U. S. DEPARTMENT OF COMMERCE
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FIFTEENTH CENSUS OF THE UNITED STATES

CENSUS OF DISTRIBUTION

WHOLESALE DISTRIBUTION

(TRADE SERIES)

RADIO SETS, PARTS AND ACCESSORIES

Distribution No. W-202

UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON : 1932

FOR SALE BY THE SUPERINTENDENT OF DOCUMENTS, WASHINGTON, D. C.

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ILLUSTRATIONS

WHOLESALE TRADE IN RADIO SETS, PARTS, AND ACCESSORIES

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INTRODUCTION

This is one of a series of trade bulletins presenting the findings of the first Census of Wholesale Distribution. The statistics were collected in 1930 and cover the wholesale operations of the year 1929. They were secured by a field canvass covering every State, county, and city in continental United States. The canvass was based upon wholesale establishments which are defined, for census purposes, as places of business where goods are sold at wholesale. The establishment may be in the form of a store which does not generally sell to the public; a warehouse; an office; or part of an office, as when the office is shared with other similar organizations. The census of distribution was taken on the basis of establishments in order to make it possible to present data by geographic areas and to facilitate the canvass. Thus a separate report was required for each establishment, regardless of whether or not it was owned or operated as part of a larger business organization. Wholesale peddlers and others who maintained no place of business were excluded from this census.

In preparing this bulletin it was impossible to secure exact correspondence between the statistics here presented and those appearing in the final State series on wholesale distribution. Discrepancies are for the most part due to a certain amount of reclassification and regrouping for the purposes of this special trade analysis.

This bulletin was prepared under the general supervision of Robert J. McFall, Chief Statistician for Distribution, and Theodore N. Beckman, in Charge of Wholesale Distribution. There is first a brief discussion of the scope of the radio industry drawing upon statistics prepared by the Census of Population and the Census of Manufactures. The sales channels through which the goods flow, as they leave the manufacturing plants, are next examined. The main part of the bulletin is devoted to an analysis of the wholesale establishments engaged in marketing radio sets, parts, and accessories.

In the latter analysis two distinct tabulations are used. The first includes the sales of radio sets, parts, and accessories by all wholesale establishments operating in the entire wholesale field. The figures are shown for each trade group and each type of operation separately. The second tabulation, or series of tabulations, deals exclusively with wholesale establishments which specialize in radio sets, parts, and accessories to the extent that a minimum of more than fifty per cent of the sales is in such goods. These establishments are analyzed as to type of operations, or functions performed; character of sales; scale of operations based upon net sales; location of the market; extent of sales territory and operating expenses, including employment costs.

SCOPE OF THE INDUSTRY

The census of population, taken in April 1930, revealed the fact that 12,078,345 families, or 40.3 per cent of all families in the United States, had radio receiving sets. No comparable figures are available for earlier years, but an examination of the Census of Manufactures statistics throws some light upon the extent and rapid growth of one of our infant industries.

The production of radio apparatus and tubes in 1929 constituted the most important single division of the group which is classified by the Census of Manufactures as the electrical machinery, apparatus, and supplies industry. This place of distinction in one of our newest and most rapidly growing industries has been won in a remarkably short period of time. (Table 1.) In 1923, an aggregate value of $54,000,470 was reported for radio apparatus and tubes. This constituted but 4.2 per cent of the value of products of the entire electrical group. The 1925 Census showed a marked increase to $178,834,697, followed by a slight gain in 1927 and a further substantial advance in aggregate value for 1929, at which time production of radio sets and tubes constituted over 20 per cent of the two and one-third billion dollars aggregate value for the entire electrical goods industry.

The small gain between 1925 and 1927 may have been due in part to a declining interest in battery operated sets by the public as well as by anticipation of radical improvements in the type of tubes, whereas the recovery in 1929 was probably stimulated by the introduction of all-electric receiving sets, better tubes, and improved radiocasting facilities. A part of the increase, however, may be attributed to changes made in the basis for enumerating by the Census. (See footnote 2, Table 1.)

TABLE 1.—PRODUCTION OF RADIO APPARATUS AND TUBES IN THE UNITED STATES, 1923–1929 [1]

YEAR	Aggregate value of production of radio apparatus and tubes [2]	Per cent of aggregate value of entire electrical industry
1929	$463, 109, 235	20. 1
1927	198, 436, 434	12. 1
1925	178, 834, 697	11. 6
1923	54, 000, 470	4. 2

[1] Census of Manufactures.
[2] In 1923, 1925, and 1927, the census secured reports on the basis of selling value at the factory exclusive of selling expenses incurred outside of the factory or factory office. In 1929 the basis was changed to sales value f. o. b. the factory, which may include some selling expense. Where elaborate sales organizations are maintained, the value reported on the latter basis may therefore be greater than on the earlier basis.

The aggregate value reported in 1929 consisted of $329,624,505 in radio apparatus and replacement parts, $82,012,807 in radio tubes, and $51,471,923 in miscellaneous radio parts and accessories made by establishments which do not manufacture radio sets. An analysis of the production of radio apparatus for 1929 showed 4,980,090 receiving sets, accounting for nearly 55 per cent of the total and 101,988,812 radio tubes making up 17.7 per cent of the aggregate value. Loud speakers, combination phonograph and radio sets, transmitting sets, transformers and replacement parts, including head sets, comprised the remaining 27.6 per cent. (See Table 2.)

TABLE 2.—RADIO APPARATUS, TUBES, AND PARTS PRODUCED IN THE UNITED STATES: 1929

PRODUCT	Number of units	Value of production	Per cent of aggregate value
Aggregate value		$463, 109, 235	100. 00
Radio apparatus		381, 096, 423	82. 29
Receiving sets	[1] 4, 980, 090	[1] 253, 260, 052	54. 69
Loud speakers	3, 338, 522	30, 550, 637	6. 60
Combination phonograph and radio	152, 107	22, 193, 702	4. 79
Transmitting sets		5, 788, 077	1. 25
Transformers	573, 451	1, 041, 500	. 22
Replacement parts		[2] 68, 262, 460	14. 74
Radio tubes	101, 988, 812	82, 012, 807	17. 71

[1] The number of crystal and short-wave sets was not reported, but their value of $472,803 is included in value of production.
[2] Includes miscellaneous radio parts and accessories made in establishments which do not manufacture radio sets.

There were in 1929 a total of 1,802 establishments engaged in the manufacture of electrical machinery, apparatus, and supplies. While the exact number of these establishments which manufactured for the radio trade is not available, it is known that 87 of these plants specialized in the production of radio receiving sets to the extent of 90 per cent or more of their business and 36 concentrated their efforts similarly on radio tubes. The location of these producing units is not shown separately but probably ties in closely with the location of plants in the entire electrical goods industry. While some production took place in practically every State in the Union, there was a high degree of concentration in the industry. The seven States of Illinois, Pennsylvania, New Jersey, New York, Ohio, Massachusetts, and Indiana ranked in order of their importance, accounted for over 84 per cent of the aggregate value of production in the electrical industry.

DISTRIBUTION OF RADIO SETS, PARTS, AND ACCESSORIES—MANUFACTURERS' SALES CHANNELS

Radio receiving sets.—Eighty-seven manufacturing plants, whose production consisted of 90 per cent or more in radio receiving sets, reported the channels through which $160,783,000 worth of radio sets were distributed.[3] (See Chart 1). This selling value, f. o. b. factory, constituted about 63.6 per cent of the total value of radio sets produced in 1929. No division by sales channels is available for the remainder of the industry.

Thirteen of the 87 plants reported sales of $8,102,000 *through* agents, brokers and commission houses, three of the thirteen selling entirely through such channels. Agents, brokers and commission houses sell largely, if not exclusively, to other wholesale distributors, hence their sales are duplicated for the most part in the sales of the following wholesale outlets.

Wholesalers were the most important sales outlet for the manufacturer of radio sets in 1929 with 80.2 per cent of total distributed sales. Sales of radio receiving sets made to *industrial consumers* (including interplant transfers to an unknown amount) were reported at $11,698,000, or 7.3 per cent of total distributed sales. *Direct sales to retailers* by the manufacturers accounted for 6.8 per cent of total distributed sales. The utilization of the *manufacturer-owned wholesale outlets* was apparently not very extensive in the radio set industry. Only 5.3 per cent of total distributed sales were handled by such branches. Seven-

[3] This figure will be referred to hereafter as total distributed sales.

teen plants reported *direct sales to household consumers*, but the total volume sold in this way amounted to only 0.4 per cent of total distributed sales of radio sets.

Radio tubes.—The sales channels of radio-tube manufacturers, who produced $47,928,000 out of the $82,012,807 total, were also reported. (See Chart 1.) Here, too, *wholesalers* occupied the most important position, handling $26,814,000, or 55.9 per cent, of total distributed sales. Manufacturers reported sales of tubes by their *own wholesale outlets* to the extent of 31.8 per cent, or six times as much as was so sold by radio-set manufacturers. The explanation may lie in the fact that radio tubes are now produced by large scale electric lamp manufacturers, who have utilized the wholesale branches originally established

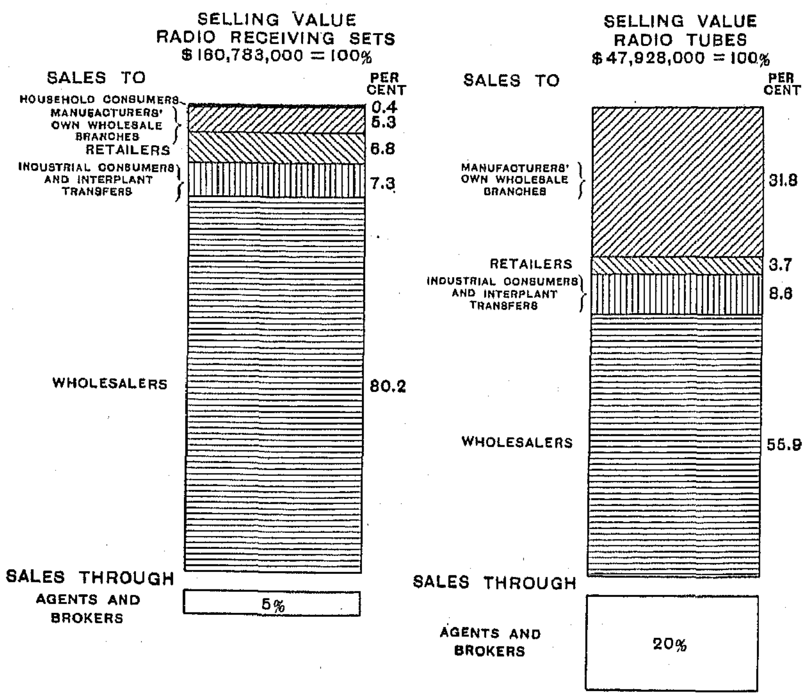


FIGURE 1.—MANUFACTURERS' SALES CHANNELS FOR RADIO RECEIVING SETS AND TUBES

because of the need for special care in testing and handling their fragile product. Sales to *industrial consumers* (including interplant transfers) were 8.6 per cent of distributed sales and the remaining 3.7 per cent was sold *direct to retailers.*

Of the total distributed sales of $47,928,000, nine plants made use of agents, brokers, and commission houses. They disposed of $9,738,000 *through* such agencies, six plants selling their entire production to those middle men. As in the case of radio sets above, these sales are largely duplicated in the sales of other wholesale outlets.

