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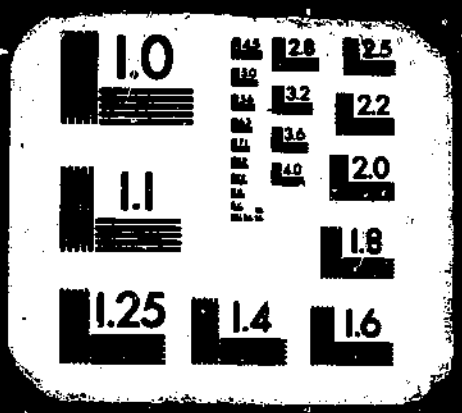
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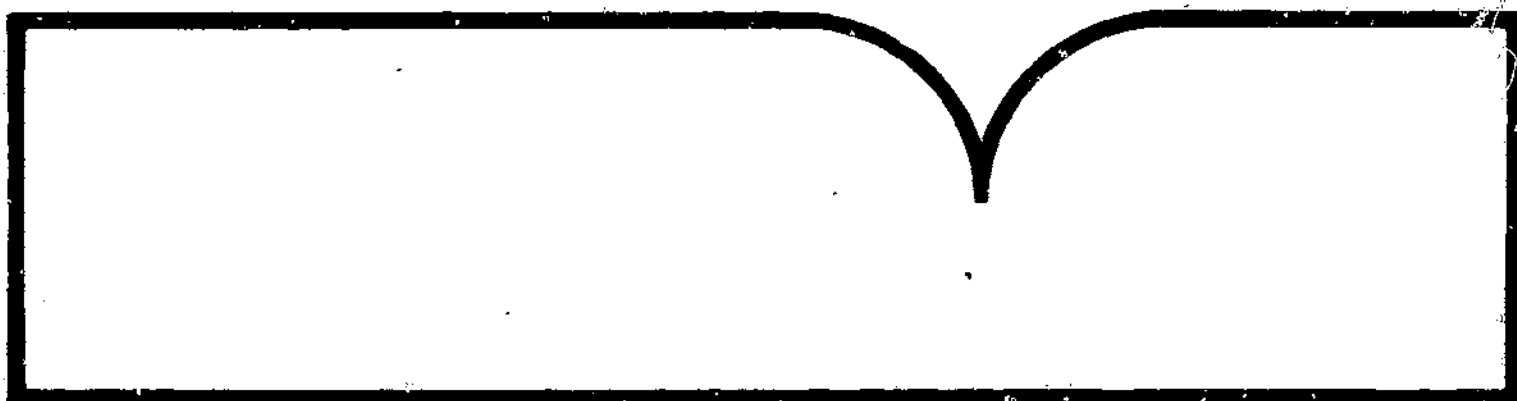
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Trends in Fresh Fruit and Vegetable
Transportation, 1963-75

(U.S.) Economics and Statistics Service
Washington, DC

Oct 80



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TRENDS IN FRESH FRUIT AND VEGETABLE TRANSPORTATION, 1963-75

Patrick P. Boles

U.S. Department of Agriculture
Economics and Statistics Service

ESS Report No. 1

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41 MAJOR CITY MARKETS*

Albany, N.Y. Atlanta, Ga. Baltimore, Md. (inc. Washington, D.C.) Birmingham, Ala. Boston, Mass. Buffalo, N.Y. Chicago, Ill. Cincinnati, Ohio Cleveland, Ohio Columbia, S.C. Dallas, Tex. Denver, Colo. Detroit, Mich.	Fort Worth, Tex. Houston, Tex. Indianapolis, Ind. Kansas City, Mo. Los Angeles, Calif. Louisville, Ky. Memphis, Tenn. Miami, Fla. Milwaukee, Wis. Minneapolis, Minn. (inc. St. Paul, Minn.) Nashville, Tenn. New Orleans, La.	New York, N.Y. (inc. Newark, N.J.) Oklahoma City, Okla. Philadelphia, Pa. Pittsburgh, Pa. Portland, Oreg. Providence, R.I. St. Louis, Mo. Salt Lake City, Utah San Antonio, Tex. San Francisco, Calif. (inc. Oakland, Calif.) Seattle, Wash. (inc. Tacoma, Wash.)
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*From Fresh Fruit and Vegetable Unload Totals--For 41 Cities, 1963-76, U.S. Department of Agriculture, Agricultural Marketing Service.

