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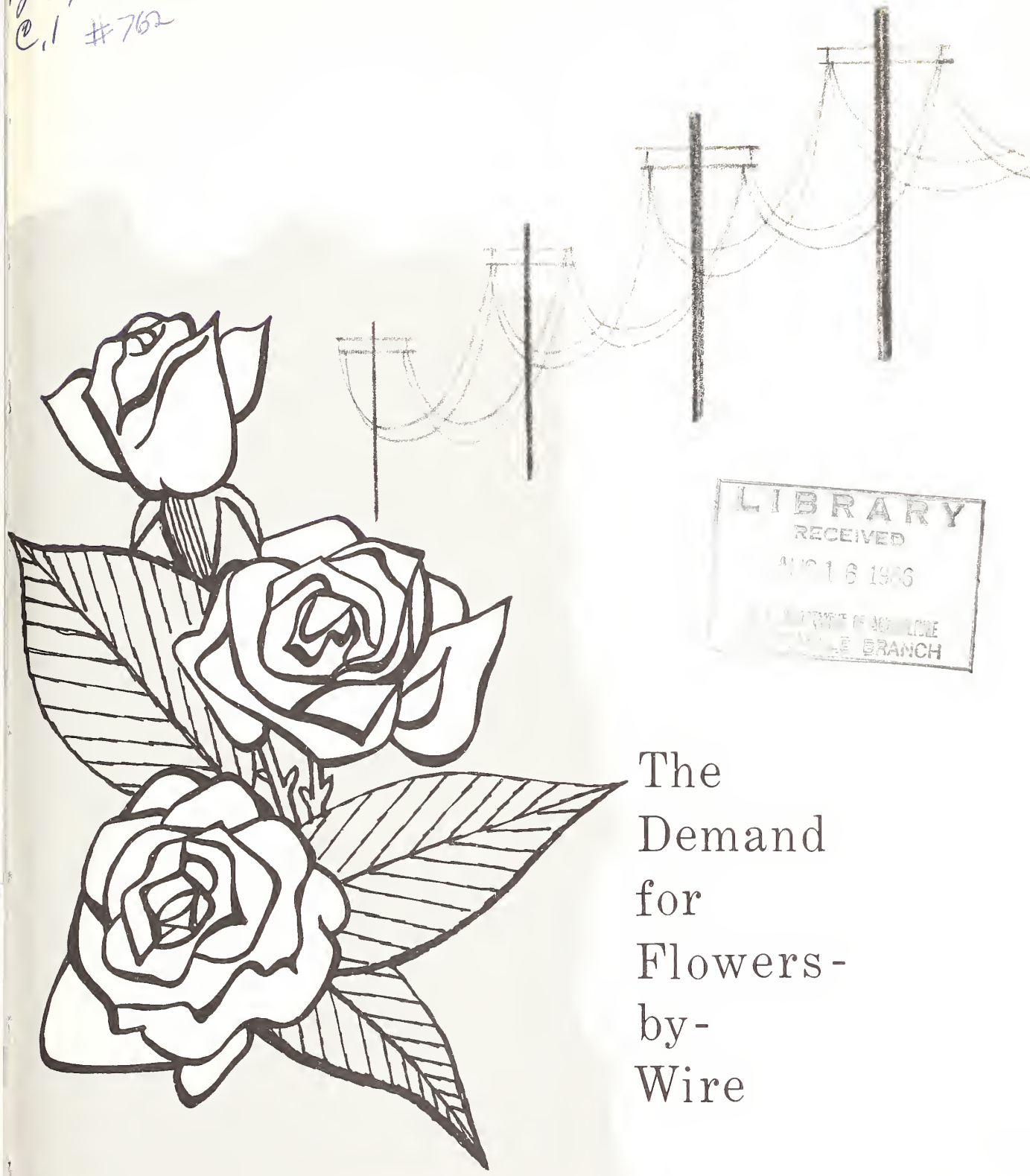

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The Demand for Flowers-by-Wire

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PREFACE

Research on the factors influencing demand for flowers was undertaken by the Economic Research Service of the U. S. Department of Agriculture to evaluate and improve the techniques used in merchandising and promoting agricultural products. This research was initiated through a cooperative agreement between the Department and the Florists' Transworld Delivery Association (FTD) which provided financial support for the study.

Collaboration in planning the research and in developing this report was provided by M. Truman Fossum of the FTD and Peter L. Henderson of the Market Development Branch, Marketing Economics Division, Economic Research Service. Kenneth McCallister, Grace Simon, and Vernice Mitchell of the Marketing Economics Division collaborated in the development of appropriate computer programs and detailed analytical procedures. The research was under the general supervision of Robert E. Frye, also of the Market Development Branch.

Other reports in this series on floral marketing are:

Powell, Jules V., and Edman, Victor G. Marketing Flowers--Credit and Financing Problems of Retail and Wholesale Florists in Four Iowa Cities. U. S. Dept. Agr. MRR 704, Apr. 1965.

Havas, Nick. Profile of the Retail Florist Industry, 1964. U. S. Dept. Agr. MRR 741, Dec. 1965.

Both can be obtained from the Division of Information, Office of Management Services, U. S. Department of Agriculture.

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Washington, D. C. June 1966

SUMMARY

The number of flower orders placed through the Florists' Transworld Delivery Association (FTD) during the 1935-65 period (excluding 1941-46) can be related to changes in economic and demographic conditions. Evidence of this effect was obtained from analyses of flowers-by-wire sales (1) for the United States, (2) for nine of the largest metropolitan markets, and (3) for seven intermediate-size metropolitan centers.

For the entire United States, changes in annual FTD sales could be explained in terms of changes in disposable personal income, employment, sales of household appliances, and sales of confectionery manufactures. Annual FTD sales increased or decreased as income and employment increased or decreased. However, FTD sales moved in the opposite direction to the change in sales of household appliances or confectionery manufactures. Disposable personal income was found to be the most important indicator. During the 26-year period, a billion-dollar increase in disposable income in the previous year was translated into 17,000 more flower orders in the following year. A separate analysis for 1947-65 indicates that the relationship of flower orders to income in the previous year was essentially the same as in the full 26-year period.

The proportion of flower sales that could not be associated with these and other economic and population factors indicated that a special nationwide promotion for flowers-by-wire would be measurable if the sales response were 4 percent or more of FTD's sales volume. Otherwise there would be little basis for concluding that the results were due to special promotional effort.

The number of orders going out of nine of the largest metropolitan markets (Chicago, Ill., Detroit, Mich., St. Louis, Mo., Los Angeles, Calif., Philadelphia, Pa., Boston, Mass., San Francisco-Oakland, Calif., Pittsburgh, Pa., and Washington, D.C.) from 1958 to 1964 could be explained in terms of employment (used to represent adult population) and spending for general merchandise. A change of 1 percent in employment generally meant a corresponding change of 0.9 percent in the number of outgoing flower orders. As consumers increased their spending for general merchandise by 1 percent, they increased their purchases of flowers-by-wire by 0.34 percent.

It was estimated that employment and spending for general merchandise could be used to estimate the normal level of flower orders from the nine cities within 11 percent of actual sales. A difference in actual and estimated number of outgoing orders of more than 11 percent would suggest an abnormal sales influence; hence, if special and intensive floral promotion were present, it could safely be judged the unusual stimulus in any one of these cities.

Incoming orders into all these large cities except Boston could be identified with changes in adult population (persons employed), deaths, and drug sales. A 10-percent change in employment meant a 5-percent variation in annual flower orders. Similarly, flower orders responded 3.5 percent for each 10-percent change in drug sales, and a 10-percent change in the number of deaths meant a 1.6-percent change in flower orders.

FTD orders going out of seven intermediate-size markets -- Utica-Rome, N. Y., Erie, Reading, Scranton, and Lancaster, Pa., Triple Cities (Binghamton, Johnson City, and Endicott, N. Y.), and Syracuse, N. Y. -- could be related to changes in family buying units, as reflected in the number of resident telephone subscribers; to the business activity in these areas, as represented by both the number of business telephone subscribers and the buying power index; and to the purchasing power, as reflected in the level of purchases of general merchandise. Flower orders increased roughly nine times faster than the number of new business telephone subscribers, a third as fast as the number of resident telephone customers, and a third as fast as general merchandise sales.

For these cities, unexplained variations in the number of outgoing orders were so large that additional refinements would be necessary to detect a realistic sales response to promotion.

FTD orders received in these seven cities could be determined with better accuracy than outgoing orders. Each 1,000 increase in the number of resident telephone customers meant an average increase of 200 flower orders. The ratio of incoming flower orders to deaths was 2,300 per 1,000 deaths. Approximately 1 more incoming flower order was associated with each $4,000 increase in drug sales.

Measurable sales increases were not observed for two markets with special television promotion. Any response to the cooperative promotion in Lancaster, Pa., or in Binghamton-Endicott-Johnson City, N. Y., was not evident from either the number of wire orders fitted to the indices mentioned above or from comparisons of total sales (dollars) of a sample of shops during the campaign with prepromotion sales.

THE DEMAND FOR FLOWERS-BY-WIRE

by
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INTRODUCTION

An expanded demand for floral products in the United States can utilize available physical and human resources that will contribute to agriculture as well as to the general economy. This report seeks to develop a better understanding of factors influencing this demand and to provide a means for measuring the effectiveness of flower promotion. Primary attention is given to flowers-by-wire sales, or that portion of orders placed with one florist for delivery by another florist.

The floral industry in the United States appears to have growth potential in that the main factors governing use of flowers--preferences and traditions--are often responsive to superior salesmanship. The bulk of U. S. flower consumption is tied to special events, such as births, deaths, marriages, anniversaries, and sickness. As a consequence, use of fresh flowers for home and office ornamentation is low compared to European countries where use of flowers does not depend on special occasions. The major market growth opportunities open to the floral industry, then, stem from that part of the market which can respond to effective marketing.

