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## The Knoxville Wholesale and Retail Produce Markets

University of Tennessee Agricultural Experiment Station

William E. Goble

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Bulletin 315

July, 1960

# The Knoxville Wholesale and Retail Produce Markets

## Use, Facilities, and Needed Improvements



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KNOXVILLE

## ACKNOWLEDGMENTS

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# **The Knoxville Wholesale and Retail Produce Markets**

By William E. Goble  
Assistant Agricultural Economist

## **Introduction**

### **Purpose and Importance of Study**

This study developed from a request of the Knox County Truck Growers to the Agricultural Council of the Knoxville Chamber of Commerce for assistance in having a survey made to determine whether new facilities for a farmers' market are feasible. Arrangements were made for the survey to be done by the Transportation and Facilities Branch, Agricultural Marketing Service, United States Department of Agriculture, in cooperation with the Agricultural Economics and Rural Sociology Department, Tennessee Agricultural Experiment Station. This report covers only the phases of the overall report allocated to the Tennessee Agricultural Experiment Station.

The specific objectives of the survey were: 1) to trace briefly the history of the Knoxville Fruit and Vegetable Markets; 2) to determine the type of facilities and the extent of the fruit and vegetable growers' use of the Knoxville Wholesale and Retail Market; 3) to determine the extent of use of and the contributions of the intercity and out-of-town truckers to the business of the Knoxville Wholesale Market; 4) to summarize the suggestions of the producers, the intercity and out-of-town truckers relative to possible changes in the market services, facilities, operating rules and locations; 5) to estimate the outlook on demand and supply for fruits and vegetables in the Knoxville trade area; and 6) to indicate the importance of the Interstate Highway system on planning a produce market.

The relative importance of fresh fruit and vegetables, poultry and eggs, meat and meat products, dry groceries and frozen foods in the Knoxville Wholesale Markets during 1958 is shown in Table 1. The farmers' market receipts of fresh fruits and vegetables included 806 carlot equivalents in truck receipts and 118 carlots sold directly to wholesalers for a total of 924 carlots or about 14 percent of the 6,747 carlots of wholesale fruit and vegetables handled (not including food chain receipts). This volume does not include an

undetermined amount of local production which was sold directly to consumers or retailers.

### Sampling Methodology

Random samples of fruit and vegetable truckers were drawn during a 2-week period. The number of truckers to be interviewed was designated for both the A.M. and the P.M. of each day. The basis for selecting the number of truckers to be interviewed was the volume of receipts flowing to market by days. No trucker was

Table 1. Number of Wholesale Dealers and Estimated Volume of Direct Produce Receipts, Knoxville, Tennessee, 1958.

Type of wholesaler	Dealers	Volume of direct receipts			Total
		Rail	Truck receipts from local production areas	Other truck receipts	
	No.		Carlots		
<b>Fresh fruit and vegetable—</b>					
Carlot receivers	14	523	30	3,449	4,002
Commodity specialists	11	124	18	1,198	1,340
Trucker-jobbers	8	6	70	523	599
Farmers' market	xx <sup>1</sup>	0	806	0	806
<b>Total<sup>2</sup></b>	<b>33</b>	<b>653</b>	<b>924</b>	<b>5,170</b>	<b>6,747</b>
<b>Poultry and egg—</b>					
Wholesalers	3	0	180	209	389
Slaughterers and wholesalers	4	0	345	645	990
<b>Total<sup>3</sup></b>	<b>7</b>	<b>0</b>	<b>525</b>	<b>854</b>	<b>1,379</b>
<b>Meat and meat product—</b>					
Wholesalers <sup>4</sup>	7	199	0	1,134	1,333
Slaughterers	3	0	1,401	1,551	2,952
<b>Total</b>	<b>10</b>	<b>199</b>	<b>1,401</b>	<b>2,685</b>	<b>4,285</b>
Dry groceries and frozen foods <sup>5</sup>	7	763	0	1,840	2,612
Food chain organizations <sup>6</sup>	4	826	206	7,479	8,511
<b>Grand Total</b>	<b>61</b>	<b>2,441</b>	<b>3,056</b>	<b>18,037</b>	<b>23,534</b>

<sup>1</sup> Number of dealers does not include between 70 and 250 growers on farmers' market.

<sup>2</sup> Excludes 272 carlots intermarket (second handling) receipts.

<sup>3</sup> Excludes 18 carlots intermarket (second handling) receipts.

<sup>4</sup> Includes packer branch houses but excludes 304 carlot intermarket (second handling) as meat from livestock receipts.

<sup>5</sup> Excludes 39 carlots intermarket (second handling) receipts.

<sup>6</sup> Includes volume of 2 food chain organizations not having local warehouses, but excludes 621 carlots intermarket (second handling) receipts.

Source: The Knoxville Wholesale Produce Market, Transportation and Facilities Research Division, AMS, USDA, Washington, D. C.

interviewed more than once. The sample of fruit and vegetable growers interviewed included 69 on Market Square and 111 on Western Avenue.

All intercity truckers and out-of-town buyers were interviewed on the Western and Forest Avenue markets during a 2-week period. In addition, fruit and vegetable growers' and other truckers' license plates were checked over an additional 3-week period to determine the number using the wholesale markets and their origins.

### **Historical Setting for the Study**

The need for a wholesale fruit and vegetable market in Knoxville was evident in 1927. On March 27 of that year City Council designated certain sections of Market Square (in the principal retail section of the city) as places at which sellers were allowed to sell only in wholesale quantities. During 1930 and 1931, part of an arterial street passing around the principal retail section (located on Henley Street) was used as a farmers' market.

Immediately before the 1932 marketing season, a committee of farmers requested the management of the Western Avenue Market to provide a space for fruits and vegetables in their tobacco warehouse. The management granted the request for sales of fruits and vegetables in the tobacco warehouse and the market has continued in operation since the 1932 marketing season. The Western Avenue Market has continued to be operated as a fruit and vegetable market from June 15 to October 15 and as a tobacco market from November through January. Automobiles, furniture, and other items are stored in the buildings from February to June.

The operation of the tobacco market during November, December and January prevents farmers from using the market when tobacco sales are being conducted. As a consequence, truck farmers must park their trucks either outside the Western Avenue Warehouse or on Forest Avenue Market.

### **Location and Facilities of the Farmers' Markets Market Areas**

Farmers during 1958 sold fruit and vegetables in the three market areas of Knoxville as follows: 1) at the Market Square area, 2) the Western Avenue Market area, and 3) at the Forest Avenue Market area. Of these three areas, the Market Square was primarily for retail sales. The Western Avenue Market served primarily two purposes—a tobacco market and a farmers' produce market with a combination of wholesale and retail sales. The

Forest Avenue Market was used mostly for wholesale sales (see Figure 1 for market locations).

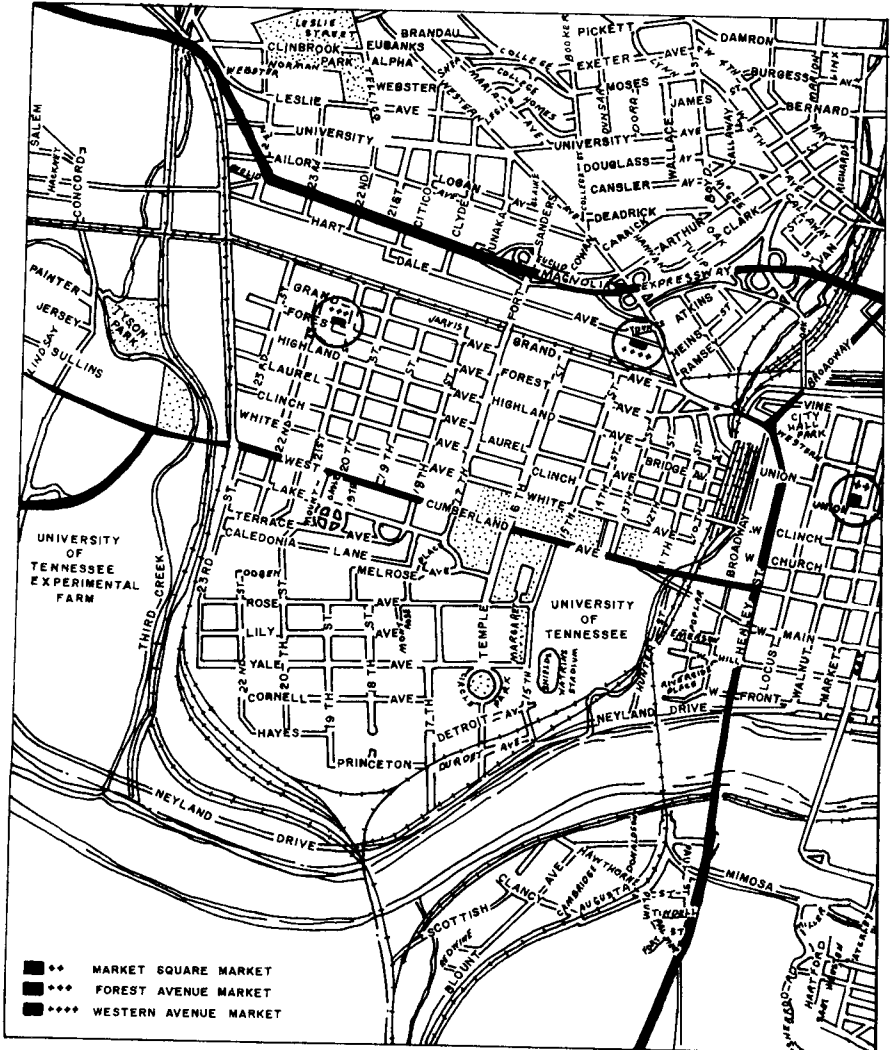


Figure 1. Location of the Market Square, Western and Forest Avenue markets in Knoxville, 1958.

Source: This part of the map of Knoxville was reproduced from a map by Nichols Printing Company, 513 S. Central, Knoxville, Tennessee.

### Market Square Market Facilities

The retail farmers' market has been on Market Square since 1850. Outside of the three-story brick building and on the streets parallel with the long sides of the building are parking spaces for 76 farmers' vehicles (see Figure 2). Individual farmers occupying these spaces sold jellies, flowers, nursery stock, fresh fruits, and





Figure 2. West half of Knoxville's Market Square Municipal Farmers' Market Building and Parking Spaces, 1958.

vegetables. During December, 1959, a fire destroyed approximately two-thirds of the market house. The City Council passed a resolution to tear down the market house and to construct a market mall on part of the site where the market house is located. The occupants of the stalls in the undamaged portion of the market house have been given notice to vacate the building. The contract for the removal of the market house has been approved and work is now underway.

In the middle of the Municipal Farmers' Market were located 93 tables with seats for the display of handicraft, home canned products, and other products from the farms. There were 32 retail stalls, in which various food products are sold. Parking for farmers' vehicles totaled 76 spaces next to the sidewalks, 39 of them on one side of the Market House and 37 on the other.