Trends in Fresh Fruit and Vegetable Transportation, 1963-75

Patrick P. Boles
Agricultural Economist

INTRODUCTION

Motor trucks dominated the transportation of fresh fruits and vegetables from producing areas to major markets in 1975, with the trend continuing into 1980. As late as 1963, railroads hauled almost 36 percent of the produce shipped to major markets, but improvements in highways, trucks, and mobile refrigeration equipment prompted strong shifts from rail to truck. The shift accelerated in 1973, and in 1975, railroads hauled only about 17 percent of the traffic. ^{1/} Shippers reported that improved service is the primary reason they shifted from rail to truck. While truck service was improving, rail service declined. Rail service problems reported by shippers included longer transit times, less dependable schedules, and increased loss and damage claims.

This study analyzes seasonal and regional shipping patterns for fresh produce and the increasing use of trucks rather than railroads for these shipments. The level of two-way movement of fresh produce by truck between regions was examined to determine backhaul potential—a method to improve efficiency and to reduce costs.

BACKGROUND AND IMPLICATIONS

The shift of fresh produce shipments from rail to truck has considerable policy implications. The reduced rail traffic has been used by railroads in their arguments for deregulation of all unmanufactured farm products shipped by rail. As more fresh produce shipments are shifted from railroads to trucks, a greater need arises for shipments of commodities for the reverse haul. Most of the commodities that are needed for the reverse haul are now regulated. The fresh produce would generally be a backhaul load for the primary traffic of regulated or private carriers. However, the regulated commodity would probably be a backhaul load for fresh produce traffic for the exempt trucker.

PROCEDURES

Since the primary purpose of the study is to examine the trucking situation in fresh produce, the data were converted from carlot equivalents to tons using

^{1/} Disaggregated data were necessary to develop the tonnages and mileage in this report. The Agricultural Marketing Service (AMS) furnished the information on data cards through July 1976. AMS installed a new data processing system in August 1976 that was no longer compatible with the ESS system.

Agricultural Marketing Service (AMS) conversion factors for various years. Ton-miles were estimated by selecting a central shipping point in each State and applying the mileage from this point to the market for each ton shipped. The regions used in the analysis are the same as those used by the Bureau of the Census in reporting the Census of Transportation (fig. 1).

TRUCKERS' RESPONSES TO SHIPPERS' NEEDS

Certain exemptions were granted when motor trucks were brought under economic regulation by the Motor Carrier Act of 1935. The exemption of unprocessed farm products has aroused controversy over the years. Persons opposing the agricultural exemption have attempted to persuade Congress to repeal the exemption of all or specific commodities. Among the opponents' allegations is that insufficient service is available to agricultural shippers from time to time. While these allegations may have some validity, the loss of traffic from railroads to trucks during the 1963-75 period indicated that truckers were still providing better service than railroads. Shortages of trucks to haul agricultural products may occur in specific locations. However, when rates are not high enough to attract the number of trucks demanded in the short run, the shortages should force rates higher and, in turn, attract enough trucks to meet the demand.

The fresh fruit and vegetable unload data cannot be used to evaluate the adequacy of trucks to meet fresh produce shippers' needs at specific locations or during specific time periods. However, the data may be used to show truckers' responses in filling shippers total truck transportation requirements over time. Regional and seasonal shipping patterns illustrate the flexibility of truckers responding to shippers' needs.

Tons and Ton-Miles of Shipments

The estimated tons of fresh produce received at the 41 city markets remained relatively constant over the entire 1963-75 period (table 1). However, the shares for truck and rail changed considerably over the period. Trucks' shares of the traffic increased from 64.3 percent in 1963 to 83.1 percent in 1975, while railroads' share decreased each year except in 1966 and 1969. Truck tonnage increased 26.8 percent during 1963-75, and railroad tonnage decreased by 53.6 percent. Truck tonnages increased by 10.8 percent between 1974 and 1975.

