

LIVESTOCK TRUCK-INS ON THREE PRINCIPAL KANSAS MARKETS.
GROWTH, ORIGIN, RATES, COMPARISON WITH RAIL
COSTS AND OTHER FACTORS

by

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TABLE OF CONTENTS

	Page
INTRODUCTION	3
REVIEW OF LITERATURE	5
DEVELOPMENT OF LIVESTOCK TRANSPORTATION	7
Receipts on 16 Principal United States Markets ..	7
Receipts on Three Principal Kansas Markets	10
<u>Cattle</u>	10
<u>Hogs</u>	10
<u>Sheep</u>	13
ORIGIN OF LIVESTOCK TRUCK-INS	18
Nature of Data	18
Kansas City Origins	19
St. Joseph Origins	23
Wichita Origins	25
TRUCKAGE RATES	25
GROSS TRUCKAGE RATES COMPARED TO RAIL RATES	33
OTHER FACTORS IN TRANSPORTATION EXPENSE	37
Risks	37
Shrinkage	40
Differential in Terminal Charges	40
Attitude of Buyers	41
Convenience and Timeliness	41
Out of Pocket Expense	41
COMPARISON OF NET TRANSPORTATION EXPENSE BY TRUCK AND BY RAIL	42
SUMMARY	46
ACKNOWLEDGMENT	48
BIBLIOGRAPHY	49

INTRODUCTION

The trucking method of transporting live stock to market has been phenomenal in the rapidity with which it has been adopted by live stock producers, in the disturbance it has caused existing methods of transportation, and in the possible future effects it may have on the entire meat industry.

Water-ways were the only practical long distance routes in the early history of our country. Live stock was produced mostly within driving distance of the centers of population where it was consumed.

In the early 19th century the driving of live stock from the Ohio Valley over the Alleghany Mountains to cities on the Atlantic sea-board became a considerable business. The men engaged in this work were known as "drovers."

The drover became a picturesque and important part in the marketing process in that early period. It was no uncommon sight in those days to see a drove of hogs, herd of cattle or band of sheep, being driven down Fifth Avenue, New York or the main street of other cities with the animals being peddled to the meat markets on either side of the street as demand required.

With the invention of the steam engine and the opening of the first railroad in 1830 by Peter Cooper, a new era had

dawned for the live stock producer because of more adequate transportation facilities. As the railway system extended westward and criss-crossed in an ever increasing net work, production of live stock sprung up immediately on lands within driving distance of the railroads.

Another important invention that was vital to the live stock industry and had a profound influence particularly on the meat packing business was the invention of the refrigerator car in 1868. This had a tendency to move the packing business nearer to the centers of production. Fresh meat could then be shipped easier than the live animals. Previous to this time the live animals were shipped to the centers of consumption.

Within more recent times the invention of the internal combustion engine and the subsequent development of the automobile and motor driven truck, profound changes are being brought about in the distribution of production and consumption goods. This in turn has led to the invention and development of the pneumatic tire and the construction of paved highways and improved roads. The present plan of national highway construction when completed will place a national highway within ten miles of at least ninety per cent of all the people in the United States.

This change has come about in the last 20 years and most of it in the last 10 years.

What then will be the ultimate effect of the motor driven truck and the improved road on the live stock industry? Changes in methods of transportation in the past have vitally affected the live stock producer. Will existing methods of transportation be discarded entirely? Will the motor driven truck finally absorb all the live stock transportation business?

The purpose of this thesis is to make a critical analysis of the growth, origins, rates, comparison with rail rates and other factors affecting the live stock truck-ins on the three principal Kansas markets.

REVIEW OF LITERATURE

No previous studies have been made of the live stock truck-ins on these markets. The U.S.D.A. Bureau of Agricultural Economics¹ has kept a record of drive-in receipts on the 16 principal markets of the United States. C. R. Ashby², University of Illinois, in 1929 made a study of live stock truckage rates in Illinois. Armour's Live Stock

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1. Heffner, E. M. and Jordan E. M. Driven-in receipts of live stock for 1929 with comparisons for earlier years 1930.
 2. Ashby, C. R. Live stock truckage rates in Illinois. University of Illinois Agr. Exp. Sta. Cir. 331, 1929.

Bureau³ occasionally has some mention or discussion of live stock trucking. A. D. Fitzgerald, of the Iowa State College⁴ issued a memo circular on the trucking situation in Iowa. Mr. A. E. Kies⁵, presented a paper at a meeting of the American Institute of Cooperation, at the Kansas State College at Manhattan on the possibilities of controlling trucking through local associations. He seemed to be afraid that trucking would disrupt the local shipping associations and believed that trucking should be so controlled that it would be used only for transporting stock to the shipping points rather than to the central markets. His discussion is somewhat biased because of his interest in maintaining local associations.

Studies of this problem have been made by railroad companies but care should be exercised in interpreting the data because the truck is a competitor of the railroad for

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3. Armour's Live Stock Bureau. Monthly Letter to Animal Husbandrymen, Vol. 8, No. 1, 1927 and Vol. 12, No. 8, 1931.
 4. Fitzgerald, A. D. Live stock trucking in Iowa. Memo Circular 1931.
 5. Kies, A. E. Possibilities of controlling trucking through local associations. Paper, Am. Inst. Coop. Kansas State College, June 8, 1931.

business. Union Stock Yard companies are making a serious study of the problem for the purpose of providing adequate facilities for trucked-in livestock and discouraging direct marketing.

DEVELOPMENT OF LIVESTOCK TRANSPORTATION

Receipts on 16 Principal United States Markets

The decade since the World War has witnessed a rapid change in methods of transporting livestock from farm to market. In 1918 about 97 per cent of the livestock received at the 16 principal markets in the United States was transported to those markets by rail and only 3.1 per cent was transported by motor truck or other means. In 1931 a great change had come about. Of the 63,023,000 cattle, hogs and sheep received on these markets during that year, 19,784,000 or 31.39 per cent were transported by motor trucks and 69.61 per cent came by rail.

Statistics compiled by the Bureau of Economics, United States Department of Agriculture, show that the hog was the most popular kind of livestock hauled by the truck driver. In 1931, 42.98 per cent of all hogs, 24.03 per cent of all the cattle and 17.01 per cent of all the sheep received on the 16 principal markets came by means of a motor driven truck. Just how rapidly this has been taking place may be clearly seen by studying Table I and Figure 1.

Table I. Total Receipts and Number and Per Cent of Drive-ins in 16 Principal U. S. Markets Combined, 1920-1931

Year	Cattle, calves, hogs, sheep			Cattle		
	Receipts "000"	Drive- ins "000"	Per cent	Receipts "000"	Drive- ins "000"	Per cent
1920	60396	3149	5.21	13028	287	2.22
1921	58076	3397	5.85	11169	280	2.51
1922	61199	4125	6.74	13420	382	2.85
1923	71265	4883	6.85	13834	400	2.90
1924	71530	5131	7.17	13849	461	3.33
1925	63692	5479	8.60	13703	633	4.62
1926	61515	6593	10.72	13722	779	5.68
1927	60182	8117	13.49	12762	982	7.27
1928	64357	11617	18.05	11803	1235	10.46
1929	63039	13775	21.85	11327	1525	13.47
1930	61558	15735	25.56	10874	1958	18.06
1931	63023	19784	31.39	10579	2524	24.03
				Hogs		
				Sheep		
1920	29442	2053	6.79	14720	504	3.43
1921	28697	2212	7.71	14887	615	4.14
1922	30476	2545	8.35	13461	835	6.20
1923	39259	3216	8.19	14278	867	6.08
1924	39251	3401	8.66	14373	846	5.89
1925	31447	3417	10.87	14234	860	6.05
1926	28099	4055	14.43	15531	1109	7.12
1927	28807	5101	17.71	14674	1384	9.43
1928	32800	7808	23.81	15954	1713	10.73
1929	31463	9079	28.86	16577	2119	12.79
1930	28878	9927	34.38	18135	2538	14.00
1931	28311	12166	42.98	20657	3514	17.01

Source of data:

Driven-in receipts of live stock by Heffner & Jordan,
Bureau of Agricultural Economics, U.S.D.A.