### Western Avenue Market Facilities

The facilities of the Western Avenue Market, located on Dale Avenue below the Western Avenue overpass, consists of two connected warehouses. The building where a majority of farmers sell their produce was constructed for a sale barn by the Tennessee-Kentucky Horse and Mule Company, which was organized in 1907. After several years of operation, sales were discontinued by this company and the building was used for lumber storage, a plow

manufacturing plant, and a tobacco warehouse. More recently, it has been used for a combination produce market from June 15 to October 15 and tobacco warehouse from November through January and other storage from February to June. The market building is a brick structure 150 feet wide and 300 feet long (Figure 3). The interior of this building, where most of the farmers sell their produce, has a concrete floor with no partitions between the stalls.



Figure 3. Knoxville's Western Avenue Market where the majority of farmers sold produce, 1958.

**Ventilation.** The building is ventilated by means of overhead lights or skylights and by windows in the walls. Opening and closing the skylights and windows is difficult and requires so much time that they are seldom opened during hot weather. Thus sometimes there is not enough provision for escape of the hot air mixed with exhaust fumes from the numerous motor vehicles driven inside the market.

**Division of Space and Handling of Traffic.** Figure 4 shows the arrangement of the stalls and driveways throughout the market. Traffic is permitted to drive straight through the old section of the warehouse located on the right of Figure 4, or to turn left at the rear of the building and drive down a lane which leads to an exit at the left side of the front. About 1 acre is utilized for the warehouse just described.

There are 36 stalls on one side of the main thoroughfare in the

building and 38 on the other. The return drive, leading toward the front, has an equal number of stalls, but these are not conveniently

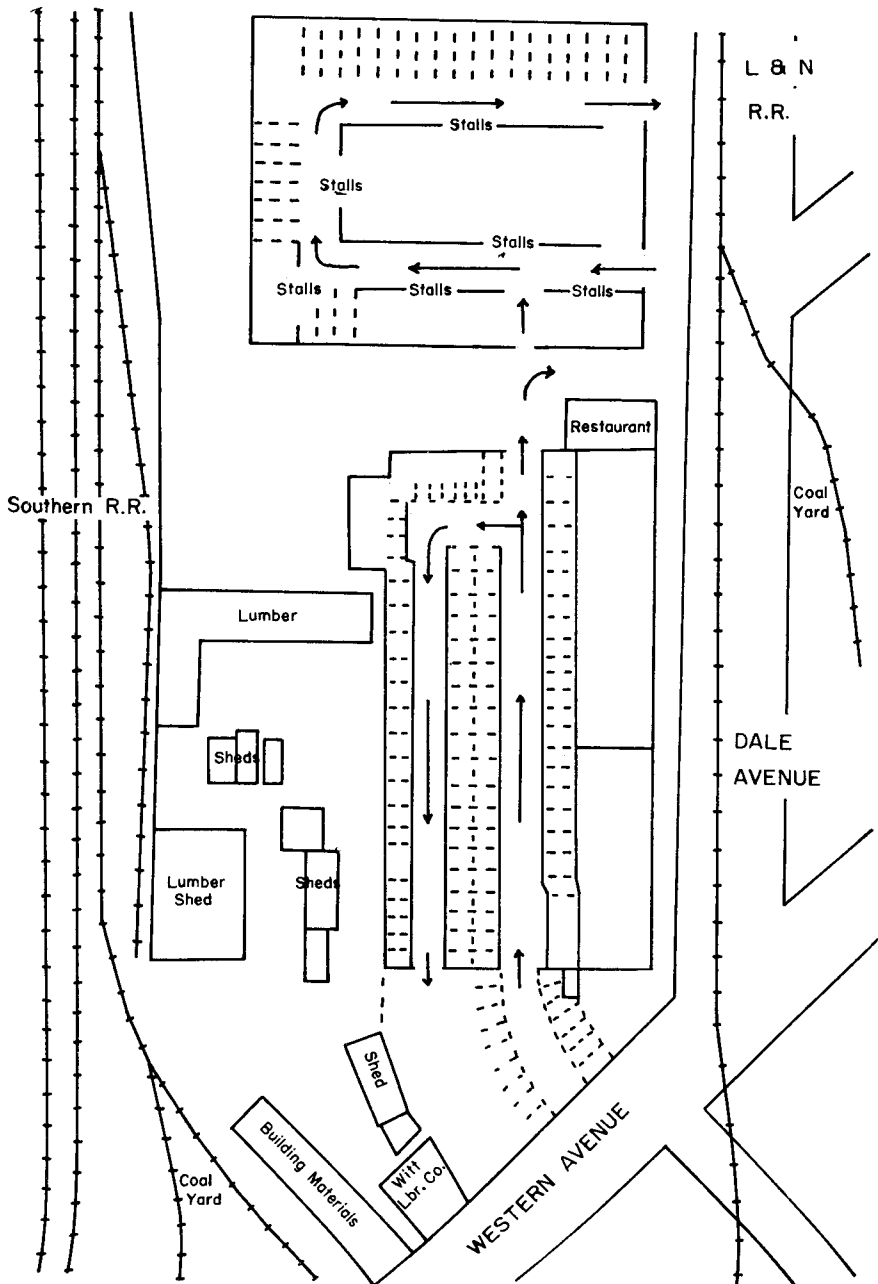


Figure 4. Parking spaces and direction of traffic flow in the Western Avenue Farmers' Market, Knoxville, 1958.

located for consumers. In front of the building is space for 11 trucks on one side of the drive leading to the main entrance and 9 trucks on the other. The parking spaces shown in Figure 4 provide room for two pickup trucks or one large truck.

**Space in New Section.** This building has about 1 acre of floor space. There are 27 parking spaces inside this building for farmers and intercity truckers. The rest of the space was allocated to stalls. There are 10 parking spaces in front of this warehouse. Merchant-truckers have the choice of stalls in the new section of the warehouse, whereas local farmers have the choice of stalls in the old building. (See Figure 4 for floor plan of building with 2 exits on Dale Avenue.)

The building is of steel construction with the roof and siding of galvanized, corrugated metal. The floor is emulsified asphalt. All windows are 4 x 10 feet, hinged on top. One set of scales is installed in the new building. Drinking water, toilets, and telephones in the old building are used. No refrigeration facilities are available.

### **Forest Avenue Market**

Since this market has been used chiefly for wholesalers and the intercity truckers, most of the information on this market is covered by an additional report from the Transportation and Facilities Research Division, A.M.S., U.S.D.A., Washington, D.C.

A few farmers sell produce on the Forest Avenue Market during the summer and early fall seasons. Furthermore, when the Western Avenue Market is closed, some growers sell on the Forest Avenue Market. This market was established during 1941 when several of the wholesale fresh fruit and vegetable handlers, who had apparently become dissatisfied and had attempted to bring about improved conditions, moved from the Western Avenue Market into new facilities on Forest Avenue. Up to the time of the study, various new facilities had been added in the Forest Avenue Market.

## **Use of the Market Square and Western Avenue Markets by Farmers Supply Area**

During the survey period, August, 1958, the growers interviewed were from 18 counties of East Tennessee, 2 counties of North Carolina and 1 county of Virginia. Figure 5 indicates the specific home counties of the 180 growers interviewed on Market Square and the Western Avenue markets.

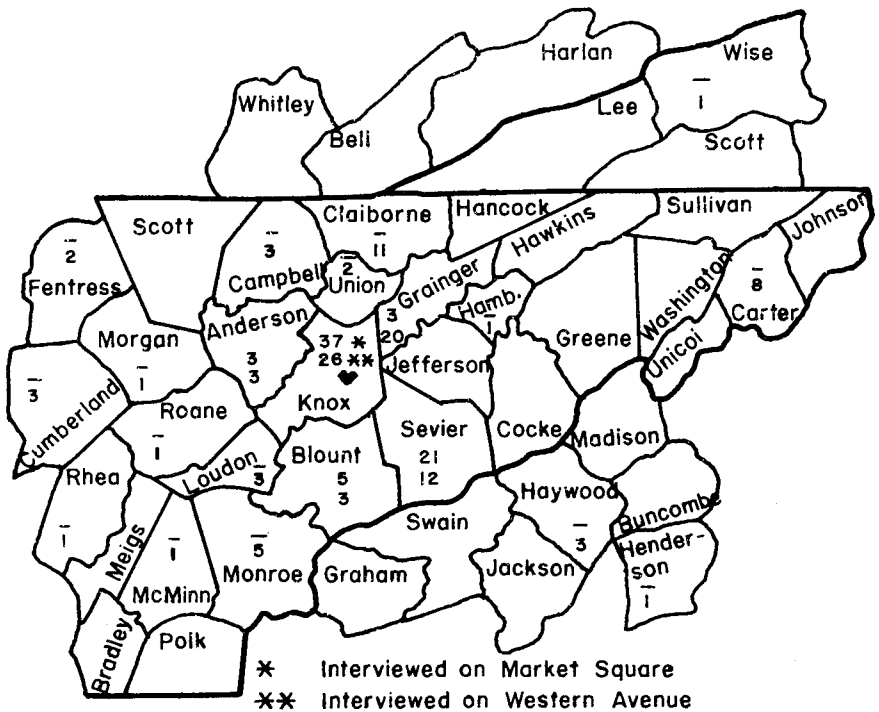


Figure 5. Number of growers in sample from each county who came to the Market Square and Western Avenue markets, Knoxville, Tennessee, August, 1958.

The 1954 acreage of fruits and vegetables for the 21 counties from which growers come to the Knoxville retail and wholesale markets is shown in Table 2.

Table 2. Fruit and Vegetable Acreage, 1954, for the Counties of Origin of Supplies For the Market Square and Western Avenue Markets, Knoxville, Tennessee.

County	Tree fruits, grapes	Vegetables, potatoes	Total fruit and vegetables
	Acres		
<i>Tennessee</i>			
Anderson	198	300	498
Blount	273	437	710
Campbell	19	328	347
Carter	94	325	419
Claiborne	124	351	475
Cumberland	1,376	1,882	3,258
Fentress	2,256	2,487	4,743
Grainger	425	516	941
Hamblen	108	134	242
Knox	467	683	1,150
Loudon	226	394	575
McMinn	229	310	539
Monroe	1,247	1,398	2,645
Morgan	201	439	640
Rhea	781	933	1,714
Roane	118	228	346
Sevier	201	292	493
Union	106	195	301
Total Tennessee	8,449	11,632	20,036
<i>North Carolina</i>			
Haywood	447	2,395	2,842
Henderson	723	1,744	2,467
Total N. C.	1,170	4,139	5,309
<i>Virginia</i>			
Wise	1,052	173	1,225
Grand total	10,671	15,944	26,570

Source: United States Census of Agriculture, 1954 (Washington, D. C., Superintendent of Documents, United States Government Printing Office).