Industry leaders, recognizing this potential, have sought to develop it in several ways. A strategy open to them on an organized basis has been flower promotion, particularly through media advertising (3). 2/ Their promotion has been largely designed to influence consumers to buy more flowers, but it also has been used to alert individual growers and florists to the opportunities available for market expansion and to stimulate them to do a more effective job of merchandising and advertising. This second objective is one of major importance if the growth potential for the industry is to be realized. The nature of the retail florist's business hardly serves to make him an aggressive salesman. His schedule is geared to receiving about 75 percent of his business by telephone, a schedule which limits his opportunity for meeting customers and which gives customers no chance to see flowers when making a purchase. In addition, the florist's volume of sales is related closely to holiday periods or special occasions, all of which are beyond his control. At times he and his staff must work long hours to accommodate this irregular sales pattern. The passive nature of his business has, at best, encouraged the average retail

1/ Mr. Brown resigned from the U. S. Dept. of Agriculture in March 1966.
2/ Underscored numbers in parentheses refer to items in References, p. 29.

florist to improve his skills as a flower arranger and to neglect his abilities as a salesman. But a good salesman he must be if the potential demand for floral products is to be developed.

Industry organizations such as the Florists' Transworld Delivery Association (FTD), the Society of American Florists, and some grower associations have encouraged greater individual promotion effort as tie-ins with their national promotional campaigns.3/ Floral associations in local areas have also engaged in cooperative promotion, but with the exception of the Allied Associations in large metropolitan centers, these local organizations are not likely to have sustained promotional programs. It is difficult to maintain individual participation in these programs primarily because of the difficulty of demonstrating that the promotion is effective. As a consequence, the key to getting retail florists to develop an effective program of promotion is to have satisfactory means of measuring and evaluating the returns from selective advertising and improved merchandising practices. But adequate tools for evaluation are not available to these groups or to the individual florist.

Methodology

Indicators of changes in the demand for floral products were established in this report by determining the level of floral sales under prevailing promotional investment; the purpose was to compare the expected changes in sales with actual sales under some intensive promotion. In developing this understanding of changes, relationships between floral sales by wire and selected economic and demographic factors were identified and measured for the United States as a whole, for nine of the largest metropolitan markets, and for seven intermediate-size metropolitan centers.

The nine large metropolitan markets involved in a study of outgoing orders were Chicago, Boston, Philadelphia, St. Louis, San Francisco-Oakland, Los Angeles, Washington, D. C., Pittsburgh, and Detroit. All of these except Boston were used in the analysis of the factors associated with incoming orders.

Seven intermediate-size markets were included to provide a broader basis for estimating normal changes in sales of flowers-by-wire. These markets were: Erie, Scranton, Reading, Syracuse, Utica-Rome, Lancaster (including Lancaster County and a few surrounding localities), and the Triple Cities (Binghamton, Johnson City, and Endicott, which constitute the urban centers in Broome County, N. Y.).

Both local sales and sales going through a wire service were studied for Lancaster and the Triple Cities because special television promotions conducted there in 1963 and 1964 would be expected to influence both local and wire sales. With these exceptions, the analyses in this report are limited to flower sales by wire. The reason is that, aside from records of individual shops, no comparable data were available for local sales; accordingly, it would be too expensive and time consuming to accumulate statistics on local sales.

3/ Mention of commercial enterprises in this report does not constitute endorsement of the firms or discrimination against other firms.

FTD provided records of the number and value of their sales since 1924. Analyses were based only on the business flowing through FTD because other wire services had policies restricting publication of their sales volumes.

Statistical series that extended back a number of years were selected to reflect economic and demographic conditions as nearly as possible and in the form that would most logically be associated with flower sales. For example, total population statistics were rejected in favor of data that more nearly reflected only adults, who make most flowers-by-wire purchases. Employment data indicated both adults and individuals with purchasing power; conversely, unemployment data indicated adults least likely to buy flowers.[4] Population was also classified as family buying units; these units were defined in selected metropolitan markets as the number of resident telephone subscribers. Statistics on employed persons and telephone subscribers were considered the most suitable and logical population data, even though growth in their number was correlated with economic growth, and even though these data were somewhat inexact. For example, neither retired persons nor adults who had no telephone in their names were reflected in the population variables used.

Data on traditional occasions for receiving flowers -- births, marriages (including both the ceremony and the anniversaries), and deaths -- were available by year for the United States and for most cities.[5] Information on the amount of sickness was not recorded directly and could only be expressed for individual markets in terms of hospital admissions(1) and volume of drug sales.

These occasions represent the portion of the flower business that tends to be self-sustaining. Where a strong custom to use flowers exists, the decision to send flowers may be less dependent upon purchasing power than the size of the order. Nevertheless, availability of money for discretionary spending would be expected to affect the placing of some flower orders. Because of this consideration, several possible measures of economic conditions were included.

Annual data on disposable income for the United States were accepted as a measure of growth in purchasing power from 1935 to 1965. The tendency of consumers to spend might be reflected in amounts spent for durable goods, household appliances (radios, televisions, mixers, etc.), merchandise in variety stores, or sales in all retail stores. Confectionery sales could represent competition for dollars that might be spent for flowers.[6] Advertising of all commodities was likewise considered as possible competition for the consumer dollar. Data on flower promotional investments of FTD were also available, but these sums were derived from sales and have grown as FTD sales have grown. In this sense, the increase in FTD promotion has followed sales closely. It was felt that a cause-and-effect relationship could not be distinguished unless a drastic change occurred in flower promotion. No change was observed.

Income and spending variables used for individual markets were the level of general merchandise sales and the buying power index.[7] It was assumed that

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4/ See (4, 8, and 9) for sources of these statistics.
5/ For source of data on these occasions, see (7).
6/ Data on disposable personal income, confectionery, variety store, retail store, and household appliance sales derive from (6).
7/ For source of data on these variables, as well as on drug sales, see(2).

these variables would indicate the purchasing power available in a market, and particularly the sums spent on goods in department, variety, and general merchandise stores. These sales represented both cash and charge purchases and indicated the spending mood of consumers in local markets. The buying power index was computed by Sales Management to represent population, income, and retail sales.

FINDINGS

U. S. Flower Sales by Wire

The volume of floral sales handled by FTD has increased substantially since 1935, but not at a constant rate (Appendix A). The growth was larger in some years than others. Flower orders placed through FTD members in the United States have followed changes in four economic and population factors: Disposable personal income, employment, sales of household appliances, and sales of confectionery manufactures. Ninety-nine percent of the total variation in annual FTD sales from the 26-year average could be explained in terms of these factors.

Disposable income was the most important of the four factors. But there was an apparent 1-year lag between changes in income and changes in flower purchases. The volume of flower orders that occurred in one year could be better explained by income received the previous year than by current disposable income. From 1935 through 1965 (excluding war years 1941-46), a $1 billion increase in disposable income in one year was generally associated with 17,700 more flower orders in the following year. Since 1947, the relationship has been essentially the same. Disposable income increased from $169.8 billion in 1947 to $465 billion in 1965; thus, its impact on flower sales would be expected to be substantial during these years. The lagged response of flower sales to increases in personal disposable income may not be characteristic of short economic recessions; for example, the recession of 1958 did not depress flower sales in 1959. Thus, it would seem that demand for flowers with respect to income is slow to change.

Competition of flowers with confectionery products and with household appliances was revealed by the inverse relationship between flowers-by-wire sales and annual expenditures for these products. As sales of confectionery manufactures increased by $1 billion, flowers-by-wire orders tended to decline by 10,000; conversely, flower orders increased when confectionery sales decreased by $1 billion. Competition between flowers and sweets has apparently increased since 1947. The number of flower orders has been 20,000 greater when confectionery sales were off by $1 billion since 1947.

Small appliances may also have offered more competition for flowers since 1947. During the 26-year period, $1 billion more spent for household appliances was related to almost 4,000 fewer flowers-by-wire orders. Since 1947, this ratio has been closer to 5,000 per $1 billion. In view of the jump in small-appliance sales from $193 billion in 1947 to $386 billion in 1964, the rate of sales increase could vary substantially from year to year and could have a significant impact on flower sales.

Employment was selected as an index of the number of adults who would be potential senders and receivers of flowers. This proved to be a sensitive indicator in that a 1-million change in employment was associated with a corresponding change of 130,000 flower orders for the 26-year period and 165,000 since 1947.[8]

Disposable personal income went up almost $30 billion in 1965 over 1964. This added income should mean more flower orders in 1966. Historical relationships indicate that FTD orders should be up by around a half million orders in 1966 from this increase in income, assuming normal changes in employment and in the two competing sales categories.

The accuracy with which flower orders placed through FTD could be explained by these measures of population and economic changes is illustrated in figure 1 and table 1. Both illustrations show that actual sales deviated from sales estimated from these four factors by more than 200,000 for only 4 out 26 years under study. Differences between estimated and actual sales ranged from 8,500 in 1940 to 294,000 in 1963. The average difference from 1935 to 1965 was 136,000 orders, a little less than the 165,000 average difference since 1947 (Appendix A). The amount of average deviation from estimated floral sales, plus accepted statistical probabilities for normal errors, provided the range in deviations that can be taken as normal and as abnormal.

A high degree of confidence could be attached to the effectiveness of special floral promotion if it accomplished a sales response of 410,000 or more orders in one year, or roughly 4 percent of FTD's present sales volume. Any abnormal effort that changed sales as much as 275,000 orders, or about 3 percent, could be detectable with the commonly accepted 95-percent level of confidence. That is, the probability is 95 in 100 that variation in sales from random causes would not exceed 275,000 orders. Conversely, a cutback in the program that caused 275,000 to 410,000 less orders would be explainable. In either case, the criterion would be a change in volume of more than 275,000 orders annually, over and above changes accredited to income, employment, confectionery sales, and household appliance sales.

The cyclical pattern of the deviation of actual number of orders from the number that economic and population factors would indicate is of particular interest. From 1948 through 1956, orders were below estimates; from 1957 to 1961, above; and again below from 1962 through 1964. Some additional influences, and not just chance occurrences, are evidently present in the demand for flowers-by-wire. These influences might result from changes in FTD promotion programs, from increased competition (since 1962) from other wire services, or other factors. Further research would be necessary to identify and quantify additional factors which could explain the number of orders not attributable to the factors discussed above.