The foregoing analysis of manufacturers' sales indicates the importance of the wholesaler in the distribution of radio sets and tubes. It is particularly noteworthy that this comparatively new industry should show such a decided preference for this type of distributor. Indeed, the facts here brought out are the more amazing when it is recalled that commodities of fairly high unit value, such as radio sets, have been pointed to as lending themselves peculiarly to direct-selling methods. In explanation, it may be said that the very newness of the industry, involving, as it does, intricate technological problems, has made it necessary to concentrate both capital and initiative on experimentation and production.

The wholesalers have offered a service in distribution which the producers have welcomed. By accepting exclusive agencies which has made possible the establishment of more definite sales quotas by the manufacturers, wholesalers have, in some cases, contributed to smoother production schedules. Furthermore, they have given intimate attention to the retail field by such activities as supplying service men in each territory. They have also simplified the manufacturer's financing problems by prompt payment of invoices, whereas direct selling by manufacturer to retailer would involve liberal credit terms and tie up capital which might be devoted to production. The true significance of the wholesaler in the radio trade, however, is brought out much more clearly and in greater detail by the following analysis.

WHOLESALE DISTRIBUTION OF RADIO SETS, PARTS, AND ACCESSORIES

The Census of Distribution secured reports by means of a field canvass from every wholesale establishment that could be located which was engaged in the distribution of radio sets, parts, and accessories.

At the outset, it should be noted that the Census of Distribution figures are not comparable with those of the Census of Manufactures. The duplication of steps in both the manufacturing and the distribution processes prevents close comparison. Manufacturers buy from and sell to other manufacturers for industrial purposes and for redistribution. Wholesale middlemen sell to one another and also make sales to industrial consumers, usually manufacturers, which still further complicates the case and invalidates comparisons. Finally the wholesale census did not solicit reports from those manufacturers who sold direct from their factories. Only when separate distribution establishments were maintained did the census secure information on direct distribution by manufacturers.

The wholesale radio trade as analyzed below, includes, in the first place, the sales of radio sets, parts, and accessories (including radio sets combined with talking machines) by wholesale establishments of all types engaged in all kinds of trade. The second section analyzes the wholesale trade of those middlemen who specialized in radio sets, parts, and accessories (including radio sets combined with talking machines) to the extent of over 50 per cent of their net sales.

Commodity sales of radios and equipment by all trades.—Table 3 shows the wholesale channels through which radio sets, parts, and accessories (including radio sets combined with talking machines) move. The statistics are shown both by trade groups and by types of distributing organizations.

The trade groups consist of the census classifications on the basis of the principal kind of business in which wholesale middlemen operate, such as hardware, electrical, furniture, automotive, etc. In addition to trade groups, it was necessary to classify all wholesalers with respect to the type of operations or functions performed. Thus we find brokers, manufacturers' wholesale branches, cash-and-carry wholesalers, and full-service wholesale merchants operating in various trade groups.[1] The method of classifying radio distributors will serve to make these points clear. Every wholesale schedule was examined to see in which trade group it belonged. For example if a schedule showed $500,000 of net sales in electrical goods, over $250,000 of which was in radios, it was classified in the radio trade. If less than $250,000 were in radios and no other specialty product stood out the schedule was classified in the electrical-goods trade. Thus the electrical-

[1] See footnote 1, Table 3.

goods trade is broader than the radio trade and includes the radio business. The schedules showing specialization in the radio trade were next classified as to type of operation, some being wholesale merchants, some brokers, and other manufacturers' wholesale branches. Consequently, to get all of the radio business, it is necessary to analyze the sales of all wholesalers in all trades. This was done in Table 3. For the purpose of studying the radio wholesalers, on the other hand, only those establishments which specialized in radios were included. (See Table 4 and following tables.)

An examination of Table 3 reveals a very high degree of concentration of radio wholesaling in the electrical trade and a further concentration in the wholesale merchant type of distributor. Of the total reported sales of these commodities, 88.6 per cent were sold through wholesale establishments of all types in the electrical trade. Wholesale merchants, who accounted for 64 per cent of the radio business in all trades, handled 62.3 per cent of such business in the electrical trade.

TABLE 3.—COMMODITY SALES OF RADIO SETS, PARTS, AND ACCESSORIES (INCLUDING RADIO SETS COMBINED WITH TALKING MACHINES)

(Sales shown by trade group and type of distributor)

UNITED STATES: 1929

[Amounts in thousands of dollars]

TRADE GROUP	NET SALES BY TYPE OF DISTRIBUTOR [1]							
	All types	Wholesale merchants	Manufacturers' wholesale outlets [2]	Agents and brokers	Chain-store warehouses	Export traders	Importers	All other types
Total	$599,777	$383,664	[2] $179,913	$27,385	$7,095	$1,303	$156	$261
Electrical trade	531,539	331,063	170,605	24,436	4,531	618	83	203
Automotive trade	25,967	23,453	325	661	1,083	445	------	------
Hardware and metals trade	18,696	15,508	2,929	259	------	------	------	------
Furniture and house furnishings trade	7,286	3,557	809	1,428	1,481	9	------	2
Amusement and sporting goods trade	7,020	1,938	4,963	100	------	19	------	------
Machinery, equipment, and supplies trade	2,121	2,036	82	3	------	------	------	------
Chemicals, drugs, and allied products trade	1,555	1,544	------	------	------	11	------	------
Paper and paper products trade	1,252	1,067	185	------	------	------	------	------
General merchandise trade	1,239	760	------	234	------	186	7	52
All other trades	3,102	2,738	15	264	------	15	66	4

[1] See Bulletin, Distribution W-100, for definition of type of distributor.
[2] Includes $95,126,000 sales by district and general sales offices of manufactures.

Next in importance as an outlet for radios and equipment was the automotive trade which handled $25,967,000 worth of such commodities, $23,453,000 of which was distributed by wholesale merchants. Wholesale merchants in the hardware and metals trade were third in rank, with sales of $15,508,000 out of $18,696,000 worth of radios and equipment reported by the entire hardware and metals trade. The electrical trade, the automotive trade, and the hardware and metals trade combined accounted for 96.1 per cent of total reported commodity sales of radios and equipment. Other trades, which served as channels of distribution with reported sales in excess of $1,000,000 each, were the furniture and house furnishings trade, $7,286,000; the amusement and sporting goods trade, $7,020,000; the machinery, equipment, and supplies trade, $2,121,000; the chemicals, drugs, and allied products trade (chiefly through wholesale merchants in the drug trade), $1,555,000; the paper and paper products trade, $1,252,000; and the general merchandise trade, $1,239,000.

Second in importance to the wholesale merchants as to type of distributor were the manufacturers' wholesale branches, which handled $179,913,000, or 30 per cent of the total radio business, most of which was through establishments in the electrical trade. Agents and brokers reported sales of $27,385,000, or 4.6 per cent, and chain-store warehouses $7,095,000, which was 1.2 per cent of total sales. Of the remaining business, $1,303,000 was reported by export traders and $156,000 by importers.

As pointed out above, there is considerable duplication in the transfer of radios and equipment from manufacturer to ultimate consumer. Agents and brokers, for example, sell very largely to wholesale merchants and occasionally to chain-store warehouses. The manufacturers' wholesale branches likewise sell, in part, to wholesale merchants. Just how much is so sold by manufacturer-owned outlets, it is impossible to determine from the existing statistics. As noted in Table 3, $95,126,000 out of $179,913,000 was handled by district and general sales offices. Much of this volume, no doubt, moves to other manufacturers' wholesale branches and to wholesale merchants. Again the remaining wholesale branches of manufacturers frequently sell to other wholesale middlemen, at least in part. All that can be said with certainty is that a very large share of the sales of wholesale merchants and of chain-store warehouses passes directly to retail outlets and thence to the consumer; that practically none of the sales of agents and brokers go to retailers; and that an indeterminate amount of sales of manufacturers' wholesale outlets is passed on directly to retailers or to retail branches maintained by producers.

SPECIALTY HOUSES IN WHOLESALE RADIO TRADE

United States summary.—The foregoing sales analysis represents the distribution of radio sets and equipment by all trades or kinds of business. The following discussion is confined to wholesale distributors who specialized in the sale of radio sets, parts, and accessories to the extent of over 50 per cent of their total net sales. This group consititutes by far the larger part of the electrical trade shown in Table 3, accounting for 91.4 per cent of the sales of that group and over 81 per cent of the total volume of wholesale trade in radio sets and equipment.

In 1929 there were 794 establishments so specializing with net sales of $486,079,668. (See Table 4.) They employed 12,898 people and paid a total of $27,942,273 in salaries and wages. Total operating expenses, exclusive of net profit, amounted to $58,744,060 for the year. On December 31, 1929, these wholesale establishments maintained stocks of merchandise valued on a cost or replacement basis at $60,105,635.

TABLE 4.—GENERAL SUMMARY OF SPECIALTY HOUSES [1] IN WHOLESALE RADIO TRADE

UNITED STATES: 1929

Number of establishments	794
Net sales	$486,079,668
Total employees [2]	12,898
Total salaries and wages [2]	$27,942,273
Total expenses	$58,744,060
Stocks on hand Dec. 31, 1929	$60,105,635

[1] Specialty houses are wholesale establishments classified in the radio trade for census purposes because over 50 per cent of their business was in radio sets, parts and accessories.

[2] Includes both full-time and part-time employees and their wages. The use of part-time employees, however, is not extensive in wholesale trade.

Development of specialty houses.—Significant facts on the growth of the radio trade and particularly the specialty houses are revealed in the reports of 779 of the 794 establishments under discussion. These concerns reported the year in which they were established, as well as the year in which they came under their present (1929) ownership. (See Tables 5 and 6.)

TABLE 5.—DATE OF ESTABLISHMENT AND DATE OF PRESENT OWNERSHIP OF 779 WHOLESALE RADIO SPECIALTY HOUSES

UNITED STATES: 1929

YEAR BUSINESS WAS ESTABLISHED	Total	YEAR BUSINESS CAME UNDER PRESENT (1929) OWNERSHIP								
		Before 1900	1900–1913	1914–1919	1920–1924	1925	1926	1927	1928	1929
Total	779	16	43	75	177	54	49	72	113	180
1929	147	------	------	------	------	------	------	------	------	147
1928	91	------	------	------	------	------	------	------	89	2
1927	58	------	------	------	------	------	------	53	------	5
1926	39	------	------	------	------	------	37	1	------	1
1925	48	------	------	------	------	39	2	2	------	5
1920–1924	202	------	------	------	160	9	6	6	13	8
1914–1919	94	------	------	71	4	4	1	4	6	4
1900–1913	57	------	33	2	10	1	2	1	4	4
Before 1900	43	16	10	2	3	1	1	5	1	4

It is noteworthy that 43 of these radio specialty houses were in business before 1900 and that 16 of the 43 have continued under the same ownership since they were established. Between the years 1900 and 1913, inclusive, 57 more houses were established, of which 33 reported no changes in ownership. During the next six years 94 new establishments came into existence. *It must be noted here that these establishments could not have been radio houses originally.* Their presence in the radio specialty classification, in 1929, indicates that they must have changed from some other trade thereby adapting themselves to changing tides of consumer demand. Certainly before the World War there were very few, if any, houses specializing in radio apparatus as we know it today.[1] Between 1900 and the World War the electrical trade was becoming increasingly important and it is quite likely that this trade was the starting point for many concerns which later became radio specialty houses.