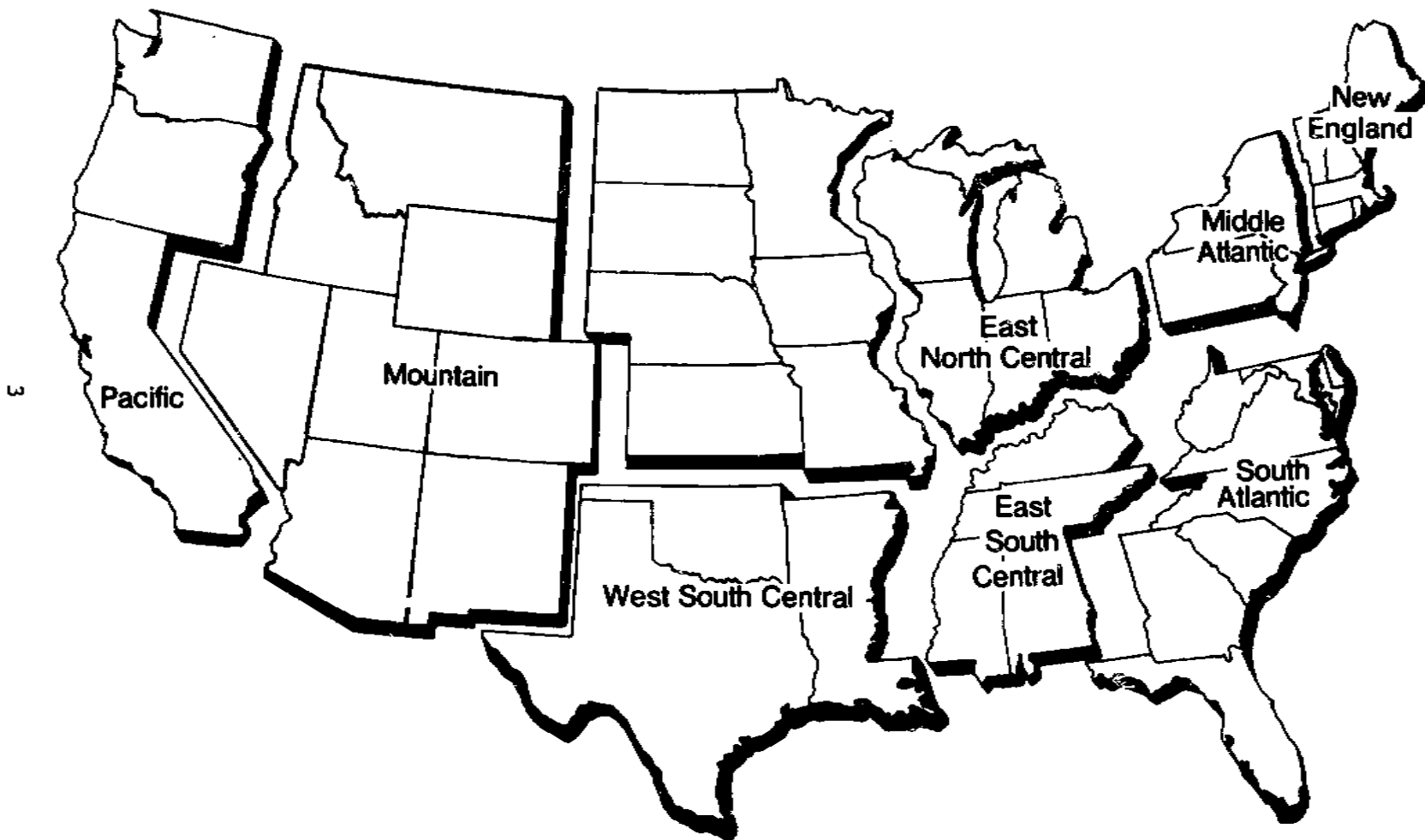
Total ton-miles increased about 8 percent for fresh fruits and vegetables received at the 41 city markets between 1963 and 1975 (table 2). ^{2/} Trucks gained a greater share of the fresh produce traffic on a ton-mile basis than on an absolute tonnage basis. Trucks accounted for 35.4 percent of all ton-miles in 1963 and 66.6 percent in 1975. Ton-miles by truck increased by more than 103 percent while rail shipments declined by 44.1 percent.

The average distance that a ton of fresh produce traveled to the 41 city markets increased from 1,073 miles in 1963 to 1,142 miles in 1975. Shipments of fresh produce moving by truck increased from an average of 571 to 915 miles, and railroad shipments of fresh produce increased from an average of 1,878 to 2,259 miles. Changes in the regional shipping and termination patterns caused these distances to increase.

