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THE ECONOMIC IMPACT OF THE

DELAWARE RIVER PORTS ,

VOLUME I

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Prepared by:

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## **Chapter 1**



## Chapter 1.--Statement of Objectives

The principal objectives of this study were to determine the economic impact of the Delaware River ports on the 11-county, Tri-state Delaware Valley metropolitan region, and on the hinterland of this region. In accordance with this objective, we have focused upon these three questions:

1. Which industries in the Delaware Valley metropolitan region are dependent upon waterborne commerce?
2. In which counties are these port-dependent industries located?
3. To what extent are these port-dependent industries dependent upon waterborne commerce?

There is an important need for objective quantitative answers to these questions, such as are given by this study. This study has undertaken to develop, commodity by commodity, industry by industry, and county by county, comparisons of the volume of port traffic--both domestic and foreign, and both in and out and through the ports--with the total volume of industrial and commercial operations in the 11-county<sup>1/</sup> Tri-state area. We have also been interested in the volume of wages and salaries generated by industries dependent upon the port, and in the total tax liability - federal, state, and local - accounted for by these industries.

In addition to this fundamental research objective, we have sought to provide answers to these questions:

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<sup>1/</sup>The 11-county area includes in Pennsylvania: Philadelphia, Bucks, Montgomery, Chester, and Delaware counties; in New Jersey: Mercer, Burlington, Camden, Gloucester, and Salem counties; and in Delaware: New Castle county.



1. What is the volume of employment and income generated by activities directly or indirectly concerned with the actual movement of traffic through the ports?
2. What is the geographic reach of the Delaware River ports into the hinterland areas in terms of origins and destinations of particular commodities?

The following chapter 2 develops in summary form the primary findings and conclusions of the study. In Chapter 3 we discuss in detail what has been shown by the study. In Chapter 4, Volume II, the data collected in this study are presented in table form. In Chapter 5 the methodology of the study and the sources of information are discussed.

#### Acknowledgement

The Delaware River Port Authority and Alderson Associates, Inc. extend their thanks to all those in business firms and public and private agencies who have assisted in the development of this study. Through their efforts to provide basic information and data for this study, executives and experts from many phases of business, industry, and government, have shown their great interest in the growth and development of the Delaware River ports.

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## **Chapter 2**



## Chapter 2.--Highlights of the Study

In evaluating the economic importance of the Delaware River ports, the following findings of the study appear to be of greatest significance:

1. More than one job in every ten in manufacturing industry and in wholesale and retail trade in the 11-county Delaware River port area depends upon the availability of materials and merchandise received through the Delaware River ports. For manufacturing alone, nearly one job in every five depends upon materials brought in through the ports.

2. A total of 96,300 employees in the Delaware River port area derive their income either directly or indirectly from the existence of the Delaware River ports. The total wage and salary income of these employees amounts to \$516,100,000<sup>1/</sup>.

3. Port-created payrolls resulted in consumer expenditures of more than \$481 million in retail trade and service establishments located mainly in the 11-county area.

4. Industries in the Delaware River port area depend much more heavily on foreign imports than is true for the country as a whole. Foreign imports through the Delaware River ports as a percent of cost of materials used in the Delaware River port area was 5.5, as compared with only 3.0 percent for the U. S. as a whole, including traffic through all U. S. ports.

5. The critical importance of the Delaware River ports to the industrial and business economy of the port area is further indicated by the fact that 78 percent of the value of inbound traffic is destined for

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<sup>1/</sup>These figures may be regarded as minimums in view of the fact that some operating employment on railroads is not included.

points within the 11-county area, while 73 percent of outbound traffic comes from points within the 11-county area.

6. There are many individual industries which depend heavily upon the port for their raw materials and for transportation of their output.