A very substantial increase in the number of new establishments was shown between 1920 and 1924, amounting to an average of over 40 per year. The pace was maintained in 1925 with 48 new establishments. A reduction in the number of new establishments is shown for 1926 followed by increases in 1927, 1928, and 1929. In fact, the gain in number of new wholesale establishments reflects roughly the increase in the volume of production of radio apparatus referred to in the first section of this bulletin. (See Table 1.)

A slightly different way of looking at these same data is presented in Table 6, which shows the length of life and the continuity of ownership of the 779 establishments reporting. *One caution must be advanced in connection with this entire*

[1] What little apparatus there was during those years was limited to wireless telegraph equipment and even that was not very highly developed.

analysis. All that is shown here is the life history of a group of establishments in existence in 1929. No information is available in the Census Bureau on the number of establishments which may have come into existence and passed out of the picture prior to 1929.

TABLE 6.—LENGTH OF LIFE AND CONTINUITY OF OWNERSHIP OF 779 ESTABLISHMENTS SPECIALIZING IN THE WHOLESALE RADIO TRADE, 1929

LENGTH OF LIFE		CONTINUITY OF OWNERSHIP	
Years established	Number of establishments	Years under same ownership	Number of establishments
Total	779	Total	779
1 year	147	1 year	180
2 years	91	2 years	113
3 years	58	3 years	72
4 years	39	4 years	49
5 years	48	5 years	54
6 to 10 years	202	6 to 10 years	177
11 to 16 years	94	11 to 16 years	75
17 to 30 years	57	17 to 30 years	43
Over 30 years	43	Over 30 years	16

Types of establishments.—The 794 establishments specializing in radio sets, parts, and accessories (including radio sets combined with talking machines) were divided into four groups composed of 641 wholesale merchants, 96 agents and brokers, 43 manufacturers' wholesale branches, and 14 miscellaneous types. (See Table 7.) The wholesale merchants, with 64.2 per cent of the total volume of business, occupied the same dominant position here which was observed before. Manufacturers' wholesale branches, next in importance, accounted for 29.5 per cent, followed by agents and brokers with 4.7 per cent of total sales volume. It is noteworthy, however, that wholesale merchants constituted 80.7 per cent of the total number of establishments as compared with but 5.4 per cent for manufacturers' wholesale branches, a fact which indicates much smaller average sales per establishment for the wholesale merchant. Again it is significant that there was a fairly close correspondence between percentages of total establishments, total employees and total salaries and wages in the cases of the wholesale merchants and of the agents and brokers. Manufacturers' wholesale branches, on the other hand, with 5.4 per cent of the establishments had 14 per cent of the employees and paid 15.4 per cent of the salaries and wages. Furthermore wholesale merchants, who had 64.2 per cent of total net sales, paid out 66.2 per cent of total expenses as contrasted with manufacturers' sales branches, which showed practically the same proportion of total net sales and total expenses. Agents and brokers showed the best position, with 4.7 per cent of total net sales and but 2.9 per cent of total expenses.

Inventory.—Wholesale merchants carried $35,320,723 worth of inventory on a cost or replacement value, as of December 31, 1929, which constituted over 58.8 per cent of total inventory for all types of distributors. Manufacturers' wholesale branches reported stocks on the same date and basis of $23,318,445, or 38.8 per cent of the total. The ratio of inventory to net sales by wholesale merchants was 1 to 8.8[1] as compared with 1 to 6.1 for manufacturers' wholesale branches and 1 to 27 for agents and brokers. The ratio for all types was 1 to 8.1.

TABLE 7.—UNITED STATES SUMMARY OF WHOLESALE RADIO SPECIALTY HOUSES: 1929

[Money values in thousands of dollars]

	Total	WHOLESALE MERCHANTS		MANUFACTURERS' WHOLESALE BRANCHES[1]		AGENTS AND BROKERS		ALL OTHER TYPES[2]	
		Amount	Per cent of total	Amount	Per cent of total	Amount	Per cent of total	Amount	Per cent of total
Net sales	$486,080	$312,188	64.22	$143,228	29.47	$22,896	4.71	$7,768	1.60
Number of establishments	794	641	80.73	43	5.42	96	12.09	14	1.76
Total employees	12,898	10,313	79.96	1,807	14.01	546	4.23	232	1.80
Total salaries and wages	$27,942	$22,125	79.18	$4,310	15.42	$1,170	4.19	$337	1.21
Total expenses	$74,902	$49,618	66.24	$22,390	29.89	$2,156	2.88	$738	.99
Stocks on hand, Dec. 31, 1929	$60,106	$35,321	58.76	$23,318	38.80	$848	1.41	$619	1.03

[1] The manufacturers' wholesale branches included here are those that specialize in selling radios and equipment. A number of the leading manufacturers in the electrical field, who operate wholesale sales branches and sell radios, are not included here since their principal business is not in radios. Their radio sales are included in Table 3 under manufacturers' wholesale outlets in the electrical trade.

[2] Includes 4 chain store warehouses with net sales of $5,852,197; 3 export merchants, with net sales of $462,000; 1 cash and carry wholesaler; 1 drop shipper; 1 importer; 1 export commission house; 1 purchasing agent; 1 wagon distributor; and 1 auction company.

SALES ANALYSIS

Returned goods and allowances.—The gross sales of wholesale radio specialty houses, amounting to $503,921,996 are broken down into net sales and returned goods and allowances. (See Table 8.) Goods returned by customers for one reason or another and allowances made to customers amounted to $17,842,328, which was 3.7 per cent of net sales. For wholesale merchants the figure was $14,624,252, or 4.7 per cent of their net sales, while manufacturers' wholesale branches showed $2,681,286, or 1.9 per cent of their net sales. Agents and brokers reported returned goods and allowances of $519,308, or 2.3 per cent of their own net sales. In explanation of these differences, it may be pointed out that agents and brokers do not normally handle the merchandise they sell, hence returned goods and allowances, should be a small item for them. Manufacturers' wholesale outlets, on the other hand, might be expected to show a much higher percentage than they did. In fact if the operations of the manufacturers' general and district sales offices which operate more like agents and brokers than wholesale merchants be excluded, the ratio for the lesser wholesale outlets of manufacturers, classified by the census as manufacturers' sales branches, rises to 5.6 per cent of their own net sales.

[1] This figure must not be confused with stock turn, which can not be computed from census figures, due to lack of information on net profits. Computation of stock turn requires that inventory and sales figures be on the same basis, either cost or selling price. Census figures for inventory are on a cost basis which is not comparable with net sales figures. Lack of net profit information and, hence, of gross margins prevents the conversion of sales and inventory figures to the same basis. Furthermore, stock-turn computation should use average inventory figures which are lacking here. However, the figures indicate a high rate of stock turn for agents and brokers, and a lower rate for wholesale merchants and manufacturers' wholesale branches.

TABLE 8.—SALES ANALYSIS OF WHOLESALE RADIO SPECIALTY HOUSES BY TYPE OF DISTRIBUTOR, UNITED STATES: 1929

[Money values in thousands of dollars]

SALES ANALYSIS	Total	WHOLESALE MERCHANTS		MANUFACTURERS' WHOLESALE BRANCHES		AGENTS AND BROKERS		ALL OTHER TYPES	
		Amount	Per cent of net sales	Amount	Per cent of net sales	Amount	Per cent of net sales	Amount	Per cent of net sales
Number of establishments	794	641	-------	43	-------	96	-------	14	-------
Gross sales	$503, 922	$326, 812	104. 68	$145, 909	101. 87	$23, 415	102. 27	$7, 786	100. 23
Returned goods and allowances	$17, 842	$14, 624	4. 68	$2, 681	1. 87	$519	2. 27	$18	. 23
Net sales	$486, 080	$312, 188	100. 00	$143, 228	100. 00	$22, 896	100. 00	$7, 768	100. 00
Credit sales	$411, 305	$253, 226	81. 11	$137, 972	96. 33	$16, 909	73. 85	$3, 198	41. 17
Sales to home consumers	$2, 380	$2, 194	. 70	$127	. 09	$24	. 10	$35	. 45
Sales to industrial consumers	$18, 171	$14, 778	4. 73	$555	. 39	$2, 838	12. 40	---------	-------
Goods manufactured	$825	$668	. 21	---------	-------	---------	-------	$157	2. 02

Credit sales.—Credit terms were extended by all types of wholesale middlemen to the extent of $411,305,494, which constituted 84.6 per cent of total net sales. Manufacturers' wholesale branches reported the highest ratio of credit to net sales, 96.33 per cent. Wholesale merchants, with 81.11 per cent, were next in rank. These figures indicate the large extent to which wholesale distributing agencies in the radio trade assumed the function of financing the distribution of merchandise to the retailer. It is further noteworthy that this same tendency existed in the next step, namely, between manufacturer and wholesaler. This fact is brought out by the credit sales of agents and brokers, which amounted to 73.85 per cent of their net sales.

Sales to consumers.—A further analysis of net sales on the basis of types of consumers is shown in Table 8. Sales to the extent of $2,379,632, or less than half of 1 per cent of total net sales, were made to home consumers, the major part of which was reported by wholesale merchants. This gives some evidence of the semijobbing business or the overlapping of wholesaling and retailing in the radio trade, but affords an incomplete picture due to the omission of sales by establishments which are primarily retail stores, but which also engage in wholesaling. Manufacturers' sales branches reported sales to home consumers amounting to $127,084, and nominal amounts were indicated by agents and brokers.

Sales to industrial consumers amounted to $18,171,185, or 3.7 per cent of total net sales. Wholesale merchants accounted for 81.3 per cent of this business, the remainder being divided between agents and brokers, with sales of $2,838,050, and manufacturers' wholesale branches with sales of $554,684. Wholesale merchants reported goods manufactured on the premises to the value of $668,170. These very likely consisted largely of the assembly of radio sets from purchased parts.

Commodity sales by wholesale radio specialty houses.—The sales of radio specialty houses are not confined to radio sets, parts, and accessories (including radio sets combined with talking machines), although other sales consitute but a small part of the total. In addition to radios and equipment, sales approximating $31,000,000 were reported in other items. Electrical goods constituted

$10,469,734, or over one-third of this total, showing the close relation existing between radio specialty houses and the broader electrical group. The sale of musical instruments to the value of $9,266,844 is an indication of the utilization of such sales channels as formerly handled talking machines, as well as an illustration of adjustments on the part of wholesalers to changing consumer demand and, perhaps, also of shifts by producers from musical instruments to radios. The addition of radios to their original line of products by manufacturers of automotive equipment, accessories, and furniture may explain the combination of sales of radios with such items. (See Table 9.)