8/ These measures of the relationships of flower orders to disposable personal income, household appliance sales, and confectionery sales were made simultaneously, i.e., the ratio of each to flower sales was over and above the contribution the other three variables made in explaining sales. Consequently, the estimate of the relationship of any of these variables to sales might be changed if variables were added or deleted from the system.

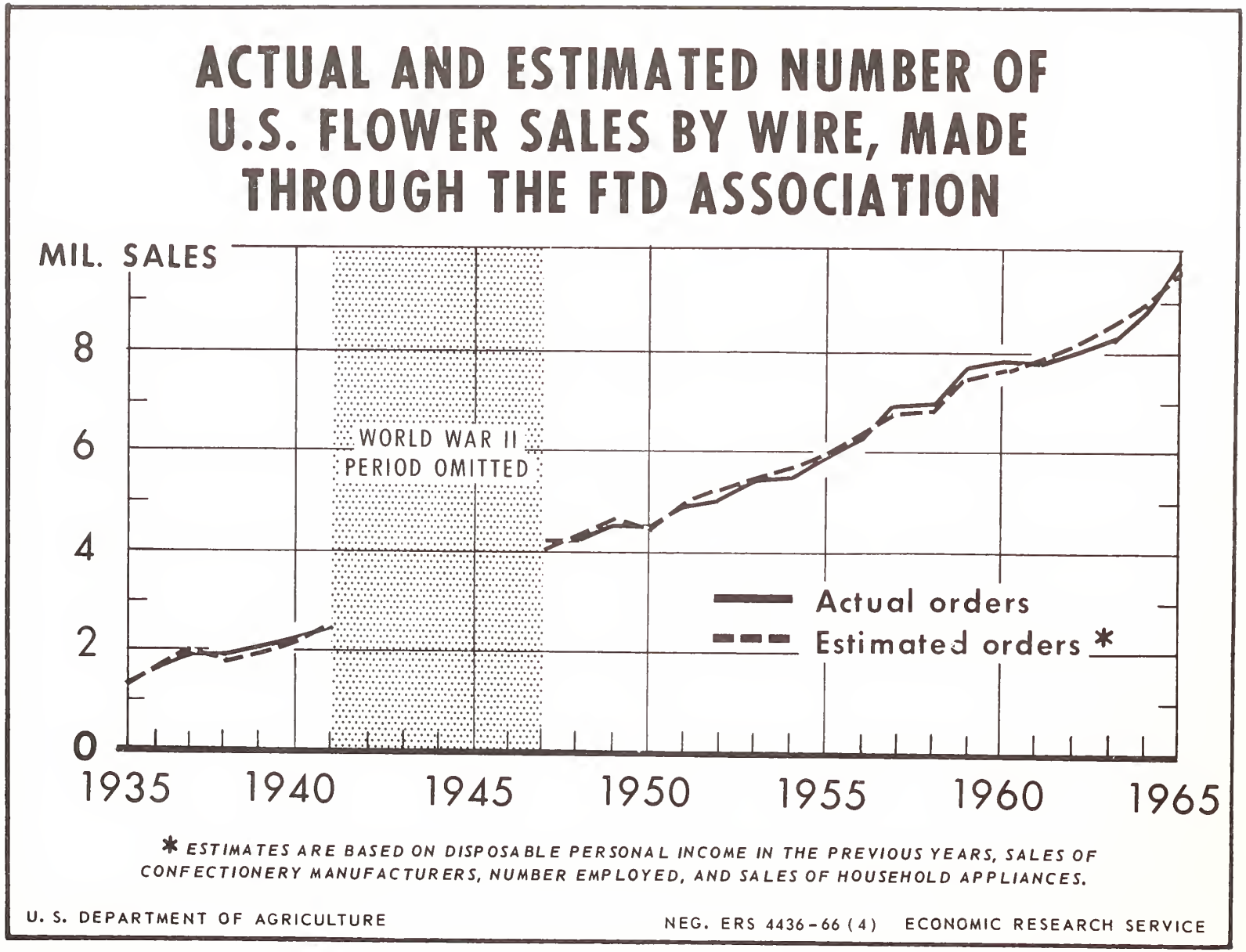
ACTUAL AND ESTIMATED NUMBER OF U.S. FLOWER SALES BY WIRE, MADE THROUGH THE FTD ASSOCIATION
MIL. SALES
8
6
4
2
0
WORLD WAR II PERIOD OMITTED
Actual orders
Estimated orders *
1935
1940
1945
1950
1955
1960
1965
* ESTIMATES ARE BASED ON DISPOSABLE PERSONAL INCOME IN THE PREVIOUS YEARS, SALES OF CONFECTIONERY MANUFACTURERS, NUMBER EMPLOYED, AND SALES OF HOUSEHOLD APPLIANCES.
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Figure 1

Table 1.--FTD sales volume, actual and estimated, United States, 1935-41 and 1947-65

Year	Actual orders	Estimated FTD orders 1/	Deviation of predicted from actual	Error
	No.	No.	No.	Pct.
1935	1,348,518	1,315,888	32,630	2.5
1936	1,636,431	1,647,646	-11,215	-0.7
1937	1,868,888	2,000,933	-132,045	-6.6
1938	1,900,265	1,872,648	27,617	1.5
1939	2,026,004	1,945,360	80,644	4.1
1940	2,213,308	2,204,812	8,496	0.4
1941	2,494,867	2,554,816	-59,949	-2.3
1947	4,199,982	4,041,095	158,887	3.9
1948	4,259,239	4,286,504	-27,265	-0.6
1949	4,546,160	4,602,433	-56,273	-1.2
1950	4,489,787	4,467,822	21,965	0.5
1951	4,846,703	4,859,494	-12,791	-0.3
1952	5,017,315	5,167,022	-149,708	-2.9
1953	5,344,533	5,381,751	-37,218	-0.7
1954	5,489,489	5,574,052	-84,563	-1.5
1955	5,897,979	5,857,748	40,231	0.7
1956	6,271,553	6,345,246	-73,693	-1.2
1957	6,906,444	6,704,360	202,084	3.0
1958	6,948,346	6,885,970	62,376	0.9
1959	7,654,680	7,449,256	205,424	2.8
1960	7,878,779	7,620,152	258,627	3.4
1961	7,848,963	7,835,804	13,159	0.2
1962	8,012,220	8,206,155	-193,935	-2.4
1963	8,245,081	8,539,317	-294,236	-3.4
1964	8,779,934	8,848,503	-68,569	-0.8
1965	9,745,730	9,656,403	89,327	0.9

1/ Estimates are based on disposable personal income, employment, confectionery sales, and household appliance sales.

Outgoing Orders.--Employment and spending for general merchandise account for most year-to-year changes in orders for flowers-by-wire placed with FTD members in nine of the largest metropolitan markets. Each of these cities--Chicago, Detroit, St. Louis, Los Angeles, Philadelphia, Boston, San Francisco-Oakland, Pittsburgh, and Washington--had an average annual volume of 167,000 outgoing orders from 1958 to 1964. Eighty-seven percent of the annual variation in sales within these cities could be identified with changes in total nonagricultural employment and the level of general merchandise sales.9/ On the average, a 1-percent change in a city's employment meant a corresponding change of 0.94 percent in the volume of outgoing orders placed with FTD florists in the city. As the level of general merchandise sales went up or down by 1 percent, the volume of flower orders changed in the same direction by 0.34 percent. In an economic sense, this relationship means that the elasticity of flower orders with respect to purchasing of general merchandise was about one-third. The shape of the particular curve for spending (Appendix B) means, however, that flower orders increased at a decreasing rate at higher levels of spending for general merchandise. Since spending has grown with time, other influences related to time may explain the leveling off of flower orders as spending increased. In the same context, increases in flower orders continued at the same proportion for higher levels of total employment.

The large cities differed in the volume of orders sent, despite adjustments for comparable size (employment) and level of spending. Los Angeles and Detroit were comparable markets to Philadelphia for flower orders per person employed and a given level of general merchandise spending (table 2). Relative to Philadelphia, Washington was a better market by 109 percent and Chicago the poorest (-22.5).

Errors in estimating the actual outgoing flower orders from these two variables ranged from 0.1 percent for Detroit in 1960 to 7.8 percent for Philadelphia in 1964. A range in error implies that flower orders going out of some cities more nearly followed the number of employed persons and general merchandise sales than in other markets. Conversely, the results indicated that the number of flower orders in Boston, for example, were subject to influences that were not consistent from year to year, that is, influences that did not move with employment or level of sales for general merchandise. Markets in which estimates were most consistently close to the actual number of orders were Detroit, Pittsburgh, St. Louis, and Washington (table 3).

Persons acquainted with the floral business in Los Angeles might give a logical explanation for the overestimation of sales by 6.2 percent in 1962, even though the error in other years did not exceed 2.3 percent for this city (table 3).

9/ General merchandise sales include sales from "department stores, dry goods stores, general merchandise stores with food, general merchandise stores (other), variety stores" (2, June 1964 issue, p. 232). Data for 1964 were not available, and so were estimated.

Table 2.--Percentage by which 8 large metropolitan areas differed from Philadelphia in annual flowers-by-wire orders, 1958-64 1/

City	Percentage	
	Difference	Range of error
Chicago	-22.5	± 6.5
Detroit	.7	± 3.9
St. Louis	15.1	± 10.0
Los Angeles	1.2	± 6.0
Boston	48.7	± 5.4
San Francisco	32.2	± 6.1
Pittsburgh	37.3	± 9.8
Washington	109.5	± 9.4

1/ Percentages were computed after adjustments were made for comparable employment and spending.

From the standpoint of statistical probability, the number of orders in any of the nine cities could have deviated from expected orders by as much as 7.0 percent without indicating that the sales level was unusual. The interpretation that any sales deviation of less than this amount was normal and that a deviation greater than 7.0 percent was unusual has a probability of 95 in 100 of being correct. The odds are 99 in 100 that a sales increase of 10.7 percent or more was abnormal. 10/ Therefore, any intensive floral promotion that effects increases in FTD orders of 7.0 or 10.7 percent would be measurable by means of this analysis.