Some of these are as follows:

<u>Industry</u>	<u>Coefficient of port dependency</u> <sup>a/</sup>	
	<u>On receipts</u>	<u>On shipments</u>
Petroleum refining	77 percent	37 percent
Sugar refining	over 90 percent	
Newspaper publishing	at least 23 percent	
Steel manufacturing	over 10 percent	
Paper mills	at least 24 percent	
Tobacco manufactures	23 percent	
Chemicals and allied products	18 percent	8 percent
Leather and leather products	14 percent	
Transportation equipment		9 percent

Other types of firms which depend heavily upon the ports are gypsum products manufacturers and producers of refractory products.<sup>a/</sup>

7. In individual counties, many industries depend more heavily upon the ports than when the 11-county area as a whole is considered. In Philadelphia county, for example, petroleum and tobacco head the list with coefficients of port dependency of 70 and 26 percent, while sugar is well over 90 percent. In Chester county, stone, clay, and glass products show a coefficient of 69 percent. The petroleum industry in Delaware county stands at 93 percent. In Camden county, primary metals come to 86 percent. In Gloucester county, both petroleum and food are over 70 percent. Lumber and wood products, petroleum, and leather products all exceed 50 percent in Wilmington. In Gloucester county, nearly two out of three jobs in manufacturing are dependent upon the ports. In Delaware county, nearly two

<sup>a/</sup>See page 3-04 for description of "coefficient of port dependency."



jobs out of every five in manufacturing are port dependent.

8. Total traffic through the Delaware River ports in 1957 amount-  
ed to 103,000,000 tons. The total value of cargo is estimated at nearly  
\$3,000,000,000 even when local traffic is omitted entirely. Out of the  
total of 103,000,000 tons, domestic traffic, including local, accounted  
for substantially more than one-half. Domestic traffic outbound from the  
ports was about 80 percent greater than foreign traffic, thus tending to  
bring the total inbound and outbound traffic of the port in better balance  
than for foreign trade alone.

Thus, analysis of the importance of the ports as a factor in the  
Delaware Valley regional economy is not complete unless it includes a con-  
sideration of domestic as well as foreign waterborne traffic. Crude oil,  
woodpulp, fruits and preparations, sugar, paper products, lumber and shingles,  
other petroleum products, sulfuric acid, and industrial chemicals are ex-  
amples of categories in which domestic traffic is either predominant or of  
great importance.

9. A total of 41,000 jobs depend directly upon the processing or  
distribution of materials and merchandise moving in and out through the ports,  
considering both receipts and shipments through the ports. The total wages  
and salaries from this employment is equal to \$220,000,000.

10. In addition to the above total, there are at least 55,300  
employees working in direct maritime activities and in other activities  
relating to the movement of tonnage through the port. These employees  
account for a total income of more than \$296,000,000.

11. The total tax liability which may be said to result from port-dependent business in the 11-county area is equal to at least \$133,000,000, including state, federal, and local taxes. Customs duties were over \$53,000,000 in 1957. Taxes paid by private individuals who are dependent upon the port for their employment are in addition to the above tax figure.

12. In addition to performing a vital role in the economy of the immediately surrounding Delaware Valley area, the Delaware River ports reach great distances into the interior of the United States in terms of both shipments and receipts through the ports. Iron ore, grain, paper products, coal, clays and earths, cotton products, cork, and sisal, henequen, and jute are examples of commodities which move extensively to and from inland points beyond the 11-county area. Overall, about 22 percent of traffic inbound through the ports moves beyond the 11-county area, while about 27 percent of outbound traffic comes from points beyond the 11-county area.

13. It is estimated that for the entire systems of the three railroads serving the Delaware River ports a total of more than 7,400 employees may be counted as dependent upon the Delaware River ports. These employees account for wage and salary income of more than \$40,000,000. A significant proportion of this income and employment must be counted within the 11-county Delaware River port area.

The figures presented above and throughout this report in general are to be regarded as minimums, since every effort was made to prepare estimates by conservative methods.



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## **Chapter 3**

### Chapter 3.--Analysis of the Findings

#### Coefficients of port dependency and related aggregates

Manufacturing industries and wholesale and retail trade in the 11-county area bring in through the Delaware River Ports 11 percent of their total cost of materials and merchandise, while manufacturing industries alone bring in 18 percent of their total materials requirements. These figures mean that in terms of receipts, nearly one manufacturing job in every five depends upon the availability of materials through the Delaware River ports, while for manufacturing and wholesale and retail trade together more than one job in ten depends upon the ports.