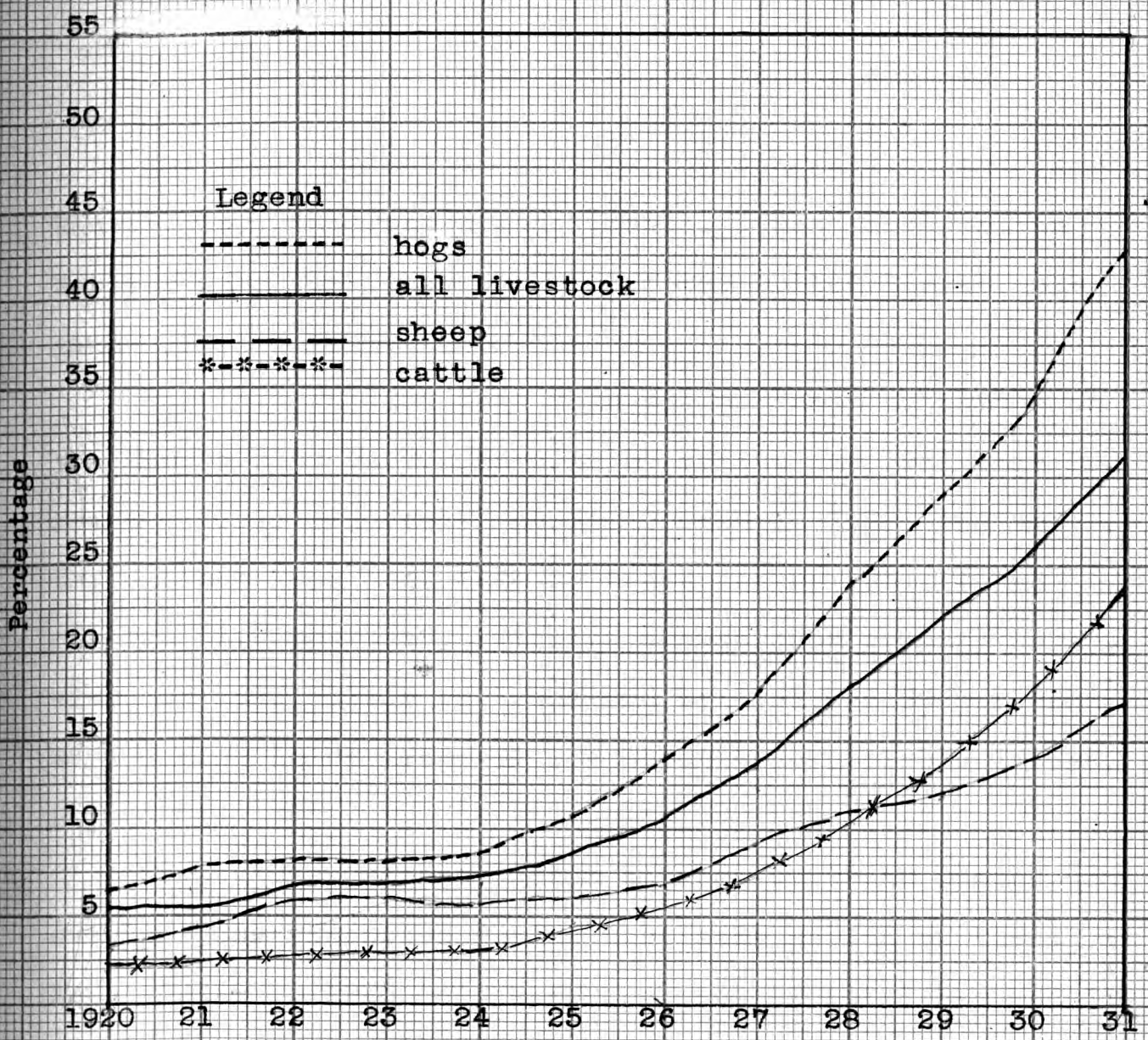


Fig. 1. Trucked-in Livestock Receipts in Percentage of Total Receipts. Sixteen Principal U.S. Markets.

(See Table I)

Receipts on Three Principal Kansas Markets

The three principal markets for Kansas livestock are: Kansas City, St. Joseph and Wichita. These markets, in harmony with the other markets of the United States, expanded in the truck-in business.

Cattle. In 1920 less than one per cent of cattle on the Kansas City Market came in by truck. By 1931 this had reached 11.15 per cent. At St. Joseph in 1920, two and three tenths per cent came by truck and by 1931 it had reached 31.7 per cent. Wichita showed even greater expansion, in 1920, 11.33 per cent and by 1931, 41.39 per cent were coming in by means of the motor truck. (Table II and Figure 2).

Hogs. The transportation of hogs by truck showed an even greater expansion during that same period of time. At Kansas City in 1920 only 4.69 per cent of total hog receipts were trucked in. In 1931 more than one-half or 51.55 per cent came by truck. At Wichita the change was from 13.69 in 1920 to 54.64 per cent in 1930. It will be noted that the receipts by truck in 1931 were about one-half of one per cent less than in 1930. Does this mean that livestock trucking is approaching its maximum? A careful study of prospective road development, competitive rail rates, shifting of the hog producing areas, competitive markets and other factors

Table II. Total Receipts and Number and Percentage of Drive-ins of Cattle in Three Principal Kansas Markets 1920-1931

Year	Kansas City			Wichita		
	Receipts "000"	Drive- ins "000"	Per cent	Receipts "000"	Drive- ins "000"	Per cent
1920	2108	16	.78	242	27	11.33
1921	2050	16	.80	284	24	8.53
1922	2443	23	.95	323	20	6.40
1923	2631	23	.91	339	20	6.10
1924	2471	26	1.07	310	21	6.83
1925	2409	34	1.44	333	39	11.83
1926	2183	40	1.84	262	37	14.43
1927	2070	48	2.36	325	47	14.57
1928	1858	62	3.38	315	60	19.29
1929	1835	99	5.41	239	61	25.56
1930	1802	140	7.81	266	82	30.84
1931	1665	185	11.15	235	97	41.39
	St. Joseph					
1920	552	12	2.30			
1921	482	12	2.57			
1922	554	17	3.08			
1923	607	24	3.99			
1924	602	25	4.18			
1925	608	29	4.87			
1926	563	32	5.83			
1927	541	39	7.24			
1928	511	56	11.08			
1929	500	74	14.83			
1930	459	98	21.38			
1931	432	137	31.70			

Source of data:

Driven-in receipts of live stock by Heffner & Jordan,
Bureau of Agricultural Economics, U.S.D.A.

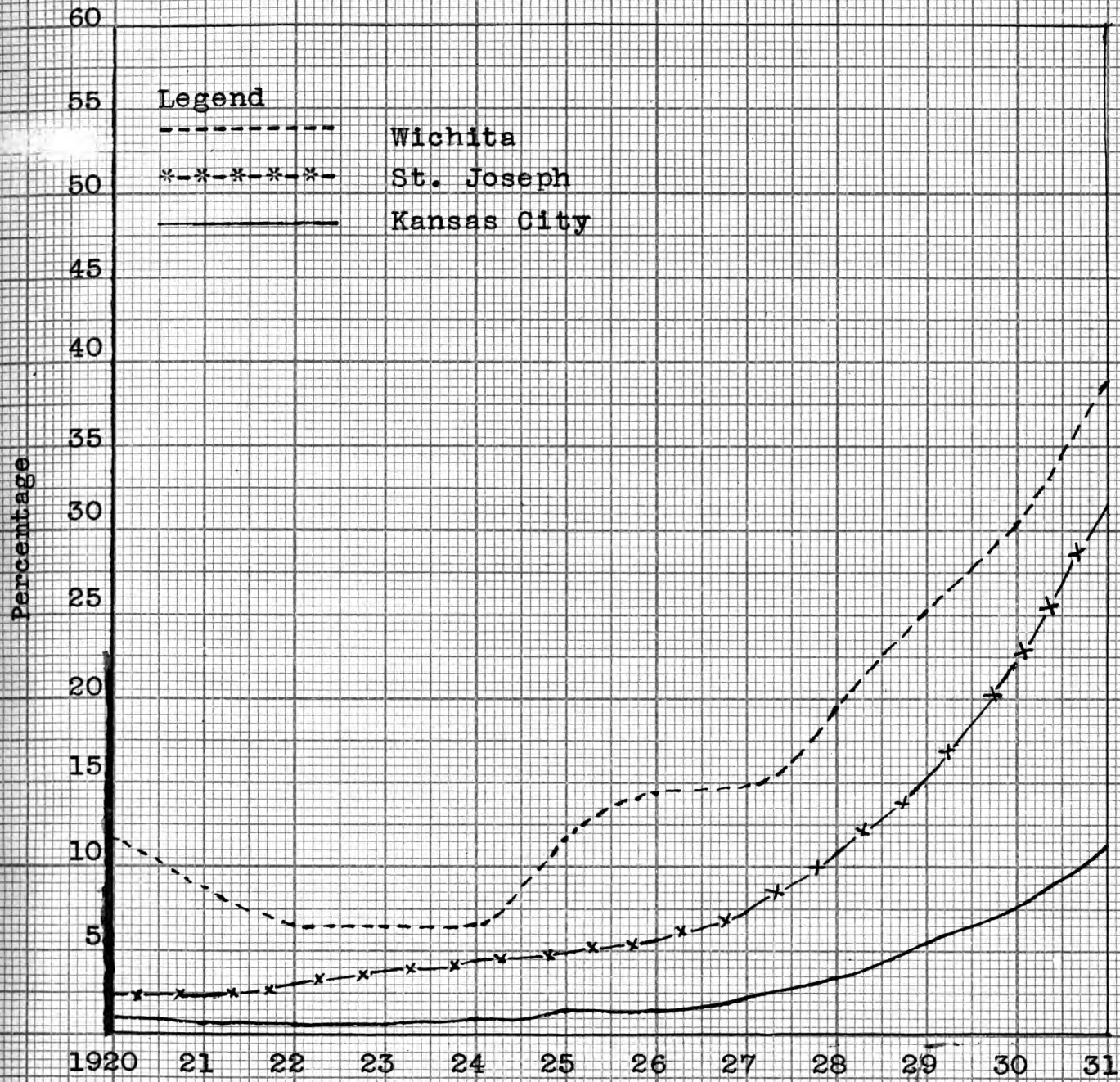


Fig. 2. Trucked-in Cattle Receipts in Percentage of Total Receipts. Kansas City, St. Joseph and Wichita.
(See Table II)

would have to be made to give a satisfactory answer to this question. The St. Joseph Market showed that 6.75 per cent of the hogs were received by truck in 1920 while in 1931 almost four-fifths or 79.92 per cent came by truck. (Table III and Figure 3).

