be included in the truck freight rate.

Transportation cost by rail was arrived at by using current I.C.C. tariff regulations, which apply to all railroads. However, as truckers are under no such control, it was necessary to arrive at trucking cost by averaging actual lamb shipments originating in Utah. This information is presented in table 8 and includes averages on 240 actual lamb shipments.

Class intervals were used denoting mileage groups in 100 mile stages, with the exception of hauls under 100 miles which were grouped in 25 mile stages.

The cost per-cwt-mile gives the cost of hauling one hundred-weight of lamb one mile. The average cost per-cwt-mile was ascertained by dividing the average miles for each class interval into the hundred-weight cost. On hauls of 25 miles or less, the average cost per-cwt-mile was $.0119, while that on hauls over 1,000 miles was only $.0013.

The labor involved in loading and unloading; and the fixed costs of insurance, interest, and licenses, are the same on trucks hauling 25 miles as they are on trucks hauling 1,000 miles. However; time and labor of the truck operator, fuel, lubrication, depreciation, and repairs increase with an increase in miles traveled, and as more miles are covered, the fixed cost is spread over a greater distance which gives a lower cost-per-mile picture on the longer hauls.

Intransit expenses

These expenses constitute the second cost factor in marketing lambs and are grouped under the items of feed enroute, and services necessary to handle lambs at feed and rest stops.

Table 8. Average cost per hundredweight-mile to ship fat and feeder lambs by truck, 1956

Mileage Interval	Number of Shipments	Average per Shipment				
		Number Lambs	Weight	Miles Traveled	Cost	Cost per Cwt-Mile
			Cwt		Dols.	Dols.
1-25	14	592	531	15.9	101.51	.0119
26-50	37	540	506	37.3	116.70	.0062
51-75	21	225	203	66.2	73.11	.0054
76-100	32	250	224	90.0	84.16	.0042
101-199	46	149	147	127.7	79.95	.0042
200-299	14	191	191	221.6	138.77	.0033
300-399	3	310	197	336.0	200.89	.0030
400-499	10	306	249	459.2	274.69	.0024
500-599	17	268	262	570.0	320.04	.0021
600-699	17	281	282	631.1	364.20	.0020
700-799	11	301	285	756.3	353.05	.0016
800-899	6	281	272	858.0	386.09	.0016
900-999	6	269	259	928.0	412.72	.0016
1,000-1,099	6	208	208	1,056.6	308.33	.0014
Total	240					

The U. S. Congress, in 1873, passed a law which provided that livestock may not be confined in transit for excessive periods without a feed and rest stop. The statute governing this is known as the 28 hour law. In essence, the law states that no railroad or common carrier may confine livestock for period longer than 28 hours (except for accidents or unavoidable circumstances) without unloading and providing feed, water, and rest for at least five consecutive hours. However, an extension of up to 36 hours may be had upon written consent of the owner or custodian of the stock, and is referred to as a 36 hour release. Time consumed in loading and unloading is not considered, and if sheep are being transported and the 28 hour period expires at night, they may be held until morning or moved on to other yards; under limitation of the 36 hour period.

Rail. Figure 5 shows feed and rest points often used by Utah lamb shippers. One feed and rest stop is shown on runs to San Francisco, Los Angeles, and Denver, with two shown on runs to Omaha. The Union Pacific railroad makes through-runs from Ogden and North Salt Lake to Los Angeles without a feed and rest stop; but when proper connections cannot be made, or when shipments have been routed from intermediate points within the state, one feed and rest stop is usually taken at North Salt Lake or at Ogden.

Alfalfa hay is usually fed lambs enroute, though some packing companies and order buyers make a practice of feeding concentrates or mixed rations to their lambs. It is a practice to feed 200 pounds of hay per deck of lambs, though the U.S.D.A. minimum requirements are just 50 percent of this ration. When no feeding instructions are given, the U.S.D.A. minimum requirements are fed.

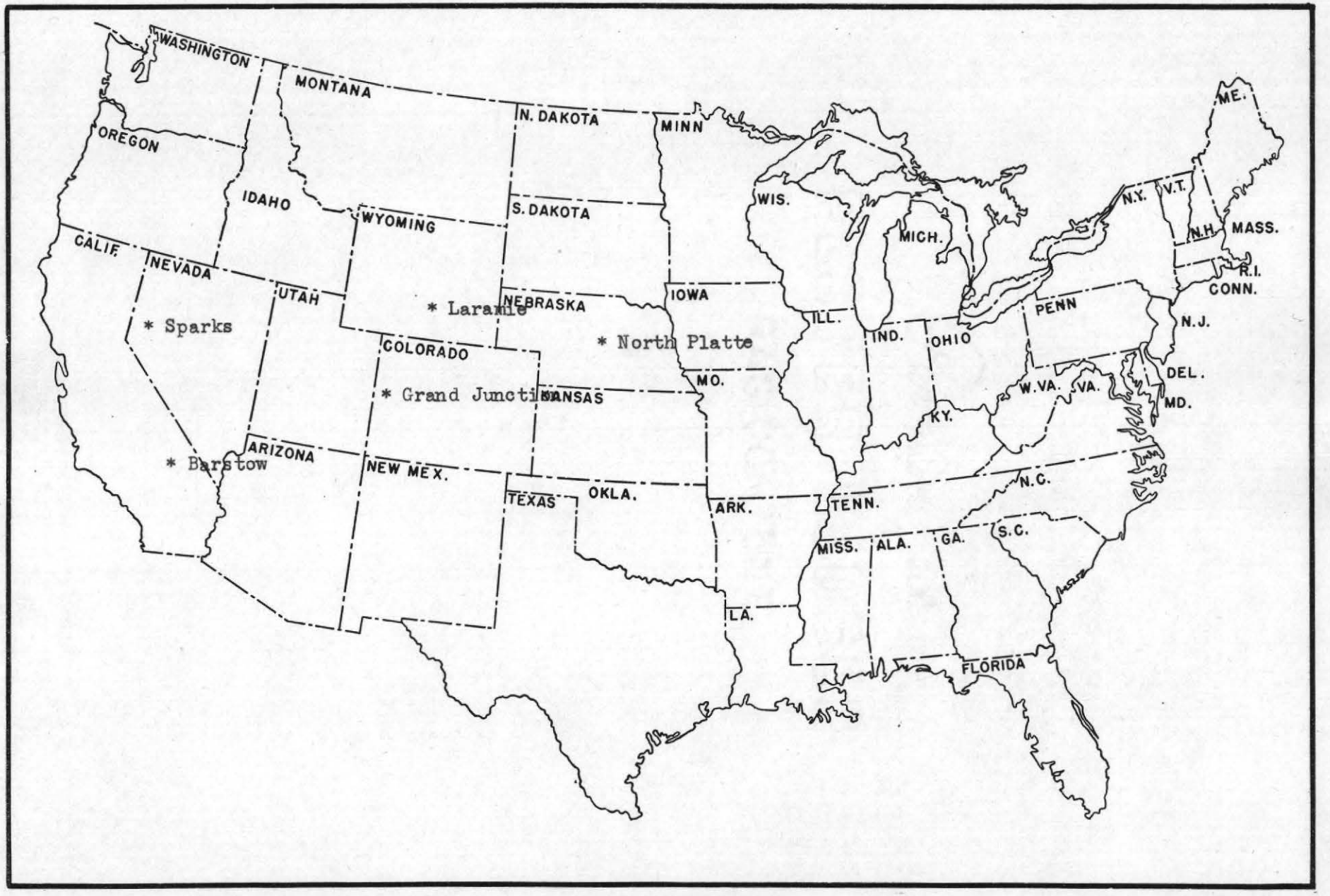

Figure 5. Feed and rest stops often used on out of state lamb shipments, 1956

Railroads issue circulars to managers and superintendents at all railroad feed yards, managers at all public livestock markets, railroad agents at all feed yard points, and to general traffic agents: giving specific feeding instructions for intransit movements of livestock. Companies or firms shipping large numbers of livestock find this a good method for providing specific instruction on feeding stock intransit.

To assure the shipper an equitable charge for feed, prices are based on the average price of hay in the area plus an average of 60 to 70 cents a hundred weight for handling.

Service and handling charges are made in addition to the cost of feed and cover the unloading, feeding and watering, and re-loading of stock. These services are performed by the stockyard companies or railroad companies if stops are made at railroad operated yards. The charges are on a per-head basis regardless of mode of arrival, and have been shown in tables 9 and 10.

Truck. Intransit expenses by truck are not as significant as those by rail. Ordinarily trucks are able to make runs to every market selected in this study without a rest stop; except on some runs to Omaha where one feed and rest stop might be taken.

As lamb truckers follow a practice of stopping at posted stockyeards for feed and rest purposes, and due to the fact that charges are irrespective of mode of arrival, truck intransit expenses are included with rail intransit expenses.