These figures are shown in the following Table T-1, which is a summary of basic information about port traffic and its relation to industry and trade in the 11-county area. In this table data are shown separately for each of twenty categories of industry which together make up total manufacturing, and also for wholesale and retail trade. In addition, the discussion below gives special consideration to several more industry classifications which are parts of the general industry categories. These industries are of particular significance in that they are heavily dependent upon the ports of the Delaware River to carry on their business.

The first five columns of Table T-1 provide the basic data required to establish the significance of the ports as a part of the total business carried on in the 11-county area. For all manufacturing industries and for wholesale and retail trade, we have shown value added, value of shipments (or sales), cost of materials (or cost of goods sold), and, in subsequent columns (4) and (5), the total value of traffic through the Delaware River ports which moves to or from each of the various industries located in the 11-county area.



Table T-1.--COEFFICIENTS OF PORT DEPENDENCY AND GENERAL ECONOMIC AGGREGATES,  
11-COUNTY DELAWARE RIVER PORT AREA, 1957<sup>a/</sup>

(Thousands of dollars)

SIC code	Industry	(1) Value added by manu- facture b/	(2) Value of shipments (sales) c/	(3) Cost of materials d/	(4) Shipments through Delaware River ports e/	(5) Receipts through Delaware River ports f/
	Total.....	**	22,353,602	13,020,977	811,167	1,440,150
	All manufacturing indus- tries.....	5,592,271	12,352,656	6,760,385	776,218	1,200,553
29	Petroleum refining and related industries.....	277,170	1,280,525	1,003,355	479,415	768,525
21	Tobacco manufactures.....	34,397	74,641	40,244	*	9,144
28	Chemicals and allied products.....	721,136	1,348,525	627,389	106,865	112,681
31	Leather and leather products	53,180	120,187	67,007	*	9,249
26	Paper and allied products...	216,484	443,792	227,308	3,537	28,996
20	Food and kindred products...	554,599	1,547,330	992,731	10,707	109,776
33	Primary metal industries....	436,563	1,169,989	733,426	44,681	75,604
32	Stone, clay and glass products.....	162,763	281,579	118,816	1,889	10,187
37	Transportation equipment....	282,368	660,741	378,373	56,713	2,814
22	Textile mill products.....	301,243	683,824	382,581	8,224	22,188
36	Electrical machinery, etc...	426,522	797,596	371,074	42,910	1,245
24	Lumber and wood products, except furniture.....	20,869	44,870	24,001	588	905
27	Printing, publishing, and allied industries.....	347,963	532,384	184,421	*	7,902
38	Instruments; photo and optical goods; watches and clocks.....	132,829	191,276	58,447	*	1,201
34	Fabricated metal products except ordnance, machinery, and transportation equip- ment.....	477,060	920,724	443,664	12,262	3,599
35	Machinery, except electrical	470,974	814,785	343,811	8,022	2,222
23	Apparel and related products	329,099	714,144	385,045	405	2,872
25	Furniture and fixtures.....	48,512	105,272	56,760	*	632
30	Rubber and miscellaneous plastics products.....	157,484	322,843	165,359	*	138
39	Miscellaneous manufacturing <sup>1/</sup>	141,056	297,629	156,573	*	*
	Manufacturing in general....	**	**	**	**	30,673
50-59	Wholesale and retail trade	**	10,000,946	6,260,592	33,558	234,676
	Other industries.....	**	**	**	1,391	4,921



Table T-1.--COEFFICIENTS OF PORT DEPENDENCY AND GENERAL ECONOMIC AGGREGATES,  
11-COUNTY DELAWARE RIVER PORT AREA, 1957<sup>a</sup> (Continued)