Sheep. The motor truck made heavy inroads on other forms of transportation for sheep as will be noted in Table IV and Figure 4. This shows Kansas City with the smallest percentage of the three markets, 2.73 per cent in 1920 and 13.39 per cent in 1931 received by truck. St. Joseph came next with 10.72 per cent in 1920 and 24.27 per cent in 1931 and Wichita from 11.16 per cent in 1920 and 59.75 per cent in 1931. Again Wichita shows a decrease in the truck-in business in 1931 amounting to 2.44 per cent less than in 1930. The total receipts decreased from 111,000 to 107,000 while the truck-ins decreased from 69,000 to 64,000 indicating that the truckers took all the loss in the business. As was stated in the case of hogs, it is impossible to give a satisfactory explanation of this slowing up without further investigation of the factors involved.

The motor truck is now the principal method of transporting hogs to the three principal Kansas Markets, since approximately two-thirds of all the hogs transported to market go by way of motor trucks. Approximately one-fourth of the cattle and one-third of the sheep go the same route

Table III. Total Receipts and Number and Percentage of Drive-ins of Hogs in Three Principal Kansas Markets 1920-1931

Year	Kansas City			Wichita		
	Receipts "000"	Drive- ins "000"	Per cent	Receipts "000"	Drive- ins "000"	Per cent
1920	2466	115	4.69	382	52	13.69
1921	2204	121	5.49	368	43	11.89
1922	2654	145	5.49	569	78	13.73
1923	3615	165	4.58	706	123	17.54
1924	2932	197	6.72	733	133	17.75
1925	2067	183	8.88	630	141	22.39
1926	2035	235	11.55	523	134	25.72
1927	1903	306	16.08	605	179	29.55
1928	2391	526	22.00	798	271	34.03
1929	2476	708	28.63	832	304	36.62
1930	2014	790	39.22	561	309	55.22
1931	1336	689	51.55	473	258	54.64
St. Joseph						
1920	1913	129	6.75			
1921	1785	165	9.25			
1922	2060	192	9.33			
1923	2456	234	9.54			
1924	2234	247	11.08			
1925	1672	235	14.06			
1926	1461	279	19.16			
1927	1425	387	27.22			
1928	1724	700	40.62			
1929	1626	855	52.60			
1930	1446	958	66.26			
1931	1321	1056	79.92			

Source of data:

Driven-in receipts of live stock by Heffner & Jordan,
Bureau of Agricultural Economics, U.S.D.A.

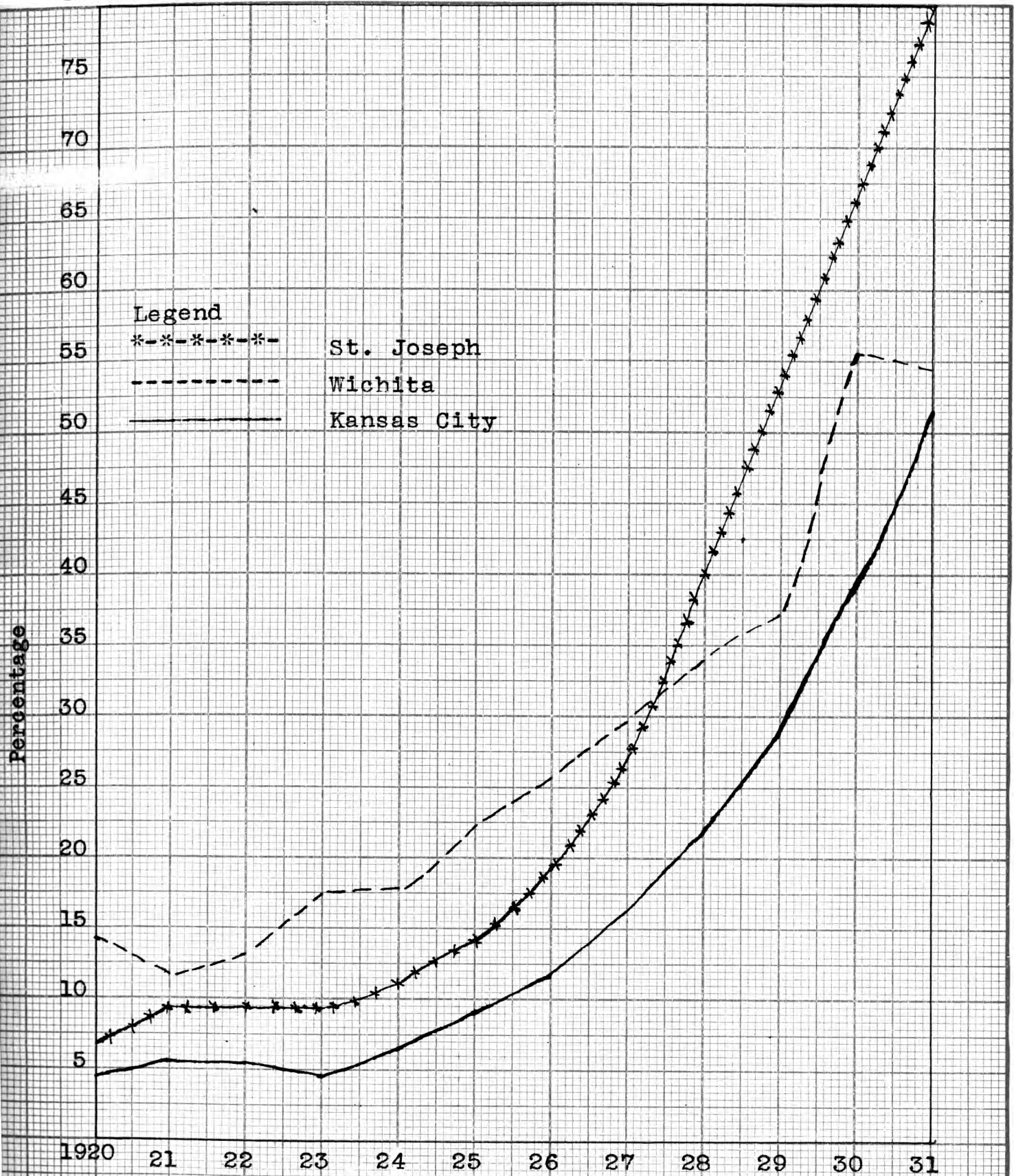


Fig. 3. Trucked-in Hog Receipts in Percentage of Total Receipts. Kansas City, St. Joseph and Wichita. (See Table III)

Table IV. Total Receipts and Number and Percentage of Drive-ins of Sheep in Three Principal Kansas Markets 1920-1931

Year	Kansas City			Wichita		
	Receipts "000"	Drive- ins "000"	Per cent	Receipts "000"	Drive- ins "000"	Per cent
1920	1678	46	2.73	39	4	11.16
1921	1780	67	3.78	31	5	16.03
1922	1574	111	7.11	82	11	14.19
1923	1671	98	5.87	119	10	8.76
1924	1569	82	5.26	83	17	21.22
1925	1499	83	5.54	89	26	29.44
1926	1761	110	6.25	125	31	25.51
1927	1615	133	8.86	145	41	28.39
1928	1767	141	8.01	140	48	34.41
1929	1752	180	10.29	140	57	40.59
1930	2015	225	11.17	111	69	62.19
1931	2244	300	13.39	107	64	59.75
	St. Joseph					
1920	842	90	10.72			
1921	930	98	10.59			
1922	729	95	13.13			
1923	979	106	10.86			
1924	1088	145	13.33			
1925	1142	171	15.01			
1926	1302	182	14.03			
1927	1347	238	17.67			
1928	1579	302	19.13			
1929	1635	368	22.52			
1930	1634	345	21.11			
1931	1572	381	24.27			

Source of data:

Driven-in receipts of live stock by Heffner & Jordan,
Bureau of Agricultural Economics, U.S.D.A.