TABLE 9.—COMMODITY SALES OF WHOLESALE RADIO SPECIALTY HOUSES BY TYPE OF DISTRIBUTOR, UNITED STATES: 1929

[Money values in thousands of dollars]

COMMODITY	Total	WHOLESALE MERCHANTS		MANUFACTURERS' WHOLESALE BRANCHES		AGENTS AND BROKERS		ALL OTHER TYPES	
		Amount	Per cent of commodity sales	Amount	Per cent of commodity sales	Amount	Per cent of commodity sales	Amount	Per cent of commodity sales
Net sales	$486,080	$312,188		$143,228		$22,896		$7,708	
Per cent of commodity coverage	98.34	98.80		99.16		100.00		59.73	
Reported commodity sales	$478,010	$308,448	100.00	$142,026	100.00	$22,896	100.00	$4,640	100.00
Radio sets, parts and accessories	446,590	283,183	91.81	138,185	97.29	20,713	90.47	4,509	97.17
Automotive equipment and parts	3,000	2,932	.95			67	.29	1	.02
Automobile accessories	2,067	1,684	.55	151	.11	227	.99	5	.11
Electrical goods	10,470	6,883	2.23	2,833	2.00	695	3.03	59	1.27
Furniture	137	137	.04						
Musical instruments	9,267	9,226	2.99			7	.03	34	.73
Sporting goods	1,189	400	.13	783	.55	6	.03		
All other commodities	5,290	4,003	1.30	74	.05	1,181	5.16	32	.70

With the exception of sporting goods, the major portion of which was reported by manufacturers' wholesale branches, wholesale merchants accounted for the bulk of the non-radio-commodity business. Manufacturers' wholesale branches, however, reported a substantial volume of electrical goods sales.

THE LOCATION OF THE WHOLESALE MARKET

The wholesale radio specialty trade offers no exception to the fact revealed by the United States Summary of Wholesale Trade (see Bulletin, Distribution, W–101) that there is a high degree of geographical concentration in wholesale marketing. The six leading States accounted for nearly 70 per cent of the entire volume of wholesale radio trade. Over half of the total volume of business was reported by the four following cities, which are ranked in order of importance: New York; Chicago; Newark, N. J.; and San Francisco. New York city alone reported nearly one-third of the total volume of this business. Table 10 shows the geographical distribution of the radio trade in such a way that the relative value of each market may be easily determined.

The inclusion of the percentages of families owning radio sets, together with total per capita retail sales in this table, affords a basis for comparison of relative saturation of the radio market. These facts make possible the establishment of market quotas on a more satisfactory basis than has hitherto been available. It is a significant market fact that there is a fairly high degree of correlation apparent between the percentages of families having radio sets and per capita sales at retail.[1] The per cent of wholesale sales by radio specialty houses was also high in the States of New York, Illinois, Pennsylvania, New Jersey, California, Missouri, and Michigan, all of which showed high per capita retail sales and high percentages of families with radios. However, this indication of correlation between percentage of wholesale coverage and the other two variable factors was not borne out for all States.[2] Delaware, for example, was above the average in per cent of families having radio sets and in per capita sales at retail, but accounted for only a very small percentage of wholesale sales. Proximity to large wholesale centers in other States no doubt explains this case. In other States, however, such a situation may have been due to a failure to develop the wholesale radio business of the State and may, therefore, serve as a clue to a promising market for the wholesale distributor.

TABLE 10.—LOCATION OF WHOLESALE RADIO SPECIALTY HOUSES, UNITED STATES, BY STATES: 1929

[*An* (x) *indicates that the amount must be withheld to avoid disclosure of individual operations, but it is included in the total*]

AREA	Number of establishments	NET SALES		Per cent of families having radio sets: 1930	Total per capita sales at retail: 1929
		Amount	Per cent of total		
United States	794	$486,079,668	100.0	40.3	$408
Alabama	4	589,247	0.12	9.5	198
Arizona	1	(x)	(x)	18.1	442
Arkansas	3	539,244	0.11	9.2	222
California	66	34,619,062	7.12	51.9	576
Colorado	12	4,138,213	0.85	37.8	481
Connecticut	15	5,999,804	1.23	54.9	476
Delaware	1	(x)	(x)	45.8	416
District of Columbia	10	1,965,425	0.40	53.9	682
Florida	11	2,282,722	0.47	15.5	339
Georgia	9	6,510,782	1.34	9.9	212
Idaho				30.3	381
Illinois	66	48,370,946	9.95	55.6	483
Indiana	18	6,321,199	1.30	41.6	380
Iowa	14	4,586,447	0.94	48.6	395
Kansas	6	1,673,580	.34	38.8	425
Kentucky	7	1,896,163	.39	18.3	226
Louisiana	4	634,797	.13	11.2	224
Maine	3	804,630	.17	39.2	389
Maryland	13	7,203,735	1.48	42.9	376
Massachusetts	27	15,594,412	3.21	57.6	484
Michigan	32	16,475,236	3.39	50.6	462
Minnesota	13	6,005,909	1.24	47.3	418
Mississippi	2	(x)	(x)	5.4	206
Missouri	34	18,681,658	3.84	37.4	411
Montana	5	684,482	.14	32.0	447
Nebraska	5	2,563,352	.53	47.8	435
Nevada	1	(x)	(x)	30.6	550
New Hampshire	2	(x)	(x)	44.4	390
New Jersey	23	22,135,341	4.55	63.3	458
New Mexico				11.5	280

[1] A correlation coefficient of 0.79 was found to exist between retail sales per capita and percentages of families having radio sets. The rank difference method was used. (A correlation coefficient may range from 0 to +1 or —1. The nearer the coefficient approaches +1 (or —1 the greater the degree of correlation indicated. The coefficient 0.79 therefore points to a high degree of correlation.)

[2] The coefficient of correlation between wholesale sales and per capita retail sales was found to be 0.34, while that between wholesale sales and percentage of families having radio sets was 0.53, both too low to indicate very much correlation between the respective series of variables although the latter indicates more than the former.

TABLE 10.—LOCATION OF WHOLESALE RADIO SPECIALTY HOUSES, UNITED STATES, BY STATES: 1929—Continued

[*An (x) indicates that the amount must be withheld to avoid disclosure of individual operations, but it is included in the total*]

AREA	Number of establishments	NET SALES Amount	NET SALES Per cent of total	Per cent of families having radio sets: 1930	Total per capita sales at retail: 1929
New York	144	$172,718,817	35.53	57.8	$575
North Carolina	6	3,065,784	.63	11.2	235
North Dakota				40.8	342
Ohio	54	26,024,669	5.35	47.7	460
Oklahoma	4	4,726,000	.97	21.6	331
Oregon	6	1,515,231	.31	43.4	483
Pennsylvania	70	34,810,243	7.16	48.1	419
Rhode Island	7	998,026	.21	57.0	460
South Carolina	3	435,696	.09	7.6	172
South Dakota	5	1,243,364	.26	44.2	378
Tennessee	10	3,514,032	.72	14.3	248
Texas	18	7,753,918	1.60	18.6	350
Utah	7	2,348,760	.48	41.1	394
Vermont				44.6	423
Virginia	10	1,041,979	.21	18.2	240
Washington	15	3,600,607	.74	42.3	405
West Virginia	8	2,595,124	.53	23.3	250
Wisconsin	20	8,396,215	1.73	51.1	420
Wyoming				34.0	450

Extent of the sales territory.—Additional light is thrown on the wholesale radio market by an analysis of the extent of the sales territory covered regularly by wholesale establishments. For the United States as a whole 39.5 per cent of the sales of *wholesale merchants* was handled by 311 distributors, who operated in a territory of 75-mile radius[1] or less. (See Table 16.) Over 17 per cent of the business was reported by establishments which regularly covered a territory with radius of between 76 and 150 miles in length. Over 18 per cent more came from houses with sales radius of 151 to 250 miles and another 17 per cent from houses that extended their activities over a radius of between 251 and 500 miles in length. About 4 per cent of the total was reported by businesses which covered a sales territory of more than 500 miles radius, but less than nation wide and only 2.7 per cent was reported by concerns with national distribution.[2]

The extent of the sales territory for 20 strategic wholesale centers of the United States for *all types of establishments* is shown in Table 11. The combined volume of business for these cities was $381,454,801, or 78.48 per cent of the total for the United States. Their strategic locations, together with the large proportion of total sales, make this analysis very significant for the student of sales areas and the manufacturer or merchant who is planning a sales campaign or outlining a budget.

New York City is revealed as a center for national distribution of radios by the fact that 65 per cent of its sales were reported by establishments operating nation wide. This is a particularly significant market fact in view of the important place New York occupies, with 32.68 per cent of the total radio specialty trade. It means that over 21 per cent of the total volume of wholesale radio specialty business in the United States was handled by houses reporting national coverage from New York City. Chicago was the only additional city indicating national distribution with 11.72 per cent of its total sales reported by firms

[1] The sales territory radius does not mean that the sales territory is circular in character. It may constitute a segment of a circle as in the case of a seacoast city.

[2] The length of the sales territory radius indicates how far from the home city trade is sought. It does not mean that trade is not secured locally and at all points within the radius.

selling on a nation-wide basis. (See also Tables 18 and 19.) No doubt some additional national distribution took place which was not reported separately.

At the other extreme from national distribution lies what is commonly known as local distribution, by which is meant here a sales territory radius of 75 miles or less. Only three cities—Baltimore, Detroit, and Philadelphia—indicated 50 per cent or more of their business to lie in such a local territory. Pittsburgh reported over 50 per cent of its business in the next size sales territory, radius of between 76 and 150 miles. However, Buffalo, Cleveland, Seattle, and St. Louis each had over one-third of their business in territories with the same radius.

Boston, Milwaukee, and Los Angeles reported over half of their total volume in a sales territory with radius of between 151 and 250 miles and Buffalo reports showed 48.5 per cent of sales in that size territory. Denver extended its marketing activities over a territory with radius of between 251 and 500 miles for over 76 per cent of its radio business. New Orleans reported 62 per cent, Minneapolis over 60 per cent, and Dallas and Newark over 50 per cent each, in an equally large sales area. San Francisco had an even larger sales territory, over 500-mile radius but not nation wide, for 52.6 per cent of its wholesale radio sales. Atlanta, Ga., likewise indicated a large proportion, 49 per cent of its total, in a sales territory of equal proportions. These facts should prove to be of real significance to the wholesale middleman in establishing the best size sales territory especially when used in conjunction with the information shown in Table 16. They are perhaps equally valuable to the manufacturer who would work out a scientific distribution plan.