SIC code	Industry	Coefficients of port dependency		(8) Employ- ment (thou- sands) <u>i</u> /	(9) Wages and salaries (thousands of dollars) <u>j</u> /
		(6) Shipments (In percent) <u>g</u> /	(7) Receipts (In percent) <u>h</u> /		
	Total.....	4	11	921.0	4,201,418
	All manufacturing indus- tries.....	6	18	652.9	3,209,737
29	Petroleum refining and related industries.....	37	77	23.4	144,042
21	Tobacco manufactures.....	*	23	5.6	16,962
28	Chemicals and allied products.....	8	18	66.6	393,117
31	Leather and leather products....	*	14	10.4	40,764
26	Paper and allied products.....	1	13	22.4	113,019
20	Food and kindred products.....	1	11	48.3	210,855
33	Primary metal industries.....	4	10	46.7	273,407
32	Stone, clay and glass products.....	1	9	21.0	99,255
37	Transportation equipment.....	9	1	39.1	224,889
22	Textile mill products.....	1	6	46.0	174,304
36	Electrical machinery, etc.....	5	*	57.6	309,073
24	Lumber and wood products, except furniture.....	1	4	3.2	12,928
27	Printing, publishing, and allied industries.....	*	4	38.9	193,021
38	Instruments; photo and optical goods; watches and clocks.....	*	2	16.6	80,943
34	Fabricated metal products except ordnance, machinery, and transportation equip- ment.....	1	1	50.8	256,829
35	Machinery, except electrical.....	1	1	56.4	304,331
23	Apparel and related products....	*	1	63.5	198,206
25	Furniture and fixtures.....	*	1	7.9	30,692
30	Rubber and miscellaneous plastics products.....	*	*	13.6	66,851
39	Miscellaneous manufacturing <sup>1</sup> /....	*	*	14.9	66,249
50-59	Wholesale and retail trade.....	*	4	268.1	991,681

\* Identical to Table S-1, Chapter 5. All footnotes follow Table S-11.



From these basic data we are able to compute coefficients of port dependency. These coefficients are shown in columns (6) and (7). Two coefficients have been developed for each industry covered: one for traffic inbound through the port and one for traffic outbound through the port. The outbound or shipments ratios shown in column (6) show the proportion of total shipments of the industry which move out through the Delaware River ports. The inbound or receipts ratios in column (7) show the proportion of total cost of materials of the industry which come in through the Delaware River ports.

Column (6) shows that manufacturing and wholesale and retail trade in the 11-county area ship 4 percent of their output or sales through The Delaware River ports, while manufacturing industries alone ship out 6 percent of their output. Receipts ratios tend to be higher than shipments ratios because the total volume of inbound traffic is considerably larger than the volume of outbound traffic.

Industries in these tables are shown in rank order according to their highest coefficient of port dependency, whether on receipts or shipments. The specific categories of industry which show coefficients of 10 percent or greater are petroleum, tobacco, chemicals, leather, paper, food, and primary metals. In addition to these, there are other industries which are parts of the industry categories shown which depend on the port extensively. These include the following: sugar refining (receipts coefficient: over 90 percent), newspaper publishing (receipts coefficient: at least 23 percent), steel manufacturing (receipts coefficient: over 10 percent), paper mills (receipts coefficient: at least 24 percent), gypsum products, and producers of refractory products.



In particular counties, several other industries appear with high coefficients of port dependency. Among these are transportation equipment in Philadelphia and Delaware counties; stone, clay, and glass products in Philadelphia, Chester, Gloucester, and Burlington counties; textile products in Chester county and Wilmington metropolitan area, and lumber and wood products in Wilmington.<sup>1/</sup>

Table T-2, on the next page, shows that, considering all industries, there is an even higher degree of port dependency in particular counties than in the 11-county area as a whole. Delaware and Gloucester stand out as heavily port-dependent counties, largely due to the importance of petroleum refining in those counties. Each of these counties has a high ratio both for shipments and for receipts. Philadelphia and the Wilmington metropolitan area show coefficients which are about as high as the 11-county area as a whole in terms of receipts.

The coefficients of port dependency are based upon the use of The Delaware River ports for receiving and shipping materials in and out of the port area. These figures thus do not take into account the volume of local traffic carried on in the port by many firms, and are thus conservative estimates of port dependency. The use of the port for local movement undoubtedly strengthens the attachment of many firms to their port location.