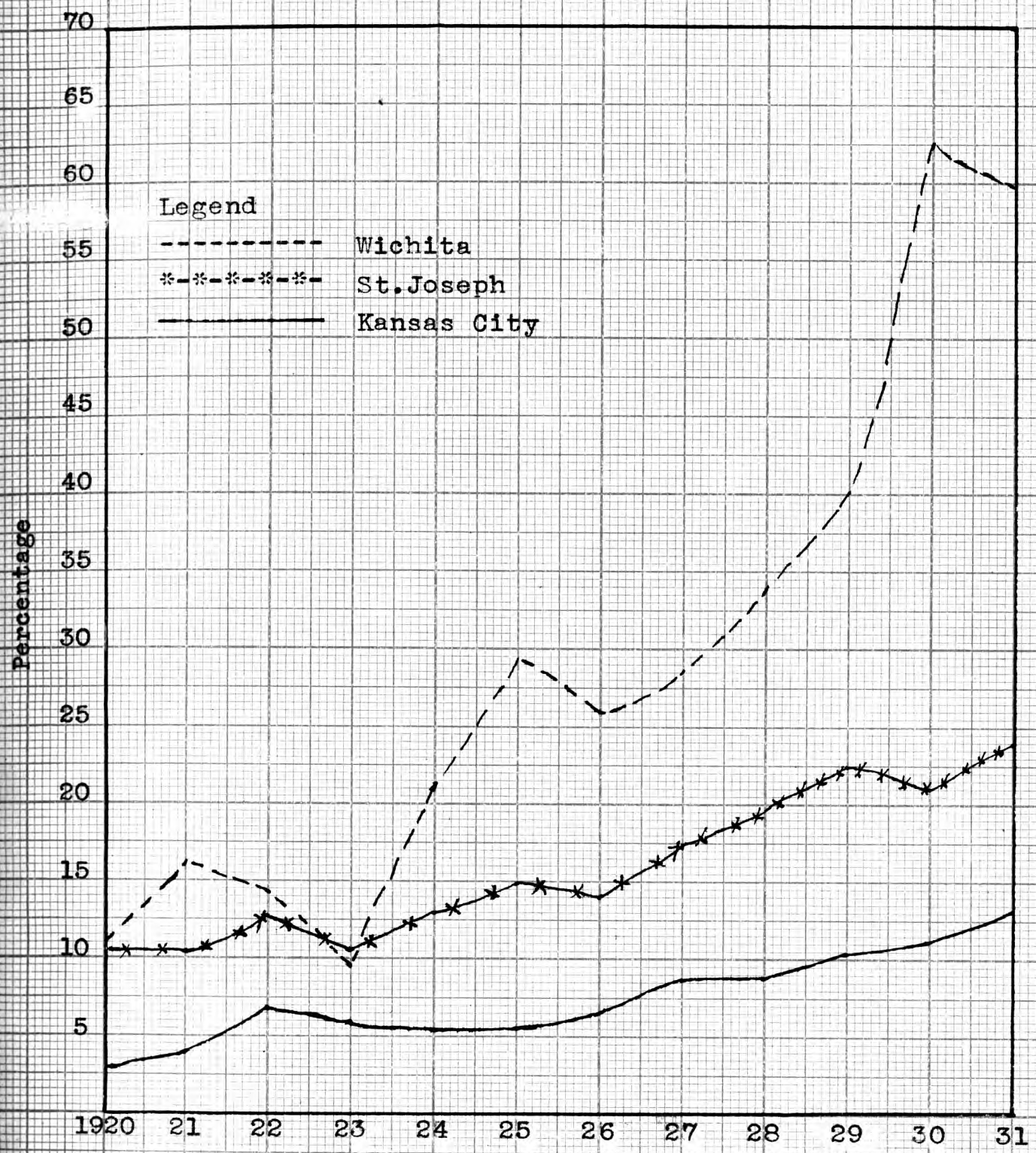


Fig. 4. Trucked-in Sheep Receipts in Percentage of Total Receipts. Kansas City, St. Joseph and Wichita.

(See Table IV)

as indicated in Table V.

Table V. Percentage Truck-ins of Three Principal
Kansas Markets 1931

Market	Percentage Truck-ins		
	Cattle	Hogs	Sheep
Kansas City	11.15	51.55	13.39
Wichita	41.39	54.64	59.75
St. Joseph	31.70	79.92	24.27

ORIGIN OF LIVESTOCK TRUCK-INS

What is an economical trucking distance? Will the motor truck, with the ever-expanding mileage of good roads, keep on widening its field of operation until it has absorbed all of the livestock transportation business? To secure data that might shed some light on these important questions, it was necessary to spend several days at each of the three principal markets and copy records of individual consignments.

Nature of Data

Blank forms were prepared, and the required information, covering truck consignments, was transcribed from duplicate account sales from commission firms in each of these markets.

These records showed kind and number of livestock re-

ceived, weight, sale price, total marketing expense, truck expense, rail expense, point from which they were shipped, date, distance and direction.

From the transcribed sheets, data were assembled by shippers post office address and segregated by kind and truckage zones. Zone one included all territory within 25 miles of the market; zone two all the territory within 26 to 50 miles and so outward by 25 mile intervals as far as truck receipts required. The distance of the origin of each consignment from the market was determined by use of a map and compass, the task of getting the actual mileage of each consignment being too tedious and laborous. The compensating error in the method used would probably give the same results as if actual mileage were used.

Several thousand of these records were transcribed as will be noted in Tables VI, VII and VIII.

The records included consignments in 1927 and 1931. This was done so that comparisons could be made of selling cost, origins and other factors.

Kansas City Origins

Table VI and Figure 5 clearly indicate that the motor truck is reaching farther and farther out from the central markets as time goes on and the limit is apparently not yet in sight. In 1927, 88 per cent of the hogs were brought in

Table VI. Origin of Trucked-in Livestock at Kansas City Union Stock Yards
Included in the Study, 1931 Compared with 1927

Miles to market	Hogs			1931 Cattle			Sheep		
	No. of consignments	No. head	Per cent total	No. of consignments	No. head	Per cent total	No. of consignments	No. head	Per cent total
0- 25	45	435	14.6	45	180	28.6	7	68	10.4
26- 50	140	1775	59.2	95	276	43.9	13	166	25.3
51- 75	51	386	12.8	48	108	17.2	14	275	41.9
76-100	34	320	10.6	17	36	5.7	9	46	7.0
101-125	6	69	2.3	7	18	2.8	3	30	4.6
126-150	2	16	.5	3	5	.8	0	0	0
151-175	0	0	0	1	5	.8	1	71	10.8
176-200	0	0	0	1	1	.2	0	0	0
Total	278	3001	100.0	217	629	100.0	47	656	100.0
<u>1927</u>									
0- 25	56	898	37.7	30	70	29.4	11	80	11.2
26- 50	110	1205	50.5	49	87	36.6	14	307	42.9
51- 75	7	145	6.0	9	36	15.1	13	309	43.3
76-100	1	19	.8	1	9	3.8	0	0	0
101-125	1	9	.4	1	6	2.5	0	0	0
126-150	2	31	1.2	0	0	0	1	4	.5
151-175	1	30	1.2	1	18	7.6	0	0	0
270	1	53	2.2	1	12	5.0	1	15	2.1
Total	179	2390	100.0	92	238	100.0	40	715	100.0

Data compiled from original Account Sales.

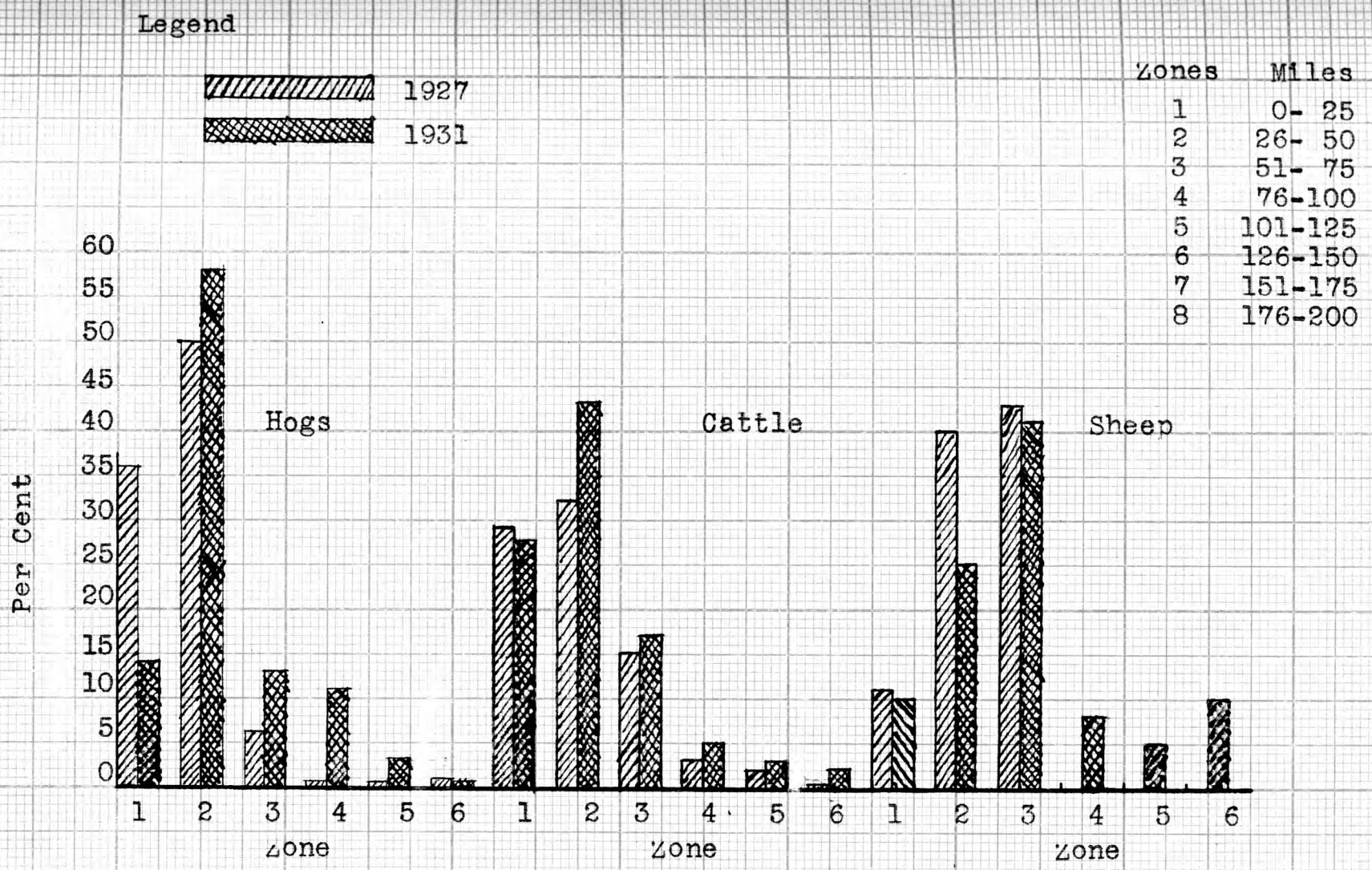


Fig. 5. Origin of Trucked-in Livestock, Kansas City Compared by Zones, 1927-1931.