^{2/} A ton-mile is the movement of 1 ton of freight for a distance of 1 mile.

Figure 1

Nine Regions Used in Analysis of Fresh Fruit and Vegetable Shipments



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Table 1--Estimated tons of fresh fruits and vegetables received at 41 city markets

Year	Mode		Total
	Truck	Rail	
	<u>1,000 tons</u>		
1963	8,830.2	4,905.2	13,735.4
1964	8,781.6	4,860.8	13,642.4
1965	8,785.4	4,540.0	13,325.4
1966	8,490.0	5,141.3	13,631.3
1967	8,736.0	4,923.0	13,659.0
1968	8,708.5	4,472.3	13,180.8
1969	8,789.1	4,630.5	13,419.6
1970	9,100.1	4,217.5	13,317.6
1971	9,599.2	3,924.4	13,523.8
1972	9,632.3	3,704.8	13,337.1
1973	9,797.9	3,377.7	13,175.6
1974	10,111.3	2,987.4	13,098.7
1975	11,198.4	2,278.0	13,476.4

Source: Estimated from 41 city markets unload data, USDA, AMS, 1963-75.

Table 2--Estimated ton-miles of fresh fruits and vegetables received at 41 city markets

Year	Mode		Total
	Truck	Rail	
	<u>Million ton-miles</u>		
1963	5,043.1	9,214.0	14,257.1
1964	5,272.2	9,170.7	14,442.9
1965	5,306.8	8,611.4	13,918.2
1966	5,134.7	9,800.7	14,935.4
1967	5,516.7	9,161.2	14,677.9
1968	5,552.7	8,524.4	14,077.1
1969	5,767.6	8,906.7	14,674.3
1970	6,242.5	8,517.0	14,759.5
1971	7,101.6	8,045.3	15,146.9
1972	7,653.5	7,697.3	15,350.8
1973	8,133.3	7,032.0	15,165.3
1974	8,501.4	6,381.0	14,882.4
1975	10,245.7	5,146.7	15,392.4

Source: Estimated from 41 city markets unload data, USDA, AMS, 1963-75.

Regional Shipping Patterns

The South Atlantic and the Pacific regions were dominant in the origination of shipments received at the 41 city markets. The share of all shipments received at the

41 city markets from these two regions increased from 57.3 percent in 1963 to 65.2 percent in 1975 (table 3). Nine of the 41 city markets were located in the two regions, and their share of all shipments received rose from 25.3 percent in 1963 to 27.4 percent in 1975 (table 4).

Five of the nine regions showed an increase in total shipments during 1963-75. The Pacific region had the largest increase, with 14.8 percent, and the New England region had the largest decrease, with 43.5 percent. Three regions, New England, Middle Atlantic, and East North Central, showed declines in receipts at their markets. Only the Middle Atlantic region had a significant decrease with 17.6 percent. The regional shifts in originations of fresh produce was greater than the shift in terminations, thus increasing the mileage of shipments between 1963-75.

Seasonal Shipments

Truckers must maintain considerable capacity in order to provide the large number of trucks demanded during some months of the year, because of seasonal variations in the amount of fresh produce shipped. However, this results in underutilization of drivers and equipment part of the time, increasing the average per-mile cost. Higher rates are required during the heavy shipment season to attract trucks, and to offset lower rates during light shipping seasons.

The average monthly index for fresh produce shipped by truck ranged from 81 in March to 125 in July for the entire 1963-75 period (table 5). The range in monthly

Table 3--Estimated tons of fresh fruits and vegetables received at 41 city markets by region of origin

Region of origin	1963			1975		
	Truck	Rail	Total	Truck	Rail	Total
	1,000 tons					
New England	419.9	366.6	786.5	401.3	43.1	44.4
Middle Atlantic	1,352.6	12.9	1,365.5	789.0	--	789.0
South Atlantic	1,887.8	592.9	2,480.7	2,452.1	154.6	2,606.7
East North Central	796.0	22.8	819.7	826.6	5.9	832.5
East South Central	136.5	27.6	164.1	124.2	.8	125.0
West North Central	203.1	230.8	433.9	339.3	143.9	483.2
West South Central	490.3	263.3	753.6	741.9	45.4	787.3
Mountain	622.6	915.1	1,537.7	793.8	427.6	1,221.4
Pacific	2,912.0	2,473.2	5,385.2	4,727.8	1,456.7	6,184.5
Unknown	8.5	--	8.5	2.4	--	2.4
Total	8,830.2	4,905.2	13,735.4	11,198.4	2,278.0	13,476.4

-- = No volume recorded.