Thus, the influence of the ports extends broadly to many segments of business and industry, indicating that the Delaware River ports have a basic role to fulfill in the operation of the business and industrial economy of the 11-county area.

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<sup>1/</sup>Chapter 4. Tables S-2 to S-11 are similar to Table T-1 for each county in the 11-county area.

Further discussion of port dependency in particular industries and particular counties begins on page 53 of this chapter.

Table T-2 .--COEFFICIENTS OF PORT DEPENDENCY BY COUNTY, 1957

(In percent)

County	Total of manufacturing and wholesale and retail trade		All manufacturing industries		Wholesale and retail trade	
	Shipments	Receipts	Shipments	Receipts	Shipments	Receipts
11-county Delaware River port area.....	4	11	6	18	*	4
Philadelphia.....	3	10	6	18	*	3
Bucks.....	4	9	6	12	*	5
Chester.....	*	5	1	6	*	4
Delaware.....	11	27	18	39	*	5
Montgomery.....	1	4	1	4	*	4
Camden.....	2	6	3	6	1	6
Gloucester.....	23	50	33	66	*	5
Burlington.....	1	6	1	4	*	8
Wilmington.....	2	10	4	13	*	6
Trenton.....	1	4	1	4	*	4

\* = Less than 0.5 percent.



Port-dependent employment, wages, and taxes

As a result of the existence of the Delaware River ports and the dependency of business and industry upon them, a large volume of employment, wages, and taxes are generated. In estimating totals for each of these, both port-dependent industries--firms which utilize the ports in the conduct of general manufacturing or business operations--and direct maritime activities--activities associated directly with the operation of the ports and the movement of traffic through them--must be considered. Adding these two categories together, the total volume of port dependent employment is 96,300, of wages and salaries is \$516,100,000, and of tax liability<sup>1/</sup> is \$133,000,000. In addition, customs duties in 1957 totalled \$53,100,000.

Table T-3.--TOTAL EMPLOYMENT, WAGES AND SALARIES, AND TAX LIABILITY  
DEPENDENT UPON THE EXISTENCE OF THE DELAWARE RIVER PORTS, 1957

	Total employment (thousands)	Total wages and salaries (millions of dollars)	Total tax liability (millions of dollars)
Total	96.3	\$516.1	\$133.0
Dependent industries	41.0	220.1	127.6
Direct and auxillary maritime activities	55.3	296.0	5.4

Table T-4, on the following page, indicates the total volume of employment and wages and salaries in direct and auxiliary maritime

<sup>1/</sup>It is to be noted that tax liability rather than actual tax figures are quoted, since taxes are often paid from addresses different from the sites at which they are generated, particularly in the case of the state of Delaware. Figure includes customs duties.

activities--all activities which depend directly upon the port or perform functions relating to the movement of traffic through the ports. The total employment is 55,345 persons, while the total wages and salaries are \$295,990,000<sup>1/</sup>

Table T-4.--EMPLOYMENT, WAGES AND SALARIES ASSOCIATED  
WITH ALL MARITIME ACTIVITIES IN THE  
DELAWARE RIVER PORT AREA, 1957

Type of employment	Number of employed persons	Total wages and salaries
Total of all maritime activities.....	55,345	\$295,990,000
Government and public maritime activities.....	29,745	160,600,000
U. S. Customs.....	330	2,400,000
U. S. Army Corps of Engineers.....	550	2,900,000
Delaware River Port Authority.....	415	2,100,000
Coast Guard.....	110	600,000
4th Naval District (Metropolitan Phila- delphia).....	28,150	151,500,000
Bureau of Port Operations.....	90	400,000
Other <sup>a/</sup> .....	100	700,000
Non-government maritime activities <sup>b/</sup> .....	25,600	\$135,390,000

<sup>a/</sup>Agencies such as the Immigration and Naturalization Service, the Public Health Service, the Agricultural Research Service and others are included in this category to the extent that their activities relate to the operation of the ports.