Market expenses

The third cost factor in marketing Utah lambs has been called market expenses. This includes yardage charges, feed costs at the market, commission fees levied, insurance deductions made, and

deductions for the National Livestock and Meat Board's advertizing program, tables 11 and 12.

Table 9. Estimated intransit expenses per shipment by rail and truck for Utah lambs, by number of feed and rest stops taken, Western Movements, 1956 1/

Expense Item	Number Feed and Rest Stops					
	0		1		2	
	Truck Dols.	Rail Dols.	Truck Dols.	Rail Dols.	Truck Dols.	Rail Dols.
Interstate:						
Bedding	----	3.41	----	3.41	----	3.41
Feed 2/	----	----	9.00	9.00	18.00	18.00
Handling 3/	----	----	2.18	2.18	4.36	4.36
Total	----	3.41	11.18	14.59	22.36	25.77
Total/Head:						
210/Shpt	----	.0162	.0532	.0694	.1065	.1227
250/Shpt	----	.0136	.0447	.0584	.0894	.1031
Intrastate:						
Bedding	----	3.07	----	3.07	----	3.07
Feed	----	----	9.00	9.00	18.00	18.00
Handling	----	----	2.18	2.18	4.36	4.36
Total	----	3.07	11.18	14.25	22.36	25.42
Total/Head:						
210/Shpt	----	.0146	.0532	.0679	.1065	.1211
250/Shpt	----	.0123	.0447	.0570	.0894	.1017

1/ Shipment assumed to be 210 wooled lambs averaging 100 pounds per head or 250 wooled lambs averaging 70 pounds per head.

2/ 400 pounds alfalfa hay per shipment per rest stop. Hay estimated at $2.50 per Cwt on eastern movements and $2.25 per Cwt on western movements.

3/ Includes unloading, feeding and watering, and re-loading.

All posted livestock markets fall under the jurisdiction and supervision of the Secretary of Agriculture and are governed by laws set forth under the Packers and Stockyards Act of 1921. The direct

responsibility for the enforcement of the act was delegated to the Packers and Stockyards Division, which is a part of the Livestock Branch of the Production and Marketing Administration.

Table 10. Estimated intransit expenses per shipment by rail and truck for Utah lambs, by number of feed and rest stops taken, Eastern Movements, 1956 1/

Expense Item	Number Feed and Rest Stops					
	0		1		2	
	Truck Dols.	Rail Dols.	Truck Dols.	Rail Dols.	Truck Dols.	Rail Dols.
Interstate:						
Bedding	----	3.41	----	3.41	----	3.41
Feed 2/	----	----	10.00	10.00	20.00	20.00
Handling 3/	----	----	2.18	2.18	4.36	4.36
Total	----	3.41	12.18	15.59	24.36	27.77
Total/Head:						
210/Shpt	----	.0162	.0579	.0742	.1160	.1322
250/Shpt	----	.0136	.0487	.0624	.0974	.1111
Intrastate:						
Bedding	----	3.07	----	3.07	----	3.07
Feed	----	----	10.00	10.00	20.00	20.00
Handling	----	----	2.18	2.18	4.36	4.36
Total	----	3.07	12.18	15.25	24.36	27.43
Total/Head:						
210/Shpt	----	.0146	.0580	.0726	.1160	.1306
250/Shpt	----	.0123	.0487	.0610	.0974	.1097

1/ Shipment assumed to be 210 wooled lambs averaging 100 pounds per head or 250 wooled lambs averaging 70 pounds per head.
2/ 400 pounds alfalfa hay per shipment per rest stop. Hay estimated at $2.50 per Cwt on eastern movements and $2.25 per Cwt on western movements.
3/ Includes unloading, feeding and watering, and re-loading.

The act was established to provide the following:

1. Adequate facilities and services to livestock producers at public stockyards.

2. Reasonable charges against livestock producers for stockyard services, and reasonable charges for the selling and buying services furnished by commission firms.

3. Open competitive conditions when livestock consigned by producers to commission firms is sold.

4. Accurate weighing of such livestock.

5. Full and correct accountings to the livestock producers and buyers for whom commission firms act as selling and buying agents.

6. That stockyard companies, commission firms, dealers, and packers shall not engage in unfair, deceptive, or discriminatory practices that are against livestock producer's interests.[2]

In establishing prices to be charged at posted stockyards, the Packers and Stockyards Division analyze all the costs involved and allow a reasonable rate of return on investment. As the cost of rendering services, and as the investment varies at each stockyards, so do the prices charged. Stockyards companies follow a practice of publishing these prices along with rule and regulations, which are available to interested persons in the form of tariffs.

Yardage charges are assessed for the use of stockyard facilities and for the services rendered in providing care for livestock. Facilities are those necessary to accomplish such things as receiving, weighing, feeding, and watering the livestock; while the services rendered are those incidental to the following:

1. The receiving of livestock after they are unloaded.

2. The furnishing of receipts for livestock to the trucker, carrier or consigner.

3. The delivery of rail livestock to sales pens.

4. The furnishing of sufficient potable water for livestock.

5. The initial weighing of livestock when sold and delivered to the scales.

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2. Administration of Packers & Stockyards Act., US.D.A. L.B., Packers and Stockyards Division, unnumbered circular, Ogden, Utah.

6. The issuance of scale tickets showing actual weight and other pertinent information concerning the livestock weighed.

7. The removal of livestock from scales after weighing and delivery to holding pens.

8. The holding of livestock for a reasonable time pending delivery or shipment to buyers, and for a reasonable time thereafter.

9. The delivery of livestock to buyers at holding pens; the obtaining of receipts for livestock so delivered to buyers; and

10. The delivery of outbound rail livestock to rail chute pens.[3]

Commission fees are on a per-head basis and cover the cost of buyer's and seller's services. The charges are the same for rail receipts and truck-ins, but the amount of charge per head varies with different stockyards. For example, Ogden bases its charge on lamb consignments of 210 head, with the first 10 in each 210 head consignment charged at the rate of 40 cents per head, the next 50 charged at the rate of 25 cents per head, the next 60 charged at 15 cents per head, and the last 90 in each 210 head consignment charged at the rate of 13 cents per head. This amounts to $37.20 for the shipment or 17.7 cents per head.

On the other hand, Denver bases its charge on 250 head consignments with 40 cents per head for the first 10, 22 cents per head for the next 50, 18 cents per head for the next 60, and 10 cents per head for the last 130. This amounts to $38.80 for the shipment, or 15.5 cents per head.

All the stockyards in this study followed a practice of insuring livestock received at the yards or held adjacent to the yards. Lambs were insured to their market value against losses due to fire, and in some instances against losses due to lightning, windstorm, cyclone and/or tornado. The charges were assessed unless formal notice was given

3. Denver Union Stockyard Company Tariff No. 14, item 2, p. 10.

the stockyards company ahead of time. The charge was usually based on a car lot equivalent, though charges on a per-head basis were made on small shipments.

Deductions for the National Livestock and Meat Board's promotional campaign were optional with the shipper, but it was noted in this study that most lamb shippers followed a practice of allowing the deduction.

Ogden, North Salt Lake, and Omaha deducted 4/5 cents per head or a maximum of $1.00 per car lot equivalent; while Los Angeles, South San Francisco and Denver deducted 50 cents per car lot equivalent or 1/4 cent per head.

Rail. Market expenses on a standard car lot equivalent of lambs arriving by rail at the six selected livestock markets are listed in table 11.

Yardage charges were on a per-head basis and were therefor the same for fats as for feeders at each market, but the charges per-head varied with each of the six selected markets. South San Francisco had the highest yardage charge per head with 21 cents, while North Salt Lake was low with 11 cents per head.

The expense for feed was arrived at by allowing 1 1/2 pounds of alfalfa hay per head, and charging for this at the current tariff quoted price for hay at the respective markets. As the price of hay at Los Angeles and Omaha was slightly higher than that at other markets, the cost of feed per head was slightly higher.

Commission fees were based on a per-head figure, and because the feeder shipments contained more lambs than the fat shipments, their commission cost was higher per car lot equivalent. Ogden and North Salt Lake had the highest commission figures with $.2050 per head for feeders and $.1770 for fats; while Omaha had the lowest, with $.1600 for feeders and $.1130 for fats.

Table 11. Market expenses per head, lamb shipments arriving by rail at selected markets, 1956

Expense Item	Public Markets					
	N.SL.	Den.	Ogden	L. A.	S.SF.	Omaha
	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.
Yardage:						
Fats	.1100	.1700	.1200	.1500	.2100	.1900
Feeders	.1100	.1700	.1200	.1500	.2100	.1900
Feed: 1/						
Fats	.0330	.0330	.0330	.0330	.0340	.0340
Feeders	.0330	.0330	.0330	.0330	.0340	.0340
Commission:						
Fats	.1770	.1230	.1770	.1600	.1440	.1130
Feeders	.2050	.1600	.2050	.1860	.1480	.1690
Insurance:						
Fats	.0005	.0005	.0005	.0007	.0005	.0005
Feeders	.0004	.0004	.0004	.0006	.0004	.0004
N.L. & M.B. 2/						
Fats	.0080	.0025	.0080	.0025	.0025	.0080
Feeders	.0080	.0025	.0080	.0025	.0025	.0080
Totals per head:						
Fats	.3285	.3285	.3385	.3717	.3905	.3455
Feeders	.3564	.3654	.3664	.3456	.3945	.4015
Totals per shpt: 3/						
Fats	68.98	68.98	71.08	78.06	82.01	84.32
Feeders	89.10	91.35	91.60	86.40	98.62	100.38

1/ 1 1/2 pounds alfalfa hay per head; on the fence.
2/ National Livestock & Meat Board.
3/ Dollars per shipment.