Source: Estimated from 41 city markets unload data, USDA, AMS, 1963-75.

Table 4--Estimated tons of fresh fruits and vegetables received at 41 city markets, by region of receipt

Region of receipt	1963			1975		
	Truck	Rail	Total	Truck	Rail	Total
<u>1,000 tons</u>						
New England	378.5	403.9	782.4	483.8	26.4	753.2
Middle Atlantic	2,176.8	2,066.5	4,243.3	2,422.4	1,074.4	3,496.8
South Atlantic	627.9	100.9	728.8	752.3	79.8	822.0
East North Central	1,139.7	1,353.1	2,492.8	1,778.1	578.5	2,356.6
East South Central	422.5	161.4	583.9	540.4	54.9	595.3
West North Central	427.3	319.1	746.4	762.2	126.2	888.4
West South Central	742.2	202.5	944.7	1,123.3	88.0	1,211.3
Mountain Pacific	441.8	25.5	467.3	482.1	1.8	483.9
	2,473.5	272.3	2,745.8	2,853.9	15.0	2,868.9
Total	8,830.2	4,905.2	13,735.4	11,198.4	2,278.0	13,476.4

Source: Estimated from 41 city markets unload data, USDA, AMS, 1963-75.

Table 5--Indexes of monthly ton-receipts of fresh fruits and vegetables at 41 city markets

Month ^{1/}	Truck			Rail		
	1963	1975	Total 1963-75	1963	1975	Total 1963-75
<u>Index</u>						
January	80	88	84	91	96	94
February	77	87	82	90	88	97
March	78	87	81	97	97	100
April	87	93	88	113	103	110
May	99	100	99	126	113	121
June	117	110	115	126	122	125
July	129	115	125	112	119	116
August	129	116	122	96	108	96
September	119	110	113	87	96	85
October	104	103	103	83	88	81
November	96	98	96	88	88	86
December	87	92	91	91	81	88

^{1/} Average month equals 100.

Source: Estimated from 41 city markets unload data, USDA, AMS, 1963-75.

indexes was 87 to 116 in 1975, compared with 77 to 129 in 1963. Shipments by train were less seasonal than truck shipments in 1963 and more seasonal in 1975.

Seasonal variations were less in truck ton-miles than in truck tons. The average monthly index for truck ton-miles ranged from 90 to 119 over the entire 1963-75 period (table 6). Seasonal variations were greater for railroad ton-miles than railroad tons, indicating that during months with fewer tons transported, these shipments were moved greater distances by truck and not as far by rail.

Truck shipments were more seasonal for individual regions than for the whole country because of the different seasonal patterns of shipments for the various regions over the entire 1963-75 period. For example, in September 1975, the South Atlantic region shipped its least number of tons, but the Middle Atlantic and East North Central regions transported their most tons that month.

The variation in seasonal shipping for the various regions implies an advantage for some truckers. Truckers who haul exempt commodities as their primary business could shift from region to region as shipping patterns change. Regulated and private carriers can haul exempt commodities as a backhaul for their regular traffic, since the agricultural exemption applies to the commodity and not the carrier. However, when regulated and private carriers use fresh produce as a backhaul for their regular traffic, they are limited to exempt traffic available in the region or regions where they operate.

Table 6--Indexes of monthly ton-mile receipts of fresh fruits and vegetables at 41 city markets

Month ^{1/}	Truck			Rail		
	1963	1975	Total 1963-75	1963	1975	Total 1963-75
	<u>Index</u>					
January	88	89	90	84	85	85
February	88	91	91	82	77	84
March	95	92	93	83	85	86
April	110	101	104	95	90	92
May	118	109	115	111	107	107
June	122	113	119	126	127	122
July	110	107	111	129	132	133
August	98	102	98	117	124	118
September	90	99	92	105	110	104
October	90	98	93	92	98	93
November	95	100	97	90	90	90
December	96	97	99	85	76	84

^{1/} Average month equals 100.