<sup>b/</sup>Detail in Table T-5

The various governmental bodies and public agencies concerned directly with the port account for a total of 29,745 employees and wages and salaries

<sup>1/</sup>These figures are minimums because they do not include an estimate for the dependency of the railroads so far as their operations in the 11-county area are concerned. In table T-17 below are estimates of total employment and total wages on the three railroads serving the Delaware River ports which are generated as a result of traffic moved over the rails to or from the Delaware River ports. It is difficult to say what proportion of this figure can be justly assigned to the 11-county area in addition to the employment at railroad terminals and piers already quoted in Table T-4.



of 160,600,000, while the figures for non-government maritime businesses are 25,600 employees and \$135,390,000 in wages and salaries.

Table T-5 presents a breakdown of these non-government maritime activities. This table shows that only a small fraction of the total employment has to do directly with foreign trade. This is largely due to the fact that many ships in foreign trade are of foreign registry. The total employment in domestic trade and in waterborne commerce moving short distances around the port, however, is very substantial.<sup>1/</sup>

Table T-6 shows port-dependent employment, wages and salaries, and tax liability for general industry and trade in the 11-county area, with specific figures for each industry. The total port-dependent employment in general industry is 41,000; wages and salaries are \$220,100,000, and the total tax liability is \$127,600,000. These figures are conservative estimates in that even though some industries could not operate economically without the use of the ports, the port-dependent employment counted from them is a reflection of the two coefficients of port dependency for each industry, as discussed above.

#### Pattern of expenditure of port-dependent income

The total port-dependent income in wages and salaries, as summarized in Table T-4, constitutes a major segment of the purchasing power of consumers in the 11-county area.

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<sup>1/</sup>For a complete description of the categories used in data obtained from general employment data collected by government agencies, see footnotes to table T-5.



Table T-5.--EMPLOYMENT, WAGES, AND SALARIES ASSOCIATED  
WITH MARITIME ACTIVITIES IN THE DELAWARE RIVER  
PORT AREA, 1957

Type of employment	Number of employed persons	Total wages and salaries
Total of all maritime activities <sup>a/</sup> .....	25,600	\$135,390,000
Maritime activities described separately in government data: <sup>b/</sup>		
Ocean-borne foreign trade.....	905	6,150,000
Coastwise and intercoastal trade.....	3,760	23,340,000
Trade on rivers and canals.....	1,250	9,400,000
Local water transportation.....	1,120	6,100,000
Services auxiliary to water transportation.....	6,925	17,580,000
Shipbuilding and repair.....	9,110	60,220,000
Shipbuilding <sup>c/</sup> .....	7,680	50,830,000
Repair.....	1,430	9,390,000
Maritime activities not described separately in government data:		
Foreign freight forwarders and custom house brokers.....	195	810,000
Pilots.....	80	880,000
Maritime insurance.....	185	740,000
Foreign banking.....	150	660,000
Warehousing of waterborne freight.....	60	210,000
Railroad marine terminals, etc. <sup>d/</sup> .....	1,260	6,300,000
Trucking employees.....	600	3,000,000

<sup>a/</sup>This total includes figures for shipbuilding (shown separately below) which may be considered not to be a direct maritime activity.

<sup>b/</sup>Figures obtained from state employment records for Philadelphia standard metropolitan area from the Pennsylvania Bureau of Employment, Security, Philadelphia. Estimates were made to cover the remaining three counties in the Delaware River port area. Categories shown are defined by the Standard Industrial Classification Manual of the U. S. Department of Commerce. S.I.C. categories included are 441, 442, 444, 445, 457, and 373. See following page for description.

<sup>c/</sup>1958 figures for shipbuilding are considerably higher.

<sup>d/</sup>Figures cover railroad employment at marine terminals and other facilities connected directly the Delaware River ports. Separate estimates are shown elsewhere with respect to the port dependency of the railroads operating in this area.



Description of Government Categories in Table T-5

Ocean-borne foreign trade (S.I.C. <sup>a</sup>/441-4411)

Companies primarily engaged in ocean transportation of freight and passengers between the U. S. and foreign countries.

This category includes both steamship companies and their agents, but excludes facilitating firms such as custom house brokers and foreign freight forwarders.