The 180 fruit and vegetable growers included in the sample of this survey operated 1,596 acres of fruit and vegetables. This was equivalent to 6.0 percent of the total acreage of fruit and vegetables in the 18 counties of Tennessee, 2 counties of North Carolina, and 1 county of Virginia. The six leading counties in fruit and vegetable sales on the Knoxville produce market, including in descending order, are Knox, Sevier, Grainger, Claiborne, Blount and Carter counties. The growers interviewed from these counties reported 706 acres in fruit and vegetables. The 706 acres from these counties comprised 44 percent of the 1,597 acres of fruit and vegetables reported by the 180 growers interviewed on Market Square and Western Avenue markets. Table 3 lists the specific acreages of fruits and vegetables operated by the 180 growers.

Table 3. Fruit and Vegetable Acreage Operated by 180 Growers from 23 Counties from Which Fruit and Vegetables Were Sold on the Market Square and Western Avenue Markets, Knoxville, Tennessee, August, 1958.

Crop	Market Sq.	Western Ave.	Total
		Acres	
Corn, green	110.3	482.1	592.4
Beans, green	23.8	232.7	256.5
Tomatoes	36.5	119.5	156.0
Apples	6.6	104.4	111.0
Cantaloupes	18.5	75.6	94.1
Watermelons	2.4	64.5	66.9
Greens	23.4	42.5	65.9
Irish potatoes	7.0	27.9	34.9
Squash	5.0	17.8	22.8
Cucumbers	8.2	13.6	21.8
Cabbage	3.2	17.4	20.6
Okra	9.1	9.4	18.5
Sw. potatoes	2.5	15.0	17.5
Turnips	4.0	12.1	16.1
Grapes	11.3	4.5	15.8
Peppers	4.9	8.6	13.5
Onion	3.3	9.9	13.2
Strawberries	2.4	8.5	10.9
Radishes	a	8.4	8.4
Peaches	6.4	1.3	7.7
Beans, Lima	7.1	c	7.1
Peas	6.0	a	6.0
Beets	1.6	4.0	5.6
Eggplant	3.5	c	3.5
Lettuce	1.4	1.4	2.8
Blackberries	2.5	b	2.5
Rhubarb	c	1.5	1.5
Other veg.	1.2	0.3	1.5
Other fruits	1.1	0.9	2.0
<b>Total</b>	<b>313.2</b>	<b>1,283.8</b>	<b>1,597.0</b>

a Other vegetables (Radishes, Carrots, Peanuts, Parsnips, and Pumpkins).

b Other Fruits (Blackberries, Pears, Raspberries, Gooseberries).

c None reported.

### Farm-to-Market Distances

The 69 growers interviewed on the Market Square Market lived from 1 to 50 miles from Market Square Market, with an average of 13.6 miles. The 111 growers interviewed on the Western Avenue Market lived from 5 to over 120 miles from the Western Avenue Market, with an average of 40.8 miles. Table 4 indicates that 97.2 percent of the growers selling on Market Square lived within a 30-mile radius of the city; however, only 44.2 percent of the growers selling on the Western Avenue Market lived within a 30-mile radius of this market. Of the growers selling on the Western Avenue

Table 4. Distance 180 Producers Travel to the Market Square and Western Avenue Markets, Knoxville, Tennessee, August, 1958.

Miles	Market Square Producers		Western Avenue Producers	
	No.	Percent	No.	Percent
1- 9.9	17	24.7	12	10.8
10- 19.9	40	58.0	23	20.8
20- 29.9	10	14.5	14	12.6
30- 39.9	1	1.4	22	19.8
40- 49.9	1	1.4	11	9.9
50- 59.9	—	—	9	8.1
60- 69.9	—	—	1	0.9
70- 79.9	—	—	3	2.7
80- 89.9	—	—	3	2.7
90- 99.9	—	—	—	—
100-109.9	—	—	3	2.7
110-119.9	—	—	2	1.8
120 and over	—	—	8	7.2
Total	69	100.0	111	100.0

Market, 1.8 percent lived within a radius of 110-120 miles of this market.

### Highways and Directions from Markets

The number of fruit and vegetable growers who transported their produce to the market from different directions is an important consideration when the location of a market is being evaluated. Table 5 discloses that over 50 percent of the growers arrived on

Table 5. Growers Who Transported Produce from Various Directions to the Market Square and Western Avenue Markets, Knoxville, Tennessee, August, 1958.

Direction from Market	Highway number and nearby city	Market Square Producers		Western Avenue Producers	
		No.	Percent	No.	Percent
North	No. 33 Maynardville	3	4.4	14	12.6
Northeast	No. 11W Rutledge	5	7.2	30	27.0
Northwest	No. 25W Clinton	2	2.9	9	8.1
South	No. 129 Maryville	4	5.8	9	8.1
Southeast	No. 441 Sevierville	40	57.9	17	15.4
Southwest	No. 70 Kingston	3	4.4	9	8.1
East	No. 70 Dandridge	3	4.4	5	4.5
West	No. 62 Oak Ridge	9	13.0	18	16.2
	Total	69	100.0	111	100.0



Market Square from the Southeast. Arrival of growers on this same market for the next highest group included 13 percent who arrived over the Oak Ridge Highway.

Growers who sold on the Western Avenue Market included 27 percent who arrived on Highway 11W which comes through Rutledge. About 16 percent each drove over the Sevierville and Oak Ridge Highways respectively.

### Time Required for Travel and Selling Produce

**Travel Time.** The 69 growers interviewed on Market Square spent an average of 37 minutes on the road traveling to and from their farms. On Western Avenue the average time spent on the road by the 111 growers was 1 hour and 12 minutes. The minimum time spent on the road by the growers was about ½ hour and the maximum time was 6 to 7 hours. Table 6 presents a breakdown of the time growers spent traveling to and from the Market Square and Western Avenue markets. Since the growers on Market Square were located fairly close to the city, most of them spent less than 1 hour on the road during trips to the market. A similar category of growers selling on the Western Avenue Market included only 44.2 percent of the total of 111 growers.

**Selling Time.** Time used by 69 growers in selling their fruit and vegetables on Market Square averaged 9 hours and 44 minutes per grower compared with an average time of 12 hours and 26 minutes spent selling fruit and vegetables by 111 growers on the Western Avenue Market. The minimum time spent on the Market

Table 6. Time Spent on the Road to and from Market Square and Western Avenue Markets, 180 Producers, Knoxville, Tennessee, August, 1958.

Hours	Market Square Producers		Western Avenue Producers		Total Producers	
	No.	Percent	No.	Percent	No.	Percent
Less than 1 hour	63	91.3	49	44.2	112	62.2
1-1½ hr.	5	7.3	12	10.8	17	9.4
1½-2 hr.	1	1.4	18	16.2	19	10.5
2-2½ hr.	—	—	12	10.8	12	6.7
2½-3 hr.	—	—	1	0.9	1	0.6
3-3½ hr.	—	—	3	2.7	3	1.7
3½-4 hr.	—	—	3	2.7	3	1.7
4-5 hr.	—	—	5	4.5	5	2.8
5-6 hr.	—	—	2	1.8	2	1.1
6-7 hr.	—	—	6	5.4	6	3.3
Total	69	100.0	111	100.0	180	100.0

by any one grower was 1 hour and the maximum time was 48 hours. Table 7 indicates that 84.1 percent of the growers who sold on Market Square spent from 8 to 11.9 hours when they sold a load of produce—compared with 14.4 percent who spent the same period of time on the Western Avenue Market.

Table 7. Time Required to Sell a Load of Produce, 180 Producers for Market Square and Western Avenue Markets, Knoxville, Tennessee, August, 1958.

Hours	Market Square Producers		Western Avenue Producers		Total Producers	
	No.	Percent	No.	Percent	No.	Percent
Under 4	—	—	2	1.8	2	1.1
4- 7.9	6	8.7	24	21.6	30	16.7
8-11.9	58	84.1	16	14.4	74	41.1
12-15.9	5	7.2	29	26.2	34	18.9
16-19.9	—	—	15	13.5	15	8.3
20 & over	—	—	25	22.5	25	13.9
Total	69	100.0	111	100.0	180	100.0

### Size of Farm Enterprises

Fruits and vegetables make up most farm products sold on both the Market Square and Western Avenue markets. All except three of the 180 growers interviewed sold either fruit or vegetables. Table 8 shows that the average acreage of fruits and vegetables reported per grower selling on Market Square was smaller than that on Western Avenue. The average acreage reported in fruit by growers selling on Market Square was .4 of an acre compared with 1.1 acres on Western Avenue. Vegetable acreage reported by growers selling on Market Square was 4.1 compared with an aver-

Table 8. Total Farm Acreage and Fruit and Vegetable Acreage Reported by 180 Producers Interviewed on the Market Square and Western Avenue Markets, Knoxville, Tennessee, August, 1958.

Item	Market Square	Western Avenue	Total
Number of producers' records	69	111	180
Total acres operated	897.9	5,971.0	6,868.9
Acres in fruit	30.3	119.6	149.9
Acres in vegetables	282.9	1,164.2	1,447.1
Total acres in fruits and vegetables	313.2	1,283.8	1,597.0
Average acres in fruits	0.4	1.1	0.8
Average acres in vegetables	4.1	10.5	8.0
Total average acres in fruits & vegetables	4.5	11.6	8.9
Percent of cultivated land operated in fruits	3.4	2.0	2.2
Percent of cultivated land operated in vegetables	31.5	19.5	21.1
Total percent of acreage in fruits & vegetables	34.9	21.5	23.2

age of 10.5 acres for growers on Western Avenue. Slightly over one-third of the cultivated acreage of growers who patronized Market Square was in fruit and vegetables. About one-fifth of the cultivated acreage of growers selling on the Western Avenue Market was in fruit and vegetables.

The minimum and maximum acreage in fruit and vegetables per grower who sold on the Knoxville Wholesale Produce Markets is shown in Table 9. On Market Square, the market is used by growers who cultivated plots of ground as small as .1 of an acre in fruit, and on Western Avenue, .3 acre. The minimum acreage for vegetables is .3 acre. The maximum acreage on Western Avenue was almost twice the maximum acreage on Market Square.

Table 9. Minimum and Maximum Fruit and Vegetable Acreage of Growers, Interviewed on Market Square and Western Avenue Markets, Knoxville, Tennessee, August, 1958.

Crop	Market Square		Western Avenue	
	Minimum	Maximum	Minimum	Maximum
	Acres per grower			
Fruit	.1	16.0	.3	65.0
Vegetables	.3	46.6	.3	100.0
Fruit & vegetables	.3	53.6	.3	103.0

### Channels of Fruit and Vegetable Movement From Farm Through Knoxville Markets

**Importance of the Western Avenue Market.** Ninety of the 111 growers interviewed on the Western Avenue Market sold all their produce on this market. The total value of fruit and vegetables reported sold by the 111 growers during 1958 was \$255,551. Table 10 shows the value of the fruit and vegetables distributed to the various outlets (see Figure 6 for marketing channels).