Incoming Orders.--Promotion would be expected to affect only flower orders originating in the respective cities; however, incoming sales were also studied to gain a more complete understanding of demand for flowers-by-wire. 11/

Given information on adult population, number of deaths, and amounts spent on drug sales, the number of flower orders received in eight 12/ of these large markets could be determined with more precision than the flowers sent (table 4). These indices reflect special occasions which are the reason for a large portion of flower sales.

10/ Variances of the coefficients are not included in the error term; hence, the probabilities of 95 and 99 are approximate. The more conservative use of 3 sigma in computing ranges of random error compensates for omission of the relatively small errors associated with the coefficients.

11/ Incoming and outgoing orders are, of course, one and the same for the total United States.

12/ Boston was excluded from the analysis for incoming orders because of incomplete data on deaths.

Table 3.--Actual and estimated number of outgoing orders for flowers-by-wire placed with FTD florists in 9 large metropolitan areas, 1958-64

City and year	Actual outgoing orders	Estimated outgoing orders 1/	Deviation of predicted from actual	Error
	No.	No.	No.	Pct.
Chicago:				
1958	245,914	250,265	4,351	1.8
1959	275,701	268,552	-7,149	2.6
1960	284,356	273,368	-10,988	3.9
1961	279,997	273,820	-6,177	2.2
1962	279,571	286,959	7,388	2.6
1963	282,357	294,188	11,831	4.2
1964	305,513	314,800	9,287	3.0
Detroit:				
1958	116,769	116,017	-752	0.6
1959	127,858	125,119	-2,739	2.1
1960	127,495	127,656	161	0.1
1961	121,850	120,057	-1,793	1.5
1962	127,238	128,321	1,083	0.9
1963	132,209	136,485	4,276	3.2
1964	145,289	151,400	6,111	4.2
St. Louis:				
1958	68,020	69,848	1,828	2.7
1959	73,242	74,162	920	1.3
1960	77,728	75,649	-2,079	2.7
1961	76,665	74,451	-2,214	2.9
1962	78,692	77,042	-1,650	2.1
1963	79,407	82,033	2,626	3.3
1964	84,004	86,815	2,811	3.3
Los Angeles:				
1958	244,991	243,714	-1,277	0.5
1959	270,642	271,443	801	0.3
1960	285,564	279,429	-6,135	2.1
1961	292,395	288,982	-3,413	1.2
1962	293,245	311,448	18,203	6.2
1963	310,722	316,893	6,171	2.0
1964	349,281	341,090	-8,191	2.3
Philadelphia:				
1958	148,626	158,103	9,477	6.4
1959	166,221	164,208	-2,013	1.2
1960	174,412	168,221	-6,191	3.5

See footnote at end of table.

Continued --

Table 3.--Actual and estimated number of outgoing orders for flowers-by-wire placed with FTD florists in 9 large metropolitan areas, 1958-64--Continued

City and year	Actual outgoing orders	Estimated outgoing orders 1/	Deviation of predicted from actual	Error
	No.	No.	No.	Pct.
Phila. Cont'd.:				
1961	176,009	171,083	-4,926	2.8
1962	176,321	182,699	6,378	3.6
1963	182,569	185,645	3,076	1.7
1964	193,381	178,300	-15,081	7.8
Boston:				
1958	146,451	156,522	10,071	6.9
1959	159,144	168,935	9,791	6.2
1960	172,529	171,278	-1,251	0.7
1961	179,606	174,884	-4,722	2.6
1962	182,834	181,389	-1,445	0.8
1963	186,821	182,069	-4,752	2.5
1964	196,571	183,950	-12,621	6.4
San Francisco:				
1958	111,940	107,836	-4,104	3.7
1959	123,676	118,928	-4,748	3.8
1960	129,601	122,909	-6,692	5.2
1961	124,337	127,430	3,093	2.5
1962	127,551	134,301	6,750	5.3
1963	131,747	138,259	6,512	4.9
1964	144,438	148,060	3,622	2.5
Pittsburgh:				
1958	91,929	95,758	3,829	4.2
1959	97,465	95,793	-1,672	1.7
1960	98,709	97,404	-1,305	1.3
1961	94,138	94,027	-111	0.1
1962	94,969	96,220	1,251	1.3
1963	96,925	96,984	59	0.1
1964	105,134	103,490	-1,634	1.6
Washington:				
1958	119,602	121,445	1,843	1.5
1959	132,390	133,436	1,046	0.8
1960	138,660	139,828	1,168	0.8
1961	150,641	148,588	-2,053	1.4
1962	159,088	161,757	2,669	1.7
1963	172,504	175,265	2,761	1.6
1964	195,289	189,390	-5,899	3.0

1/ Estimates are based on employment and level of spending for general merchandise.

Table 4.--Actual and estimated number of incoming orders for flowers-by-wire received by FTD florists in 8 large markets, 1958-63

City and year	Actual incoming orders	Estimated incoming orders 1/	Deviation of predicted from actual	Error
	No.	No.	No.	Pct.
Chicago:				
1958	216,537	217,300	763	0.4
1959	238,571	232,000	-6,571	2.8
1960	243,744	238,700	-5,044	2.1
1961	240,931	239,100	-1,831	0.8
1962	241,345	245,600	4,255	1.8
1963	240,380	249,100	8,720	3.6
Los Angeles:				
1958	233,523	225,900	-7,623	3.3
1959	253,596	253,600	4	0
1960	269,345	264,600	-4,745	1.8
1961	269,014	271,300	2,286	0.8
1962	274,983	283,900	8,917	3.2
1963	288,203	291,500	3,297	1.1
Philadelphia:				
1958	150,781	159,700	8,919	5.9
1959	165,203	163,500	-1,703	1.0
1960	174,684	168,700	-5,984	3.4
1961	175,601	171,300	-4,301	2.4
1962	175,481	173,500	-1,981	1.1
1963	176,513	176,700	187	.1
Detroit:				
1958	98,652	100,200	1,548	1.6
1959	104,553	105,000	447	.4
1960	107,889	108,100	211	.2
1961	105,341	103,700	-1,641	1.6
1962	109,671	108,400	-1,271	1.2
1963	112,000	112,600	600	.5
San Francisco:				
1958	103,227	102,400	-827	.8
1959	112,910	108,400	-4,510	4.0
1960	115,531	112,700	-2,831	2.5
1961	113,764	116,300	2,536	2.2
1962	114,727	119,400	4,673	4.1
1963	117,749	122,200	4,451	3.8

See footnote at end of table.

Continued --

Table 4.--Actual and estimated number of incoming orders for flowers-by-wire received by FTD florists in 8 large markets, 1958-63--Continued

City and year	Actual incoming orders	Estimated incoming orders 1/	Deviation of predicted from actual	Error
	No.	No.	No.	Pct.
Pittsburgh:				
1958	97,201	101,700	4,499	4.6
1959	104,633	104,300	-333	.3
1960	106,607	107,600	993	.9
1961	104,798	105,050	252	.2
1962	107,323	106,000	-1,323	1.2
1963	109,886	105,400	-4,486	4.1
St. Louis:				
1958	62,066	65,360	3,294	5.3
1959	68,326	68,310	-16	.02
1960	71,079	70,570	-509	.7
1961	69,722	69,630	-92	.1
1962	72,048	70,960	-1,088	1.5
1963	72,883	70,900	-1,983	2.7
Washington:				
1958	81,748	82,700	952	1.2
1959	90,256	88,920	-1,336	1.5
1960	92,862	93,120	258	.3
1961	97,055	97,580	525	.5
1962	102,482	102,700	218	.2
1963	108,281	107,400	-881	.8

1/ Estimates are based on adult population (number of nonagricultural employment), number of deaths, and volume of drug sales.

The adult population was represented in terms of the number employed under the nonagricultural category. It was found that as employment went up or down by 10 percent, flower orders received through FTD florists showed a corresponding change of 5 percent. A 10-percent change in deaths meant a 1.6-percent change in incoming flower orders. Orders went up or down by 3.5 percent for a 10-percent change in drug sales, which were taken as an index of sickness.13/

Of the eight areas, Pittsburgh was the best market for incoming orders during 1958-63. Even at comparable levels of employment, deaths, and drug sales, Pittsburgh would receive 12 percent more orders than the average for all eight markets. Detroit would be below the average by 30 percent, Chicago by 22 percent, St. Louis by 17 percent, and Los Angeles by 36 percent. Relative to the average value for all cities during 1958-63, the value of orders received was 82 cents higher for Pittsburgh, 55 cents higher for Detroit, 38 cents for Chicago, and 23 cents for Washington.

Flower Sales by Wire in Seven Intermediate-Size Metropolitan Markets

Outgoing Orders.--During 1952-64, the volume of FTD flower orders coming out of Erie, Utica-Rome, Scranton, Lancaster, Reading, Syracuse, and the Triple Cities could largely be identified with family buying units and economic conditions. Flower orders increased annually by about the same percentage as the number of resident telephone subscribers. Over the 13-year period, the number of business telephone subscribers on January 1 of the following year was indicative of the economic growth in these cities. The number of outgoing orders went up about nine times as fast as the number of new business telephone subscribers. However, outgoing orders increased faster as the number of businesses reached higher levels (Appendix C).

Economic activity in these markets was further reflected by the level of general merchandise sales and the buying power index reported by Sales Management (2). The number of flower orders went up around 0.36 percent for each 1-percent increase in spending for general merchandise, or down by 0.36 percent for each 1-percent decrease. This was approximately the same ratio as was found in the nine large cities. However, flower orders have tended to increase faster than general merchandise sales in the seven markets (Appendix C).

The buying power index was the least important variable, but it was significant in explaining sales over and above contributions of other measures of economic changes.

The number of outgoing FTD orders generally followed these population and economic indicators, although there were substantial deviations in some years in selected markets (table 5).

Attribution of a plus or minus 15-percent deviation to an unusual sales influence would have a probability range of 1 in 100. It would be unrealistic to expect a 15-percent sales increase from a promotional campaign. It would be

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13/ "Drug stores include those with and without fountains, and proprietary stores without prescription departments" (2, June 1964 issue, p. 232).