TABLE 11.—THE MARKET RADIUS FOR 20 STRATEGIC CITIES, WHOLESALE RADIO SPECIALTY TRADE: 1929 [1]

CITY	NET SALES		PER CENT OF NET SALES BY SALES TERRITORY RADIUS [2]						
	Amount	Per cent of total	75-mile radius or less	76 to 150 mile radius	151 to 250 mile radius	251 to 500 mile radius	Over 500-mile radius, but not national	Nation-wide	All other
United States total	$486,079,668	100.0	------	------	------	------	------	------	------
Total of 20 cities	381,454,801	78.48	------	------	------	------	------	------	------
New York, N. Y	158,833,817	32.68	23.40	2.23	4.68	3.34	0.02	65.01	1.32
Chicago, Ill	45,763,217	9.41	20.44	18.72	3.35	18.07	25.90	11.72	1.80
Newark, N. J	20,866,303	4.29	45.31	3.21	1.22	50.26	------	------	------
San Francisco, Calif	17,952,031	3.69	5.81	7.43	------	34.14	52.62	------	------
Philadelphia, Pa	16,675,868	3.43	50.96	18.44	24.64	5.96	------	------	------
Boston, Mass	15,159,364	3.12	35.96	12.72	51.32	------	------	------	------
Los Angeles, Calif	14,145,534	2.91	1.86	11.64	66.56	17.63	2.31	------	------
Cleveland, Ohio	12,576,242	2.59	44.48	38.46	12.84	4.22	------	------	------
Pittsburgh, Pa	11,665,857	2.40	22.12	54.25	22.83	------	------	------	.80
Detroit, Mich	11,285,352	2.32	65.53	10.62	1.43	22.42	------	------	------
St. Louis, Mo	10,172,210	2.09	16.48	38.09	28.58	2.30	14.55	------	------
Milwaukee, Wis	7,765,766	1.60	5.87	16.29	73.79	4.05	------	------	------
Baltimore, Md	7,203,735	1.48	64.97	4.24	14.70	13.59	2.50	------	------
Atlanta, Ga	6,510,782	1.34	.49	------	26.13	24.23	49.15	------	------
Buffalo, N. Y	6,429,136	1.32	17.26	34.24	48.50	------	------	------	------
Minneapolis, Minn	5,821,798	1.20	7.28	------	16.66	60.48	15.58	------	------
Dallas, Tex	5,005,184	1.03	1.20	------	26.27	50.64	21.89	------	------
Denver, Colo	4,138,213	.85	------	------	12.09	76.15	11.76	------	------
Seattle, Wash	2,850,595	.59	15.90	47.41	29.66	7.03	------	------	------
New Orleans, La	634,797	.14	12.60	------	------	62.15	25.25	------	------

[1] These cities were selected as representative of the different sections of the country and not entirely because of their size. A few other cities have more wholesale radio trade than some of the cities included.

[2] The length of the sales territory radius indicates how far from the home city trade is sought. It does not mean that trade is not secured locally as well and at all points within the radius. Neither does it mean that the sales territory is circular in character. It may constitute only a segment of a circle, as in the case of a seacoast city.

OPERATING EXPENSES

The nature of the statistics.—The total expense figures used by the wholesale division of the Census of Distribution comprise five elements:

1. Salaries and wages paid.
2. Expenses of salesmen paid.
3. Rent paid.
4. Interest paid.
5. All other expenses paid during the year.

The first group is further subdivided into salaries and wages of salesmen, of executives, and of all other employees. In securing information for each of the five items, the enumerators were instructed to get only the actual money outlays for the items included, hence rent was not supposed to be reported for owned premises, nor interest on owned capital. *The "all other expense" item does not include net profits nor cost of the merchandise sold.* Such items as taxes; insurance; administrative; office and overhead expense; maintenance; delivery; stationery and supplies; light, heat, and power were supposed to be included. The following quotation from the printed instructions to the field force is of interest:

A practical method of determining the amount of "All other expenses" is to take the total operating expenses, which most firms have at hand, and deduct from this the sum of all expense items specifically provided for in the schedule—wages, salaries, commissions, bonuses, expenses of salesmen; rent; and interest. Sometimes it may be necessary to estimate the total operating expense by a building-up process and then deduct from it the sum of all items of expense listed separately in order to obtain all other expenses.

Considerable confidence may be placed in the figures for total expenses. The value of an adequate accounting system has been so impressed upon the wholesaler by trade associations, bureaus of business research, and income tax requirements that the census field force faced a much better group for the gathering of wholesale trade statistics than was possible in many other trades. While it is true of course that uniform accounting systems are not generally used, there is little fundamental difference in bookkeeping practice with respect to the few items required by the Census. Moreover, since the entire field has been covered, minor discrepancies tend to offset each other through the operation of the law of averages. In the case of total salaries and wages and in the case of salesmen's salaries and wages and expenses of salesmen, it is felt that the figures are particularly satisfactory. Wholesalers watch these items much more closely as a general rule than do most merchants and constantly use the ratios of expenses to sales as checks upon the efficiency of their employees.

The costs of wholesaling in the radio trade for all types of wholesale houses was 15.41 per cent of net sales. (See Table 12.) Salaries and wages took 5.75 per cent of net sales divided between 837 executives who received 1.11 per cent; 3,846 salesmen who were paid 2.08 per cent; and 8,215 other employees whose salaries and wages took an additional 2.55 per cent of net sales. Selling expense proper constituted 2.69 per cent of net sales, of which 2.08 per cent was for salesmen's salaries and 0.61 per cent was expense of salesmen. Rent for all establishments amounted to 0.60 per cent of net sales. The rent figure, however, needs modification because of the inclusion of 52 establishments which reported no rent, probably because they occupied their own premises. If they are excluded, rent becomes 0.63 per cent of net sales for those establishments which reported rent. All other expenses, which include interest paid out and such items as taxes, insurance, general administrative, office and other overhead expenses, maintenance, delivery, stationery and supplies, light, heat, power, and all other items of expense, except costs of goods sold, amounted to 8.44 per cent of net sales.

TABLE 12.—EXPENSE ANALYSIS OF WHOLESALE RADIO SPECIALTY HOUSES, BY TYPES OF DISTRIBUTOR—UNITED STATES: 1929

EXPENSE ITEMS	Total	Wholesale merchants [1]	Manufacturers' wholesale branches [2]	*Agents and brokers* [3]	*All other types*
Number of establishments	794	641	43	96	14
Net sales	$486, 070, 668	$312, 188, 040	$143, 227, 687	$22, 895, 795	$7, 768, 146
Total expenses	$74, 902, 363	$49, 617, 569	$22, 390, 012	$2, 156, 448	$738, 384
Per cent of net sales	15. 41	15. 89	15. 63	9. 42	9. 50
Salaries and wages, total [4]	$27, 942, 273	$22, 124, 976	$4, 309, 653	$1, 170, 321	$337, 323
Per cent of net sales	5. 75	7. 09	3. 01	5. 11	4. 34
Executives, number	837	720	71	41	5
Executives, salaries	$5, 411, 808	$4, 419, 741	$638, 247	$327, 220	$26, 600
Per cent of net sales	1. 11	1. 42	0. 45	1. 43	0. 34
Salesmen, number [4]	3, 846	3, 197	428	209	12
Salesmen, wages	$10, 131, 715	$8, 232, 371	$1, 429, 862	$449, 940	$19, 542
Per cent of net sales	2. 08	2. 64	1. 00	1. 96	0. 25
All other employees, number [4]	8, 215	6, 396	1, 308	296	215
All other employees, wages	$12, 398, 750	$9, 472, 864	$2, 241, 544	$393, 161	$291, 181
Per cent of net sales	2. 55	3. 03	1. 57	1. 72	3. 75
Expense of salesmen	$2, 986, 272	$2, 164, 067	$682, 647	$131, 193	$8, 365
Per cent of net sales	0. 61	0. 69	0. 48	0. 57	0. 11
Rent	$2, 929, 312	$2, 275, 884	$479, 505	$138, 201	$35, 722
Per cent of net sales	0. 60	0. 73	0. 33	0. 60	0. 46
All other expenses	$41, 044, 506	$23, 052, 642	$16, 918, 207	$716, 733	$356, 924
Per cent of net sales	8. 44	7. 38	11. 81	3. 13	4. 59

[1] 42 establishments in the wholesale merchant group, with net sales of $15,837,784 and total expenses of $2,633,725, reported no rent paid.
[2] 5 establishments in the manufacturers' sales branch group, with net sales of $7,455,858 and total expenses of $655,177, reported no rent paid.
[3] 5 establishments in the agents and brokers group, with net sales of $1,388,465 and total expenses of $92,037, reported no rent paid.
[4] Includes both full-time and part-time employees and their wages. The use of part-time employees, however, is not extensive in wholesale trade.

Comparison of wholesale merchants and manufacturers' wholesale outlets.—Wholesale merchants and manufacturers' wholesale branches showed very similar total operating costs, 15.9 per cent and 15.6 per cent of net sales, respectively. The individual cost items, however, did not correspond so closely. Wholesale merchants expended over twice as great a percentage of sales on salaries as did manufacturers' wholesale branches. In the first place a much larger proportion of net sales was paid to executives and to salesmen by the wholesale merchants, 1.42 per cent and 2.64 per cent, respectively, as compared with 0.45 per cent and 1 per cent for manufacturers' wholesale branches. The same difference was present for salaries and wages of all other employees, namely, 1.57 per cent as compared with 3.03 per cent. Expenses of salesmen and rent were likewise much higher for wholesale merchants. Only in the case of miscellaneous expenses did the manufacturers' wholesale branches show higher cost ratios than wholesale merchants, 11.81 per cent of net sales as contrasted with 7.38 per cent.

In partial explanation of these differences, it is necessary to call attention to the lack of homogeneity in the manufacturers' wholesale outlet group. As pointed out before, this group includes general sales offices, district sales offices and manufacturers' wholesale branches. In some cases these establishments paralleled those of wholesale merchants, warehouses being maintained and an extensive sales force employed. In other cases only offices were maintained from which one or more sales representatives worked. With these limitations in mind, the comparison of manufacturers' wholesale branches with wholesale merchant may be made with less danger of misunderstanding.

The statistics raise an interesting question regarding the division of functions between independent wholesalers and manufacturer-controlled outlets. It is commonly assumed that the latter are established for the purpose of giving more attention to selling the producer's own goods than can be obtained from the wholesaler. From the statistics here presented it appears that, in order to perform the selling function, other functions had to be taken over to such an extent that costs of such functions exceeded the direct selling expense to a greater degree than was true of the independent wholesaler and this in spite of the fact that some of the manufacturers' branches were merely sales offices with low costs.

A comparison on the basis of sales per dollar of selling expense throws additional light upon this problem. Manufacturers' wholesale branches showed $33.23 sales per dollar of total salaries and wages as compared with $14.11 for wholesale merchants. If the comparison be made on the basis of sales per dollar of salesmen's salaries, the figures are $100.17 for manufacturers' branches and $37.92 for wholesalers. If salaries and wages of salesmen be combined with expenses of salesmen, the manufacturers still showed the best figure, $67.80 sales per dollar of salesmen's cost as against $30.03 for wholesalers. These figures indicate clearly much lower selling costs on the part of the manufacturer-owned outlets, due in part, no doubt, to the fact above mentioned that some of these establishments sold to other wholesalers much after the manner of brokers, that is, with fairly large volume orders. This advantage was reduced somewhat when expenses not tied up so closely with direct sales effort are considered. For "All other expenses" the wholesale merchant came to the front with $13.54 sales per dollar of expenses in contrast with $8.47 for manufacturers' wholesale branches.