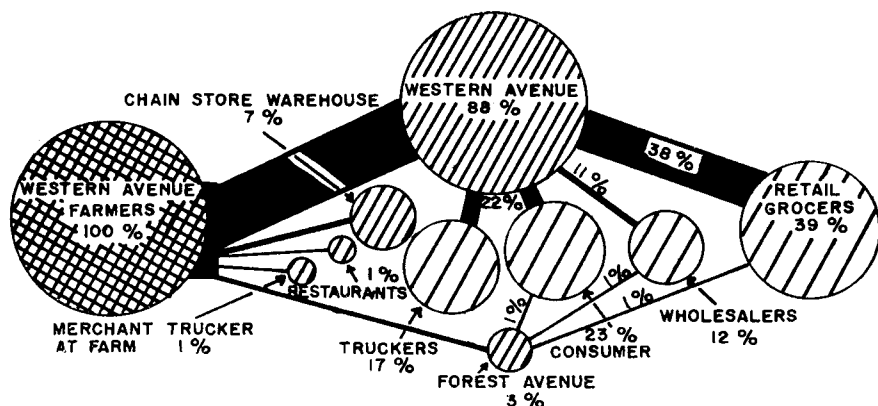


Figure 6. Channels of fruit and vegetable movement for 111 growers who sold on the Western Avenue Market, Knoxville, Tennessee, August, 1958.

Table 10. Value of Fruit and Vegetables Distributed by 111 Producers Through Specified Channels on the Western Avenue Market, Knoxville, Tennessee, 1958 Season.

Market and Growers' Sales Outlet	Dollars	Percent
<b>Western Avenue Market</b>		
Wholesalers	\$ 28,647	12.7
Retail grocers	95,978	42.7
Truckers	43,663	19.4
Consumers	56,698	25.2
<b>Total</b>	<b>\$224,986</b>	<b>100.0</b>
<b>Forest Avenue Market</b>		
Wholesalers	2,950	43.3
Retail grocers	2,600	38.2
Consumers	1,265	18.5
<b>Total</b>	<b>\$ 6,815</b>	<b>100.0</b>
<b>Other</b>		
Merchant trucker at farm	3,525	14.8
Chain store warehouse	17,025	71.7
Restaurants	3,200	13.5
<b>Total</b>	<b>\$ 23,750</b>	<b>100.0</b>
<b>Grand total</b>	<b>\$255,551</b>	
<b>Average per producer</b>	<b>\$ 2,302</b>	

A logical question would be "What was the gross sales of all the growers on the Western Avenue Market during 1958?" Based on the sample of growers interviewed, the chances are 95 out of 100 that sales per farmer would range from \$1,810 to \$2,794 and average \$2,302. Information obtained from the manager at the Western Avenue Market and from truck counts over an 8-week period, during the 1958 season, disclosed that there were about 500 different farmers selling on the Western Avenue Market. Using the confidence limit obtained from the sample of 111 farmers, and assuming there were 500 farmers on the market, gross sales of all growers would range from \$905,000 to \$1,397,000 with an average total gross sale of \$1,151,000.

**Importance of the Market Square Market.** Fifty-three of the 69 growers who sold fruit and vegetables on Market Square sold all of their produce on this market. The average estimate of value of the fruit and vegetables sold by the 69 growers inside the market building and on Market Square during 1958 was \$111,011. Market Square Market is considerably different from the Western Avenue Market where only fruit and vegetables were sold. Sales of growers to the Market Square and Western Avenue Markets included

fruits and vegetables, nursery products, vegetable plants, eggs, dairy products, poultry, pork, canned goods, and needlework (Table 11).

Table 11. Value of Fruit and Vegetables, Nursery Products, Vegetable Plants, Eggs, etc., Distributed by 69 Producers Through Specified Channels of the Market Square Market, Knoxville, Tennessee, August, 1958.

Item	Western Avenue		Market Square		Other	Total
	Whole- salers	Retail grocers, consumers	Retail grocers	Consumers	Peddle to customers	
	Value of products sold by producers (Dollars)					
Vegetables & fruit	7,207	700	830	61,845	2,125	72,707
Nursery products	—	—	200	15,445	—	15,645
Vegetable plants	—	—	250	3,310	—	3,560
Eggs	—	—	45	11,227	75	11,347
Dairy products	—	—	30	5,228	—	5,258
Poultry	—	—	8	1,636	—	1,644
Canned goods	—	—	—	350	—	350
Handwork	—	—	—	175	—	175
Pork	—	—	—	325	—	325
Total	7,207	700	1,363	99,541	2,200	111,011
Average per producer	104	10	20	1,443	32	1,609

Figure 7 indicates the specified marketing channels for fruit and vegetables from the farm to Market Square and Western Avenue and to whom final sales are made.

What was the income for all growers' sales on the Market Square Market and other outlets during 1958?

**Market Square—Outside.** A sample of 39 growers had an average gross income of \$2,187. Based on this sample, the chances are

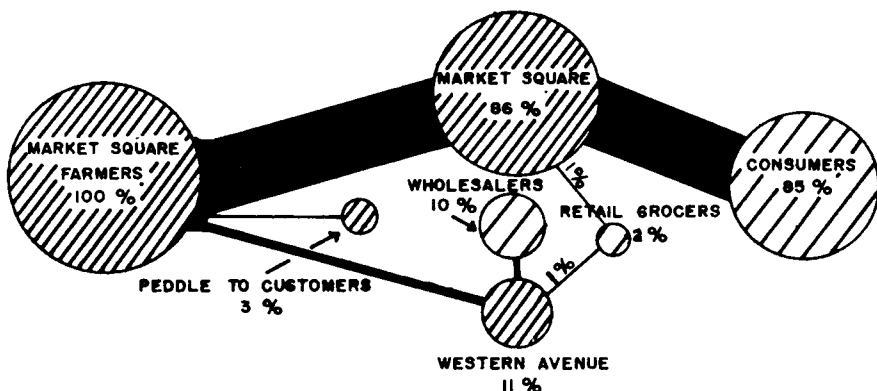


Figure 7. Channels of fruit and vegetable movement for 69 growers who sold on Market Square Market, Knoxville, Tennessee, August, 1958.

95 out of 100 that the income per grower would range from \$1,563 to \$2,811. Assuming 108 growers at outside Market Square and using the same procedure as with Western Avenue Market, the total gross income would range from \$168,804 to \$303,588 with an average gross income of \$236,196.

**Market Square—Inside.** Similar calculations showed that with a sample of data from 30 farmers' wives the chances are 95 out of 100 that the income would range from \$656 to \$1,058 or average \$859. Assuming 90 families selling inside Market Square and based on the sample, total income for these families would range from \$59,040 to \$95,220 or average \$77,130.

In summary, based on the sample as previously shown, total income on Market Square was estimated to range from \$227,844 to \$398,808 or average \$313,326 for the total of 198 growers.

With a universe of 698 growers (Western Avenue and Market Square Markets), the gross sales or income would range from \$1,132,844 to \$1,795,808 with an average of \$1,464,326 for all growers. In all the calculations the assumptions of normality and random sampling were made (Table 12).

Table 12. Incomes for a Specified Number of Growers Selling Produce on Market Square and Western Avenue Markets, Knoxville, Tennessee, 1958.

Markets	No. of growers	Average	Range	
			Minimum	Maximum
Western Avenue Market	500	\$1,151,000	\$ 905,000	to \$1,397,000
Market Square—Inside	90	77,130	59,040	to 95,220
Market Square—Outside	108	236,196	168,808	to 303,588
Total	698	\$1,464,326	\$1,132,848	to \$1,795,808

### Length of Marketing Season

About 57 percent of the 69 growers sold produce on Market Square during January which included the lowest attendance. The highest attendance was in August when all 69 growers sampled were on the market. June, July, August and September were the 4 busiest months of the year for marketing according to the 1958 survey. During July, August, and September, growers' patronage of the market was at a maximum (Table 13).

### Trips Per Week and Per Year

The total number of trips made to Market Square by the 69 growers interviewed varied from 251 in January and February to 893 in August. The trips for the group of 69 growers totaled 6,314 per year or an average of 92 per farmer per year (Table 14).

Table 13. Length of Fruit and Vegetable Marketing Season of 180 Growers Who Sold on the Market Square and Western Avenue Markets, Knoxville, Tennessee, Survey, August, 1958.

Month	Market Square		Western Avenue Market		Total both markets	
	No. of producers	Percent of producers	No. of producers	Percent of producers	No. of producers	Percent of producers
Jan.	39	56.5	7	6.3	46	25.6
Feb.	40	58.0	7	6.3	47	26.1
March	45	65.2	6	5.4	51	28.3
April	49	71.0	8	7.2	57	31.7
May	59	85.5	10	9.0	69	38.3
June	62	89.9	24	21.6	86	47.8
July	64	92.8	76	68.5	140	77.8
Aug.	69	100.0	107	96.4	176	97.8
Sept.	63	91.3	69	62.2	132	73.3
Oct.	55	79.7	18	16.2	73	48.6
Nov.	44	63.8	7	6.3	51	28.3
Dec.	42	60.9	7	6.3	49	27.2

Table 14. Trips Made to Market Square, Knoxville, Tennessee, Each Week and Month by 69 Producers, August, 1958.

Month	Total trips per month	Total trips per week	Percent of trips made during each month
January	251	58	4.0
February	251	58	4.0
March	338	78	5.3
April	433	100	6.9
May	633	146	10.0
June	776	179	12.3
July	828	191	13.1
August	893	206	14.1
September	706	163	11.2
October	529	122	8.4
November	364	84	5.8
December	312	72	4.9
Annual trips	6314	1457	100.0

Table 15 shows that the total trips per month to the Western Avenue Market varied from 65 per month during January to 1,465 during August. There was a total of 4,559 trips for the year by the group, or an average of 41 trips per farmer per year (Table 15). In a survey of the Knoxville Wholesale Fruit and Vegetable Market published in 1940, each grower averaged 51 trips per year.<sup>1</sup>

<sup>1</sup> Charles E. Allred, Benjamin J. Luebke and William S. Crawford, Knoxville Wholesale Fruit and Vegetable Market (Knoxville, Tennessee, Agricultural Experiment Station, University of Tennessee) Monograph No. 119, Oct. 30, 1940, p. 25.

Table 15. Trips Made to the Western Avenue Market, Knoxville, Tennessee, by 111 Producers, 1958.

Month	Total trips per month	Total trips per week	Percent of trips made per month
January	65	15	1.4
February	78	18	1.7
March	74	17	1.6
April	117	27	2.6
May	177	41	3.9
June	299	69	6.6
July	975	225	21.4
August	1465	338	32.1
September	871	201	19.1
October	221	51	4.8
November	126	29	2.8
December	91	21	2.0
Total	4559	1052	100.0

### Number, Type, and Size of Farmers' Vehicles

Table 16 indicates the type, number and size of vehicles used by the growers interviewed. Autos were the most widely used vehicles by growers on the Market Square Market; 42 percent used

Table 16. Type, Number, and Size of Vehicles Driven by 180 Producers to the Western Avenue and Market Square Markets, Knoxville, Tennessee, August, 1958.