The insurance charges were the same at each livestock market except that of Los Angeles, which was slightly higher.

De Deductions for the National Livestock & Meat Board's promotional campaign amounted to $.0080 per head at Ogden, North Salt Lake, and Omaha; while it was only $.0025 per head at Los Angeles, South San Francisco, and Denver. These figures were taken from current tariff regulations at the respective markets, and the writer was not able to determine the reason for the difference in amount deducted.

Total market expenses on lamb shipments arriving by rail varied considerably with the markets selected. Expenses were highest at Omaha with $.3455 per head for fats and $.4015 per head for feeders. This amounted to market expenses of $84.32 for a shipment of fats and $100.38 for a shipment of feeders at the Omaha market.

On the other hand, North Salt Lake and Denver had the lowest market expenses on fat lambs with $68.98 recorded for each market. Because commission charges were greater on feeder lambs at Denver than they were on feeder lambs at North Salt Lake, a greater total cost resulted per shipment at the Denver market.

Truck. Market expenses on a standard car lot equivalent of lambs arriving by truck at the six selected livestock markets are listed in table 12.

All market expense items were the same for truck arrivals as they were for rail; except in the case of yardage charges at Ogden, North Salt Lake, and Los Angeles, where a discount was given arrivals by rail. The charges at North Salt Lake were three cents per head lower on rail arrivals than on truck arrivals, while Ogden and Los Angeles gave a two cent advantage to arrivals by rail.

Because of the two and three cent advantage, market expenses were from $3.25 to $16.30 higher per car lot equivalent on lamb shipments arriving by truck than by rail at Los Angeles and North Salt Lake. This also had the effect of placing Denver in the lowest market expense category for truck arrivals, whereas North Salt Lake was lowest on rail arrivals. Omaha remained the highest market expense location on both rail and truck arrivals.

Risk

Risk was considered a cost item in marketing Utah lambs in this

study, with losses due to shrinkage, death, and crippling making up the factor group. Losses due to shrinkage were by far the most important item in this grouping.

Table 12. Market expenses per head, on lamb shipments arriving by truck at selected markets, 1956

Expense Item	Public Markets					
	Den.	Ogden	N.SL.	L. A.	S.SF.	Omaha
	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.
Yardage:						
Fats	.1700	.1400	.1400	.1700	.2100	.1900
Feeders	.1700	.1400	.1400	.1700	.2100	.1900
Feed: 1/						
Fats	.0330	.0330	.0330	.0330	.0340	.0340
Feeders	.0330	.0330	.0330	.0330	.0340	.0340
Commission:						
Fats	.1230	.1770	.1770	.1600	.1440	.1130
Feeders	.1600	.2050	.2050	.1860	.1480	.1690
Insurance:						
Fats	.0005	.0005	.0005	.0007	.0005	.0005
Feeders	.0004	.0004	.0004	.0004	.0004	.0004
N.L. & M.B.: 2/						
Fats	.0025	.0080	.0080	.0025	.0025	.0080
Feeders	.0025	.0080	.0080	.0025	.0025	.0080
Totals per head:						
Fats	.3285	.3585	.3585	.3917	.3905	.3455
Feeders	.3654	.3864	.3864	.3656	.3945	.4015
Totals per shpt: 3/						
Fats	68.98	75.28	75.28	82.30	82.01	84.32
Feeders	91.35	96.60	96.60	91.40	98.62	100.38

1/ 1 1/2 pounds alfalfa hay per head; on the fence.
2/ National Livestock & Meat Board.
3/ Dollars per shipment.

Shrinkage is generally classified as either "excretory" or "tissue" shrink. The excretory shrink is a result of the animal passing excretia or emptying the bladder and intestinal tract. This type shrink results in the elimination of "fill" and is not considered an economic

loss, but tissue shrink is the result of body building processes not keeping up to the body break-down processes, and is considered an economic loss to society.

Shrinkage has been found to be quite a variable item and is effected by a number of things. The season of year, the type of weather, the method of handling, and the type of feed consumed all have a definite effect on the amount of shrink.

It was found that lambs will shrink more in July than in December and will shrink more in wet weather than in dry weather. Lambs fed green, lush, soft feeds, will shrink more than lambs fed dry and harder feeds; while lambs right off their mothers will shrink more than lambs out of the feedlot. Lambs are also excitable creatures and if handled too roughly will not rest or feed properly, which results in a higher percent shrink.

Irrespective of the great variability in lamb shrinkage, there has been enough experience in shipping lambs, both by rail and truck, to arrive at sound averages.

It was determined that the mode of transportation had little effect on the amount of shrink, but rather that the time in transit was the determining factor. Trucks made better time between shipping points and public markets than did rail; which resulted in lower lamb shrinkage by truck, but the factor involved was time in transit and not the mode of transportation. For this reason lamb shrinkage information has been presented on an hours-in-transit basis.

Table 13 gives fat lamb shrinkage information for Utah lambs on an hours-in-transit basis. One hundred forty-one shipments, moving a total of 64,983 lambs were the basis for these figures.

Table 13. Average shrinkage in transit for fat lambs by rail and by truck on an hours-in-transit basis, 1956

Average Time in Transit	Shipments	Lambs	Average Distance	Average Shrink
Hours	No.	No.	Miles	Percent
.83	6	10,161	28.0	1.46
1.67	15	11,982	47.9	2.02
3.28	9	6,332	112.9	2.69
5.31	8	1,430	156.2	3.32
8.07	7	1,335	241.1	4.63
23.65	60	20,392	532.9	7.48
42.91	22	9,896	758.1	8.41
91.36	14	3,455	1,028.6	7.31
	141	64,983		

An increase in the amount of shrink took place with an increase of time in transit up to about 43 hours. After that period, however, a slight decrease in the amount of shrink took place. The reason for this change was placed on "fill-back" which is a result of feed and rest stops taken. Figure 6 has been presented to give a graphic illustration of this.

Fat lambs were found to shrink most rapidly during the first few hours in transit, afterwhich shrinkage increased, but at a decreasing rate until feed and rest stops were taken. After the feed and rest stops were taken, shrinkage took place at a slightly decreasing rate. Undoubtedly the lambs became more accustomed to their environment and took on good amounts of feed and water, which caused less shrinkage to occur. It was noted however, that shipments existed in which no

fill-back occured, possibly due to weather or handling conditions; in which case, the rate of shrink increased, but at a decreasing rate from the point of origin to the point of destination.

Average shrinkage on fat lambs after one hour intransit was 1.33 percent, and after 44 hours intransit averaged 8.5 percent.

Table 14 gives feeder lamb shrinkage information for Utah lambs on an hours-in-transit and miles traveled basis. Fifty-five shipments moving a total of 30,541 lambs were the basis for these figures.

Feeder lambs did not shrink as rapidly as fat lambs, up to a six hour period, but from that point they shrank more rapidly than did fats, figure 6. It was noticeable that feeder lambs had the benefit of fill-back as did fats, but the rate of decrease in shrink was not as much as that for fats.

The fact that excretory shrink takes place first, and the fact that fat lambs have greater capacity than feeder lambs, might account for the higher rate of shrink on fats in the first hours of transit. However, reasons for the higher rate of shrink on feeders after the first few hours of transit might well be due to the type of finish or fleshing on the lambs.

Average shrinkage on feeder lambs after one hour intransit was 1.0 percent, and after 44 hours intransit averaged 10.0 percent.

Lamb shrinkage due to handling and sorting in yards was also obtained on 14 separate shipments representing 7,984 lambs, table 15. All the lambs were shipped to a Salt Lake packing plant from north eastern Utah. The fats and feeders were separated and then all lambs were re-weighed. It was found that shrinkages ranged from 3.4 percent to 7.6 percent with an average shrink of 4.4 percent.