(See Table VI)

Table VII. Origin of Trucked-in Livestock at St. Joseph Union Stock Yards
Included in the Study, 1931 Compared with 1927

Miles to market	Hogs			1931 Cattle			Sheep		
	No. of consign- ments	No. head	Per cent total	No. of consign- ments	No. head	Per cent total	No. of consign- ments	No. head	Per cent Total
0- 25	151	1807	28.8	104	327	34.4	13	197	33.4
26- 50	202	2453	29.3	123	302	31.8	15	237	40.2
51- 75	122	1532	24.4	89	263	27.8	12	88	14.9
76-100	26	260	4.1	12	37	3.9	4	68	11.5
101-125	16	199	3.2	6	10	1.0	0	0	0
126-150	2	9	.2	2	11	1.1	0	0	0
Total	519	6260	100.0	336	950	100.0	50	590	100.0
<u>1927</u>									
0- 25	83	672	47.9	89	151	50.8	3	30	42.2
26- 50	69	540	38.6	51	129	43.5	4	41	57.8
51- 75	19	190	13.5	7	17	5.7	0	0	0
Total	171	1402	100.0	147	297	100.0	7	71	100.0

Data compiled from original Account Sales.

Table VIII. Origin of Trucked-in Livestock at
Wichita Union Stock Yards 1931

Miles to market	No. consign- ments	Hogs	Per cent total
		No. head	
0- 25	57	459	24.4
26- 50	74	560	29.8
51- 75	70	533	28.3
76-100	22	209	11.1
101-125	2	28	1.5
126-150	5	57	3.0
151-175	4	53	1.7
Total	234	1879	100.0

Compiled from original Account Sales.

from a radius of 50 miles while in 1931, 12.8 per cent came from the 51-75 zone, 10.6 per cent, 76-100 miles, 2.3 per cent, 101-125 miles and some were being hauled 200 miles.

St. Joseph Origins

Table VII and Figure 6 plainly indicate again the ever-widening area in which the motor truck is operating. None of the 1927 records which were used as a sample showed livestock being brought more than 75 miles while five years later some trucks were going 150 miles for their loads.

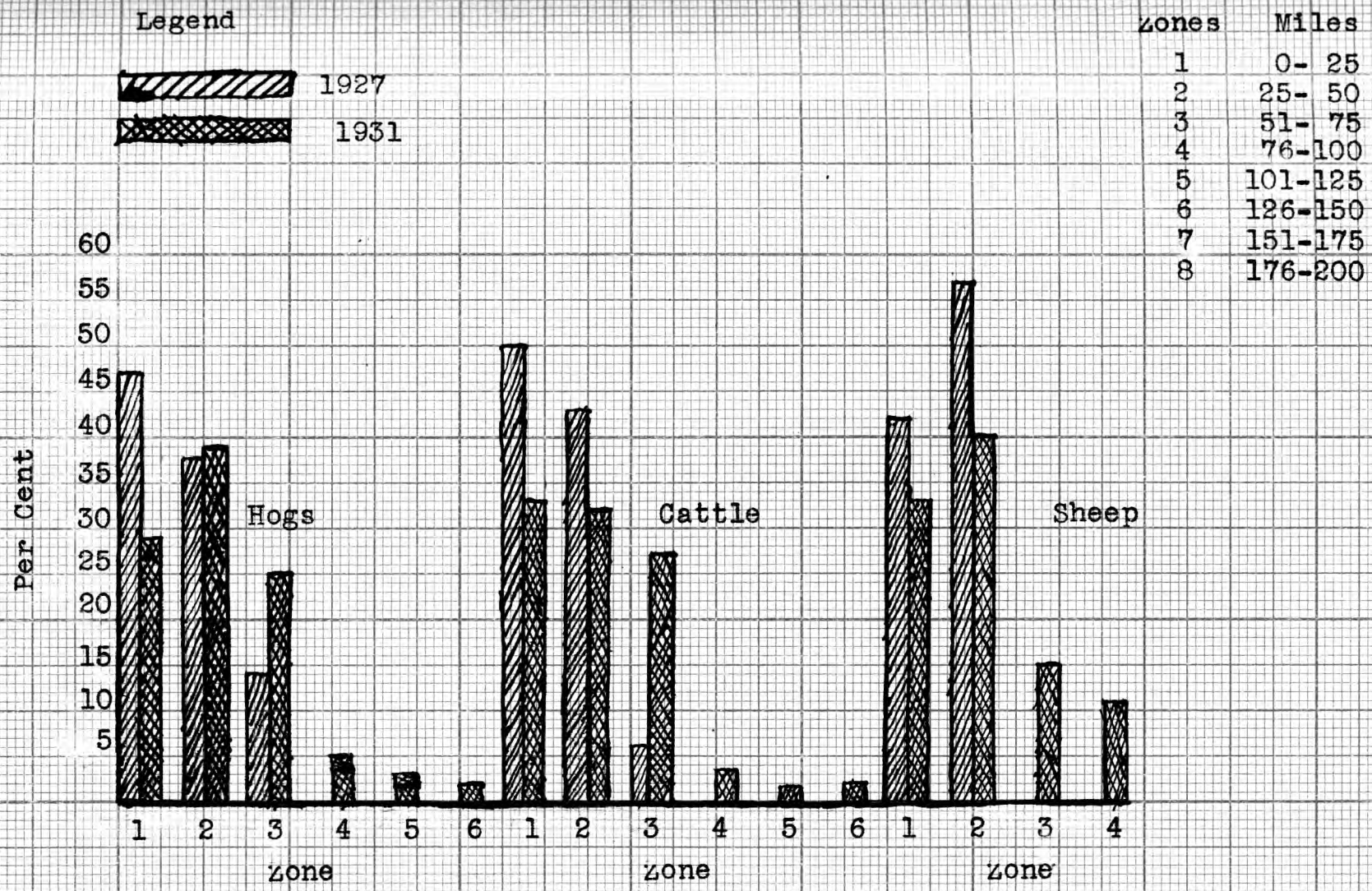


Fig. 6. Origin of Trucked-in Livestock, St. Joseph Compared by zones, 1927-1931.

(See Table VII)

Wichita Origins

The Wichita market indicates a situation similar to that of the other two markets. Table VIII indicates that hogs were being trucked for 175 miles. Due to lack of time complete data were not secured from Wichita.

Table IX summarizes the origins of truck-ins at Kansas City and St. Joseph markets and again clearly demonstrates that the truck-in business is expanding in all directions from the central markets as time goes on.

TRUCKAGE RATES

What does it cost the producer in cash to ship his stock by motor truck?

It was quite evident in transcribing the duplicate account sales that a large percentage of the truck-ins were not brought in by commercial truckers since a relatively small percentage showed a trucking charge. This would indicate that the owner of the stock was also owner of the truck and evidently the truck or motor car which brought in the stock was used by the owner for many other purposes. In such cases he did not pay a direct rate and undoubtedly figured only the gas and oil used as the cost. It was likely that he took a load of produce back with him or he had to come to town on other business so that livestock

Table IX. Origin of Trucked-in Livestock at Kansas City and St. Joseph. Percentage by Zones, 1931 Compared to 1927

Miles to market	Hogs			
	Kansas City		St. Joseph	
	1927	1931	1927	1931
0- 25	37.7	14.6	47.9	28.8
26- 50	50.5	59.2	38.6	39.3
51- 75	6.0	12.8	13.5	24.4
76-100	.8	10.6	.0	4.1
101-125	.4	2.3	.0	3.2
126-150	1.2	.5	.0	.2
151-175	1.2	.0	.0	.0
176-200	2.2	.0	.0	.0
Total	100.0	100.0	100.0	100.0
	<u>Cattle</u>			
0- 25	29.4	28.6	50.8	34.4
26- 50	36.6	43.9	43.5	31.8
51- 75	15.1	17.2	5.7	27.8
76-100	3.8	5.7	.0	3.9
101-125	2.5	2.8	.0	1.0
126-150	.0	.8	.0	1.1
151-175	7.6	.8	.0	.0
176-200	5.0	.2	.0	.0
Total	100.0	100.0	100.0	100.0
	<u>Sheep</u>			
0- 25	11.2	10.4	42.2	33.4
26- 50	42.9	25.3	57.8	40.2
51- 75	43.3	41.9	.0	14.9
76-100	.0	7.0	.0	11.5
101-125	.0	4.6	.0	.0
126-150	.5	.0	.0	.0
151-175	.0	10.8	.0	.0
176-200	2.1	.0	.0	.0
Total	100.0	100.0	100.0	100.0

Data from Tables VI and VII.

transportation costs would be figured at a low rate in instances of that kind. However, the percentage of commercial truckers apparently was greater in 1931 than in 1927.