Coastwise and intercoastal trade (S.I.C. 442-4421)

Companies primarily engaged in ocean or gulf transportation of freight and passengers between U. S. ports located on the Atlantic, Gulf, and Pacific coasts, including transportation lines operating between U. S. ports and Hawaii, Puerto Rico, or Alaska.

Trade on rivers and canals (S.I.C. 444-4441)

Companies primarily engaged in transportation of freight and passengers on inland waters including rivers, canals, and bays and sounds of the ocean.

Local water transportation (S.I.C. 445-4451)

Companies primarily engaged in miscellaneous transportation in local waters, such as ferry-boat operation, lighterage, piloting vessels in and out of harbors, and tugboat operations.

Pilots, however, are omitted from employment data.

Services auxiliary to water transportation (S.I.C. 457-4571)

Establishments primarily engaged in furnishing services to water transportation, such as canal operation, cargo checking and surveying, dock operation, stevedoring, marine salvaging, and operation of waterfront terminals.

Ship building and repairing (S.I.C. 373-3731-3732)

Establishments primarily engaged in building and repairing all types of ships, boats, barges, canal boats and lighters, whether propelled by sail or motor power or towed by other craft. This industry includes the conversion and reconversion of ships.

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<sup>a</sup>/1945 and 1949 editions of the Standard Industrial Classification Code of the U. S. Department of Commerce.



Table T-6.--WEIGHTED COEFFICIENTS OF PORT DEPENDENCY, AND TOTAL  
EMPLOYMENT, WAGES AND SALARIES, AND TAX LIABILITY  
DEPENDENT UPON THE PORT

SIC Code	Industry	Employment dependent upon the existence of the port (thousands)	Wages & sal- aries depend- ent upon the existence of the port (millions of dollars)	Total tax liability (millions of dollars)
Total.....		41.0	220.1	127.6
All manufacturing industries.....		35.6	200.3	121.9
29	Petroleum refining and related industries.	12.9	79.2	88.5
28	Chemicals and allied products.....	7.3	43.2	9.9
21	Tobacco manufactures.....	.4	1.4	2.9
33	Primary metal industries.....	2.8	16.4	3.5
37	Transportation equipment.....	2.3	13.5	4.1
20	Food and kindred products.....	2.4	10.5	7.1
26	Paper and allied products.....	1.1	5.7	1.4
31	Leather and leather products.....	.5	2.0	.2
36	Electrical machinery, etc.....	2.3	12.4	2.1
22	Textile mill products.....	1.4	5.2	.6
32	Stone, clay and glass products.....	.6	3.0	.6
24	Lumber and wood products, except furniture	.1	.3	*
27	Printing, publishing, and allied indus- tries.....	.4	1.9	.2
34	Fabricated metal products except ordnance, machinery, and transportation equipment..	.5	2.6	.4
35	Machinery, except electrical.....	.6	3.0	.4
23	Apparel and related products.....	*	*	*
25	Furniture and fixtures.....	*	*	*
30	Rubber and miscellaneous plastics products	*	*	*
38	Instruments; photo and optical goods; watches and clocks.....	*	*	*
39	Miscellaneous manufacturing <sup>1/</sup> .....	*	*	*
50-59	Wholesale and retail trade.....	5.4	19.8	5.7

\*Less than 50 people or \$50,000.



Table T-7 shows the pattern of expenditure of this port-dependent income. The retailers, wholesalers, and manufacturers who supply the goods on which these expenditures are made are in a very large sense also dependent upon the port to maintain their level of business operations. Expenditures out of these payrolls amount to more than \$481,000,000, and total savings are \$35 000,000 in addition.

#### Importance of foreign trade in the local economy

There are a variety of ways of pointing out the importance of the Delaware River ports as a part of the economy of the 11-county area. Table T-8 compares the Delaware River ports as a supplier of foreign commodities to industry in the area with the total receipts of foreign commodities by the same categories of industry for the United States as a whole. This table shows that (in terms of foreign trade) industries in the Delaware River area depend much more heavily on waterborne receipts than is true for the country as a whole. The figure for the 11-county area is about 80 percent greater than that for the total United States. This figure is surprisingly large in view of the fact that the figures used are in dollars, which tends to underemphasize the huge tonnage of crude oil, iron ore, and other bulk commodities which comes in through these ports.