Type	Market Square		Western Avenue		Total	Percent of total
	No. of producers	Percent of total	No. of producers	Percent of total		
Pick-up trucks						
1/2 ton	—	—	47	42.4	47	26.1
3/4 ton	—	—	9	8.1	9	5.0
Flat body trucks						
1/2 ton	7	10.0	1	0.9	8	4.4
3/4 ton	1	1.5	9	8.1	10	5.5
1 ton	—	—	8	7.2	8	4.4
1 1/2 ton	—	—	3	2.7	3	1.7
Stake-body trucks						
1/2 ton	2	2.9	19	17.1	21	11.7
3/4 ton	—	—	5	4.5	5	2.8
1 ton	—	—	5	4.5	5	2.8
1 1/2 ton	—	—	4	3.6	4	2.2
School bus	1	1.5	1	0.9	2	1.1
Autos	29	42.0	—	—	29	16.1
Panel trucks						
1/2 ton	1	1.5	—	—	1	0.6
3/4 ton	1	1.5	—	—	1	0.6
Trucks with tops						
3/4 ton	27	39.1	—	—	27	15.0
Total	69	100.0	111	100.0	180	100.0



them. Almost the same percentage of the growers used trucks with tops.

Pick-up trucks were the most commonly-used vehicles on the Western Avenue Market, being used by 42.4 percent of the growers.

### Size of Producers' Vehicle Loads

The 180 producers of fruits and vegetables who were interviewed on the Market Square and Western Avenue Markets were asked to estimate their "usual" load transported to these markets. This information was used to determine the volume of fruit and vegetables that growers within the area hauled to market (see Table 17).

Table 17. Average Size Load Reported by 180 Producers for Western and Market Square Markets, Knoxville, Tennessee, August, 1958.

Bushels	Market Square		Western Avenue		Total	
	No. of producers	Percent of producers	No. of producers	Percent of producers	No. of producers	Percent of producers
Under 5	31	44.9	—	—	31	17.2
5- 9.9	16	23.2	1	0.9	17	9.4
10- 14.9	12	17.4	5	4.5	17	9.4
15- 19.9	1	1.4	10	9.0	11	6.1
20- 24.9	5	7.3	14	12.6	19	10.6
25- 29.9	3	4.4	19	17.1	22	12.2
30- 39.9	—	—	25	22.6	25	13.9
40- 49.9	—	—	10	9.0	10	5.6
50- 74.9	1	1.4	13	11.7	14	7.8
75- 99.9	—	—	10	9.0	10	5.6
100-124.9	—	—	4	3.6	4	2.2
125 & over	—	—	—	—	—	—
Total	69	100.0	111	100.0	180	100.0

## Use of the Forest and Western Avenue Markets By Intercity Truckers

### Supply Area

The supply of fruit and vegetables came from 10 states during the time the interviews were being conducted. Figure 8 shows the area from which the supply of fruit and vegetables came to Knoxville during August, 1958. The supply area from which Knoxville's produce was received covered a much wider area during different seasons of the year. On the basis of information received from 31 fruit and vegetable wholesale dealers in Knoxville, the supply area for tomatoes, citrus, cantaloupes, and other produce is more accurately described by Figure 9. The supply came from 18 states, Mexico, Central America, and Puerto Rico.

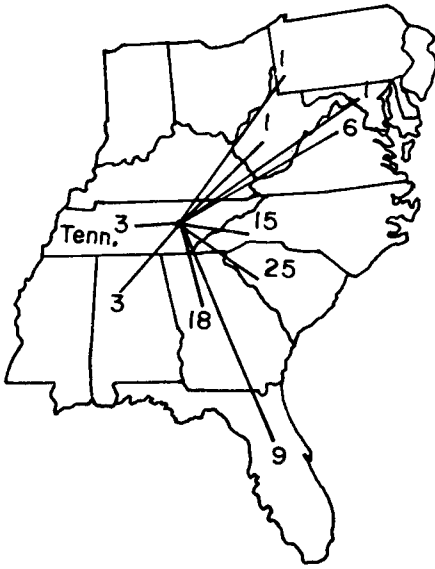


Figure 8. Origin of fruit and vegetables transported to Knoxville, Tennessee, by 82 intercity truckers, August, 1958; half of these were interviewed.

**Kinds of Fruit and Vegetables Purchased.** The wide variety of the different fruits and vegetables shipped into Knoxville during 1958 is shown in Table 18.

#### Time Required to Sell a Load of Produce

The time required by truckers to sell a load of produce at the



Figure 9. Origin of fruit and vegetables transported to Knoxville, Tennessee, by 41 intercity truckers during all of 1958.

Table 18. Origin of Fruit, Vegetables, and Nuts Shipped into Knoxville for the Forest and Western Avenue Markets, Knoxville, Tennessee, 1958.

Commodity	Texas		Ala.		N.Y.		Ind.		S.C.		Md.		Tenn.		Ariz.		Wash.		Central & South America		Mexico
			La.	Miss.	Pa.	N.J.	Ohio	Wis.	Ga.	N.C.	W. Va.	Ky.	Fla.	Calif.	Idaho	Ore.					
Apples						x						x					x				
Asparagus	x																				
Bananas																					x
Beans, Lima			x																		
Blackberries																					
Beans, Snap			x									x									x (Fla.)
Beets																					x
Cabbage			x																		
Cantaloupes								x													
Cauliflower																					
Carrots																					
Celery																					
Cherries																					
Collards																					
Corn, Green			x																		
Cranberries																					
Cucumbers			x																		
Egg plant			x																		
Figs																					
Gooseberries																					
Grapefruit																					
Grapes																					
Greens																					
Honeydew melons			x																		
Kale																					

Table 18. Continued

Commodity	Texas		Ala.		N.Y.		Ind.		S.C.		Md.		Tenn.		Ariz.		Wash.		Central & South America		Mexico
		Miss.	La.	Pa.	N.J.	Ohio	Wis.	Ga.	Va.	N.C.	Ky.	Calif.	Idaho	Ore.	Fla.	Fla.	Ore.	Fla.	Calif.		
Lemons																					
Lettuce	x				x																
Limes																					
Okra																					
Onions, dry	x																				
Oranges	x																				
Peaches																					
Pears																					
Peas, Field																					
Peas, English																					
Pecans	x																				
Peanuts	x																				
Peppers	x																				
Pumpkins																					
Irish potatoes																					
Raspberries																					
Radishes																					
Rhubarb																					
Spinach	x																				
Squash																					
Strawberries																					
Sweet potatoes																					
Tangerines																					
Tomatoes	x																				
Turnips																					
Watermelons																					

Knoxville markets varied considerably. Only about 20 percent sold their produce within 1 day. About 39 percent required from 1½ to 2 days to sell their produce. The other truckers, or about 41 percent, spent from 2½ days to 1 week selling their produce (Table 19). The amount of time required to sell a load of produce depends upon many factors, and it is an important consideration in deciding the number of spaces required for intercity trucks.

Table 19. Time Required to Sell a Load of Produce on the Forest and Western Avenue Markets, 41 Intercity Truckers, Knoxville, Tennessee, August, 1958.

Time to sell a truckload	Intercity Truckers Reporting	
	Number	Percent
1 day	8	19.5
1½ days	2	4.9
2 days	14	34.2
2½ days	1	2.4
3 days	7	17.1
3½ days	1	2.4
4 days	3	7.3
5 days	—	—
6 days	—	—
1 week	3	7.3
Not reporting	2	4.9
Total	41	100.0

### Trips Made Per Week

The total trips made per week by 41 intercity truckers varied considerably during the different seasons (Table 20). Since most trips were made during the summer season, facilities for parking trucks would be required to accommodate the peak load during this season. The 41 truckers made 1,833 trips to the markets during the 1958 season.

Table 20. Trips Made Per Week, 41 Intercity Truckers for Forest Avenue and Western Avenue Markets, Knoxville, Tennessee, August, 1958.

Seasons	Truckers reporting	Total trips made per week	Av. weekly trips made by producers reporting		Total trips
			Number		
Spring	12	20.0	1.7		260
Winter	6	11.0	1.8		143
Summer	39	87.0	2.2		1,131
Fall	23	22.5	1.0		299
Total	80	140.5	1.8		1,833

## Amount of Annual Business

The total sales of the 41 intercity truckers was \$215,340, giving an average of \$5,252 per trucker. Table 21 indicates there was a wide range in the distribution of the annual gross sales received by the 41 truckers. About 39 percent of the truckers reported sales under \$2,000. About 27 percent reported sales of \$2,000 to \$5,000, and the balance (34 percent) reported sales ranging from \$5,000 to over \$25,000.

What was the total annual business for 80 intercity truckers? This was believed to be a very conservative estimate of the total population of the intercity truckers coming to the Forest and Western Avenue markets. Based on the sample of truckers interviewed, the total amount of the annual business for 80 intercity truckers would range from \$292,800 to \$547,520 with an average estimate of \$420,160 for all truckers' gross income.

Table 21. Amount of Annual Gross Sales Made by 41 Intercity Truckers, Forest and Western Avenue Markets, Knoxville, Tennessee, August, 1958.