It would seem from these comparisons that these two types of wholesale outlets have considerable to learn from each other. *In so far as they perform the same functions and are comparable,* it may be concluded that wholesalers should be able to reduce their selling costs and that manufacturers should be able to cut the costs not so directly connected with selling. *On the other hand, it may be that the manufacturers are offering larger services in some directions.* It has already been noted that manufacturers' sales branches reported a large proportion of credit sales, and carried larger inventories on the average than did the wholesalers. Both of these services involved costs which are not strictly selling expenses. To the extent that different functions are performed the two groups are, of course, not strictly comparable. Additional light is thrown upon this problem by the analysis which follows of operating costs of manufacturers' wholesale branches, agents and brokers, and wholesale merchants by size of establishment.

OPERATING EXPENSES BY SIZE OF ESTABLISHMENT

Manufacturers' wholesale branches by size of establishment.—Before attempting an analysis by size of establishment of the operating costs of the 43 manufacturers' wholesale branches, it should be pointed out that there are definite limitations upon the use of too great detail for such a small group. On the other hand, the smallness of the group should not be confused with a small statistical sample. As stated above, every effort was made by the wholesale census personnel to secure complete coverage of all wholesale establishments in the United States. It is believed that the coverage, while probably not 100 per cent, constitutes as nearly complete a record as it is normally possible to assemble. Such being the assumption, it follows that the statistical picture no doubt represents a very close approximation to the truth. If there are but two or three establishments in a group, statistics for that group can not be legitimately criticized on the grounds that the small number of cases is not representative. On the contrary, they represent the situation as it actually existed. Nevertheless, particular care was taken to include only those establishments which clearly belonged in a group, and it is safe to say that there are few cases in the following analysis where statistics for a single establishment unduly influence the results.

TABLE 13.—MANUFACTURERS' WHOLESALE BRANCHES BY SIZE OF ESTABLISHMENT, RADIO SPECIALTY TRADE, UNITED STATES: 1929

SIZE OF ESTABLISHMENT BY NET SALES GROUPS	Number of establishments	NET SALES Amount	NET SALES Per cent of total	TOTAL EXPENSES Amount	TOTAL EXPENSES Per cent of net sales	Total salaries, per cent of net sales	Cost of salesmen, per cent of net sales [1]	All other expenses, per cent of net sales [2]	Stocks on hand, per cent of net sales
Total	43	$143,227,687	100.0	$22,390,012	15.6	3.0	1.5	12.1	16.2
Less than $99,999	8	375,396	0.3	111,369	29.7	11.2	9.8	16.7	57.9
$100,000 to $299,999	7	1,370,113	1.0	224,088	16.4	9.6	3.2	5.7	10.3
$300,000 to $499,999	4	1,651,440	1.2	174,214	10.5	7.9	5.3	2.3	8.0
$500,000 to $999,999	5	3,267,384	2.3	422,464	12.9	4.8	4.3	7.2	20.1
$1,000,000 and over	19	136,563,354	95.2	21,457,877	15.7	2.8	1.4	12.4	16.2

[1] Includes salaries, wages, commissions and expenses of salesmen.
[2] Includes rent paid out, interest paid out, and miscellaneous expenses such as taxes, insurance, office supplies, delivery, freight, etc.

The refined analysis of operating costs by size of establishment for manufacturers' wholesale branches brings out some interesting facts. (See Table 13.) The smaller businesses, those with sales below $100,000 per year, had the highest costs. Concerns with net sales between $300,000 and $499,999 showed the lowest ratio of total expenses to net sales, 10.5 per cent. Large-scale operations do not appear to contribute to efficiency in operating manufacturers' wholesale branches. On the contrary, the larger concerns showed rising costs, those in the $500,000 to $999,999 group having costs slightly under 13 per cent and those with sales in excess of $1,000,000 reporting costs of 15.7 per cent of net sales. Since the largest establishments accounted for over 95 per cent of the total volume of business of manufacturers' wholesale branches, their preponderance had the effect of strongly influencing the average cost for the group, which was 15.6 per cent or 0.1 per cent below the ratio for the large-scale group.

Another interesting fact is that the group with the lowest ratio of expenses to sales also showed the best inventory position. The per cent of stocks on hand to net sales was lowest for the $300,000 to $499,999 group, with a figure of 8 per cent. While not conclusive because of the limitations previously mentioned (see footnote, p. 12), this indicates a potentially higher stock turnover in this group. There is little correlation between stocks and costs, however, for any other save the high-cost group which also has very large inventory.

The ratio of total salaries and wages, as well as that of cost of salesmen to net sales, was lowest for branches with sales in excess of $1,000,000 per year. These very low costs, however, were offset in the larger group by "All other expenses" which are much higher. Here again is further evidence that manufacturers find it necessary to perform additional services whenever they attempt to expand their volume of direct sales through their own wholesale outlets.

Agents and brokers by size of establishment.—Total operating costs for the 96 agents and brokers specializing in the sale of radios and parts were considerably lower than for wholesale merchants or for manufacturers' wholesale branches, which was to be expected, since agents and brokers are known to concentrate upon the selling function. However, their figure of 9.4 per cent of net sales was high for typical brokers. The explanation may lie in the fact that since these agents and brokers reported stocks on hand they no doubt performed some of the physical handling functions, which would tend to make their costs higher. Another factor is the extension of credit. Credit sales to the amount of nearly seventeên million dollars out of total sales of $22,895,795 certainly tended to add to the cost of doing business.

The cost analysis for agents and brokers by size of establishment reveals the same fact brought out in the case of manufacturers' wholesale branches, namely, that the largest scale of operations did not show the lowest cost. (See Table 14.) Houses with sales between $400,000 and $499,999 showed decidedly lower costs than any other group. It is particularly significant that these low-cost concerns had the lowest figures not only for total expenses, but for every other item of expense reported. Contrary to the manufacturers' wholesale outlet findings, the low-cost group here accounted for a larger share of the total volume of sales than any but the very largest group. The costs for the large-scale houses were higher than the average and nearly two and a half times as great as those of the low-cost group.

Table 14.—Agents and Brokers, by Size of Establishment, Radio Specialty Trade, United States: 1929

	Number of establishments	Net sales		Total expenses		Total salaries, per cent of net sales	Cost of salesmen, per cent of net sales[1]	All other expenses, per cent of net sales[2]
		Amount	Per cent of total	Amount	Per cent of net sales			
Total	96	$22,895,795	100.0	$2,156,448	9.4	5.1	2.5	3.7
Less than $50,000	23	594,717	2.6	125,524	21.1	10.8	8.9	8.4
$50,000 to $99,999	18	1,367,224	5.9	119,602	8.7	2.9	1.6	5.3
$100,000 to $199,999	18	2,576,553	11.3	180,221	7.0	3.4	2.3	2.9
$200,000 to $299,999	12	2,920,416	12.8	197,506	6.8	4.2	2.1	2.3
$300,000 to $399,999	5	1,786,220	7.8	293,436	16.4	9.4	3.3	6.9
$400,000 to $499,999	7	3,101,539	13.5	132,142	4.3	2.7	1.2	1.1
$500,000 and over	13	10,549,126	46.1	1,108,017	10.5	5.8	2.7	4.1

[1] Includes salaries, wages, commissions plus expenses of salesmen.
[2] Includes rent paid out, interest paid out, and miscellaneous expenses such as taxes, insurance, office supplies, delivery, freight, etc.

Wholesale merchants by size of establishment.—In the wholesale-merchant group, the same tendency noted in the two preceeding groups is present. Over half of the sales are in the hands of less than 13 per cent of the number of dealers. At the opposite extreme, nearly 43 per cent of the establishments sell less than 8 per cent of the merchandise. (See Fig. 2.) To those who are accustomed to think of wholesale trade as large-scale business, it will come as a surprise to learn that there were 82 radio establishments with sales of less than $50,000 per year and 167 with sales of less than $100,000 per year.

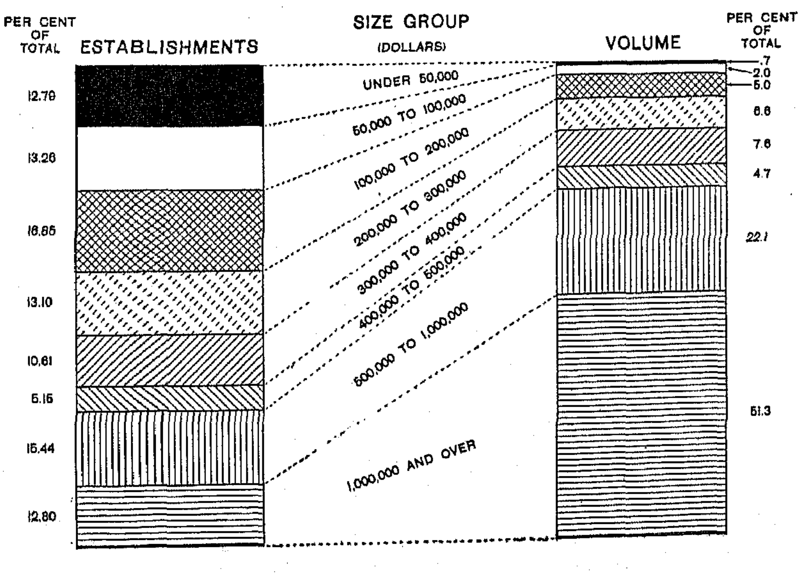
TABLE 15.—WHOLESALE MERCHANTS, BY SIZE OF ESTABLISHMENTS, RADIO SPECIALTY TRADE, UNITED STATES: 1929

SIZE OF ESTABLISHMENT BY NET SALES GROUP	Number of establishments[1]	NET SALES		TOTAL EXPENSES		Total salaries, per cent of net *sales*	Cost of salesmen, per cent of net *sales*[2]	All other expenses, per cent of net *sales*[3]	Stocks on hand, per cent of net *sales*
		Amount	Per cent of total *sales*	Amount	Per cent of net *sales*				
Total	641	$312,188,040	100.0	$49,617,569	15.9	7.1	3.3	8.1	11.3
Under $50,000	82	2,185,951	0.7	583,694	26.7	14.3	5.5	11.7	25.1
$50,000 to $99,999	85	6,228,538	2.0	1,312,860	21.1	10.1	5.1	9.8	16.0
$100,000 to $199,999	108	15,639,004	5.0	3,178,638	20.3	9.3	4.6	10.1	13.1
$200,000 to $299,999	84	20,380,932	6.5	4,226,704	20.7	9.8	4.1	10.1	13.0
$300,000 to $399,999	68	23,742,013	7.6	3,874,882	16.3	7.9	4.3	7.4	9.8
$400,000 to $499,999	33	14,712,924	4.7	2,699,727	18.4	8.8	3.9	8.7	9.9
$500,000 to $999,999	99	69,043,636	22.1	11,183,130	16.2	7.5	3.7	7.9	8.2
$1,000,000 and over	82	160,255,042	51.4	22,557,934	14.1	5.9	2.7	7.7	12.3

[1] Includes 126 houses established during the year 1929. Their total operating costs amounted to 15.7 per cent of net sales.
[2] Includes salaries, wages, commissions and expenses of salesmen.
[3] Includes rent paid out, interest paid out, and miscellaneous expenses such as taxes, insurance, office supplies, delivery, freight, etc.