Table 5.--Actual and estimated number of outgoing flowers-by-wire orders placed with FTD florists in selected intermediate-size markets, 1952-64

City and year	Actual outgoing orders	Estimated outgoing orders 1/	Deviation of predicted from actual	Error
	No.	No.	No.	Pct.
Utica-Rome:				
1952	10,425	10,962	537	5.2
1953	11,206	11,276	70	0.6
1954	11,463	11,460	-3	2/
1955	11,410	12,445	1,035	9.1
1956	12,278	12,968	690	5.6
1957	14,070	13,492	-578	4.1
1958	14,044	13,899	-145	1.0
1959	15,980	14,995	-985	6.2
1960	16,377	15,579	-798	4.9
1961	15,894	15,825	-69	0.4
1962	16,058	16,294	236	1.5
1963	16,350	16,439	89	0.5
1964	16,508	15,666	-842	5.1
Reading:				
1952	5,844	5,148	-696	11.9
1953	6,072	5,447	-625	10.3
1954	5,650	5,562	-88	1.6
1955	6,031	6,279	248	4.1
1956	6,402	6,336	-66	1.0
1957	7,025	6,504	-521	7.4
1958	6,349	6,580	231	3.6
1959	6,926	6,813	-113	1.6
1960	6,906	6,968	62	0.9
1961	6,679	7,042	363	5.4
1962	6,474	6,973	499	7.7
1963	6,460	7,031	571	8.8
1964	6,654	6,914	260	3.9
Erie:				
1952	7,146	7,701	555	7.8
1953	7,554	8,385	831	11.0
1954	7,709	8,151	442	5.7
1955	8,945	9,138	193	2.2
1956	9,842	9,724	-118	1.2
1957	11,014	9,815	-1,199	10.9
1958	9,612	9,749	137	1.4
1959	9,915	9,943	28	0.3
1960	10,265	10,062	-203	2.0

See footnotes at end of table.

Continued--

Table 5.--Actual and estimated number of outgoing flowers-by-wire orders placed with FTD florists in selected intermediate-size markets, 1952-64--Continued

City and year	Actual outgoing orders	Estimated outgoing orders 1/	Deviation of predicted from actual	Error
	No.	No.	No.	Pct.
Erie Cont'd:				
1961	10,199	10,055	-144	1.4
1962	10,733	10,121	-612	5.7
1963	10,713	10,237	-476	4.4
1964	10,603	10,443	-160	1.5
Scranton:				
1952	5,859	5,664	-195	3.3
1953	6,208	5,754	-454	7.3
1954	6,072	5,894	-178	2.9
1955	6,299	6,535	236	3.7
1956	6,506	6,799	293	4.5
1957	7,144	6,854	-290	4.1
1958	6,757	6,910	153	2.3
1959	6,852	7,150	298	4.3
1960	6,754	7,108	354	5.2
1961	7,194	7,087	-107	1.5
1962	7,318	7,163	-155	2.1
1963	7,223	7,245	22	0.3
1964	7,440	7,497	57	0.8
Lancaster:				
1952	3,647	3,673	26	0.7
1953	3,729	3,577	-152	4.1
1954	4,149	4,517	368	8.9
1955	4,936	5,928	992	20.1
1956	6,754	6,418	-336	5.0
1957	7,399	6,465	-934	12.6
1958	7,621	6,942	-679	8.9
1959	8,359	7,835	-524	6.3
1960	8,527	8,279	-248	2.9
1961	8,636	8,625	-11	0.1
1962	8,420	8,872	452	5.4
1963	9,225	9,225	---	---
1964	9,458	9,815	357	3.8

See footnotes at end of table.

Continued--

Table 5.--Actual and estimated number of outgoing flowers-by-wire orders placed with FTD florists in selected intermediate-size markets, 1952-64--Continued

City and year	Actual outgoing orders	Estimated outgoing orders 1/	Deviation of predicted from actual	Error
	No.	No.	No.	Pct.
Binghamton, Endicott, Johnson City:				
1952	6,371	6,913	542	8.5
1953	7,262	7,441	179	2.5
1954	7,800	7,794	-6	0.1
1955	8,171	8,536	365	4.5
1956	9,005	8,574	-431	4.8
1957	10,232	9,127	-1,105	10.8
1958	9,323	9,705	382	4.1
1959	9,926	10,434	508	5.1
1960	10,825	10,730	-95	0.9
1961	11,138	10,951	-187	1.7
1962	11,473	11,183	-290	2.5
1963	11,436	11,433	-3	2/
1964	11,995	11,988	-7	2/
Syracuse:				
1952	14,349	14,617	268	1.9
1953	15,491	15,439	-52	0.3
1954	15,929	16,559	630	4.0
1955	16,866	16,106	-760	4.5
1956	16,972	17,921	949	5.6
1957	20,971	20,328	-643	3.1
1958	21,595	21,256	-339	1.6
1959	23,256	21,410	-1,846	7.9
1960	23,793	23,509	-284	1.2
1961	24,013	25,411	1,398	5.8
1962	24,921	25,067	146	0.6
1963	25,108	24,810	-298	1.2
1964	25,689	26,251	562	2.2

1/ Estimates are based on the level of general merchandise sales, number of telephone subscribers, and buying power index as reported by Sales Management (2).

2/ Less than one-tenth of 1 percent.

necessary to isolate the influences of variables not presently included in this analysis to identify with confidence any promotional sales effects of less than 15 percent. Logically, such factors could be identified directly or controlled under experimental situations. For example, the rate of deaths outside the city of relatives and friends could be isolated by treating flower orders for funerals and memorials separately.

None of the variables related to outgoing sales was very successful in explaining the average value of wire orders from these seven markets. For a meaningful analysis of determinants of the size of an outgoing order, information on the occasion for the orders would also have to be known.

Incoming Orders.--The volume of flower orders coming in by wire service to the seven cities from 1954 to 1963 was reflected by the number of resident telephone subscribers on the following January 1, by deaths, and by drug sales. Each 1,000 increase in the number of resident telephone customers meant 200 more flowers-by-wire orders for each city. For each 1,000 change in deaths, flower sales showed a corresponding change of 2,300 orders. A $1 million increase in drug sales was associated with 270 more flowers-by-wire orders, or roughly 1 order for each additional $4,000 in drug sales. Drug sales proved a better indicator of sickness than the number of hospital admissions. The extent to which incoming orders could not be explained by these three variables resulted in a normal range of unexplained sales fluctuations of plus or minus 1,000 orders per market per year, at a level of confidence of 95 in 100. Actual and estimated numbers of incoming orders are given by city in table 6.

As was the case for the nine large cities, incoming orders for these seven centers could be estimated with more precision than outgoing wire orders. This emphasizes the importance of knowing the occasion for sale.

The average dollar value of an order could also be related to deaths and drug sales. Incoming orders increased in value by 0.6 percent for each 10-percent increase in drug sales. The number of deaths was related to the value of incoming orders at the rate of 0.2 percent for each 1-percent increase in deaths. Arrangements for deaths and memorials were accepted as representing larger purchases. The relationships of both deaths and volume of drug sales are over and above allowance for economic growth. As the number of business telephone users went up by 1 percent, average expenditures for flowers sent into these markets increased by 0.3 percent.

Markets With Television Promotion

The television promotion sponsored by 10 FTD members in the Triple Cities of New York consisted of sixty 20-second spots per month from April 1963 through March 1964. These announcements stressed special arrangements, the FTD Selection Guide, the convenience of sending flowers-by-wire, or the use of flowers for a holiday occasion. In addition, listeners were generally given the name of one of the FTD florists who participated. Names of sponsoring florists rotated in successive announcements, which appeared at no special time during the broadcasting day but included some prime television time.

Table 6.--Actual and estimated number of incoming orders for flowers-by-wire received by FTD florists in selected intermediate-size markets, 1954-63

City and year	Actual incoming orders	Estimated incoming orders 1/	Deviation of predicted from actual	Error
	No.	No.	No.	Pct.
Utica-Rome:				
1954	10,677	10,395	-282	-2.6
1955	11,297	11,297	-18	-0.2
1956	12,202	12,141	-61	-0.5
1957	13,472	13,008	-464	-3.4
1958	12,744	13,045	301	2.4
1959	14,631	14,593	-38	-0.3
1960	14,325	14,582	257	1.8
1961	14,771	14,827	56	0.4
1962	14,703	15,371	668	4.5
1963	15,191	15,108	-83	0.5
Reading:				
1954	6,096	6,080	-16	-0.3
1955	6,902	7,003	101	1.5
1956	6,975	7,465	490	7.0
1957	8,125	7,897	-228	-2.8
1958	7,916	8,146	230	2.9
1959	8,825	8,117	-708	-8.0
1960	8,873	8,815	-58	-0.7
1961	9,165	9,259	94	1.0
1962	9,465	9,336	-129	-1.4
1963	9,263	9,486	-223	2.4
Erie:				
1954	8,005	7,758	-247	-3.1
1955	8,835	8,397	-438	-5.0
1956	9,497	8,958	-539	-5.7
1957	10,136	9,599	-537	-5.3
1958	9,449	9,461	12	0.1
1959	10,055	10,265	210	2.1
1960	10,546	10,567	21	0.2
1961	10,126	10,652	526	5.2
1962	10,454	10,652	198	1.9
1963	10,011	10,805	794	7.9
Scranton:				
1954	9,577	10,618	1,041	10.9
1955	10,203	10,872	669	6.6
1956	10,571	11,365	794	7.5
1957	12,246	12,117	-129	-1.1
1958	11,495	11,812	317	2.8
1959	12,680	12,312	-368	-2.9
1960	12,718	12,566	-152	-1.2
1961	12,814	12,105	-709	-5.5
1962	12,834	12,299	-535	-4.2
1963	13,306	12,377	-929	-7.0

See footnote at end of table.