Volume of Sales	Producers reporting	
	Number	Percent
Under \$500	2	4.9
500- 999	3	7.3
1000- 1999	11	26.9
2000- 2999	5	12.2
3000- 3999	2	4.9
4000- 4999	4	9.8
5000- 5999	4	9.8
6000- 6999	1	2.4
7000- 7999	1	2.4
8000- 8999	1	2.4
9000- 9999		—
10000-14999	4	9.8
15000-19999	1	2.4
20000-24999	1	2.4
Over 25000	1	2.4
<b>Total</b>	<b>41</b>	<b>100.0</b>
Total Sales \$215,340		
Av. per producer \$5,252		

## Use of the Forest and Western Avenue Markets By Out-of-Town Buyers Origin of Buyers

The 73 out-of-town buyers came from 32 towns and cities in Tennessee, 10 towns and cities in Kentucky, 2 towns in Virginia, and 1 city in Ohio. See Figure 10 for delineation of the boundary

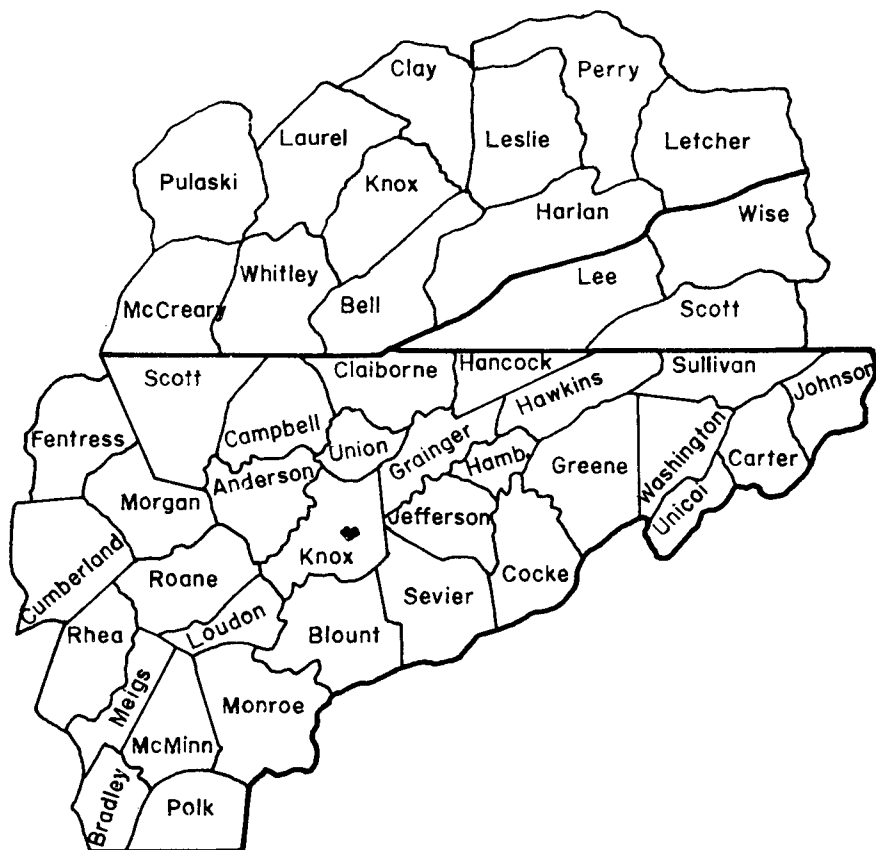


Figure 10. Counties from which buyers came to the Market Square and Western Avenue markets, Knoxville, Tennessee, August, 1958.

generally included within the Knoxville trade area. The southern boundary extends to Athens and Madisonville, the eastern boundary to Newport and the northeastern boundary to Bristol and three counties in Virginia. The northern and northwestern sections include several counties in Kentucky. The western section extends as far as Crossville, and the southwestern section as far as Chattanooga.

### Source of Supplies Purchased

Table 22 discloses that the source of fruit and vegetable supplies for the out-of-town buyers—which included operators of retail grocery stores and produce markets—differed considerably on the Forest and Western Avenue markets. Purchases from farmers were of minor importance on Forest Avenue but were of major

Table 22. Sources of Fruits and Vegetables for 73 Out-of-Town Buyers at Forest and Western Avenue Markets, Knoxville, Tennessee, August, 1958.

Source of Produce	Out-of-town buyers reporting	
	Number	Percent
		Forest Avenue Market
Farmers	2	2.7
Intercity truckers	11	15.1
Wholesalers	60	82.2
Total	73	100.0
		Western Avenue Market
Farmers	55	75.3
Intercity truckers	18	24.7
Wholesalers	—	—
Total	73	100.0

importance on Western Avenue. On the other hand, on Forest Avenue the purchases from wholesalers were of major importance and purchases from intercity truckers were of secondary importance.

### Time Required to Buy a Load of Fruit and Vegetables

The distribution of the buyer's time required to buy a load of fruit and vegetables for the 73 out-of-town buyers indicated that 84 percent of them completed their purchases in one-half to 3 hours (Table 23). There was no evidence that buyers waited to take advantage of farmers by delaying until prices were adjusted downward from the "going" market price.

Table 23. Time Required to Buy a Load of Fruit and Vegetables, 73 Out-of-Town Buyers, Forest and Western Avenue Markets, Knoxville, Tennessee, August, 1958.

Time required	Out-of-town buyers reporting	
	Number	Percent
1/2 hour	2	2.7
1 hour	7	9.6
1 1/2 hours	9	12.3
2 hours	26	35.6
2 1/2 hours	10	13.7
3 hours	7	9.6
3 1/2 hours	2	2.7
4 hours	5	6.9
4 1/2 hours	2	2.7
5 hours	1	1.4
5 1/2 hours	1	1.4
No response	1	1.4
Total	73	100.0



## Preference for Time of Buying Produce

Slightly over 45 percent of the buyers expressed a preference for buying fruit and vegetables on the Western Avenue and Forest Avenue Markets from 5 A.M. to 10 A.M. On the other hand, about 26 percent of them did not express a preference for buying during any particular hour (Table 24).

Table 24. Preference for Time in Buying Fruit and Vegetables, 73 Out-of-Town Buyers  
Knoxville, Tennessee, August, 1958

Buying produce during specified hours	Out-of-town buyers reporting	
	Number	Percent
5 a.m.-10 a.m.	33	45.2
10 a.m.-12 a.m.	11	15.1
12 a.m.- 2 p.m.	2	2.7
2 p.m.- 6 p.m.	6	8.2
6 p.m.- 9 p.m.	2	2.7
No particular hours	19	26.1
Total	73	100.0

The information on the expressed preferences in time of buying would be of value in determining the hours during which the market would be open for business.

## Amount of Annual Business

The sample range of purchases extends from \$16,314 to \$24,340 with an average of \$20,328. Assuming that the total number of out-of-town buyers is 150, the total annual purchases would range from \$2,447,100 to \$3,651,000, or average \$3,049,200.

## Outlook for Fruit and Vegetables In the Knoxville Trade Area

### Demand

Specifically the factors that cause a change in demand are:

- 1) Change in total population and the age composition of the population.
- 2) Changes in income per capita and in the distribution of income.
- 3) Changes in taste.

**Changes in Population.** Other things being equal, a change in population causes a proportional change in demand. Age groups in the population change. A high percentage of small children would eat less than the same percentage of adults.

**Population Growth.** The Knoxville Metropolitan area, accord-

ing to the U. S. Census Bureau in 1950, included Knox, Anderson, and Blount Counties. On total population the Knoxville Metropolitan area ranked next to the Memphis Metropolitan area in the state.

The population of the Knoxville Metropolitan area in 1950 was 337,100.<sup>2</sup> According to the Bureau of Business and Economic Research, University of Tennessee, the population of this same area in 1957 was 358,000. The population for 1970 is estimated to be 461,500.<sup>3</sup> Using the 1957 population estimate as a base, the 1970 population estimate would be 129 percent of the 1957 estimate.

The Knoxville Wholesalers' distribution of fruit, vegetables, and other food included 23 East Tennessee counties, 9 Kentucky counties, 4 Virginia counties, and 5 North Carolina counties.<sup>4</sup> The area population in 1950 was 1,288,100.<sup>5</sup> When this area population was added to the Knoxville Metropolitan population of 337,100, the total 1950 population was 1,625,200 for the Metropolitan area and the outside distribution area. Using the University estimate of the 1957 population for the Tennessee counties and estimating populations for counties in the other states, the Metropolitan and outside distribution area in 1957 was 1,706,300. This represented a population increase of about 5 percent. Similar computation would indicate that the area population in 1970 would be 2,062,500, or an increase of about 21 percent over the 1957 estimate.

**Changes in Disposable Income Per Capita.** Over the United States, consumers' disposable income rose 84 percent from 1947 to 1958, but farmers' receipts rose only 10 percent. Probably consumer spending for food will continue to increase in the future as in the recent past, but the percentage of income spent for food will continue to decline. If per-capita incomes continue to rise, then the demand for marketing services will expand more rapidly than the demand for food. Consequently, the number of workers em-

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<sup>2</sup> U. S. Census of Population, 1950, Vol. II, Chap. A, U. S. Census Bureau, 1951.

<sup>3</sup> Corry, Armond C., *Tenn. Business*, March, 1959, University of Tennessee, Knoxville, Tennessee. These population estimates were made by using the natural increase—net migration method and then adjusting the Census Bureau area and State estimates. Such methodology has traditionally yielded conservative, reasonably accurate estimates.

<sup>4</sup> Utter, Kenneth and Taylor, Earl, **Wholesale Food Distribution Facilities for Knoxville, Tenn.**, Research Division, Transportation and Facilities, AMS, USDA, U. S. Government Printing Office, Washington, D. C., p. 2.

<sup>5</sup> See footnote 2. The report listed under footnote 4 was used as a source of basic data referred to in footnotes 2 and 3.

ployed in marketing and the total resources used by marketing firms would increase relative to workers and resources in agriculture. Marketing costs would, then, consume more of the increasing share of consumer spending for food. Unless efficiencies in food marketing exceed those in agriculture and food production, these things can occur.

What are the possibilities for a continued increase in the disposable income in the East Tennessee area? The outlook is for employment to remain at a high level in the foreseeable future.

## Supply

### Fruit Trees and Grapes

In the 28 East Tennessee counties the number of peach trees has declined sharply from about 2,500,000 to about 100,000 from 1925 to

THOUS. TREES

OR VINES

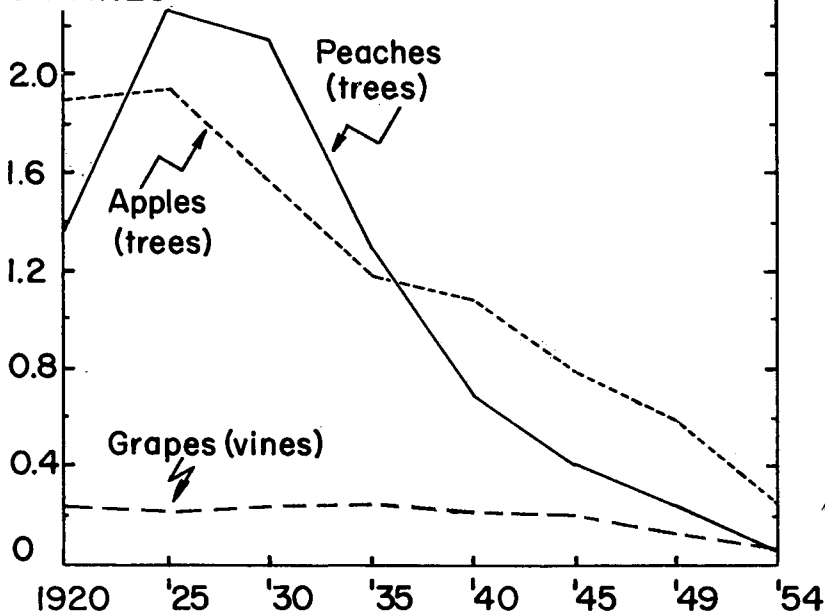


Figure 11. Number of apple trees, peach trees, and grape vines, 28 East Tennessee Valley Counties, 1920-1954.

\*Watermelons not reported for 1934, 1939, and 1944.