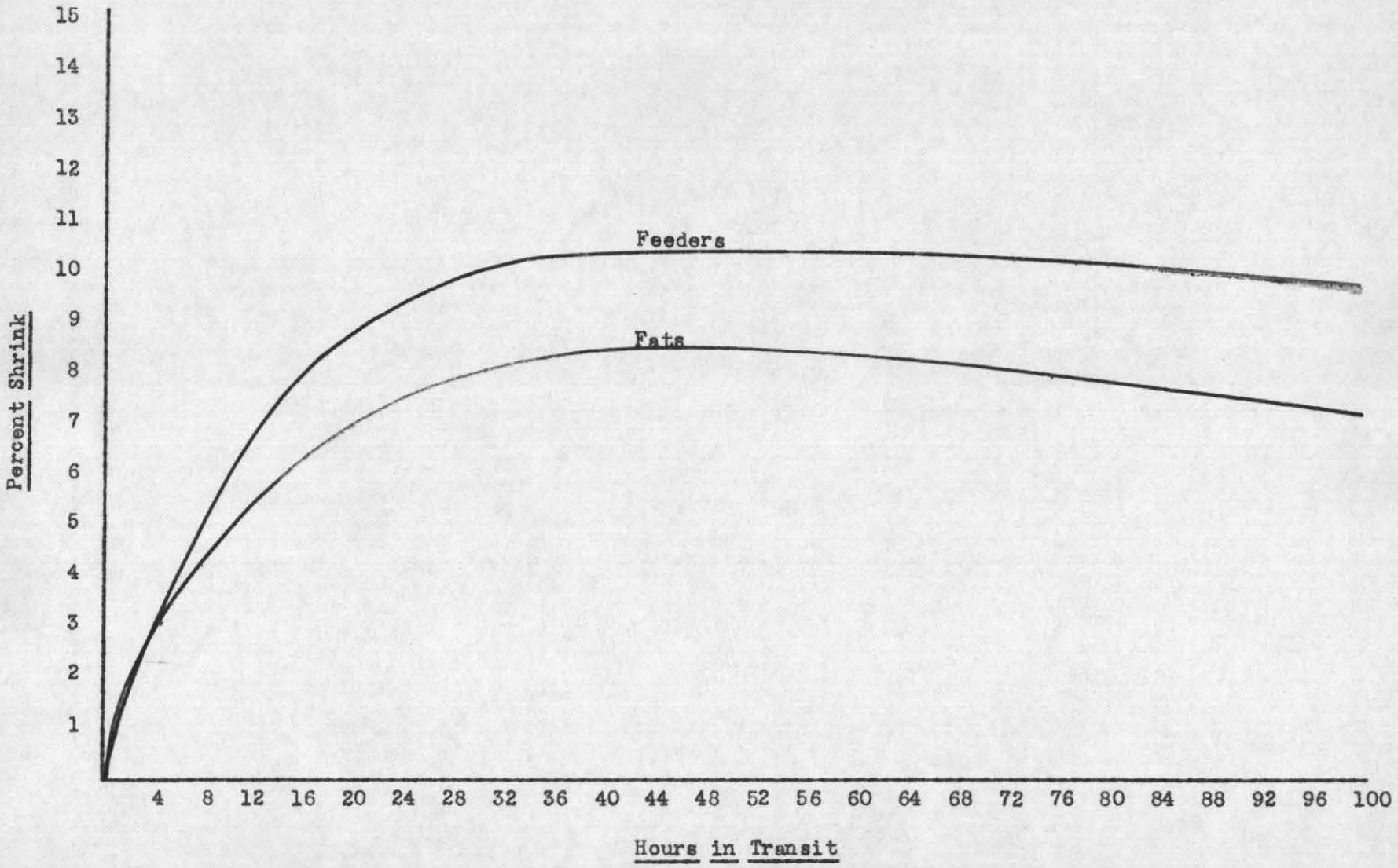

Figure 6. Shrinkage in transit for fat and feeder lambs by rail and by truck, 1956

Table 14. Average shrinkage in transit for feeder lambs by rail and by truck on an hours in transit basis, 1956

Average Time in Transit	Shipments	Lambs	Average Distance	Average Shrink
Hours	No.	No.	Miles	Percent
.68	7	4,223	22.4	.85
1.64	7	2,434	43.3	1.82
2.92	3	1,230	81.7	2.04
14.67	3	675	600.0	7.64
63.75	4	1,938	1,050.5	10.19
84.74	19	10,534	1,321.7	10.07
86.60	12	9,507	1,444.0	9.98
	55	30,541		

Table 15. Shrinkage on Utah lambs at Salt Lake packing plant after sorting and handling, 1956

Lambs	Arrival Weight	Re-weight	Shrink
No.	Pounds	Pounds	Percent
561	40,800	39,425	3.4
518	43,160	41,670	3.5
397	28,060	27,080	3.5
238	17,340	16,700	3.7
360	28,590	27,860	3.7
954	81,446	78,410	3.7
709	59,580	57,090	4.2
650	50,630	48,520	4.2
888	69,920	66,860	4.3
530	39,000	37,270	4.4
649	51,410	49,150	4.4
610	52,205	49,130	5.9
373	30,880	28,850	6.6
547	35,655	32,920	7.6
7,984			
Average shrink			4.4

The owner of the packing plant stated that the fat lambs were held in the yards on feed and water for a 12 hour period before slaughtering, and that in most every instance the lambs would gain back the weight which had been lost in handling.

Losses due to death and crippling intransit have also been considered cost items by rail and by truck, and have been grouped under the heading "risk" with shrinkage losses.

Table 16 gives death and crippling experience by Utah lamb truckers in 1956.

Table 16. Death and crippling experience on lambs hauled by Utah truckers, 1956

Total Hauled	Dead	Crippled	Dead	Crippled
No.	No.	No.	Percent	Percent
520,100	1,336	797	.0025	.0015

Loss experience indicates that Utah lamb shippers had a .0025 percent death loss and .0015 percent crippling loss in shipping lambs by truck.

Actual death and crippling experience on Utah lambs shipped by rail was not available. However, over several years, sheep and lamb losses due to death and crippling by rail have been about 20 percent less than losses by truck.[4] Using these figures, lamb shippers could expect a .0020 percent death loss by rail and a .0012 percent crippling loss. For purposes of computing cost data in this work, the above figures were used.

4. National Livestock Loss Prevention Bureau. "Costly Waste in Marketing Livestock." 1949 report, p. 5.

To this point in the work, material has been presented for the calculation of marketing costs on lamb shipments from selected Utah shipping points to alternative livestock markets. The following section will list and describe the cost to market lambs at each alternative market from each Utah shipping point.

COST OF MARKETING LAMBS AT SELECTED MARKETS

This section has been presented to show the marketing cost on a standard car lot equivalent of lambs arriving by truck and by rail at alternative markets from selected shipping points in Utah, tables 17 and 18.

The 10 Utah shipping points are Logan, Ogden, North Salt Lake, Heber City, Spanish Fork, Soldier Summit, Thompson, Ephraim, Richfield, and Cedar City, figure 3; while the alternative markets are Ogden, North Salt Lake, Los Angeles, South San Francisco, Denver, and Omaha, figure 2.

The figures in table 17 represent the cost per cwt to ship a car lot equivalent of fat lambs from the 10 Utah shipping points to the six alternative markets by truck and by rail; while table 18 lists the same information on feeder lambs. These totals represent the summation of Transportation cost, Intransit expense, Market expense, and Risk cost; a complete listing of which is given in Appendix tables 1 through 10. According to this study rail was the costliest mode of transporting Utah lambs, and was accounted for in the higher rate of shrink due to a longer time intransit by rail.

Transportation

Transportation figures on shipments by rail were determined from Interstate Commerce Commission tariff regulations and included the freight charge with a three percent federal tax.

Table 17. Estimated cost per hundredweight to market a standard car lot equivalent of Utah fat lambs at selected markets, 1956 prices 1/

Origin	Destination											
	Ogden		N.SLC.		L. A.		So. S.F.		Denver		Omaha	
	Rail	Truck	Rail	Truck	Rail	Truck	Rail	Truck	Rail	Truck	Rail	Truck
	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.
LOGAN	1.41	1.06	1.49	1.24	3.28	2.99	3.28	3.13	3.01	2.66	3.49	3.29
OGDEN			.79	.88	3.05	2.93	3.21	3.00	2.86	2.78	3.42	3.34
NORTH SALT LAKE	.80	.88			3.05	2.91	3.21	2.96	2.86	2.54	3.42	3.42
HEBER CITY	1.50	1.15	1.40	1.05	3.18	2.87	3.30	3.02	2.92	2.59	3.46	3.45
SPANISH FORK	1.32	1.20	1.18	1.25	3.02	3.03	3.29	3.04	2.83	2.48	3.48	3.38
SOLDIER SUMMIT	1.61	1.42	1.53	1.27	3.19	2.86	3.38	3.13	2.41	2.51	3.45	3.30
EPHRAIM	1.67	1.51	1.54	1.35	3.24	2.90	3.37	3.15	2.92	2.65	3.48	3.44
RICHFIELD	1.90	1.65	1.77	1.66	3.27	2.68	3.40	3.39	2.98	2.61	3.53	3.34
CEDAR CITY	2.34	2.10	2.27	2.04	2.92	2.47	3.34	2.96	3.20	2.79	3.57	3.58
THOMPSON	2.27	1.97	2.16	1.78	3.28	3.01	3.49	3.50	2.45	2.25	3.35	3.26

1/ Standard car lot equivalent assumed to be 210 wooled lambs averaging 100 pounds per head or 250 wooled lambs averaging 70 pounds per head.