Continued--

Table 6.--Actual and estimated number of incoming orders for flowers-by-wire received by FTD florists in selected intermediate-size markets, 1954-63--Continued

City and year	Actual incoming orders	Estimated incoming orders 1/	Deviation of predicted from actual	Error
	No.	No.	No.	Pct.
Lancaster:				
1954	6,301	7,051	750	-11.9
1955	6,935	7,399	464	-6.7
1956	7,678	8,039	361	-4.7
1957	8,010	8,376	366	-4.6
1958	8,424	8,451	27	-0.3
1959	9,302	8,925	-377	4.1
1960	9,048	8,764	-284	3.1
1961	9,445	9,009	-436	4.6
1962	9,900	9,208	-692	7.0
1963	9,510	9,331	-179	1.9
Binghamton:				
1954	6,357	6,317	-40	0.6
1955	6,809	7,300	491	-7.2
1956	6,916	7,664	748	-10.8
1957	8,345	7,913	-432	5.2
1958	7,628	8,125	497	-6.5
1959	8,686	8,337	-349	4.0
1960	8,745	8,581	-164	1.9
1961	9,114	8,620	-494	5.4
1962	9,298	8,913	-385	4.1
1963	8,949	9,076	127	-1.4
Syracuse:				
1954	17,153	16,678	-475	2.8
1955	18,588	18,375	-213	1.1
1956	19,270	20,020	750	-3.9
1957	20,591	20,405	-186	0.9
1958	21,057	21,192	135	-0.6
1959	22,440	22,147	-293	1.3
1960	22,547	22,999	452	-2.0
1961	23,516	23,223	-293	1.2
1962	23,802	24,153	351	-1.5
1963	24,571	24,345	-226	0.9

1/ Estimates are based on family units (resident telephone subscribers), deaths, and drug sales.

The Lancaster promotion began in September 1963 and ended on Mother's Day in May 1964. The contract called for 160 announcements that were generally concentrated around holiday periods. Each advertisement was for 20 seconds and appeared from 8:00 a.m. to 10:30 p.m. Some of these announcements were used in conjunction with top network shows.

The Lancaster advertisements used themes similar to the Triple Cities promotion, i.e., selection guide, special arrangements, and holiday usages of flowers. Participating florists and FTD were also mentioned in each announcement. As in the Triple Cities, FTD was instrumental in coordinating the television promotion and providing slides for the spots; the cost, however, was financed by the individual participants.

Twelve of the 16 Lancaster participants were florists in Lancaster County.[14] The other four were located in areas around Lancaster. Lancaster florists had previous experience in cooperative newspaper advertising; they had used color linage in a Lancaster newspaper for holiday periods until 1962.

On an individual basis, florists in both Lancaster and the Triple Cities used a variety of means to promote their shops and flowers. Their promotional activities included newspapers, radio, billboards, direct mail, yellow pages, trading stamps, and space in organizational publications such as those issued by schools, churches, lodges, and unions. Seven of the 10 FTD members indicated that the medium receiving the most promotional investment was newspapers. Information provided by nine Lancaster florists did not show as clear a preference for one means of promotion.

Nine florists in the Triple Cities who reported local sales spent around 3.5 percent of their total sales on promotion during 1963; 11 FTD members and 6 non-FTD florists in Lancaster reported expenditures of 1 to 1.5 percent.

Individual promotional activities existed in years prior to the television campaign. One might assume that these activities would continue through the period of special promotion. However, television promotional expenditures in the Triple Cities were not a net increase to regular promotion by individual shops. Florists cut back on the amount they spent on their individual advertising during the joint television program. This illustrates that a new promotional program may not mean an equal increase in promotional investment or just the addition of another medium to the program already being conducted by florists--but some of both. Thus, the sales success or failure of promotion should be related to a special television promotion that is accompanied by some reduction in regular promotion.

14/ One of the participating florists had two shops involved in the promotion; hence, a total of 17 shops were part of the special television campaign. Two of these shops were omitted from sales comparisons: one had substantial individual promotion and the other had grown in volume because of consolidation in recent years.

Sales in the Promotion Cities

The number of outgoing orders placed through 15 of the 17 Lancaster shops participating in the promotion increased by 4.4 percent between fiscal 1962-63 and 1963-64, which included the September-to-May promotion (table 7). Between the two previous fiscal years, 1961-62 and 1962-63, the increase had been 4.9 percent.[15] In contrast, 11 nonparticipating FTD members in Lancaster and nearby counties had 5.7 percent more orders between 1963-64 and 1962-63, and no change in sales between 1962-63 and the year preceding.

For the specific promotion months of September 1963 to May 1964, 10 of these Lancaster participants reported sales (local and wire) that totaled over $500,000.[16] These sales exceeded the amount reported for September 1962-May 1963 by 2.5 percent. Seven florists in Lancaster County but not in the promotion had a 3.4-percent increase in total sales for the September 1963-May 1964 period. Their combined sales were over $200,000 during this period.

Incoming orders for the 15 florists in Lancaster showed as much as a 10-percent change from one fiscal year to the next. The percentage changes in the number of both outgoing and incoming orders between years suggest a considerable degree of randomness or inconsistency in sales. Even after sales are fitted to certain economic and demographic factors on an annual basis, such randomness exists (table 5 and figure 2).

Annual volume of total sales during 1963-64 by the 10 participants in the Triple Cities was around $750,000. The five florists who provided monthly sales data reported $348,000 in sales for April-December 1963, when the promotion was being conducted. These sales were 12 percent less than sales for April-December 1962, when total floral sales had been up by 11 percent over the volume in April-December 1961. Again, these comparisons illustrate a substantial randomness in sales between periods.

Outgoing wire orders by sponsors in the Triple Cities went up by 2 percent during 1963-64 (which included July to March promotion) over 1962-63 (which included April to June promotion). There was less than a 1-percent change in sales between 1962-63 and the preceding fiscal year (table 7).

Unfortunately, not enough years of data were available to estimate statistically the normal fluctuation in total floral sales or the relationship between local sales and wire orders. As a consequence, it is not known if local and outgoing wire orders normally move in the same direction and if wire sales as well as local sales would have declined in the Triple Cities without the television promotion.

15/ Total U. S. orders through FTD declined by 3.7 percent in fiscal 1962-63 from the previous year and went up 5 percent in 1963-64 over 1962-63.

16/ Total floral sales included cut flowers, potted plants, accessories, and wire-order business, but did not include landscaping, shrubbery and insecticides.

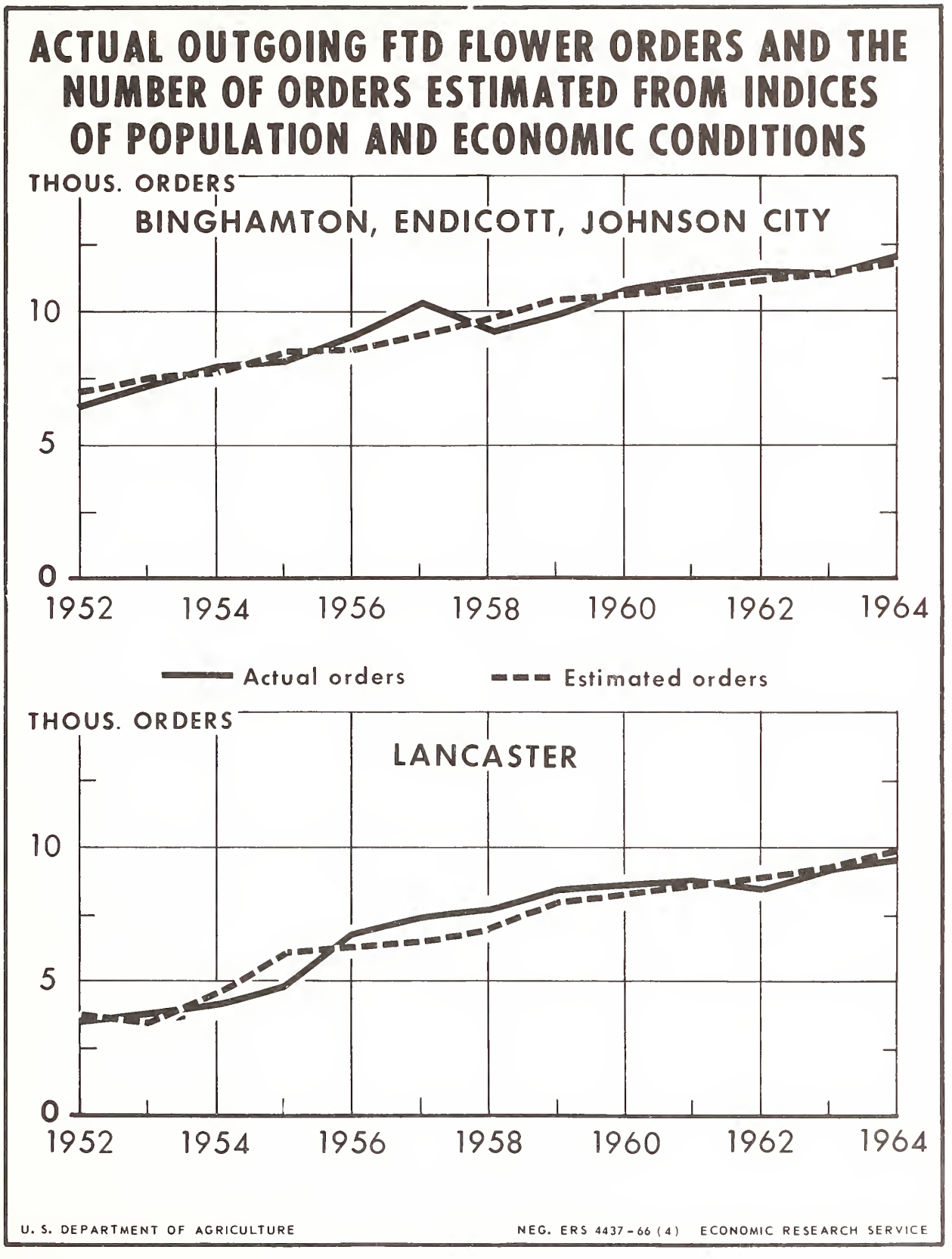
ACTUAL OUTGOING FTD FLOWER ORDERS AND THE NUMBER OF ORDERS ESTIMATED FROM INDICES OF POPULATION AND ECONOMIC CONDITIONS
THOUS. ORDERS
BINGHAMTON, ENDICOTT, JOHNSON CITY
10
5
0
1952
1954
1956
1958
1960
1962
1964
Actual orders
Estimated orders
THOUS. ORDERS
LANCASTER
10
5
0
1952
1954
1956
1958
1960
1962
1964
U. S. DEPARTMENT OF AGRICULTURE
NEG. ERS 4437-66 (4)
ECONOMIC RESEARCH SERVICE

Figure 2

Table 7.--Wire-order sales by sponsoring FTD florists in television promotion, Lancaster, Pa., and Triple Cities of New York, 1961-64

Item	Lancaster - 15 shops			Triple Cities - 10 shops		
	1961-62	1962-63	1963-64 1/	1961-62	1962-63 2/	1963-64 3/
Outgoing orders:						
Number	8,465	8,884	9,279	11,291	11,379	11,640
Percent change from previous year	---	4.9	4.4	---	.8	2.3
Value	$68,141	$72,298	$75,537	$95,401	$98,295	$100,502
Percent change from previous year	---	6.1	4.5	---	3.0	2.2
Incoming orders:						
Number	9,298	10,408	9,999	9,041	9,284	9,296
Percent change from previous year	---	11.9	-4.0	---	2.7	0
Value	$75,876	$88,057	$84,226	$73,719	$79,509	$78,808
Percent change from previous year	---	16.1	-4.4	---	7.9	-.9

1/ Television promotion, Sept.-May.
2/ Television promotion, Apr.-June.
3/ Television promotion, July-Mar.