Source: Census of Agriculture, U. S. Department of Commerce, Bureau of the Census. U. S. Government Printing Office, Washington, D. C., 1919-1954.

1954. Apple trees have declined from 1,850,000 to 200,000 for the period 1925 to 1954. For the same period grape vines have declined from slightly over 200,000 to approximately 100,000. Specifically, the number of apple trees is decreasing in nearly all counties of the area, except in the northeastern part of the state (See Figure 11).

### Acreage of Vegetables

Acreage of sweet potatoes in the 28 East Tennessee Counties has declined sharply from 15,000 to 703 for the period 1934 to 1954. (See Fig. 12 for sweet potatoes and additional crops.) Likewise the

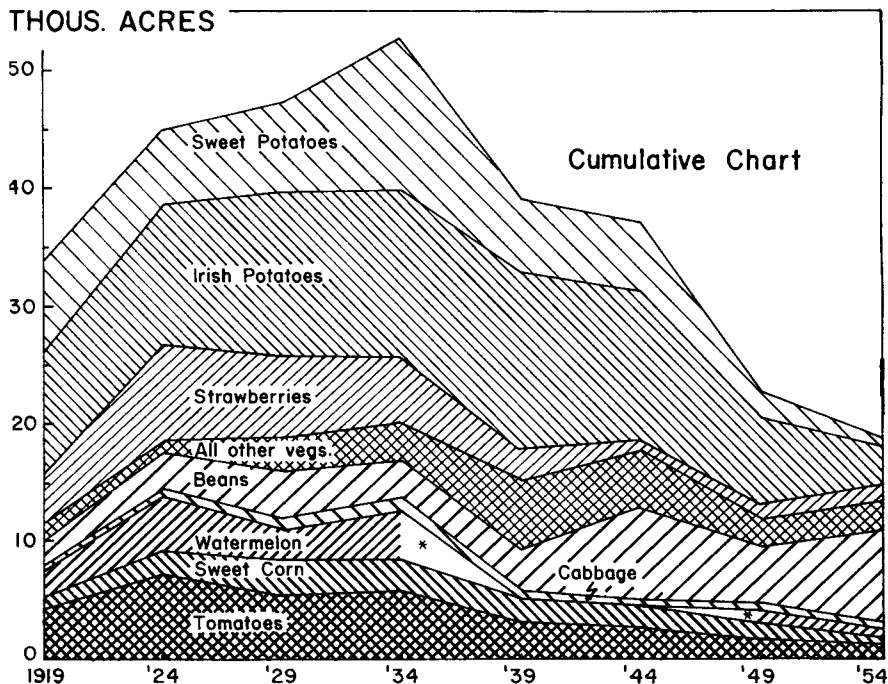


Figure 12. Acres of specified vegetables in 28 East Tennessee counties, 1919-1954. Source: Census of Agriculture, U. S. Department of Commerce, Bureau of the Census. U. S. Government Printing Office, Washington, D. C., 1919-1954.

acreage of Irish potatoes has declined sharply from about 15,000 to 3,285 during the same period. Strawberry acreage was 2,083 during 1954 which was 1,000 less than the acreage during 1934. Bean acreage expanded from 3,537 during 1940 to 7,567 during 1954. Cabbage acreage showed a small change from 1940 to 1954, the acreages being 651 and 761 for the respective periods. Sweet corn acreage declined from 2,085 during 1940 to 679 during 1954. To-

mato acreage declined from 3,197 in 1940 to 1,268 in 1954. Likewise, acreage in other vegetables declined from 5,662 to 2,642 from 1940 to 1954.

Recent estimates from County Agents indicate there may have been an increase in the acreage of tomatoes, corn, beans, Irish potatoes, strawberries, and all other vegetables from 1954 to 1958.

## Transportation

### Market Sites Recommended Near Highways

The purpose of this section is to show the importance of the Interstate Highway System and the downtown loop on planning a produce market. Accessibility and proximity to Interstate Highways is a fundamental requirement for an efficient produce market. Figure 13 shows that Knoxville itself will be reached from all directions by a well-planned system of expressways. When the downtown loop system is completed, the downtown area will be circled by a system of roadways and interchanges plus an inner loop system.<sup>6</sup>

<sup>6</sup> Knoxville Chamber of Commerce publication, May 11, 1959, Vol. I, No. 4, p. 16.

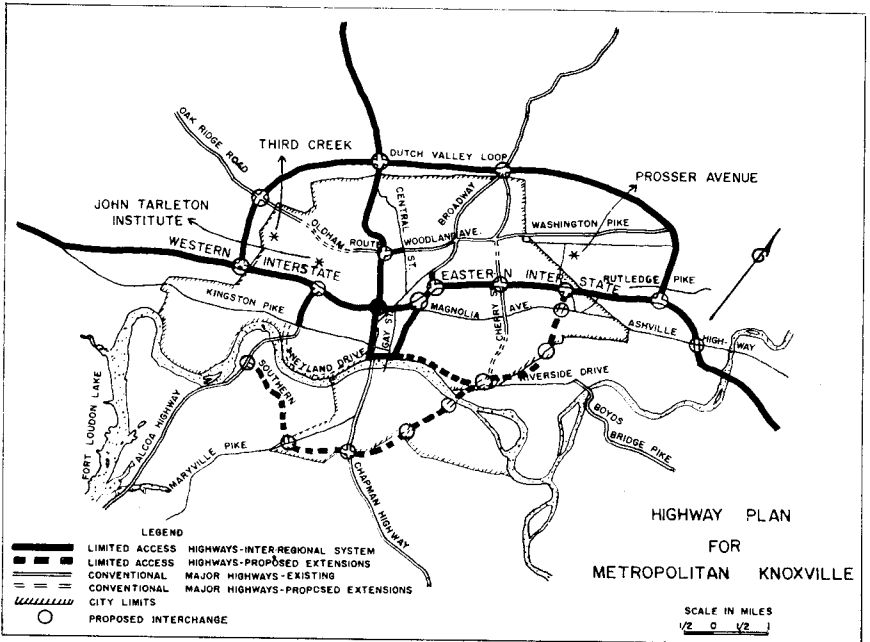


Figure 13. Metropolitan Knoxville's portion of a network of super U. S. highways. Source: Knoxville Publication of the Knoxville Chamber of Commerce, May 11, 1959, Vol. I, No. 4.

The three sites that most nearly meet the desired criteria for the location of a new market include the John Tarleton Institute, Prosser Avenue, and Third Creek area. The locations of these sites and their relative positions to the Interstate Highways are shown on Figure 13. All three of the proposed sites are located relatively near the Eastern and Western Interstate Highway. The Forest Avenue Market is also located relatively close to the Eastern and Western Interstate Highway.

### Truckers Can Travel Greater Distances

The Interstate Highway system will enable truckers to transport fruit and vegetables over greater distances to and from Knoxville during a given period than it has been possible to travel over the present highways. The estimated travel time to reach towns and cities located relatively close to Knoxville will be shortened appreciably because truckers do not stop for rest periods on relatively short hauls. Figure 14 shows the projected time-distances on a contour map to downtown Knoxville.

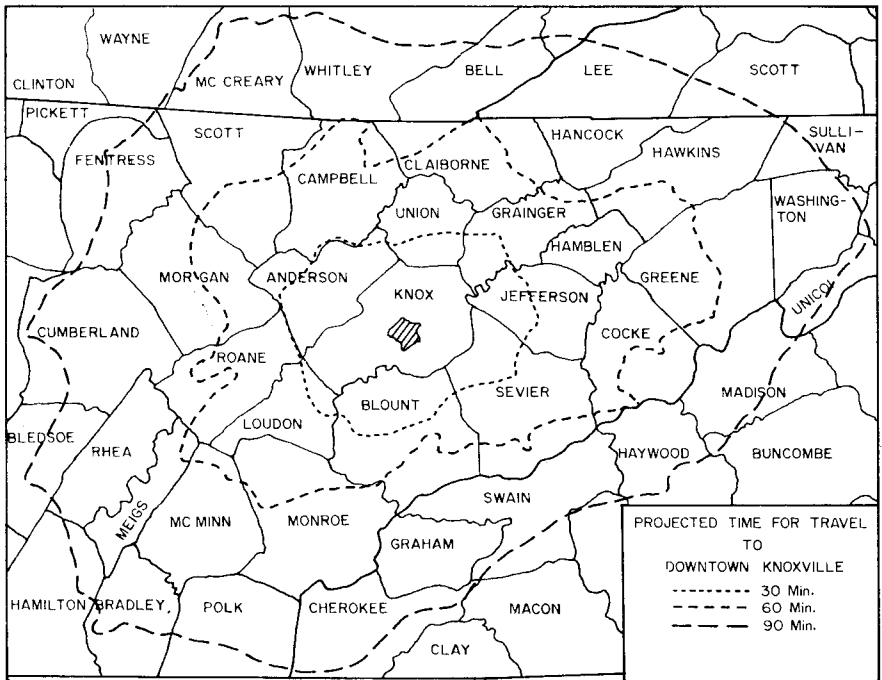


Figure 14. Projected time required for travel by truckers to downtown Knoxville.  
 Source: Tennessee Valley Authority and Unpublished Report, Elbert Wilson, Downtown Knoxville Business, p. 34.

On long trips the average speed of transport trucks averages about 30 miles per hour over highways that cross relatively smooth terrain. Highways that cross very mountainous terrains slow down trucks to 15 or 20 miles per hour. Assuming that the trucks average 30 miles per hour on conventional highways and 35 miles per hour on the Interstate Highways, Table 25 shows the additional distances that could be covered in given periods of time on both types of highways.

Table 25. Comparative Distances Covered in Specified Periods by Transport Trucks on Conventional and New Interstate Highways

Travel time	Conventional 2-lane highway	Interstate highway
Hours	Miles	Miles
12	360	420
24	720	860

### Suggestions For Improving Markets

Growers, intercity truckers, and out-of-town buyers gave 35 different suggestions for improving the Knoxville produce markets. Some of the most important suggestions will be discussed. As Table 26 indicates, suggestions made by growers, intercity truckers, and out-of-town buyers varied in kind in most instances. Major suggestions given by all of the growers, intercity truckers and most out-of-town buyers were to combine all markets, provide better ventilation, install loading and unloading platforms, and increase vehicle parking space.

Table 26. Suggestions of 111 Growers, 41 Intercity Truckers, and 73 Out-of-Town Buyers for Improvements of Western and Forest Avenue Produce Markets, Knoxville, Tennessee, August, 1958.