In Tables X and XI are given the number of consigners, number of head, total weight and total amount of money paid for different kinds of livestock shipped by truck on the St. Joseph and Kansas City markets grouped into zones of 25 miles each. These were consignments handled by commercial truckers for which a cash sum was paid for the trucking service. It was noted in the transcriptions that the amount paid varied greatly in each zone which indicated a lack of standardization of rates among commercial truckers. However this lack was not so apparent in 1931 as in 1927 which indicates a tendency for truckers to standardize rates. It is rather plain that there still must be considerable dickering and trading in determining what will be paid for this service.

With the data at hand, the necessary mathematical calculations were made and the average rate paid was determined for each zone and each kind of livestock. In Tables IX and X it will be noted there are some apparent inconsistencies but in general the rates increase in a fairly uniform rate with the distance from the market.

On hogs the rates were about the same at both markets, ranging from 19 cents per hundred in zone one (0-25 miles)

Table X. Kansas City Stock Yards. Summary 1931 Truck Receipts Included in Study Compared with 1927. Showing Rate Per Head and Hundred Weight

Hogs 1931							
Miles to market	No. of consignments	No. head	Total weight (pounds)	Total cost (dollars)	Rate per head (cents)	Rate per Cwt. (cents)	Per cent '31 rate of '27 rate
0- 25	13	129	31480	59.55	44.4	18.9	82.5
26- 50	98	1236	268270	564.05	45.6	21.0	56.5
51- 75	42	292	60540	197.98	67.8	32.7	71.1
76-100	29	290	66910	203.32	70.0	30.4	
101-125	2	33	6940	41.01	72.0	34.6	
126-150	2	16	3330	16.17	101.0	48.5	
360	1	18	3640	18.20	101.0	50.5	
Total	187	2014	441110	1100.28			
<u>1927</u>							
0- 25	7	96	20940	48.12	50.1	22.9	
26- 50	31	320	75940	282.85	88.4	37.2	
51- 75	3	21	5800	26.73	127.0	46.0	
Total	41	437	102680	357.70			
Cattle 1931							
0- 25	14	22	18000	49.44	2.25	27.5	84.1
26- 50	62	164	101140	280.97	1.71	27.7	68.2
51- 75	44	99	58760	177.61	1.79	30.2	55.8
76-100	17	36	16040	59.16	1.64	36.9	
101-125	5	5	2280	8.46	1.69	37.1	

Table X. Continued

Miles to market	No. of consignments	No. head	Total weight (pounds)	Total cost (dollars)	Rate per head (cents)	Rate per Cwt. (cents)	Per cent '31 rate of '27 rate
<u>Cattle 1931</u>							
126-150	3	5	2630	13.52	2.70	51.4	
151-175	0	0	0	0	0	0	
176-200	1	1	1020	3.06	3.06	30.0	
Total	144	332	299870	592.23			
<u>1927</u>							
0- 25	9	16	9991	31.71	1.98	31.7	
26- 50	22	42	21980	89.34	2.13	40.6	
51- 75	2	2	1220	6.60	3.30	54.1	
Total	33	60	33191	127.65			
<u>Sheep 1931</u>							
0- 25	1	5	290	1.50	30.0	51.5	78.4
26- 50	10	104	8500	32.32	31.0	38.0	69.3
51- 75	10	126	9710	30.61	24.0	31.5	43.9
76-100	8	44	3130	16.16	36.8	51.6	
101-125	1	11	870	4.40	44.0	50.6	
Total	30	290	22500	84.99			
<u>1927</u>							
0- 25	2	31	2220	14.60	47.0	65.7	
26- 50	6	76	6170	33.80	44.5	54.8	
51- 75	5	47	3250	23.31	50.0	71.7	
Total	13	154	11640	71.71			

Data from original Account Sales.

Table XI. St. Joseph Union Stock Yards. Summary 1931 Truck Receipts Included in Study Compared with 1927. Showing Rate Per Head and Rate Per Hundred Weight

Hogs 1931							
Miles to market	No. of consignments	No. head	Total weight (pounds)	Total cost (dollars)	Rate per head (cents)	Rate per Cwt. (cents)	Per cent '31 rate of '27 rate
0- 25	40	641	134292	257.98	40.2	19.1	58.4
26- 50	191	1997	444799	1105.76	55.3	24.9	55.5
51- 75	106	1355	304205	852.41	62.9	27.9	76.5
76-100	19	185	41005	145.02	78.4	34.9	
101-125	16	199	43535	178.32	89.6	40.8	
126-150	2	9	1700	8.35	92.7	49.1	
Total	374	4386	969536	2547.84			
<u>1927</u>							
0- 25	12	113	23680	77.66	68.7	32.7	
26- 50	3	24	7355	35.01	102.9	44.7	
51- 75	15	137	31035	112.67	83.0	36.3	
Total	30	274	62070	225.34			
Cattle <u>1931</u>							
0- 25	22	50	22430	63.40	1.27	28.2	48.9
26- 50	64	169	98605	266.51	1.56	25.0	47.6
51- 75	31	110	49375	157.86	1.43	31.9	63.8
76-100	11	34	18760	73.92	2.17	38.8	
101-125	0	0	0	0	0	0	

Table XI. Continued

Miles to market	No. of consignments	No. head	Total weight (pounds)	Total cost (dollars)	Rate per head (cents)	Rate per Cwt. (cents)	Per cent '31 rate of '27 rate
Cattle <u>1931</u>							
126-150	2	11	6200	23.35	2.12	37.7	
Total	130	374	195370	585.04			
<u>1927</u>							
0- 25	2	3	520	3.00	1.00	57.7	
26- 50	7	11	4620	24.17	2.20	52.3	
51- 75	1	2	2140	10.70	5.35	50.0	
Total	10	16	7280	37.87			
Sheep <u>1931</u>							
0- 25	3	41	4300	12.08	30.0	26.0	
26- 50	11	172	14410	51.37	29.9	35.7	22.6
51 -75	10	74	5795	22.48	30.4	38.8	
76-100	5	80	5465	19.91	24.5	36.6	
Total	29	367	29970	105.84			
<u>1927</u>							
0- 25	no data						
26- 50	1	7	450	5.20	74.3	115.5	
Total	1	7	450	5.20			

Data from original Account Sales.

to 50 cents per hundred in zone 6 (126-150 miles).

Cattle and sheep rates seem to be somewhat higher on the shorter hauls.

In comparing these rates with those charged in 1927 for the same service, it would appear that the rates have been lowered from 20 to 40 per cent.

The comparative rates charged by truckers at Kansas City and St. Joseph, while there are some variations, yet on the whole, average about the same as is indicated in Tables XII and XIII.

Table XII. Comparison of Average Livestock Truckage Rates in Kansas City and St. Joseph Area. Compiled from Tables X and XI. (Cents per Hundred Weight).

Miles to market	Hogs		1931 Cattle-Calves		Sheep	
	Kansas City	St. Joseph	Kansas City	St. Joseph	Kansas City	St. Joseph
0- 25	18.9	19.1	27.5	28.2	51.5	26.0
26- 50	21.0	24.9	27.7	25.0	38.0	35.7
51- 75	32.7	27.9	30.2	31.9	31.5	38.8
76-100	30.4	30.9	36.9	38.8	51.6	36.6
101-125	34.6	40.8	37.1	0	50.6	0
126-150	48.5	49.1	51.4	37.7	0	0
151-175	0	0	0	0	0	0
176-200	0	0	30.0	0	0	0
360	50.1	0	0	0	0	0
<u>1927</u>						
0- 25	22.9	32.7	31.7	57.7	65.7	0
26- 50	37.2	44.7	40.6	52.3	54.8	115.5
51- 75	46.0	36.3	54.1	50.0	71.7	0

Table XIII. Livestock Truckage Rates for 1931 Compared with Rates for 1927 in Kansas City and St. Joseph Market Areas, Showing Percentage of Decline.

Miles to market	Kansas City			<u>Hogs</u>		
	1927	1931	Per cent decline	1927	1931	Per cent decline
0-25	22.9	18.9	17.4	32.7	19.1	41.6
26-50	37.2	21.0	43.5	44.7	24.9	44.3
51-75	46.0	32.7	29.0	36.3	27.9	23.1
				<u>Cattle</u>		
0-25	31.7	27.5	13.2	57.7	28.2	51.1
26-50	40.6	27.7	31.7	52.0	25.0	52.2
51-75	54.1	30.2	42.2	50.0	31.9	36.2
				<u>Sheep</u>		
0-25	65.7	51.5	21.6	No record		
26-50	54.8	38.0	30.6			
51-75	71.7	31.5	56.0			

Compiled from Table XII.