Unlike the two preceding groups, however, the analysis of sales and expenses by size of business for wholesale merchants brings out a clear advantage for the large-scale operators. (See Table 15.) Houses with sales in excess of $1,000,000, which accounted for 51.4 per cent of the total sales of wholesale merchants, had lower total operating costs and lower individual cost items as well, when compared with the average figures. Moreover, their costs were lowest of any of the size groups with the exception of the miscellaneous expense item, which was lowest in the $300,000 to $399,999 group. Total expenses for the lowest cost group were 14.1 per cent of net sales as compared with the average for all groups of 15.9 per cent and a high of 26.7 per cent for the very small scale establishments.

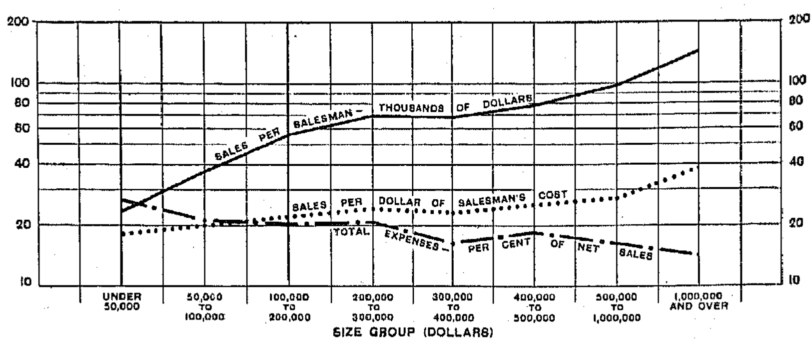
FIGURE 2.—NUMBER OF ESTABLISHMENTS AND NET SALES BY SIZE OF BUSINESS—WHOLESALE MERCHANTS IN RADIO TRADE



An interesting comparison of significant cost data is brought out in Chart 3, which shows graphically the decline in total expenses as sales volume increases, together with the relation of sales to number of salesmen to cost of salesmen and to total expenses. The curve for total expenses, shown in percentage of net sales, shows a decided downward trend as sales volume expands until a low of 14.1 per cent for businesses with sales over $1,000,000 per year is reached. This drop from 26.7 per cent to 14.1 per cent was only interrupted twice, first by a small increase of 0.4 per cent and again by a jump of over 2 per cent.

Average sales per salesman showed a remarkable inverse correlation with total expenses, expanding as sales increased with the single exception of the $300,000 to $399,999 group, where there was a small decrease. Perhaps a more valuable curve, however, is that showing sales per dollar of salesmen's cost, or the number of dollars in sales for every dollar paid out to salesmen for salaries, commission and expenses. This curve showed an increase as the size of the business increased, but the increase was neither as rapid nor as great as that shown by the sales-per-salesman curve. The sales-per-salesman curve showed over a sixfold increase, whereas sales per dollar of salesmen's cost increased only a little over two times as sales volume increased. The conclusion seems warranted that the qualitative information on sales as measured by costs is a much better gauge to selling and operating efficiency than is the more quantitative measure of sales per salesman. After all, the results per dollar of expenditure are the vital factors.

FIGURE 3.—SALES AND EXPENSE COMPARISONS FOR WHOLESALE MERCHANTS BY SIZE OF BUSINESS



As compared with large-scale manufacturers' wholesale branches (see Table 13), independent wholesale merchants in the same size bracket showed lower operating costs, 14.1 per cent as compared with 15.7 per cent. This was an advantage of 1.6 per cent that may have been due to differences in nonselling services rendered by the manufacturers' wholesale branches. The latter showed lower cost ratios for total salaries and wages and for cost of salesmen, but much higher costs for miscellaneous expenses. Greater warehousing costs were, no doubt, incurred by the large-scale manufacturers' branches, which reported a larger inventory than did the comparable large-scale independents; 16.2 per cent of net sales as contrasted with 12.3 per cent.

In the different size brackets for wholesale merchants there seems to be a high degree of correlation between expense ratios and ratios of stocks to net sales with the single exception of the large-scale, low-cost houses, which carried heavier inventories than did any of the three groups with sales between $300,000 and $999,999. The establishments with sales between $500,000 and $999,999 had the lowest inventory ratio of 8.2 per cent of net sales. The highest inventory ratio was found in the smallest scale group, which also had highest costs, further evidence that large inventories are a drag on operating efficiency.

WHOLESALE MERCHANTS BY SIZE OF SALES TERRITORY

Wholesale merchants specializing in the radio trade may be studied from an additional point of view—the extent of the sales territory in which they regularly operate. Out of the 641 dealers in this group, 628 reported information on the sales radius. Nearly half of the group—311, to be exact—reported what may be termed a local radius of operations, namely 75 miles or less. There were 111 establishments reporting sales territory radius of between 76 and 150 miles; 95 reporting a radius between 151 and 250 miles; 70 reporting a radius of 251 to 500 miles; 19 reporting over 500 miles, but not nation wide; 18 reporting national operations and 4 combining domestic with foreign trade. (See Table 16.)

The operating costs for the houses covering the smallest sales territory were below the average for the entire group reporting. Costs increased from 15.1 per cent of net sales in the local group to 18.8 per cent for those houses covering a radius of between 76 and 150 miles. It is significant that this total increase of 3.7 per cent was accompanied by an increase of only 1 per cent in total salaries and wages and less than 1 per cent in combined salesmen's salaries and salesmen's expenses. Miscellaneous expenses apparently increased faster than the more strictly selling costs involved in reaching the larger market. In this connection it is of interest to note that average sales per establishment increased approximately 25 per cent when this larger area was covered. This means that more goods were handled and that greater warehousing and delivery facilities were required, thereby explaining the increased nonselling costs. There was a decline in the next larger sales area to 16.6 per cent and a still further decline to 12.6 per cent for those concerns selling in a radius of between 251 and 500 miles. Both of these declines in operating cost ratio were accompanied by substantial increases in average sales, which no doubt more than offset the increased cost of reaching a wider market and explains the lower cost ratios. Lowest costs were reached by houses with a sales-territory radius of between 251 and 500 miles and thereafter costs increased to a high of 21.7 per cent for the four establishments selling, to some extent, in foreign markets. The rising costs were combined with decreases in average sales per establishment, a fact which points to a high degree of correlation between average sales and costs. This correlation tends to corroborate the facts brought out in Table 15, namely that costs tend to vary inversely with volume of sales.

TABLE 16.—WHOLESALE MERCHANTS, BY SALES TERRITORY, UNITED STATES: 1929

EXTENT OF SALES TERRITORY COVERED REGULARLY [1]	Number of establishments	Net sales	Average sales per establishment	TOTAL EXPENSES		Total salaries and wages, per cent of net sales	Salesmen's salaries, per cent of net sales	Expenses of salesmen, per cent of net sales
				Amount	Per cent of net sales			
Total	628	$311, 203, 793	$495, 547	$49, 436, 607	15.9	7.1	2.6	0.70
75-mile radius or under	311	122, 826, 510	394, 941	18, 597, 979	15.1	7.2	2.8	.48
76 to 150 mile radius	111	54, 118, 067	487, 550	10, 169, 809	18.8	8.2	3.3	.78
151 to 250 mile radius	95	57, 715, 165	607, 528	9, 561, 204	16.6	7.2	2.6	.86
251 to 500 mile radius	70	54, 310, 111	775, 859	6, 864, 848	12.6	5.3	2.1	.81
Over 500-mile radius, but not national	19	12, 536, 193	659, 800	2, 333, 607	18.6	7.6	2.2	1.30
National	18	8, 224, 197	456, 900	1, 588, 869	19.3	7.8	1.3	.68
United States and foreign	4	1, 473, 550	368, 388	320, 291	21.7	7.1	2.6	.26

[1] The length of the sales-territory radius indicates how far from home city trade is sought. It does not mean that trade is not secured locally as well and at all points within the radius. Neither does it mean that the sales territory is circular in character. It may constitute only a segment of a circle, as in the case of a seacoast city.

It is significant that the average sales for the low-cost group were $775,859, which was the highest of any of the groups. This fact indicates that a relatively high proportion of the large scale establishments shown to have lowest costs in Table 15 were found operating in sales territories with radius of between 251 and 500 miles. The lower costs shown for this group were thus more likely due to the larger scale of operations than to the size of the sales territory, although the latter, no doubt, exercises a considerable influence in making possible the larger sales.

The discovery of such low costs with high average sales further indicates that there must be a considerable range of operating costs among the large scale establishments since the costs for the group, selling in a radius of 251 to 500 miles with average sales of $775,859 was lower than the average cost for the group with sales in excess of a million dollars in Table 15 and considerably lower than costs for the group with sales of $500,000 to $999,999 or practically the same average sales. In order to discover the range of operating costs, the following distribution was prepared. (See Table 17.)

FREQUENCY DISTRIBUTION OF WHOLESALE MERCHANTS' EXPENSE RATIOS

At first glance such a wide range of expense ratios as appear in Table 17 seemed absurd if not impossible. A careful reexamination was therefore made of the schedules in this group to be sure that they had been properly classified. It was found that the figures represent the actual situation, but that certain qualifications with respect to the very low cost and the very high cost establishments are in order. The low-cost establishments, while properly classified in the wholesale merchant group, nevertheless showed causes for the low costs. These causes fell in three major divisions. Some of the reports indicated a considerable volume of drop shipment business which reduced warehousing and handling costs. In the second place, it was found that low costs were enjoyed by certain establishments which apparently specialized in a single make of radio set, possibly having exclusive agencies. Finally there were a few establishments which were operating on a small scale in which the proprietor apparently did all of the work. While sales were small, out of pocket costs were kept at a minimum. In such cases, however, it is possible that all costs were not properly recorded, especially with respect to the proprietor's own salary, which was frequently very low. The high cost establishments, at the other extreme of the scale, were, for the most part, concerns which actually reported operating at a loss during 1929 or establishments which were just getting started in business, the initial expenses being responsible for high costs.

Nearly 90 per cent of the establishments had costs between 5 per cent and 32.5 per cent. The extremely low-cost establishments, namely, those with costs below 5 per cent, constituted but 2.2 per cent of the total, whereas the concerns with costs in excess of 32.5 per cent made up 8.8 per cent of the total. The latter group thus exerted a greater influence upon the modal average cost [1] than did the former, as far as the number of establishments is concerned. It is noteworthy, however, that modal average cost [1] for the group, amounting to 16.2 per cent of net sales, was but 0.3 per cent higher than the simple arithmetic average used in the other tables.. This indicates that the extreme items did not seriously influence the arithmetic average The explanation lies in the fact that with few exceptions

[1] The modal average cost is the most characteristic cost or the most frequent cost ratio found in the distribution. In this group there are 92 establishments showing costs between 15 and 17½ per cent. The exact cost of 16.2 per cent for the mode is derived by use of a simple formula found in most text books on statistics.

the average sales per establishment are larger for the low cost houses and vice versa. This situation still further substantiates the earlier findings that costs for wholesale merchants vary inversely with sales volume.