Source: Estimated from 41 city markets unload data, USDA, AMS, 1963-75.

THE BACKHAUL SITUATION

Loaded backhauls are important to truckers hauling fresh produce. Except for short trips, there is very little difference in per-mile cost between a loaded and an empty truck. ^{3/} The additional revenue from a backhaul load allows the truckers to be more competitive in seeking the primary load.

The exempt trucker generally can benefit from hauling fresh produce in both the primary haul and backhaul. The alternative to an exempt load for backhaul is to obtain a load of regulated commodities to haul under a trip lease from a regulated carrier, but finding a load can result in a delay of several days. Under the trip lease arrangement, regulated carriers may retain a large share of the revenue, with exempt truckers receiving less than they would from a load of fresh produce. Also, when business conditions result in a decline in the number of loads of regulated commodities, fewer trip leases may be available for exempt truckers.

Interregional Shipments

Interregional shipments to the 41 city markets increased from 60 percent of the total shipments in 1963 to 65 percent in 1975 (table 7). The Pacific and South Atlantic regions dominated interregional shipments. They accounted for 61.6 percent of all interregional shipments in 1963 and 68.7 percent in 1975. Markets located in the two regions received only 8.2 percent of all interregional shipments in 1963 and 8.8 percent in 1975 (table 8).

Five of the nine regions increased their tonnage of interregional shipments between 1963 and 1975. However, only the Pacific region showed a substantial increase in tonnage. The East North Central region had the largest percentage increase in tonnage of 27.9, but this was from a small base. The Pacific region increased tonnage by 22.8 percent, while the South Atlantic region showed only a 5.1-percent upturn.

Interregional truck shipments increased by 71.3 percent between 1963 and 1975. During the same period, interregional rail shipments decreased by 51.5 percent. Interregional rail shipments decreased from all regions while interregional truck shipments increased from all regions except the Middle Atlantic region where total shipments also decreased.

Two-Way Movements Among Regions

The amount of backhaul loads of fresh produce is limited by the amount of two-way movements between regions. However, the total two-way movement overstates the situation because all two-way shipments do not correspond seasonally. For example, the New England region shipped 198,000 tons of fresh produce to the Middle Atlantic region in 1975, and the Middle Atlantic region shipped 81,000 tons to the New England region. There was a yearly two-way movement of 162,000 tons, or 58 percent of all shipments between the two regions. When monthly shipments were compared for two-way movement, only 80,000 tons of two-way movement was possible, or 28.7 percent of all shipments between the two regions.

Other factors can affect the potential for backhaul loads of fresh produce for exempt haulers. A regulated or private carrier may backhaul fresh produce from a

^{3/} Patrick P. Boles, Cost of Operating Refrigerated Trucks for Hauling Fresh Fruits and Vegetables. PB 270 625, National Technical Information Service, Springfield, Va.

Table 7--Estimated tons of interregional shipments of fresh fruits and vegetables received at 41 city markets, by region of origin

Region of origin	1963			1975		
	Truck	Rail	Total	Truck	Rail	Total
	1,000 tons					
New England	203.2	289.7	492.6	260.9	21.5	282.1
Middle Atlantic	262.4	1.0	253.4	169.5	--	169.5
South Atlantic	1,025.2	590.1	2,110.3	2,063.3	154.4	2,217.7
East North Central	269.6	6.6	276.2	350.4	2.1	352.5
East South Central	51.8	25.1	76.9	77.2	.8	78.0
West North Central	87.7	165.2	252.9	180.7	102.0	282.7
West South Central	251.7	258.5	510.2	431.1	45.3	476.4
Mountain Pacific	379.1	904.4	1,283.5	598.2	426.5	1,024.7
	661.8	2,293.9	2,955.7	2,183.1	1,446.9	3,630.0
Total	3,687.5	4,534.5	8,222.0	6,314.1	2,199.5	8,513.6

-- = No volume recorded.

Source: Estimated from 41 city markets unload data, USDA, AMS, 1963-75.