GROSS TRUCKAGE RATES COMPARED TO RAIL RATES

Average truck rates, average rail rates, gross difference, and per cent of truck rates over rail rates are shown by zones, markets and kind of stock in Table XIV and Figure 7.

Adjustment for various other marketing expenses, as shrinkage, farm to station haul, time and convenience, will be considered later, but for the present, only the gross difference in the rates will be considered.

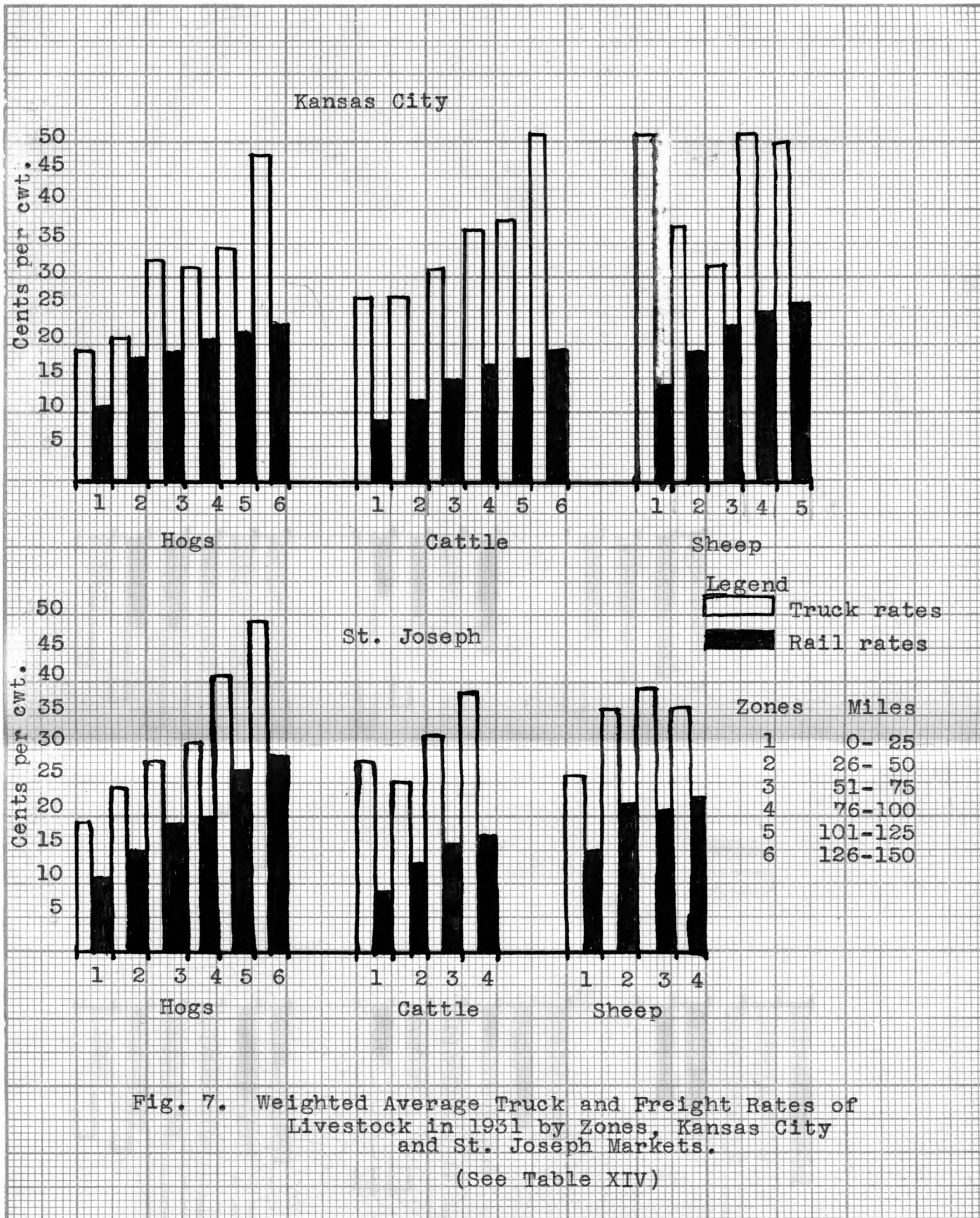


Fig. 7. Weighted Average Truck and Freight Rates of Livestock in 1931 by Zones, Kansas City and St. Joseph Markets.

(See Table XIV)

Table XIV. Gross Differences Between Truck and Rail Rates Using Weighted Average Rates by zones for Kansas City and St. Joseph Markets, 1931.
(Cents per Hundred Weight)

Zones	Kansas City				<u>Hogs</u>		St. Joseph		
	Truck	Rail	Differ- ence	Per cent truck over rail	Truck	Rail	Differ- ence	Per cent truck over rail	
0- 25	18.90	10.50	8.4	80.0	19.04	10.50	8.44	81.3	
26- 50	21.00	16.18	4.82	29.8	24.90	15.80	9.10	57.6	
51- 75	32.70	19.20	13.50	70.3	27.90	19.60	8.30	42.3	
76-100	30.40	20.08	9.32	51.3	30.90	20.16	10.74	53.3	
101-125	34.60	21.00	13.60	64.8	40.80	27.33	13.47	49.6	
126-150	48.50	22.75	25.75	113.2	49.10	27.50	21.60	78.5	
151-175									
176-200									
360	50.50	36.00	14.50	140.30					
					<u>Cattle</u>				
0- 25	27.5	8.5	19.0	223.5	28.2	8.75	19.45	216.5	
26- 50	27.5	11.6	15.9	137.1	25.0	13.00	12.00	92.3	
51- 75	30.2	15.3	14.9	97.3	31.9	15.58	16.32	104.7	
76-100	36.9	16.25	20.6	127.1	38.8	16.33	22.47	137.5	
101-125	37.1	17.3	19.8	114.4	0	22.16			
126-150	51.4	18.0	33.4	185.5					
					<u>Sheep - Single Deck</u>				
0- 25	51.5	14.75	36.75	249.1	26.7	14.75	11.95	81.01	
26- 50	38.0	19.75	18.25	92.8	35.7	21.16	14.54	68.66	
51- 75	31.5	23.10	8.40	36.3	38.8	20.60	18.20	59.2	

Table XIV. Continued

Zones	Kansas City				St. Joseph			
	Truck	Rail	Differ- ence	Per cent truck over rail	Truck	Rail	Differ- ence	Per cent truck over rail
	<u>Sheep</u>							
76-100	51.6	25.41	26.39	103.07	36.6	23.00	13.60	59.1
101-125	50.6	26.30	24.20	92.4				

Note:

Minimum weight per 36 ft. car.

Hogs Single Deck 16500
 Cattle 22000
 Sheep Single Deck 12000

Compiled from Table XIII and rail rates furnished by the railroad companies.

In the rates on hogs, it will be noted that truck rates range from 29.8 per cent to 113 per cent more than rail rates. Cattle rates range from 92.3 per cent to 223 per cent more than rail rates, and sheep rates by truck range from 36.3 per cent to 249 per cent more than rail rates.

The average freight rate in each zone was determined by taking an average of a number of rates from representative towns in each zone. The truck rates were determined by taking the actual cost for several representative shipments in each zone.

OTHER FACTORS IN TRANSPORTATION EXPENSE

Other factors included in the cost of getting livestock to market are: (1) risks, (2) shrinkage, (3) differences in terminal charges, (4) attitude of buyers, (5) convenience, (6) timeliness, (7) out of pocket expenses.

Risks

Records kept by the Western Weighing and Inspection Bureau at Kansas City and St. Joseph would indicate that there is little difference in loss of livestock transported by rail and truck except with calves. Truck losses with calves showed a ratio of 1:5482 and rail a ratio of 1:212 (Table XV).

The insurance rates as indicated in Table XVI are generally somewhat higher on trucked-in livestock than on rail shipment.

Table XV. Proportion of Dead Stock in Rail and Truck Shipments Received at Kansas City and St. Joseph Markets. In Proportion of One Dead to Total Number Received in Sound Condition

Market	Length of period 1929	<u>Dead Cattle</u>		<u>Dead Calves</u>		<u>Dead Hogs</u>		<u>Dead Sheep</u>	
		Rail	Truck	Rail	Truck	Rail	Truck	Rail	Truck
		lto:	lto:	lto:	lto:	lto:	lto:	lto:	lto:
St. Joseph	4 Mo.	4465	2810	169	1744	740	784	1479	1701
Kansas City	2 Mo.	2885	5605	256	9220	1035	1336	1073	1166

Information from Western Weighing and Inspection Bureau, Chicago, by courtesy of Dr. W. J. Embree, Chief Veterinarian.

Table XVI. Insurance Rates Covering Losses from Death and Crippling of Livestock in Transit from Any Cause

Miles to market	*Rail rates per head			Miles to market	**Truck rates, cents per head		
	Cattle and Calves	Hogs	Sheep		Cattle and Calves	Hogs	Sheep
Under 150	10	7	4	Under 50	10	6	4
151- 300	12	9	4	51- 75	12	8	5
351- 750	15	11	5	76-100	15	11	7
751-1100	20	15	6	101-150	16	12	8
				151-300	20	16	9

* General Rates.