Table 18. Estimated cost per hundredweight to market a standard car lot equivalent of Utah feeder lambs at selected markets, 1956 prices 1/

Origin	Destination											
	Ogden		N.SLC.		L. A.		So. S.F.		Denver		Omaha	
	Rail	Truck	Rail	Truck	Rail	Truck	Rail	Truck	Rail	Truck	Rail	Truck
	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.
LOGAN	1.61	1.16	1.69	1.37	3.76	3.39	3.76	3.63	3.51	3.13	4.07	3.79
OGDEN			.91	.99	3.54	3.40	3.76	3.49	3.27	3.30	4.00	3.87
NORTH SALT LAKE	.93	.97			3.54	3.34	3.76	3.41	3.40	2.99	4.00	3.91
HEBER CITY	1.83	1.31	1.73	1.14	3.67	3.31	3.84	3.53	3.47	3.01	4.06	3.96
SPANISH FORK	1.57	1.37	1.41	1.20	3.50	3.47	3.83	3.54	3.36	2.93	4.07	3.98
SOLDIER SUMMIT	2.01	1.87	1.98	1.37	3.69	3.30	3.93	3.61	3.21	3.31	4.04	3.83
EPHRAIM	2.16	1.69	2.01	1.50	3.74	3.31	3.94	3.67	4.07	3.06	4.07	3.94
RICHFIELD	2.39	1.84	2.24	1.86	3.76	3.01	3.97	3.89	3.20	3.14	4.14	3.87
CEDAR CITY	2.84	2.39	2.74	2.24	3.43	2.80	3.90	3.41	3.76	3.26	4.21	4.09
THOMPSON	2.89	2.26	2.74	2.00	3.77	3.46	4.04	3.97	3.50	2.56	3.93	3.76

1/ Standard car lot equivalent assumed to be 210 wooled lambs averaging 100 pounds per head or 250 wooled lambs averaging 70 pounds per head.

Truck transportation figures, however, were arrived at from average trucking costs as recorded in table 8. The mileage between each shipping point and each public market was computed, which placed it in a mileage interval on table 8; then the appropriate charge per cwt-mile was applied for each shipment, which gave a total truck transportation figure. As an example, the mileage from Logan to Ogden was determined to be 46 miles. This placed it in the second mileage interval (26-50); for which the appropriate charge of $.0062 per cwt-mile was made. As a standard car lot equivalent was used, there was 210 hundred weight of fat lamb which traveled 46 miles; or 9,660 hundred-weight miles. By applying the cost per hundred-weight mile ($.0062) it was determined that the transportation charge was $59.89 for the shipment of fat lambs. This method was used to determine all truck transportation figures which are recorded in the study.

Intransit expenses

Intransit expense figures for both truck and rail were determined from tables 9 and 10. This expense was the result of bedding, feed, and handling charges enroute, and the amount was directly related to the number of feed and rest stops taken. No bedding charge is listed on truck shipments, and as trucks were able to make runs from the Utah shipping points without a feed and rest stop, no intransit expenses are listed.

A charge of $3.41 was made per double deck car on interstate rail shipments, while bedding charges on intrastate shipments amounted to $3.07; or 34 cents less per double deck car.

Feed charges were based on 400 pounds alfalfa hay per shipment per rest stop, and the price was taken from current tariff information at each public market. A charge of $2.25 per cwt on western movements,

and a charge of $2.50 per cwt on eastern movements was made for alfalfa hay. Feed charges increased proportionately with an increase in the number of feed and rest stops taken.

Market expenses

These expenses were ascertained from totals in tables 11 and 12. They included yardage charges, feed costs at the market, commission fees levied, insurance deductions made, and deductions for the National Livestock and Meat Board's advertizing program.

All market expense items were the same for truck arrivals as they were for rail; except in the case of yardage charges at Ogden, North Salt Lake, and Los Angeles, where a discount was given arrivals by rail. Ogden and Los Angeles gave a two cent advantage to arrivals by rail and North Salt Lake gave a three cent advantage to rail arrivals.

On fat lamb shipments by rail, market expenses were equally low at North Salt Lake and Denver, with $68.98 per shipment; but on feeder shipments they were $2.35 lower at North Salt Lake than at Denver. This was accounted for by the fact that there was a greater yardage charge on feeders at Denver than at North Salt Lake.

Omaha had the highest market expenses on both fat and feeder lamb shipments arriving by rail, with charges of $84.32 and $100.38 respectively.

On fat and feeder lamb shipments arriving by truck, Denver was the low market with charges of $68.98 and $91.35 respectively; while Omaha was again high, with $84.32 and $100.38.

Risk

Risk was considered a cost item in marketing lambs with losses due to shrinkage, death and crippling making up the group. Risk figures listed in tables 1 through 10 of the Appendix take each of these factors

into account. In applying the factors, the price of lamb was set at $18.50 per hundred, which was the average price received by U.S. farmers in 1956. Feeder lamb prices were set at $12.95 per head.

To arrive at shrinkage cost, the estimated time intransit was determined and shrinkage data from figure 6 was used. As an example, the average time intransit from Logan to Ogden was determined to be 1.5 hours. From figure 6, it was ascertained that an estimated shrink of 2.0 percent would occur. This would amount to two pounds shrink per head on the fat lamb shipment; and priced at $.1850 per pound, would amount to a shrinkage cost of $77.70 on the shipment. As time intransit was greater on rail shipments than on truck shipments, rail shrinkage cost was also greater.

In determining death and crippling cost, information from table 16 was used. Death and crippling losses by rail were placed at .0020 percent and .0012 percent respectively, while by truck they were set at .0025 percent death loss and .0015 percent crippling loss. This figure did not take into consideration any salvage value of the dead animal; though in reality salvage value was present. The study did not endeavor to list figures on death and crippling salvage value as very little information was available for study.

CONCLUSION

By knowing the cost to market lambs at alternative markets, producers and handlers of lambs could better estimate which market offered the greatest net return, and could better understand their marketing problems. This could result in lower marketing costs and elimination of some inefficiency in the marketing of lambs.

The cost data as presented in this study by no means answer all the questions and problems of the lamb producer and handler. Limitations exist in a study such as this in which many uncontrollable variables are present. The problem of shrinkage is an example. We must conclude that no two lambs will shrink exactly the same amount under similar circumstances, and with the uncontrolables such as weather and unforseen delays, shrinkage cannot be stated in a hard and fast nature. Nevertheless, the information contained in this study represents much actual data on lamb movements and could be of much value to the producer and handler in better meeting his lamb marketing problems.

It is also true that risk is involved and must be carried by some person or agency. It is possible that a person might understand the cost factors in marketing and might think his knowledge would assure certain results, but in an economy such as ours, extreme deviations in very short periods have resulted in unexpected results. The lamb shipper who has analyzed his markets and prices and who decides to ship to a market some distance away still stands a chance of price changes during the interval between the point of origin and destination.

It is therefore necessary that the lamb handler project his analysis into the future. General trends are evident in the lamb industry as well as in other industries, and with this in mind, the lamb producer and handler must consider all variables at hand and exercise good judgment.

It is hoped that the producers and handlers who come in contact with this information will carefully weigh the information at hand and incorporate it with their information to make sound marketing decisions.

From the standpoint of further study, it is suggested that case studies of actual lamb shipments from Utah ranges be made to gain more accurate shrinkage information on lambs. Shrinkage experience has been recorded on many shipments between central shipping points and public markets, but very little information is available on actual lamb shrinkage from the range to central shipping points. Study might also be initiated on the feasability of changing rail schedules so that better train connections might be made between such places as Logan and Ogden; where costly waste results in the form of shrinkage due to unwanted delay.

SUMMARY

1. Because of its importance to the state's economy, as well as to lamb producers and handlers, studies on the cost of marketing Utah lambs were conducted during 1957 at Utah State University.

2. Posted livestock markets and important shipping points which service lamb producing areas of the state were selected. Mail questionnaires and trained enumerators were utilized to gain cost data. Market cost information was gathered from livestock markets, railroads and trucking firms, lamb producers and handlers, and independent sheep companies.

3. Marketing cost data was classified under two major headings: (a) cost factors in marketing lambs, and (b) cost of marketing lambs at selected markets. Cost factors were listed as transportation, intransit expenses, market expenses, and risk.

4. Rail and truck were found to be about equal in their importance as methods of transporting Utah lambs, with rail used more often than truck on longer hauls, and with truck most generally used on shipments from the feedlot and range. Rail was found to offer certain privileges, such as special feeder rates and certain freight benefits, while truck offered speed and accessibility to lamb shippers. Truck freight rates were found to be slightly higher than rail rates, but when consideration was given shrinkage losses and intransit expenses, rail became the most costly mode in transporting lambs.