IMPLICATIONS OF THESE FINDINGS

Available statistics on economic and demographic factors can be used to explain most of the changes in FTD sales volumes in past years. These factors logically influence the demand for flowers. Their changes can be used to explain total U. S. flower sales within 4 percent, sales in 9 large markets within 11 percent, and sales in 7 smaller markets within 15 percent. The respective 4, 11, and 15 percent of FTD sales that could not be clearly identified with changes in these variables were likely related to variables which were not brought into this analysis. For example, a portion of unexplained sales that resulted from flower promotion in the past could not be determined. The effectiveness of these promotions was obscured with sales trends, inasmuch as promotional budgets were largely dependent upon sales volumes and grew with sales. This is especially true of the manner in which FTD's promotional budget is determined.

These analyses show the amount of changes in FTD sales that have occurred during a 26-year period. They further show what would be an abnormal change in the sales volume for the United States and for selected markets. Thereby, this approach to understanding the demand for flowers provides one means of detecting a substantial sales change resulting from promotion. However, to accomplish an unusual boost in flower sales, the promotion itself would necessarily have to be unusual. For example, if the sales volume for FTD in the United States changed by 4 percent more than population and the economy would indicate, this sales response would be unusual. A pronounced change in FTD's promotional program might bring this about, and FTD could change its program substantially by concentrating the promotional budget of 2 fiscal years into 1 calendar year. Resulting sales could then be tested to determine if sales increased by 4 percent more than population and the economy would warrant. Such an approach may be the only means for evaluating a national promotional program.

In local markets, the response that can be expected from a practical change in promotion is more nearly 4 percent than 11 or 15 percent. Some control conditions in local markets would, therefore, need to be initiated in combination with the historical analysis of flower sales to measure a 4-percent response to promotion. Nevertheless, even with controlled testing, an understanding of the amounts by which flower sales in these markets change in relation to economic and population factors will be helpful for conclusive evaluation of reasonable sales responses to promotion.

The analytical procedure outlined in this report will best estimate FTD orders when data on economic and demographic influences are known for the respective year and market. Use of historical sales patterns to estimate flower sales need not be restricted to appraising past situations, however. Sales may be projected for expected levels of economic and population indicators (table 8). Such projections would be necessarily conditional upon the materialization of assumed levels, but they would aid in the joint consideration of what the several influences might mean to flower sales. These estimates of future sales volumes could be based on normal growth factors, but data on expected flower sales for a city that may be losing or gaining a major industry, or for the United States when additional disposable income is

Table 8.--Projected annual number of FTD flower orders at increased levels of employment and spending for general merchandise, 9 large metropolitan markets 1/--Continued

Total non-agricultural employment	Philadelphia: Level of general merchandise sales (Mil. dol.)				
	1,220	1,230	1,260	1,290	1,320
	-- Orders --				
1,550	189,605	191,218	192,801	194,361	195,898
1,560	190,761	192,380	193,972	195,542	197,088
1,570	191,916	193,549	195,151	196,730	198,285
1,580	193,072	194,711	196,327	197,916	199,480
1,590	194,227	195,875	197,497	199,095	200,669

Total non-agricultural employment	San Francisco: Level of general merchandise sales (Mil. dol.)				
	800	850	900	950	1,000
	-- Orders --				
1,085	155,722	158,990	162,132	165,162	168,089
1,105	158,431	161,756	164,953	168,035	171,013
1,125	161,139	164,517	167,768	170,907	173,932
1,145	163,840	167,278	170,585	173,772	176,852
1,165	166,544	170,040	173,400	176,640	179,771

Total non-agricultural employment	Boston				
	910	940	970	1,000	1,300
1,200	201,362	203,615	205,816	207,974	227,525
1,210	202,955	205,220	207,439	209,614	229,319
1,220	204,536	206,819	209,055	211,247	231,111
1,230	206,120	208,425	210,678	212,887	232,900
1,240	207,697	210,020	212,290	214,516	234,682

Total non-agricultural employment	Pittsburgh				
	600	625	650	675	700
775	106,706	108,208	109,670	111,099	112,492
777	106,967	108,473	109,938	111,368	112,764
779	107,228	108,738	110,207	111,640	113,039
781	107,486	109,001	110,474	111,910	113,313
783	107,746	109,262	110,741	112,181	113,587

See footnote at end of table.

Table 8.--Projected annual number of FTD flower orders at increased levels of employment and spending for general merchandise, 9 large metropolitan markets 1/

Total non-agricultural employment	Chicago: Level of general merchandise sales (Mil. dol.)				
	2,860	3,010	3,160	3,210	3,360
	-- Orders --				
2,580	324,302	330,027	333,373	337,381	342,697
2,610	327,861	333,657	337,039	341,083	346,458
2,640	331,429	337,280	340,698	344,786	350,227
3,670	452,356	460,341	465,008	470,587	478,013
3,700	455,848	463,895	468,598	474,231	481,704

Total non-agricultural employment	St. Louis: Level of general merchandise sales (Mil. dol.)				
	590	610	630	650	670
	-- Orders --				
800	91,618	92,670	93,700	94,709	95,695
820	93,780	94,855	95,909	96,942	97,954
840	95,938	97,040	98,118	99,174	100,207
860	98,093	99,220	100,323	101,403	102,459
880	100,247	101,398	102,525	103,626	104,708

Total non-agricultural employment	Detroit				
	1,190	1,230	1,375	1,470	1,560
1,275	180,917	182,978	190,095	194,496	198,491
1,295	183,595	185,686	192,097	197,374	201,428
1,315	186,273	188,395	195,722	200,253	204,367
1,335	188,947	191,232	198,532	203,123	207,300
1,355	191,620	193,803	201,340	205,997	210,232

Total non-agricultural employment	Los Angeles				
	2,000	2,200	2,400	2,600	2,800
2,480	356,172	367,993	379,123	389,655	399,669
2,540	364,318	376,400	387,784	398,566	408,809
2,600	372,435	384,787	396,433	407,446	417,917
2,660	380,540	393,161	405,051	416,313	427,012
2,720	388,642	401,532	413,685	425,177	436,104

See footnote at end of table.

Table 8.--Projected annual number of FTD flower orders at increased levels of employment and spending for general merchandise, 9 large metropolitan markets 1/--Continued

Total non-agricultural employment	Washington, D.C.: Level of general merchandise sales (Mil. dol.)				
	725	775	825	875	925
	-- Orders --				
910	202,172	206,843	211,320	215,620	219,761
945	209,508	214,348	218,988	223,445	227,735
980	216,830	221,840	226,642	231,254	235,695
1,015	224,135	229,314	234,277	239,045	243,635
1,050	231,430	236,772	241,897	246,820	251,565

1/ Both spending and employment are greater than prevailed for each city in 1964. The increments shown for each represent roughly the annual rate of growth that prevailed in the past 7 years.

anticipated from a tax cut, should prove especially helpful in planning more effective marketing programs for flowers. As indicated earlier, total sales of FTD for 1966 are expected to be up by 500,000 orders over 1965 primarily as a result of the increase in disposable personal income in 1965.

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APPENDIX A

Analyses of U. S. Flower Orders Handled by FTD

FTD sales from 1935 to 1965 were compared to statistics on population, income, some types of spending, price levels, competition from other products, employment, and the wartime involvement of the U. S. economy.

Data on total disposable personal income and various sales indices were used to measure purchasing power and rate of spending. The amount of unemployment was considered since it might also have indicated changes in distribution of income.

In any analysis of this type, sales during World War II often deviate from usual sales patterns. This was true for FTD sales, which jumped substantially in volume in 1942-46 and then declined in the immediate postwar period. The number of military personnel on active duty was a good index of these peculiar influences, which likely resulted from the relocation of people, restrictions on travel, curtailment of flower deliveries because of gas and tire rationing, and the scarcity of other types of remembrances (4 and 5). Along with statistics on disposable income, deaths, and marriages, military numbers could be used to estimate the number of FTD orders with precision from 1930 through 1963. However, estimates of FTD sales relative to important peacetime determinants have been given in this report as being more meaningful to present and future flower sales than coefficients influenced by 1942-46 market conditions.

These independent variables were chosen on the basis of their logical association, direct and indirect, with the demand for flowers and on the availability of statistics on these factors. It was assumed that the variables included would reflect other variables not specifically identified. In direct comparison, the number of flower orders was highly correlated with some variables, poorly correlated with others. In like manner, some independent variables were highly correlated with each other (table 9).