Table 8--Estimated tons of interregional shipments of fresh fruits and vegetables received at 41 city markets, by region of receipt

Region	1963			1975		
	Truck	Rail	Total	Truck	Rail	Total
	1,000 tons					
New England	161.7	327.0	488.7	343.1	247.9	591.0
Middle Atlantic	1,086.4	2,054.7	3,141.1	1,802.9	1,074.4	2,877.3
South Atlantic	260.3	98.0	358.3	363.5	69.6	433.1
East North Central	612.5	1,336.8	1,949.3	1,301.9	574.7	1,876.6
East South Central	337.8	158.9	496.7	493.4	54.9	548.3
West North Central	311.9	253.5	565.4	603.7	84.2	687.9
West South Central	503.6	197.7	701.3	812.4	87.9	900.3
Mountain Pacific	198.4	14.8	213.2	286.4	.7	287.1
	223.4	93.0	316.4	309.2	5.2	314.3
Total 1/	3,696.0	4,534.4	8,230.4	6,316.5	2,199.5	8,516.0

1/ Includes receipts of unknown origin that are not included in table 7.

Source: Estimated from 41 city markets unload data, USDA, AMS, 1963-75.

region, diverting traffic needed by exempt haulers to balance their two-way traffic. Some partial backhaul loads could be transported from or to regions that are located between two other regions. For example, truckers hauling fresh produce from the South Atlantic to New England could backhaul fresh produce from New England to the Middle Atlantic.

Monthly two-way movements of fresh produce between regions equaled 32.6 percent of all interregional shipments in 1963. This ranged from 19.2 percent for movements between the East South Central and other regions to 52.4 percent between the Mountain and other regions. In 1975, monthly two-way movements were 24.1 percent of all interregional shipments, ranging from 12.4 percent for movements between the Middle Atlantic and other regions to 44.1 percent between the Mountain and other regions.

The relative decline in monthly two-way movements of fresh produce by truck between 1963 and 1975 resulted from large increases in shipments from the Pacific and South Atlantic regions, while other regions had only minor increases or decreases. The two regions accounted for 75.9 percent of the total increase in interregional shipments but only 8.4 percent of the increase in interregional receipts. Thus, truckers of fresh produce had less opportunity in 1975 than in 1963 to obtain a backhaul load of fresh produce.

Seasonal two-way movements between regions declined in 1975 compared with 1963. In 1963, two-way movements ranged from 22.6 percent of all interregional movements in May to 45.5 percent in September. In 1975, two-way movements ranged from 20.2 percent of all interregional movements in June to 27.9 percent in November.

Truck rates for fresh produce could be affected by the seasonal patterns of two-way movements. The seasonal difference in two-way movements was substantial for some regional couplings.^{4/} In 1975, the South Atlantic-Pacific regional coupling had a two-way movement ranging from 0.5 percent in August to 98.7 percent in February, indicating that an exempt trucker would have had a fairly easy time finding a backhaul load of fresh produce in February but almost no chance in August. Since the exempt trucker would have to depend almost entirely on trip leases of regulated commodities for backhauls in August, the chances of returning empty would probably be much greater than in February. Thus, rates would have to be higher in August than in February to attract the number of trucks needed.

Two-way movements of fresh produce, as a percentage of total interregional shipments by truck, should continue to decline because of the trends in modal share and shifts in regions of origin. In 1975, the two-way movement between regions for fresh produce by rail was 0.3 percent of all rail shipments. When trucks gain fresh produce traffic at the expense of railroads, the relative level of two-way movement by truck declines. Most of the future increases in originations will probably continue to be from the Pacific and South Atlantic regions. These two regions are surplus producing areas for fresh produce so future increases in origination from them will result in a decline in the relative level of two-way movements. Declines in the two-way movement of fresh produce will increase the number of exempt truckers seeking regulated commodities to backhaul.

Major Truck Movements Among Regions

Nine of the 36 regional couplings carried major interregional movements of 250,000 tons or more of fresh produce by truck in 1975 (table 9). These nine regional

^{4/} Regional couplings refer to the linkage between two regions for originations and terminations of fresh produce.