Suggestions for market improvement	Growers		Intercity truckers		Out-of-town buyers	
	Number	Percent	Number	Percent	Number	Percent
Combine all markets	111	100	41	100	43	59
Provide better ventilation	111	100	38	93	40	55
Install loading and unloading platforms	111	100	41	100	35	48
Increase vehicle parking space	46	41	32	78	39	53
Provide for better cooling of market area	46	41	38	93	45	62
Move market to more convenient location	46	41	—	—	—	—
Arrange for grading of all products	32	29	17	41	50	69
Provide display counters	32	29	31	76	21	9
Have Federal or State inspection of market	20	18	1	2	31	43
Require uniform packaging of products	14	13	15	37	33	45
Provide adequate drinking water facilities	10	9	37	90	50	69
Provide a market news service (a)	10	9	1	2	—	—
Permit more selling and unloading hours	4	4	18	44	9	12
Improve the market sanitation	3	3	41	100	—	—
Establish minimum prices for products	3	3	—	—	—	—
Larger market is needed for buying and selling	2	2	32	78	—	—
Need a new market manager	1	1	—	—	—	—
Rent system needs improvement (b)	1	1	1	2	—	—
Establish a cannery in connection with market	1	1	—	—	—	—
Provide better storage facilities	—	—	17	41	52	71
Provide facilities for ripening products	—	—	9	22	—	—
Provide freezing and icing facilities	—	—	9	22	50	69
Provide product washing facilities	—	—	8	20	45	62
Provide facilities for accurate weighing	—	—	15	37	19	26
Provide better lighting of market area	—	—	25	61	18	25
Provide heaters	—	—	18	44	—	—
Provide garbage disposal facilities	—	—	33	80	40	55
More telephones needed	—	—	18	44	—	—
Install rest room facilities	—	—	36	88	46	63
Divide wholesale and retail areas	—	—	1	2	—	—
Improve eating facilities	—	—	15	37	30	41
Better system needed for handling traffic	—	—	1	2	—	—
Warehouse rules need re-evaluating	—	—	1	2	—	—
Market space needs to be allocated on a fairer basis	—	—	1	2	—	—
Permit market to remain open the year round	—	—	—	—	48	66

(a) One reported the need for inter-state communications.

(b) One thought the rent was too high for storage.





Figure 15. Methods for display of produce on Western Avenue Market, Knoxville, 1958.

A split market is the principal defect in the Knoxville Wholesale and Retail markets, considering the interest of the farmers, wholesalers and consumers. 1) A split market does not provide optimum conditions for price making. Furthermore, a larger market may attract more buyers. Additional expenses are incurred when buyers patronize more than one central market. 2) Traffic congestion is a major difficulty at all of the present Knoxville markets. 3) Only one of the three markets is equipped to handle rail and motor truck shipments satisfactorily.

A central market is highly desirable in a large city. This market should be a food distribution center that includes all wholesale operators, including food chain warehouses, food brokers, dealers, truckers, and farmers, in order that retail grocers and out-of-town buyers may obtain their supplies more quickly, easily, and more economically. Because of this situation, it is not feasible to locate the farmers' market apart from the wholesalers' market.

The facilities should be geared to a modern distribution system. Easy access to major highways, rail team tracks, and adequate parking space for business firms and customers are all part of the requirements. Efficiency of operation is desirable in construction and layout of the food center. Traffic should flow easily without congestion.

Unloading platforms should be constructed at truck height. The

interior of the building should be adapted to the most efficient labor-saving devices for material handling equipment, refrigeration equipment, and be adapted to multi-unit operation.

More adequate cooling of the market warehouse was suggested by 41 percent of the growers, 93 percent of the intercity truckers, and 62 percent of the out-of-town buyers. Very high temperatures hasten the deterioration of vegetables during very hot weather.

Display counters were suggested by all three groups. Figure 15 shows the methods employed by growers when they displayed their produce. Figure 16 presents the methods stall operators used in displaying produce.



Figure 16. Methods used by stall operators for the display of produce at the Western Avenue Market, Knoxville, 1958.

Arrangements for grading and packaging fruits and vegetables uniformly at the markets were suggested by growers, intercity truckers, and out-of-town buyers.

## Summary

### Growers' Use of Markets

**Market Square Facilities.** This retail farmers' market, operated as a municipal market, has been located at the present site on Market Square, Wall, and Clinch, since 1850. The facilities included a three-story brick structure, which was considerably damaged by fire in December, 1959. There were display tables inside the market house to accommodate 93 people. There were 32 stalls in the building for fruit, vegetables and meat sales; 5 flower stalls and 9 lunch counters. There were 78 parking spaces, 39 on each side of the market house. Two-thirds of the interior of the market house was destroyed in the fire. The City Council has passed a resolution for the market house to be torn down and a market mall to be erected on the site.

**Western Avenue Facilities.** Since the 1932 marketing season, this market has functioned as a fruit and vegetable market from June 15 through October 15, as a tobacco warehouse from November through January, and as a storage place for automobiles, furniture, and other items from February to June. There were 168 stalls available for parking in and around the farmers' market located in the old section of the warehouse. Twenty-seven parking spaces are available for farmers and intercity truckers in the new section of the warehouse, constructed in 1940. Ten parking spaces are available outside in front of the warehouse. The total parking spaces available inside and outside both buildings are 205.

**Principal Defects of Markets:** 1) The lack of adequate year-round facilities at the Market Square, Western Avenue and Forest Avenue Markets, 2) a split market, 3) traffic congestion, particularly on Market Square, and 4) the wholesale markets not being adequately equipped to handle rail and motor truck shipments satisfactorily.

### Information from a Survey of 180 Farmers

**Use of Markets by Growers.** The Market Square Market was used for sales by the 108 growers on the outside and 90 farmers' wives on the inside of the market during the 1958 season.

The Western Avenue Market was used by about 500 farmers during the 1958 season.

The major part of the fruit and vegetables originated in Knox, Grainger, Sevier, Claiborne, Blount, and Carter counties. The growers from these counties operated 706 of the 1,597 acres of fruits and vegetables grown by the farmers who sold on both markets.

The 1,597 acres includes 6 percent of the total acreage in fruits and vegetables in the 18 counties of Tennessee, 2 counties of North Carolina and 1 county of Virginia. Market Square growers average 37 minutes on the road to and from the market. Western Avenue growers averaged 1 hour and 12 minutes on the road to and from the market.

**Selling Time.** Market Square growers' selling time averaged 9 hours and 44 minutes. The Western Avenue growers' selling time averaged 12 hours and 26 minutes.

**Sales Outlets at Markets.** The 69 growers on the Market Square Market sold 86 percent of their fruit and vegetables on Market Square, peddled 3 percent to customers and sold 11 percent to the Western Avenue Market. The 111 growers on the Western Avenue Market sold 88 percent of their fruit and vegetables on the Western Avenue Market, 7 percent to chain store warehouses, 1 percent each to merchant-truckers and restaurants and 3 percent on the Forest Avenue Market.

**Annual Income of Growers on Markets.** Based on the sample and assuming 108 growers and 90 growers' wives selling on Market Square, the chances are 95 out of 100 that the income would range between \$227,844 and \$398,808 and average \$313,326. Similarly, assuming 500 growers were selling on the Western Avenue Market during 1958, their total income would range between \$905,000 and \$1,397,000 and average \$1,151,000.

**Attendance on Markets.** From 56 to 100 percent of the growers sold on Market Square 12 months of the year. The peak months for growers' attendance on the market were July, August, and September. The growers averaged 42 trips to the market per year. On Western Avenue about 5 to 9 percent of the farmers sold on the market the first 5 months of the year. The peak period of attendance on the market was from June through September. The growers averaged 41 trips to the market per year.

### **Intercity Truckers' Use of Markets**

**Supply Area.** The supply of fruit and vegetables came from 10 states during the survey period, August, 1958. The supply area covered a much wider area during other months of the year.

**Time Required to Sell a Load of Produce Varied.** One-fifth of the truckers sold their produce within 1 day; about one-third required 2 days and about one-sixth spent 3 days.

**Amount of Annual Business.** Total sales for the 41 intercity truckers amounted to \$215,340 and averaged \$5,252 per trucker.

Based on the sample and assuming 80 intercity truckers who used the market, the total annual sales would range from \$292,800 to \$547,520 and average \$420,160.

### Out-of-Town Buyers

**Origin.** The 73 out-of-town buyers came from 32 towns and cities in Tennessee, 10 towns and cities in Kentucky, 2 towns in Virginia and 1 city in Ohio.

**Source of Supplies.** On Forest Avenue the out-of-town buyers bought most of their supplies from wholesalers. On Western Avenue over 87 percent of them purchased supplies from farmers.

**Amount of Annual Business.** The average amount of annual business reported by out-of-town buyers was \$20,328 per buyer. Based on the sample and assuming 150 out-of-town buyers, the total amount of annual business would range from \$2,447,100 to \$3,651,000 or average \$3,049,200.

### Outlook for Fruits and Vegetables in the Knoxville Trade Area

**Demand.** The population of the Knoxville Metropolitan area in 1950 was 337,100; in 1957 the population was 358,000, and the estimate for 1970 is 461,500. For the metropolitan and outside distribution area, the 1970 population is estimated to be 2,062,500. The outlook is for employment to remain at a high level in the foreseeable future.

**Supply.** In the 28 East Tennessee counties the number of peach trees has declined from 2,500,000 in 1925 to about 100,000 in 1954. Apple trees have declined from 1,850,000 in 1925 to slightly under 200,000 in 1954. For the same period Irish potato acreage declined from 15,000 to 3,285. Strawberry acreage was 2,083 in 1954, which was 1,000 less than the acreage in 1934. Bean acreage expanded from 3,537 during 1940 to 7,567 during 1954. Cabbage acreage showed little change from 1940 to 1954. Sweet corn declined from 2,085 acres in 1940 to 679 in 1954. Tomato acreage declined from 3,197 in 1940 to 1,268 in 1954. Likewise acreage in other vegetables declined from 5,662 to 2,642 from 1940 to 1954. Recent estimates from county agents indicate there may have been an increase in the acreage of tomatoes, corn, beans, Irish potatoes, strawberries and all other vegetables from 1954 to 1958.

### Recommendations

**Market Sites Recommended Near Highways.** The three sites that most nearly meet the criteria for a central market location

include the John Tarleton Institute, Prosser Avenue and Third Creek area. These sites and the Forest Avenue Wholesale Market are located relatively near the East and West Expressway.

**Truckers Can Travel Greater Distances.** Traffic from farmers, intercity truckers', and out-of-town buyers' trucks will move to and from Knoxville's Produce Market at a faster speed when the Interstate Highway system is completed. The area from which farmers come to the market may expand.

Growers, intercity truckers and out-of-town buyers gave 35 different suggestions for improving the markets. The suggestions were not unanimous on all factors. Major suggestions were 1) to combine all markets, provide better ventilation, install loading and unloading platforms and increase vehicle parking space. A split market does not provide optimum conditions for price-making. Traffic congestion is a major difficulty at all of the present Knoxville markets. Furthermore, only one of the three markets is equipped to handle rail and motor truck shipments satisfactorily. A central market is highly desirable in a large city. This market should be a food distribution center that includes all wholesale operators, including food chain warehouses, food brokers, truckers, and farmers. The facilities should be geared to a modern distribution system.