The intercorrelation between independent variables was handled by a stepwise multiple regression program and a predetermined confidence level for acceptance of significant variables. This procedure brought in an independent variable when it made a significant contribution to the explanation of flower sales, over and above the sales variation explained by other independent variables brought in previously. For instance, disposable income, which showed the highest direct relationship to flower sales, explained most of the variation in U. S. flower sales; but employment, which was highly related to disposable income, further explained flower sales during 1935-41 and 1947-65. In brief, this program permitted a simultaneous comparison of flower orders with variables, many of which were individually correlated with most of the fluctuations in flower sales from 1935 through 1965, and it selected the combination of those variables that most nearly explained sales fluctuations. This was the criterion for the variables finally selected for use in explaining flower sales.17/

17/ The analysis was also made on first differences, but the efficiency of this technique in explaining sales fluctuations was not any greater than use of variations from the overall mean, the approach used here.

Table 9.--Simple correlation coefficients for selected economic and demographic factors, and number of FTD flower orders in the United States for 26 years, 1935-65

Item	Total employment	Personal disposable income	Deaths	Sales of durable goods	Sales of household appliances	Variety store sales	Retail store sales	Sales of confectionery mfgs.	FTD orders
Total employment ..	1	0.97	0.83	0.96	0.97	0.97	0.99	0.99	0.97
Disposable personal income		1	.93	.98	.93	.99	.99	.96	.997
Deaths			1	.91	.75	.92	.89	.82	.92
Sales of durable goods				1	.92	.99	.98	.94	.98
Sales of household appliances					1	.93	.96	.96	.92
Variety store sales						1	.99	.96	.990
Retail store sales							1	.98	.992
Sales of confectionery mfgs.								1	.96
FTD orders									1

The 5 years prior to 1935 were dropped from the analysis because data on confectionery and several other sales were not available before this year. The regression coefficient for any variable is consequently influenced by the other variables present in the system. This means that if a variable, such as disposable income, is the only one to represent growth in both purchasing power and population, the coefficient for its relationship to flower sales will be somewhat different than when the employment statistic is present to reflect population.

The significant combination of variables that explained sales was disposable income, employment, household appliance sales, and sales of confectionery manufactures. These four explained 99.75 percent of the annual variation in wire orders during the 26-year period. Other variables were rejected because they failed to give any additional explanation of changes in flower sales. In effect, they did not further reduce the standard deviation in sales of 136,000 orders.

The estimating equation derived for the number of annual sales in the United States for the period was:

$$(1) \quad \hat{Y} = \underset{(0.891)}{17.690\, X_1} + \underset{(25.855)}{129.763\, X_2} - \underset{(5.734)}{10.320\, X_3} - \underset{(0.906)}{3.926\, X_4} - 4{,}712 \pm 135.930$$

where:

$\hat{Y}$ = estimated number of annual FTD orders in thousands,

X_1 = total disposable income for the previous year in billions of dollars,

X_2 = number of persons employed in millions,

X_3 = sales of confectionery manufactures in billions of dollars,

and

X_4 = sales of household appliances in billions of dollars.

The standard errors of the regression coefficients are given in parenthesis under the respective coefficients.

The linear equation for the 1947-65 period explained 99.36 percent of sales fluctuations; it is as follows:

$$(2) \quad \hat{Y} = \underset{(2.613)}{18.174\, X_1} + \underset{(60.733)}{166.210\, X_2} - \underset{(11.839)}{20.910\, X_3} - \underset{(1.658)}{5.332\, X_4} - 5{,}776 \pm 154.70$$

where X_1, X_2, X_3, and X_4 are defined as above.

APPENDIX B

Analyses of FTD Sales for Nine of the Largest Metropolitan Markets

The number of outgoing orders for the large markets from 1958 to 1964 was compared to the number of persons employed and their rate of spending. Persons employed and marriages were the assumed indications of population change and composition. Income and spending of the adult population were assumed to be reflected by the sum spent on general merchandise and by the buying power index. As expected, general merchandise sales and the buying power index were highly correlated, with an R^2 of 0.94, the same as the correlation between employment and merchandise sales.

The nine markets differed substantially in level of sales, both outgoing and incoming. These differences in size were handled through adjustment for sales volume peculiar to each market. This adjustment was over and above the influence found for spending, population, and occasion for flowers. It was accomplished by computing constants for zero-one variables representing these markets in the multiple regression analysis. Consequently, the estimating coefficients derived represented the average effect of factors associated with annual flower orders within a city, instead of differences in flower volumes among cities.

FTD sales going out of these markets could best be fitted in logarithmic forms to the number of persons employed and the spending for general merchandise. The shape of the curve for general merchandise sales indicated that spending tended to rise faster than wire orders. Both spending and flower orders went up substantially from 1958 to 1964. Whether consumers tended to spend proportionately more on general merchandise and less on flowers as spending increased, or whether the higher levels of spending reflected other variables associated with time, could not be established. The employment curve was almost linear in shape; therefore, flower orders generally went up in proportion to the increase in number of adults employed.

The estimating equation was:

$$\hat{Y} = \underset{(0.1842)}{0.9444} \log X_1 + \underset{(0.0595)}{0.3424} \log X_2 - 0.96486 + C_i \pm 0.0148$$

where:

X_1 is the logarithm of the number of persons employed annually,

X_2 is the logarithm of dollars spent for general merchandise,

0.96486 is the intercept constant, and

C_i is the respective constant for differences in sales volumes of individual cities from the overall average.

The latter constants are: -0.10504 for Chicago, 0.00297 for Detroit, 0.06097

for St. Louis, 0.00508 for Los Angeles, 0.17224 for Boston, 0.12108 for San Francisco, 0.13770 for Pittsburgh, and 0.32123 for Washington. Although some cities were not significantly different in this analysis, correction for sales levels peculiar to a city was forced for all cities but Philadelphia; hence, no constant was needed in this equation for Philadelphia. The standard error of estimate for this equation was 0.0148 in logs.

Incoming orders were expected to depend upon the number of adults (again taken as employment) and the occasions for their receiving flowers. The number of deaths would reflect an occasion for flowers. Drug sales were used as a possible index of changes in the amount of sickness in these large markets. Admittedly, this was an aggregate figure that might well reflect discretionary spending more than the state of health of persons in a particular city. Hospital admissions might have been a better measure of sickness, but this statistic did not prove worthwhile for the smaller markets and would have required much time to compile for all hospitals in large cities.

Logarithmic transformations also proved best for fitting incoming FTD sales for eight of the nine markets. The estimating equation was:

$$\hat{Y} = 0.52446 \log X_1 + 0.16377 \log X_2 + 0.3516 \log X_3 - 0.49704 + C_i \pm 0.0112$$

where:

X_1 is the log of employment,

X_2 is the log of deaths,

X_3 is the log of drug sales,

0.49704 is the intercept constant, and

C_i the respective constants for differences in sales levels among cities.

These latter constants were -0.10581 for Chicago, -0.04468 for Los Angeles, -0.15485 for Detroit, 0.07385 for Pittsburgh, and -0.08068 for St. Louis. Sales levels for Washington, San Francisco, and Philadelphia were not significantly different from the corrected mean for cities, and no constant for these cities was computed in this equation. The standard error of estimate in this equation was 0.0112 in logs and, as for outgoing orders, applied between years within cities rather than among city means.

Analyses of FTD Sales for Seven Intermediate-Size Markets

The regression equation finally derived for orders going out of these seven cities was more complex than the equations developed to estimate sales for larger markets. General merchandise sales were brought into the analysis both in log form and as X^2. The implication of this curve is that flower orders increased proportionate to sales of general merchandise in these markets, but this rate of increase tended to level off at higher volumes of general merchandise sales.

The volume of flower orders trended upward slightly compared to the number of business telephone subscribers. This curve was based on business telephone statistics being entered in log form, as $(\log X)^2$ and as X^2. It means that flower orders have gone up proportionate to the expansion in businesses in these cities, but this rate has changed as the expansion in business has increased.

The number of resident telephone subscribers was fitted to flower sales in log form, with a resulting curve that showed some tendency for flower orders to level off as number of subscribers increased. The buying power index was treated as linear.

The regression equation established to estimate outgoing flower orders from Utica-Rome, Erie, Reading, Scranton, Lancaster, Triple Cities, and Syracuse was:

$$\log \hat{Y} = \underset{(0.07894)}{0.36677} \log X_1 - \underset{(0.00001)}{0.00003} X_1^2 + \underset{(0.00035)}{0.00079} X_2 + \underset{(0.22609)}{1.09283} \log X_3 +$$

$$\underset{(0.00143)}{0.00924} X_4^2 + \underset{(0.97387)}{8.99337} \log X_4 - \underset{(0.81733)}{6.61982} (\log X_4)^2 - 1.68213 + C_i,$$

where:

X_1 is the sum of general merchandise sales,

X_2 is the buying power index,

X_3 is the number of resident telephones on January 1 of the following year, and

X_4 is the number of business telephones on the same date.

The 1.68213 is the intercept constant and the C_i is the sales level characteristic of the respective city. These constants for cities were -0.36196 for Reading, -0.12687 for Erie, -0.09581 for Scranton, 0.08456 for the Triple Cities, 0.06351 for Lancaster, and -0.28142 for Syracuse. Utica-Rome was used as the base city; the equation applies to Utica-Rome without the addition of a constant.

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Incoming orders for these markets were best fitted in linear form, using the variables of deaths, drug sales, and resident telephone subscribers. The standard error for this equation was 467 orders. It was as follows:

$$\hat{Y} = \underset{(64.8)}{200.8\, X_1} + \underset{(762.2)}{2{,}336.0\, X_2} + \underset{(71.6)}{269.3\, X_3} - 5506 + C_i \pm 467$$

where:

X_1 refers to the number of resident telephone subscribers in thousands,

X_2 is deaths in thousands, and

X_3 is the amount spent for drug sales in million dollars.

Estimates can be made for the Triple Cities without addition of another term. Estimates applicable to the other cities would include -1981 for Utica-Rome, -5660 for Reading, -1922 for Erie, 1214 for Scranton, 506 for Lancaster, and -9123 for Syracuse.

Hospital admissions did not prove helpful in explaining additional fluctuations in incoming flower orders. Likewise, the number of marriages was not important in explaining flowers received from outside the city.