5. Feed enroute, bedding charges, and services necessary to handle lambs at feed and rest stops were listed as intransit expenses. And, as trucks were able to make runs to all markets selected in the study without a feed and rest stop, intransit expenses applied mostly to shipments by rail. Intransit expenses, when one feed and rest stop was taken, amounted to $.0694 per head on a 210 head shipment to western markets, and $.0742 per head on a 210 head shipment to eastern markets. Rail shipments had fixed bedding expenses of $3.41 per car on interstate shipments, and $3.07 per car on intrastate shipments, regardless as to whether feed and rest stops were taken.

6. Market expenses, included yardage charges, feed costs at the market, commission fees levied, insurance deductions made, and deductions for the National Livestock and Meat Board's advertizing program. Yardage charges varied on a 210 head shipment from $.1100 per head at North Salt Lake to $.1900 per head at Omaha. Commission fees were based on different car lot equivalents at each market, which resulted in different charges per head at each market. North Salt Lake and Ogden had the highest commission charges, with $.1770 per head on a 210 head shipment, while Omaha had the lowest charge, with $.1130 per head on a 210 head shipment.

7. Risk was considered a cost item in marketing Utah lambs with losses due to shrinkage, death, and crippling making up the factor group. Shrinkage was determined to be quite a variable factor, with season of year, type of weather, method of handling, and type of feed consumed all having a definite effect on the amount of shrink. It was determined that the mode of transportation had little effect on the amount of shrink, but rather that the time in transit was the determining factor. Fat lambs were found to shrink relatively faster than

feeder lambs up to a six hour period, at which time feeders begin to shrink the fastest. Average shrinkage on fat lambs after one hour in transit was 1.33 percent, and after 44 hours in transit averaged 8.5 percent. Average shrinkage on feeder lambs after one hour in transit was 1.0 percent, and after 44 hours in transit averaged 10.0 percent. Lambs did not shrink as rapidly after feed and rest stops as prior to them, and on the average, experienced a decreasing rate of shrink after 48 hours in transit; when feed and rest stops were taken. Loss experience indicated that Utah lamb shippers had a .0025 percent death loss and a .0015 percent crippling loss in shipping lambs by truck, and that they could expect about .0020 percent death loss and .0012 percent crippling loss when shipping by rail.

8. The cost of marketing a standard car lot equivalent of lambs at selected markets from various Utah shipping points varied considerably. On fat lamb rail shipments from Logan, Utah, marketing cost varied from $1.41 per head to $3.49 per head. On fat lamb truck shipments from Logan, Utah, marketing cost varied from $1.06 per head to $3.29 per head. On feeder lamb rail shipments from Logan, cost varied from $1.13 per head to $2.85 per head; while on feeder lamb truck shipments from Logan, cost varied from $.81 per head to $2.66 per head.

9. A study of price variations at selected markets over a four year period, indicated that the price spread between each market did not always represent the cost of moving lambs between the markets. At certain periods, certain markets had a definite price advantage over other markets, and that by knowing the cost to market lambs at alternative markets, a producer or handler could better estimate and could receive the greatest net return from his product. By

knowing and understanding marketing costs, he could better understand marketing problems and could help to decrease marketing inefficiency.

LITERATURE CITED

(1) Anonymous. Lamb marketing costs and margins. U.S.D.A., AMS., Marketing research report No. 159, 1957.

(2) _____ Total meat production and consumption in the United States 1909-1956. U.S.D.A., AMS., Stat. Bul. 209. 1957.

(3) _____ Union Pacific Railroad Company freight tariff authorizing transit privileges on livestock at points in Idaho, Montana, Nevada, Oregon, Utah, Wyoming. I.C.C. 5466. U.P.R.R. tariff 7184-F, 1957.

(4) _____ Livestock shipping guide and directory, Union Pacific Railroad, Department of traffic., 1956.

(5) _____ Meat animals: Farm production, disposition, and income, by states 1954-55. U.S.D.A., AMS., 35., 1956.

(6) _____ Costly waste in marketing livestock. National Live Stock Loss Prevention Bureau., 1949.

(7) Caire, Justinian. The sheep industry of the Twelfth Federal Reserve District. Supplement to monthly review, Federal Reserve Bank of San Francisco, September 1950.

(8) Collins, Spelman B. Profitable sheep. New York: The Macmillan Company, 1956.

(9) Ellsworth, Von T. Normal spread between local and terminal market prices for sheep. (M.S. Thesis: Dept. of Farm Mgt. and Ag. Econ.) Agricultural College of Utah, 1924.

(10) Holmes, Lloyd I. Marketing sheep and lambs in Utah 1954-55. (M.S. Thesis: Dept. of Ag. Econ.) Utah State Agricultural College, 1956.

(11) Pingrey, H. B. and Thomas, J. W. Feeding and marketing of feedlot lambs in New Mexico. New Mexico Ag. Exp. Sta. Bul. 409., 1956.

(12) Ricenbacker, J. B. Livestock losses at Wisconsin markets, 1952.

(13) Wright, J. Stewart. Montana sheep and cattle shrinkage in transit. (M.S. Thesis: Dept. of Animal Ind.) Montana State College, 1942.

APPENDIX

Appendix Table 1. Estimated cost to market a standard car lot equivalent of fat and feeder lambs by rail and by truck at selected markets from Logan, Utah, 1956 prices 1/

Expense Item	Livestock Market											
	Ogden		N.SLC.		L. A.		So. S.F.		Denver		Omaha	
	Fats	Fdrs.	Fats	Fdrs.	Fats	Fdrs.	Fats	Fdrs.	Fats	Fdrs.	Fats	Fdrs.
	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.
RAIL:												
Transportation	57.46	41.31	57.46	41.31	259.56	220.42	255.44	216.30	216.30	183.34	290.46	247.20
Intransit Exp.	3.41	3.41	3.41	3.41	14.25	14.25	14.25	14.25	15.25	15.25	27.43	27.43
Market Exp.	71.08	91.60	68.98	89.10	78.06	86.40	82.01	98.62	68.98	91.35	84.32	100.38
Risk	163.17	146.48	182.07	161.48	337.47	336.48	337.47	328.98	331.17	323.98	331.17	336.48
Total	295.12	282.80	311.92	295.30	689.34	657.55	689.17	658.15	631.70	613.92	733.38	711.49
Total per cwt.	1.41	1.62	1.49	1.69	3.28	3.76	3.28	3.76	3.01	3.51	3.49	4.07
TRUCK:												
Transportation	59.89	49.91	85.05	70.88	263.09	219.24	281.90	234.92	246.96	205.80	295.47	246.22
Intransit Exp.	--	--	--	--	--	--	--	--	--	--	--	--
Market Exp.	75.28	96.60	75.28	96.60	82.30	91.40	82.01	98.62	68.98	91.35	84.32	100.38
Risk	87.41	55.59	100.01	73.09	282.71	283.09	293.21	300.59	242.81	250.59	312.11	315.59
Total	222.58	202.10	260.34	240.57	628.10	593.73	657.12	634.13	558.75	547.74	691.90	662.19
Total per cwt.	1.06	1.16	1.24	1.37	2.99	3.39	3.13	3.63	2.66	3.13	3.29	3.79

1/ Standard car lot equivalent assumed to be 210 wooled lambs averaging 100 pounds per head or 250 wooled lambs averaging 70 pounds per head.

Appendix Table 2. Estimated cost to market a standard car lot equivalent of fat and feeder lambs by rail and by truck at selected markets from Ogden, Utah, 1956 prices 1/

Expense Item	Livestock Market											
	Ogden		N.SLC.		L. A.		So. S.F.		Denver		Omaha	
	Fats	Fdrs.	Fats	Fdrs.	Fats	Fdrs.	Fats	Fdrs.	Fats	Fdrs.	Fats	Fdrs.
	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.
RAIL:												
Transportation			27.80	27.80	241.02	206.00	241.02	206.00	210.12	177.16	288.40	245.14
Intransit Exp.			3.41	3.41	3.07	3.07	14.25	14.25	3.07	3.07	15.25	15.25
Market Exp.			68.98	89.10	78.06	86.40	82.01	98.62	68.98	68.98	84.32	100.38
Risk			66.57	38.98	318.57	323.98	337.47	338.98	318.57	323.98	331.17	338.98
Total			166.76	159.29	640.72	619.43	674.75	657.85	600.74	573.19	719.14	699.75
Total per cwt.			.79	.91	3.05	2.54	3.21	3.76	2.86	3.27	3.42	4.00
TRUCK:												
Transportation			41.66	34.72	250.40	217.00	264.77	220.64	260.19	216.82	304.29	253.58
Intransit Exp.			--	--	--	--	--	--	--	--	--	--
Market Exp.			75.28	96.60	82.30	91.40	82.01	98.62	68.98	91.35	84.32	100.38
Risk			67.51	40.59	282.71	285.59	282.71	290.59	255.41	268.09	312.11	323.09
Total			184.45	171.91	615.41	593.99	629.49	609.85	584.58	576.26	700.72	677.05
Total per cwt.			.88	.99	2.93	3.40	3.00	3.49	2.78	3.30	3.34	3.87

1/ Standard car lot equivalent assumed to be 210 wooled lambs averaging 100 pounds per head or 250 wooled lambs averaging 70 pounds per head.