Table 9--Estimated truck tonnage of fresh fruits and vegetables shipped for nine regional couplings to the 41 city markets

Nine regional couplings	1963	1975
	<u>1,000 tons</u>	
New England-Middle Atlantic	212.4	279.1
Middle Atlantic-South Atlantic	919.5	1,022.1
Middle Atlantic-Pacific	35.6	431.5
South Atlantic-East North Central	325.0	543.9
East North Central-Pacific	70.0	504.5
West North Central-Pacific	109.0	318.5
East South Central-Mountain	169.6	255.6
West South Central-Pacific	223.4	451.1
Mountain-Pacific	297.7	396.4
Total nine major couplings	2,362.3	4,202.7
All other couplings	1,325.2	2,111.4
Total interregional movement	3,687.5	6,314.1

Source: Estimated from 41 city markets unload data, USDA, AMS, 1963-75.

couplings accounted for 64 percent of all interregional shipments in 1963 and 66.6 percent in 1975. Between 1963 and 1975, interregional shipments for the nine regional couplings increased by 77.9 percent, compared with a 59.3-percent upturn for all regional couplings. Approximately 65 percent of this increase in traffic resulted from a shift from railroads to trucks.

Shipments from the Pacific and South Atlantic regions dominated the nine regional couplings. These two regions originated about 71 percent of all truck shipments for the nine regional couplings in 1963 and 79 percent in 1975. However, the Pacific region accounted for most of the increase between 1963 and 1975.

Two-way movements on a monthly basis were limited for most of the nine regional couplings (table 10). The relative decrease in two-way movements between 1963 and 1975 was caused primarily by the large increase in shipments from the Pacific region, which was not matched by comparable increases from other regions to the Pacific region. The relative decline in two-way movements for the nine regional couplings was greater than for all interregional movements. The seasonal two-way movements for the nine regional couplings was greater than for all interregional movement.

CONCLUSIONS AND IMPLICATIONS

Shippers increasingly favored trucks over rail for fresh fruit and vegetable transportation during 1963-75, for both short and long distances. Seasonal rail shipments in some regions indicated that railroads served primarily as residual carriers for some fresh produce traffic; this, along with low volume, made fresh produce traffic less attractive to railroads as a source of revenue.

Table 10--Two-way movements of fresh fruits and vegetables by truck for nine regional couplings to the 41 city markets

Nine regional couplings	Two-way movement 1/			
	1963		1975	
	1,000 tons	Percentage of total	1,000 tons	Percentage of total
New England-Middle Atlantic	79.5	37.4	80.3	28.8
Middle Atlantic-South Atlantic	186.2	20.3	91.9	9.0
Middle Atlantic-Pacific	1.1	3.2	1.4	.3
South Atlantic-East North Central	61.4	18.9	127.9	23.5
East North Central-Pacific	1.5	2.2	2.5	.5
West North Central-Pacific	16.4	15.1	5.6	1.8
West South Central-Mountain	50.1	29.5	59.5	23.3
West South Central-Pacific	45.4	20.3	136.0	30.1
Mountain-Pacific	229.2	77.0	287.3	72.5
Total nine regional couplings	670.8	28.4	792.5	18.9

1/ Two-way movements are based on monthly shipping patterns.

Source: Estimated from 41 city markets unload data, USDA, AMS, 1963-75.

Seasonal truck shipments, particularly on a regional basis, accented the flexibility of truckers in meeting the transportation requirements of fresh produce shippers. Truckers can move from region to region as seasonal shipping patterns change, and rate freedom encourages truckers to meet surges in demand at specific locations.

Total shipments among regions increased between 1963 and 1975, but the percentage of two-way movements declined and will probably continue to decline.

This increased the need to find other types of commodities for backhaul loads. Without these backhaul loads, considerably higher rates would have been necessary to attract enough exempt truckers to fill the demand.

Some recent developments in transportation may alter the trends found in the 1963-75 data--for example, deregulation of fresh fruit and vegetable shipments by railroads in 1979. Though rail shipments may have risen slightly since deregulation, it may take several years before new shipping patterns emerge. Rising fuel prices may hinder truckers from competing with railroads for long distance shipments. However, higher fuel prices combined with extreme shortages of fuel or stringent fuel rationing could trigger shifts in the production of fresh fruits and vegetables closer to the major consuming areas that would be opposite to the growing trends of the 1963-75 period. Trucks could gain a larger share of the tons hauled, and the railroads could increase their ton-mileage.

Although there may be some minor changes in shipping patterns and modes, trucks will probably maintain their dominant position in hauling fresh fruits and vegetables at least for the next few years.

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