** Rates out of Kansas City.

Rates furnished by Hartford Insurance Company, Livestock Department.

Shrinkage

Reliable data on comparative shrinkage of stock shipped by truck are difficult to obtain, because so few farmers have scales to weigh their stock. Tables XVIIa and XVIIb indicate a slightly greater shrinkage in trucked-in hogs than on rail shipments.

Table XVII. Comparison of Shrinkage on Hogs Shipped by Truck and by Rail

(a)			
Method of shipment	No. head	Distance in miles	Per cent shrink
Truck	368	20.5	1.77
Rail	500	152.3	1.75

(b)				
Method of shipment	No. head	Farm weight	Market weight	Shrinkage per cent
Truck	779	153958	152295	1.1
Rail	1100	270461	267985	.9

Source of data:

C. R. Ashley - Circular 331, page 25, Agricultural Experiment Station, University of Illinois.

Differential in Terminal Charges

An increase of two cents per head for hogs and sheep and five cents per head for cattle is made for stock re-

ceived at the yards in trucks because of special facilities that have to be provided.

Attitude of Buyers

Some buyers pay a little more for calves trucked-in. The attitude on other kinds of livestock varies greatly. Some say hogs and cattle are bruised more when hauled by truck hence it is necessary to discount on price. The flexibility of truck service makes it possible for the producer to send in his stock in small lots so that he is able to have better finished stock so in the long run he should get a higher price.

Convenience and Timeliness

The strongest appeal to producers for trucking service, as long as comparative rates are some where nearly in line, is the convenience as to time and labor. Many producers receive market reports by radio and if the market seems good, they usually want quick action and a trucking service usually can give it.

Out of Pocket Expense

Many producers own one or more trucks or trailers that are used for other purposes on the farm and can be used for livestock transportation. Such producers will usually haul

their own stock to market regardless of the rates by other methods of transportation. Where this is the case, little immediate cash outlay will have to be made. In some instances, labor or some farm product will be given in exchange for truckage service so that there is no immediate out of pocket expense.

COMPARISON OF NET TRANSPORTATION EXPENSE BY TRUCK AND BY RAIL

It is only when all the factors of expense in transporting livestock from farm to market are brought together that a true picture of the comparative costs can be secured.

When livestock is shipped by rail, the expense of moving the stock from farm to shipping point, assembling in even car load lots, loading and feeding are all items of expense that must be added to the freight charges made by the railroad companies. The cost of moving from farm to shipping point of course, will vary. The producer living within a mile or so may drive his stock in with little expense. Others may have their own trucks that are used for other purposes so they can bring in the stock with a small actual cost. So it will be impossible to arrive at a cost figure that will apply under all conditions. In the market area under consideration, it seems reasonable to assume that a satisfactory trucking service might be established that

would haul livestock to shipping points for 10 cents per hundred or even less.

Most hogs in this territory are produced on farms in less than carload lots so that the average producer would have to patronize some agency that would assemble this stock to be shipped by rail in even carload lots. This service is rendered by local buyers, packer representatives at concentration points or cooperative shipping associations. Local shipping associations usually make a charge of about 10 cents per hundred for this service. So for the sake of making a direct comparison of total cost for shipping livestock by rail, it would appear reasonable to add 10 cents per hundred for transportation charge from farm to shipping point and 10 cents per hundred for assembling costs, making a total of 20 cents per hundred to be added to the rail rate. This has been done in Table XVIII.

The truck rate arrived at in Table XIII does not include all the expenses involved in truck transportation. These additional expenses have been discussed under the heading of other factors. In view of the factors analyzed, it would seem reasonable to add about two cents per hundred to the truck rate. This additional two cents per hundred is an estimated average of about what the extra costs would be in handling stock by truck over rail that has not been included in the rates in Table XIII. It is made up of extra

Table XVIII. Comparison of Total Net Transportation Expense - Truck and Rail.
 Kansas City and St. Joseph Markets, 1931.
 (Cents per Hundred Weight)

Zones	Kansas City				St. Joseph			
	Truck	Rail	Differ- ence	Per cent rail over truck	Truck	Rail	Differ- ence	Per cent rail over truck
<u>Hogs</u>								
0- 25	20.90	30.50	10.40	46	21.04	30.50	9.46	45
26- 50	23.00	36.18	13.18	50	26.90	35.80	8.90	33
51- 75	34.70	39.20	4.50	13	29.90	39.60	9.70	32
76-100	32.40	40.08	7.58	24	32.90	40.16	7.26	25
101-125	36.60	41.00	4.40	12	42.80	47.33	4.57	11
126-150	50.50	44.75	-5.25	-12	51.10	47.50	-3.60	-7
<u>Cattle</u>								
0- 25	29.50	28.50	-1.00	- 3	30.20	28.75	-1.45	-5
26- 50	29.50	31.60	2.10	7	27.00	33.00	-5.00	-22
51- 75	32.20	35.30	3.10	10	33.90	35.85	-1.95	-12
76-100	38.90	36.25	-2.65	- 5	40.80	36.33	-4.47	-10
101-125	39.10	37.30	-1.80	- 4				
126-150	53.40	38.00	-12.40	-29				
<u>Sheep</u>								
0- 25	53.50	34.75	-18.75	-35	28.70	34.75	6.05	21
26- 50	40.00	39.75	- .25	- 1	37.70	41.16	3.46	9
51- 75	33.50	43.10	9.60	29	40.80	40.60	.20	0
76-100	53.60	45.41	- 8.19	-16	38.60	43.00	4.40	11
101-125	52.60	46.30	- 6.30	-12				

Note: Net truck cost is truck rate (Table XIII) plus two cents.

Net rail cost is rail rate (Table XIII) plus 20 cents.

Source of data: Table XIII.

yardage and commission charges made for handling stock brought in by truck. Table XVIII gives a comparison of the total net cost of truck and rail shipments.

It is not expected that this analysis will give the final solution of the problem of the individual livestock producer as to whether it will be to his advantage to ship by truck or by rail. That is a question each producer will have to decide after weighing all the factors as they apply to his own particular conditions. He should find out the freight rates from his shipping point, what it will cost him to get his stock to that point and if he has less than car-load lots, what the facilities are for shipping with others and what this inconvenience is worth to him in excess truck rates over rail.

Then comparing with that cost, the actual truck rates plus the additional charges in yardage and commissions at the terminal market, he will be able to arrive at an intelligent answer to the question of which is the most economical method of transporting his livestock to market.

Table XVIII shows that the net rail cost calculated on the above basis is considerably higher than the truck costs in the first two zones which extend out 50 miles from the markets. From 50 to 125 miles, the costs approximate the same and at 125 miles and more, the costs are favorable to movement by rail.

SUMMARY

1. Livestock truck-ins on 16 principal United States markets have increased from 5.21 per cent of total receipts in 1920 to 31.39 per cent in 1931 or about six times in eleven years.

2. Trucked-in hogs increased from 6.79 per cent in 1920 to 42.98 per cent in 1931, cattle 2.22 per cent to 24.03 per cent and sheep 3.43 per cent to 17.01 per cent on the 16 principal livestock markets.

3. Trucked-in cattle on three principal Kansas markets have increased as follows from 1920 to 1931: Kansas City .78 to 11.15 per cent; St. Joseph 2.3 per cent to 31.7 per cent and Wichita 11.33 per cent to 41.39 per cent.

4. Trucked-in hogs increased from 4.69 per cent of total receipts in 1920 to 51.55 per cent in 1931 at Kansas City; 13.69 per cent to 54.64 per cent at Wichita and 6.75 per cent to 79.92 per cent at St. Joseph.

5. Trucked-in sheep at Kansas City increased from 2.73 per cent in 1920 to 13.39 per cent in 1930; at St. Joseph from 10.72 per cent to 24.27 per cent and at Wichita from 11.16 per cent to 59.75 per cent.

6. Transportation by motor truck is now the principal method of transporting hogs to the three Kansas markets since approximately two-thirds were trucked in in 1931.

Approximately one-fourth of all the cattle and one-third of all the sheep are now transported by this method.

7. Due to the extension of improved highway systems and improved trucking facilities, motor truck transportation of livestock is extending in ever widening circles from central markets.

8. In 1927 approximately 80 per cent of the trucked-in livestock was coming from within 50 miles of the market. By 1931, 80 per cent was coming from a 100-mile radius.

9. Truck rates have declined approximately 30 per cent since 1927.

10. Gross truck rates range from 50 to 200 per cent more than rail rates.

11. Net transportation costs show the truck to be cheaper than shipment by rail in a 50-mile radius, from 50 to 125 miles about the same cost and more than 125 miles, truck shipment is the more expensive.

12. From data available, mortality loss is about the same for rail and truck transportation except for calves which is more favorable by truck.

13. From data available, there appears to be some advantage in shrinkage in favor of rail shipment.

14. Insurance rates are slightly higher for truck shipment than for rail shipment.

15. Under present regulations, motor trucks will un-

doubtedly continue to get an increasing share of the live-stock transportation business.

ACKNOWLEDGMENT

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