Appendix Table 3. Estimated cost to market a standard car lot equivalent of fat and feeder lambs by rail and by truck at selected markets from North Salt Lake, Utah, 1956 prices 1/

Expense Item	Livestock Market											
	Ogden		N.SLC.		L. A.		So. S.F.		Denver		Omaha	
	Fats	Fdrs.	Fats	Fdrs.	Fats	Fdrs.	Fats	Fdrs.	Fats	Fdrs.	Fats	Fdrs.
	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.
RAIL:												
Transportation	27.80	27.80			241.02	206.00	241.02	206.00	210.12	177.16	288.40	245.14
Intransit Exp.	3.41	3.41			3.07	3.07	14.25	14.25	3.07	3.07	15.25	15.25
Market Exp.	71.08	91.60			78.06	86.40	82.01	98.62	68.98	91.35	84.32	100.38
Risk	66.57	38.98			318.57	323.98	337.47	338.98	318.57	323.98	331.17	338.98
Total	168.86	161.79			640.72	619.45	674.75	657.85	600.74	595.56	719.14	699.75
Total per cwt.	.80	.93			3.05	3.54	3.21	3.76	2.86	3.40	3.42	4.00
TRUCK:												
Transportation	41.66	34.72			251.33	209.44	256.36	213.64	229.32	191.10	313.40	261.17
Intransit Exp.	--	--			--	--	--	--	--	--	--	--
Market Exp.	75.28	96.60			82.30	91.40	82.01	98.62	68.98	91.35	84.32	100.38
Risk	68.51	38.98			278.51	283.09	282.71	285.59	234.41	240.59	320.51	323.09
Total	185.45	170.30			612.14	583.93	621.08	597.85	532.71	523.04	718.23	684.64
Total per cwt.	.88	.97			2.91	3.34	2.96	3.41	2.54	2.99	3.42	3.91

1/ Standard car lot equivalent assumed to be 210 wooled lambs averaging 100 pounds per head or 250 wooled lambs averaging 70 pounds per head.

Appendix Table 4. Estimated cost to market a standard car lot equivalent of fat and feeder lambs by rail and by truck at selected markets from Heber City, Utah, 1956 prices 1/

Expense Item	Livestock Market											
	Ogden		N.SLC.		L.A.		So. S.F.		Denver		Omaha	
	Fats	Fdrs.	Fats	Fdrs.	Fats	Fdrs.	Fats	Fdrs.	Fats	Fdrs.	Fats	Fdrs.
	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.
RAIL:												
Transportation	57.46	57.46	57.46	57.46	238.96	201.88	259.56	220.42	210.12	177.16	288.40	245.14
Intransit Exp.	3.41	3.41	3.41	3.41	14.25	14.25	14.25	14.25	15.25	15.25	27.43	27.43
Market Exp.	71.08	91.60	68.98	89.10	78.06	86.40	82.01	98.62	68.98	91.35	84.32	100.38
Risk	182.07	166.48	163.17	151.48	337.47	338.98	337.47	338.98	318.57	323.98	326.97	336.48
Total	314.02	318.95	293.02	301.45	668.74	641.51	693.29	672.27	612.92	607.74	727.12	709.43
Total per cwt.	1.50	1.83	1.40	1.73	3.18	3.67	3.30	3.84	2.92	3.47	3.46	4.06
TRUCK:												
Transportation	71.44	59.54	57.83	48.20	245.62	204.68	270.14	225.12	239.90	199.92	320.46	267.05
Intransit Exp.	--	--	--	--	--	--	--	--	--	--	12.18	12.18
Market Exp.	75.28	96.60	75.28	96.60	82.30	91.40	82.01	98.62	68.98	91.35	84.32	100.38
Risk	95.81	73.09	87.41	55.59	274.31	283.09	282.71	293.09	334.41	235.59	320.51	325.59
Total	242.53	229.23	220.52	200.39	602.23	579.17	634.86	616.83	543.29	576.86	725.29	693.02
Total per cwt.	1.15	1.31	1.05	1.14	2.87	3.31	3.02	3.53	2.59	3.01	3.45	3.96

1/ Standard car lot equivalent assumed to be 210 wooled lambs averaging 100 pounds per head or 250 wooled lambs averaging 70 pounds per head.

Appendix Table 5. Estimated cost to market a standard car lot equivalent of fat and feeder lambs by rail and by truck at selected markets from Spanish Fork, Utah, 1956 prices 1/

Expense Item	Livestock Market											
	Ogden		N.SLC.		L. A.		So. S.F.		Denver		Omaha	
	Fats	Fdrs.	Fats	Fdrs.	Fats	Fdrs.	Fats	Fdrs.	Fats	Fdrs.	Fats	Fdrs.
	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.
RAIL:												
Transportation	67.72	67.72	52.46	57.46	234.84	199.82	257.00	218.36	210.12	177.16	288.40	245.14
Intransit Exp.	3.41	3.41	3.41	3.41	3.07	3.07	14.25	14.25	15.25	15.25	27.43	27.43
Market Exp.	71.08	91.60	68.98	89.10	78.06	86.40	82.01	98.62	68.98	91.35	84.32	100.38
Risk	135.87	113.98	116.97	96.48	318.57	323.98	337.47	338.98	299.67	303.98	331.17	338.98
Total	278.08	276.71	246.82	246.45	634.54	613.27	690.73	670.53	594.02	587.74	731.32	711.93
Total per cwt.	1.32	1.57	1.18	1.41	3.02	3.50	3.29	3.83	2.83	3.36	3.48	4.07
TRUCK:												
Transportation	71.44	68.36	69.17	57.64	288.54	240.45	273.50	227.92	222.26	185.22	308.70	257.25
Intransit Exp.	--	--	--	--	--	--	--	--	--	--	--	--
Market Exp.	75.28	96.60	75.28	96.60	82.30	91.40	82.01	98.62	68.98	91.35	84.32	100.38
Risk	106.31	75.59	118.91	55.59	265.91	275.59	282.71	293.09	230.21	235.59	316.31	323.09
Total	253.03	240.55	263.36	209.32	636.75	607.44	638.22	619.63	521.45	512.16	709.33	680.42
Total per cwt.	1.20	1.37	1.25	1.20	3.03	3.47	3.04	3.54	2.48	2.93	3.38	3.89

1/ Standard car lot equivalent assumed to be 210 wooled lambs averaging 100 pounds per head or 250 wooled lambs averaging 70 pounds per head.

Appendix Table 6. Estimated cost to market a standard car lot equivalent of fat and feeder lambs by rail and by truck at selected markets from Soldier Summit, Utah, 1956 prices 1/

Expense Item	Livestock Market											
	Ogden		N.SLC.		L. A.		So. S.F.		Denver		Omaha	
	Fats	Fdrs.	Fats	Fdrs.	Fats	Fdrs.	Fats	Fdrs.	Fats	Fdrs.	Fats	Fdrs.
	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.
RAIL:												
Transportation	100.11	100.11	100.11	100.11	241.02	206.00	265.44	224.54	185.40	160.68	282.22	241.02
Intransit Exp.	3.41	3.41	3.41	3.41	14.25	14.25	25.43	25.43	3.07	3.07	27.43	27.43
Market Exp.	71.08	91.60	68.98	89.10	78.06	86.40	82.01	98.62	68.98	91.35	84.32	100.38
Risk	164.17	151.18	148.47	136.48	337.47	338.98	337.47	338.98	299.67	306.48	331.17	338.98
Total	337.77	346.30	320.97	329.10	670.80	645.63	710.35	687.57	507.02	561.58	725.14	707.81
Total per cwt.	1.61	2.01	1.53	1.89	3.19	3.69	3.38	3.93	2.41	3.21	3.45	4.04
TRUCK:												
Transportation	112.90	94.08	84.67	70.56	244.61	203.84	285.26	237.72	234.36	195.30	297.23	247.70
Intransit Exp.	--	--	--	--	--	--	--	--	--	--	--	--
Market Exp.	75.28	96.60	75.28	96.60	82.30	91.40	82.01	98.62	68.98	91.35	84.32	100.38
Risk	110.09	140.59	106.31	73.09	274.31	283.09	289.01	295.59	223.91	218.09	312.11	323.09
Total	298.27	331.27	266.26	240.25	601.22	578.33	656.28	631.93	527.05	504.74	693.66	671.17
Total per cwt.	1.42	.87	1.27	1.37	2.86	3.30	3.13	3.61	2.51	3.31	3.30	3.83

1/ Standard car lot equivalent assumed to be 210 wooled lambs averaging 100 pounds per head or 250 wooled lambs averaging 70 pounds per head.