TABLE 17.—FREQUENCY DISTRIBUTION OF OPERATING COST PERCENTAGES, 641 WHOLESALE MERCHANTS

RADIO TRADE: 1929

OPERATING COSTS (Total expenses as percentage of net sales)	Number of establishments	Cumulative number of establishments	Average sales per establishment
2.5–4.99	14	14	$242, 470
5.0–7.49	15	29	1, 139, 022
7.5–9.99	46	75	479, 094
10.0–12.49	68	143	693, 327
12.5–14.99	79	222	628, 723
15.0–17.49	92	314	624, 631
17.5–19.99	78	392	449, 954
20.0–22.49	69	461	490, 532
22.5–24.99	59	520	329, 107
25.0–27.49	26	546	318, 741
27.5–29.99	22	568	502, 865
30.0–32.49	16	584	106, 820
32.5–34.99	10	594	128, 790
35.0–37.49	7	601	148, 662
37.5–39.99	7	608	178, 760
40.0–42.49	7	615	86, 127
42.5–44.99	2	617	19, 348
45.0–47.49	2	619	18, 958
47.5–49.99	6	625	67, 921
50.0–52.49	3	628	45, 473
52.5–54.99	4	632	76, 018
Over 55.0	9	641	95, 677

The foregoing analysis is particularly significant as illustrating the very great differences in operating efficiency which obtain within a fairly homogeneous group of business establishments. It is true that these concerns are scattered throughout the Nation and that sectional differences, no doubt, accounted for some of the variation. Indeed, an examination of Table 18, which shows the sales and total expenses by type of distributor for the four ranking cities of the United States, reveals no little sectional variation. Wholesale merchants who accounted for 98.8 per cent of the business in Newark, N. J., showed total operating expenses of but 10.8 per cent of net sales. In New York City, where wholesale merchants were less important, with but 25.9 per cent of total net sales, operating costs were 13.8 per cent, or 3 per cent higher than in Newark. In both Chicago and San Francisco wholesale merchants accounted for a considerable volume of sales, 68.1 per cent and 51.2 per cent, respectively, and showed costs of 15 per cent and 15.9 per cent of net sales. It is noteworthy that the cost figure for San Francisco is identical with the simple arithmetic average for all wholesale merchants in the United States. The differences were even more pronounced in the cases of manufacturers' wholesale branches and agents and brokers, but, since there is less homogeneity within these groups than is true of the wholesale merchants, and, since a smaller number of establishments is involved as well, it is possible that individual peculiarities may play as large a part as sectional differences in explaining the variation.

TABLE 18.—WHOLESALE RADIO SPECIALTY HOUSES BY TYPE OF DISTRIBUTOR FOR FOUR LEADING WHOLESALE CENTERS

UNITED STATES: 1929

CITY AND TYPE OF DISTRIBUTOR	Number of establishments	NET SALES		TOTAL EXPENSES	
		Amount	Per cent of total	Amount	Per cent of net sales
United States	704	$486,079,668	100.0	$74,902,363	15.41
Total, 4 cities	202	243,414,368	50.1	36,651,721	15.06
New York City, N. Y.	99	158,833,817	100.0	24,732,759	15.6
Wholesale merchants	69	41,129,278	25.9	5,674,404	13.8
Manufacturers' wholesale outlets	8	105,973,897	66.7	17,819,488	16.8
Agents and brokers	15	7,259,085	4.6	927,836	12.8
All other	7	4,471,557	2.8	311,031	7.0
Chicago, Ill.	57	45,763,217	100.0	6,093,263	13.3
Wholesale merchants	28	31,181,625	68.1	4,687,612	15.0
Manufacturers' wholesale outlets	8	10,284,021	22.5	1,005,235	9.8
Agents and brokers	18	3,479,014	7.6	361,690	10.4
All other	3	818,557	1.8	38,726	4.7
Newark, N. J.	16	20,865,303	100.0	2,226,810	10.7
Wholesale merchants	15	20,610,303	98.8	2,218,440	10.8
All other	1	255,000	1.2	8,370	3.3
San Francisco, Calif.	30	17,952,031	100.0	3,593,889	20.0
Wholesale merchants	16	9,187,435	51.2	1,463,677	15.9
Manufacturers' wholesale outlets	5	7,160,456	39.9	2,051,980	28.7
Agents and brokers	8	1,440,743	8.0	74,634	5.2
All other	1	163,397	.9	8,598	5.3

Whether sectional differences account for the variation in costs between wholesale merchants in the eastern and western cities is difficult to determine. In Table 19 certain comparisons are made that call for comment. The highest costs, in San Francisco, are accompanied by highest labor costs as shown by lowest sales per employee and per dollar of salaries and wages and highest ratio of salaries and wages to net sales. San Francisco also has a very high inventory ratio and lowest average sales per establishment. Chicago, which also shows high costs, has a fairly high inventory ratio as well. Since both San Francisco and Chicago are located at a considerable distance from the producing centers, it may be necessary for them to maintain higher inventories to insure prompt deliveries to their customers. New York City and Newark (see footnote, Table 19), on the other hand, are close to the producing centers and need not maintain such large inventories, since they can normally secure stocks quickly from the factories. It would appear then that the geographical location plays some part in cost differences, due to the necessity for maintaining larger stocks at points remote from producing centers.

There are other differences that can not be explained so easily. Both Newark and Chicago show high average sales, accompanied in the first case by low labor costs whereas Chicago has higher labor costs and much higher total expenses. On the other hand, Chicago has practically identical labor costs with New York and, at the same time, nearly twice as large average sales, notwithstanding Chicago has higher total expenses. No doubt the necessity for maintaining over three times as large an inventory ratio explains a large part of this difference. The same explanation, no doubt, accounts for part of the differences between San Francisco and New York which have approximately the same average sales but a difference of 2.1 per cent in total expenses. To be sure, San Francisco has higher labor costs by 0.3 per cent which explains some of the difference.

There are, in all probability, numerous factors explaining the wide range of costs found in the wholesale merchant group that are not revealed by the statistics. The average figure of approximately 16 per cent, for all wholesale merchants, however, should be significant as a rough guide to efficiency in carrying on a wholesale business in the radio trade. Furthermore, the fact that over one-third of the entire group of wholesale merchants operated on an expense margin of less than 15 per cent would seem to indicate considerable room for improvement among the remaining establishments. At least a careful scrutiny of operating costs would seem to be in order.

TABLE 19.—EMPLOYEES, SALARIES, STOCKS, AND AVERAGE SALES FOR WHOLESALE MERCHANTS FOR FOUR LEADING WHOLESALE CENTERS

RADIO SPECIALTY TRADE: 1929

	New York	Chicago	Newark[1]	San Francisco
Total employees	1,087	847	394	281
Sales per employee	$37,837	$36,814	$52,310	$32,695
Total salaries and wages	$2,659,354	$1,094,325	$1,009,713	$625,333
Per cent of net sales	6.5	6.4	4.9	6.8
Sales per dollar of salaries and wages	$15.46	$15.64	$20.41	$14.69
Stocks on hand [1]	$2,109,862	$5,238,137	$4,210,433	$1,747,291
Per cent of net sales [1]	5.1	16.8	20.4	19.0
Average sales per establishment	$596,076	$1,113,629	$1,374,020	$574,215

[1] The high ratio of stocks to net sales in Newark is due to the inclusion of one wholesale chain establishment which carries heavy stocks to supply the other branches. If this establishment be excluded, the ratio of stocks to sales becomes 6.1 per cent for the Newark wholesalers.

WHOLESALE CHAINS IN RADIO DISTRIBUTION

It is a well-established fact that the chain method of distribution plays an important role in the retail field. It is equally true, but not so commonly known that chains are found in wholesale trade. The radio business affords no exception to this rule, as there are chains among agents and brokers, manufacturers' wholesale branches and wholesale merchants in this group. The following analysis, based on Table 20, illustrates the extent of this principle in the case of wholesale merchants.

Out of a total of 641 wholesale merchants, over one-third of the establishments operated as members of wholesale chains. These multiple unit businesses accounted for nearly 43 per cent of the total net sales of radio wholesalers. Single unit businesses numbered 421 and accounted for over 57 per cent of the total sales. Thirty-nine chains of two establishments each reported nearly 16 per cent of total sales by radio wholesalers. In the next group (chains with an average of 4 establishments each) there were approximately 29 chains accounting for nearly 19 per cent of total net sales. The 13 establishments in the group containing 6 to 10 units consisted of 2 chains, which accounted for slightly less than 7 per cent of total sales. In addition, there was 1 chain of 11 establishments and 4 establishments belonging to chain organizations that can not be definitely identified as to number. They probably represent establishments specializing in radios which are parts of larger chains engaged primarily in other lines of business.

TABLE 20.—WHOLESALE MERCHANTS BY NUMBER OF MARKETING UNITS UNDER SAME OWNERSHIP

UNITED STATES; 1929

NUMBER OF UNITS UNDER SAME OWNERSHIP	Number of establishments	NET SALES		Average sales per establishment	TOTAL EXPENSES	
		Amount	Per cent of total		Amount	Per cent of net sales
Total	641	$312, 188, 040	100. 0	$487, 033	$49, 617, 569	15. 9
1 establishment	421	178, 895, 256	57. 30	424, 929	29, 405, 360	16. 4
2 establishments	78	48, 704, 402	15. 60	624, 417	7, 935, 964	16. 3
3 to 5 establishments	114	58, 684, 632	18. 80	514, 777	9, 677, 605	16. 5
6 to 10 establishments	13	21, 609, 600	6. 92	1, 662, 277	1, 521, 786	7. 0
All other multiple unit establishments	15	4, 294, 060	1. 38	286, 271	1, 076, 856	25. 1

The ratios of operating expenses to net sales were fairly uniform for the single unit, 2 units, and 3 to 5 units groups. The lowest costs were shown by the 13 establishments in the 6 to 10 unit group and the highest costs by the remaining group of 15 establishments. It must not be concluded, however, that the chain principle accounted for the low costs in the one case and the high costs in the other. Indeed, the same facts brought out in the earlier analysis is again confirmed here, namely, that high costs accompany low sales volume and low costs go with large sales volume. The 13 establishments with costs of 7 per cent showed average sales in excess of a million and a half dollars, which is over three times the average for any of the other groups. On the other hnd, the 15 establishments with costs of 25.1 per cent had average sales of less than $300,000.

It may be pointed out, furthermore, that the 13 low-cost establishments operated on slightly less than half of the margin for the 82 wholesalers with sales in excess of $1,000,000. (See Table 15.) This may be due in part to advantages of chain operation, but no such conclusion can be drawn after we examine the high-cost group of 15 establishments. When their costs of 25.1 per cent are compared with costs for other establishments in the same size group (20.7 per cent of net sales) it could be said with equal justification that the chain principle contributes to high costs. The fact is that the explanation probably lies in other factors, such as individual efficiency, in the one case, and lack of efficiency in the other; factors which are not brought out in such general comparisons but which come to light when the operations of the individual establishments are examined.

In addition to chains among wholesale merchants, such as analyzed above, there were also a few chain store warehouses in the radio trade, which served owned retail outlets. The sales of the 4 chain store warehouses which reported are given at wholesale values in Table 7 as $5,852,197. In addition, to the radio trade, which is a part of the electrical group, chain store warehouses report radio sales of over $1,000,000 in the automotive trade and nearly one and one-half million dollars in the furniture and house furnishings trade (see Table 3), thus accounting for slightly over 1 per cent of the total volume of sales of radio sets, parts, and accessories in the United States.

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