Appendix Table 7. Estimated cost to market a standard car lot equivalent of fat and feeder lambs by rail and by truck at selected markets from Ephraim, Utah, 1956 prices 1/

Expense Item	Livestock Market											
	Ogden		N. SLC.		L. A.		So. S.F.		Denver		Omaha	
	Fats	Fdrs.	Fats	Fdrs.	Fats	Fdrs.	Fats	Fdrs.	Fats	Fdrs.	Fats	Fdrs.
	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.
RAIL:												
Transportation	90.83	90.83	89.83	90.83	251.32	214.24	267.80	228.66	206.00	276.04	292.52	247.20
Intransit Exp.	3.41	3.41	3.41	3.41	14.25	14.25	25.43	25.43	15.25	15.25	27.43	27.43
Market Exp.	71.08	91.60	68.98	89.10	78.06	86.40	82.01	98.62	68.98	91.35	84.32	100.38
Risk	186.27	191.48	161.07	168.98	337.47	338.98	333.27	336.48	322.77	328.98	326.97	336.48
Total	351.59	377.32	323.29	352.32	681.10	653.87	708.51	689.19	613.00	711.62	731.24	711.49
Total per cwt.	1.67	2.16	1.54	2.01	3.24	3.74	3.37	3.94	2.92	4.07	3.48	4.07
TRUCK:												
Transportation	126.13	105.10	97.90	81.58	265.02	220.85	290.30	241.92	236.38	196.98	318.11	265.09
Intransit Exp.	--	--	--	--	--	--	--	--	--	--	--	--
Market Exp.	75.28	96.60	75.28	96.60	82.30	91.40	82.01	98.62	68.98	91.35	84.32	100.38
Risk	114.71	93.09	110.51	83.09	261.71	268.09	289.01	300.59	251.21	245.59	321.51	325.59
Total	316.12	294.79	283.69	261.27	609.03	580.34	661.32	641.13	556.57	533.92	722.94	691.06
Total per cwt.	1.51	1.69	1.35	1.50	2.90	3.31	3.15	3.67	2.65	3.06	3.44	3.94

1/ Standard car lot equivalent assumed to be 210 wooled lambs averaging 100 pounds per head or 250 wooled lambs averaging 70 pounds per head.

Appendix Table 8. Estimated cost to market a standard car lot equivalent of fat and feeder lambs by rail and by truck at selected markets from Richfield, Utah, 1956 prices 1/

Expense Item	Livestock Market											
	Ogden		N. SLC.		L. A.		So. S.F.		Denver		Omaha	
	Fats	Fdrs.	Fats	Fdrs.	Fats	Fdrs.	Fats	Fdrs.	Fats	Fdrs.	Fats	Fdrs.
	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.
RAIL:												
Transportation	99.26	99.26	99.26	99.26	257.00	218.36	276.04	234.84	210.12	117.16	306.94	259.56
Intransit Exp.	3.41	3.41	3.41	3.41	14.25	14.25	25.43	25.43	15.25	15.25	27.43	27.43
Market Exp.	71.08	91.60	68.98	89.10	78.06	86.40	82.01	98.62	68.98	91.35	84.32	100.38
Risk	226.17	223.98	200.97	201.48	337.47	338.98	331.17	336.48	331.17	336.48	322.77	336.48
Total	399.92	418.25	372.60	393.25	686.78	657.99	714.65	695.37	625.52	560.25	741.46	423.85
Total per cwt.	1.90	2.39	1.77	2.24	3.27	3.76	3.40	3.97	2.98	3.20	3.53	4.14
TRUCK:												
Transportation	138.60	115.50	148.18	123.48	237.26	197.72	329.51	274.59	236.46	206.90	296.65	247.21
Intransit Exp.	--	--	--	--	--	--	--	--	--	--	--	--
Market Exp.	75.28	96.60	75.28	96.60	82.30	91.40	82.01	98.62	68.98	91.35	84.32	100.38
Risk	133.61	110.59	125.21	105.59	242.81	240.59	301.61	305.59	242.81	250.59	320.51	330.59
Total	341.49	322.69	348.67	325.68	562.37	529.71	712.63	678.80	548.25	548.84	701.48	678.18
Total per cwt.	1.65	1.84	1.66	1.86	2.68	3.01	3.39	3.89	2.61	3.14	3.34	3.87

1/ Standard car lot equivalent assumed to be 210 wooled lambs averaging 100 pounds per head or 250 wooled lambs averaging 70 pounds per head.

Appendix Table 9. Estimated cost to market a standard car lot equivalent of fat and feeder lambs by rail and by truck at selected markets from Cedar City, Utah, 1956 prices 1/

Expense Item	Livestock Market											
	Ogden		N. SLC.		L. A.		So. S.F.		Denver		Omaha	
	Fats	Fdrs.	Fats	Fdrs.	Fats	Fdrs.	Fats	Fdrs.	Fats	Fdrs.	Fats	Fdrs.
	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.
RAIL:												
Transportation	144.59	121.43	144.59	121.43	206.00	173.04	257.00	218.36	251.32	212.18	319.30	271.92
Intransit Exp.	3.41	3.41	3.41	3.41	3.07	3.07	25.43	25.43	15.25	15.25	27.43	27.43
Market Exp.	71.08	91.60	68.98	89.10	78.06	86.40	82.01	98.62	68.98	91.35	84.32	100.38
Risk	272.37	281.48	259.77	266.48	326.97	336.48	337.47	338.98	337.47	338.98	318.57	336.48
Total	491.45	497.92	476.75	480.42	614.10	598.99	701.91	681.39	673.02	657.76	749.62	736.21
Total per cwt.	2.34	2.84	2.27	2.74	2.92	3.43	3.34	3.90	3.20	3.76	3.57	4.21
TRUCK:												
Transportation	191.52	159.60	188.50	142.80	221.76	184.90	257.36	214.48	259.14	215.95	341.92	284.94
Intransit Exp.	--	--	--	--	--	--	--	--	--	--	--	--
Market Exp.	75.28	96.60	75.28	96.60	82.30	91.40	82.01	98.62	68.98	91.35	84.32	100.38
Risk	173.51	160.59	165.11	153.09	215.51	213.09	282.71	285.59	257.51	263.09	324.71	330.59
Total	440.31	416.19	428.89	392.49	519.57	489.39	622.10	598.69	585.63	570.39	750.95	715.91
Total per cwt.	2.10	2.39	2.04	2.24	2.47	2.80	2.96	3.41	2.79	3.26	3.58	4.09

1/ Standard car lot equivalent assumed to be 210 wooled lambs averaging 100 pounds per head or 250 wooled lambs averaging 70 pounds per head.

Appendix Table 10. Estimated cost to market a standard car lot equivalent of fat and feeder lambs by rail and by truck at selected markets from Thompson, Utah, 1956 prices 1/

Expense Item	Livestock Market											
	Ogden		N. SLC.		L. A.		So. SF.		Denver		Omaha	
	Fats	Fdrs.	Fats	Fdrs.	Fats	Fdrs.	Fats	Fdrs.	Fats	Fdrs.	Fats	Fdrs.
	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.	Dols.
RAIL:												
Transportation	149.23	149.23	149.23	149.23	259.56	220.42	288.40	245.14	154.50	124.54	259.56	220.42
Intransit Exp.	3.41	3.41	3.41	3.41	14.25	14.25	25.43	25.43	3.07	3.07	27.43	27.43
Market Exp.	71.08	91.60	68.98	89.10	78.06	86.40	82.01	98.62	68.98	91.35	84.32	100.38
Risk	253.47	261.48	232.47	238.98	337.47	338.98	337.47	338.98	287.07	293.98	331.17	338.98
Total	477.19	505.72	454.09	480.72	689.34	660.05	733.31	708.17	513.62	612.94	702.48	687.21
Total per cwt.	2.27	2.89	2.16	2.74	3.28	3.77	3.49	4.04	2.45	3.50	3.35	3.93
TRUCK:												
Transportation	173.94	144.95	141.77	126.47	266.78	222.32	347.00	289.17	215.46	179.55	298.37	248.64
Intransit Exp.	--	--	--	--	--	--	--	--	--	--	--	--
Market Exp.	75.28	96.60	75.28	96.60	82.30	91.40	82.01	98.62	68.98	91.35	84.32	100.38
Risk	165.11	153.09	146.21	128.09	282.71	290.59	305.81	308.09	188.21	175.59	301.61	308.09
Total	414.33	394.64	373.26	251.16	631.79	604.31	734.82	695.88	472.65	446.49	684.30	657.11
Total per cwt.	1.97	2.26	1.78	2.00	3.01	3.46	3.50	3.97	2.25	2.56	3.26	3.76

1/ Standard car lot equivalent assumed to be 210 wooled lambs averaging 100 pounds per head or 250 wooled lambs averaging 70 pounds per head.