In addition, these figures for the Delaware River port area include only that traffic which moves to destinations within the 11 counties. Other traffic through the ports helps to supply the requirements of industry and business scattered throughout the nation.

It must be recognized, however, that the predominant use of the Delaware River ports is for imports of heavy raw materials, and that a

Table T-7.--EXPENDITURE OF PORT  
CREATED PAYROLLS, 1957<sup>a/</sup>

Type of expenditure	Percent b/	Total port created payroll (millions of dollars)
Total personal income.....	100.0	516.1
Total expenditures.....	93.3	481.5
Durable goods.....	11.7	60.4
Automobiles and parts.....	5.2	26.8
Furniture and household equipment.	4.9	25.3
Non-durable goods.....	46.5	239.9
Clothing and shoes.....	7.4	38.2
Food and alcoholix beverages.....	28.4	146.6
Gasoline and oil.....	2.9	15.0
Services.....	35.1	181.2
Household operation.....	5.4	27.9
Housing.....	11.5	59.4
Transportation.....	2.6	13.4
Total savings.....	6.7	34.6

<sup>a/</sup>Survey of Current Business, February, 1958

<sup>b/</sup>Percents in sub-categories may not add to total because only selected items are shown.



Table T-8.--IMPORTS AS A PERCENT OF TOTAL  
COST OF MATERIALS (GOODS SOLD), 1957

(Billions of dollars, and percent)

Industry	Delaware River Port Area			U. S. Total		
	Cost of materials	Imports	Imports as a percent of cost of materials	Cost of materials a/	Imports a/	Imports as a percent of cost of materials
Total.....	13.02	0.71	5.5	426.7	13.0 <sup>b/</sup>	3.0
Manufacturing.	6.76	0.59	8.7	187.9	--	--
Wholesale and retail trade.	6.26	0.12	1.9	238.8	--	--
Other.....	--	*	--	--	--	--

a/Survey of Current Business, February, 1958, back cover.

b/13.0 less 0.3 percent allocated to other industries in 11-county area.

small amount of general cargo shipments move out through the Delaware River ports. Table T-9 shows that, in terms of foreign trade, industry and trade for the U. S. as a whole exports more heavily than does industry and trade in the Delaware River port area. Exports through the Delaware River ports as a percent of sales are 1.4 percent in the 11-county area as opposed to 2.9 percent for the country as a whole. The figure for the 11-county area includes only exports through the Delaware River ports. Inclusion of all exports would result in a somewhat higher figure. The extent to which firms in the 11-county area ship out through other ports may be of significance.



Table T- 9.—EXPORTS AS A PERCENT  
OF TOTAL VOLUME OF BUSINESS

(Billions of dollars, and percent)

Industry	Delaware River Port Area			U. S. Total		
	Sales	Exports	Sales as a percent as exports	Sales <u>a/</u>	Exports <u>a/</u>	Sales as a percent as exports
Total manufacturing and wholesale retail trade..	22.35	0.31	1.4	722.0	20.8 <sup>b/</sup>	2.9
Manufacturing.....	12.35	0.30	2.4	340.6	—	—
Wholesale and retail trade.....	10.00	0.01	0.1	381.4	—	—
Other.....	—	*	—	—	—	—

<sup>a/</sup>Survey of Current Business, February, 1958, back cover

<sup>b/</sup>20.8 less 0.2 percent allocated to other industries in 11-county area.

Summary of traffic

The Delaware River ports are well-established as the second largest port in the nation in terms of tonnage. The total tonnage of waterborne commerce through the ports in 1957 was nearly 103,000,000 tons. The following table shows a breakdown of the types of movement which were involved:

Table T-10.--WATERBORNE COMMERCE, DELAWARE RIVER  
PORTS, BY TYPE OF TRAFFIC, 1957<sup>a/</sup>

(Thousands of short tons)

Type of movement	Total	Foreign	Domestic
Total.....	102,962	46,352	56,610
Inbound.....	70,388	40,422	29,966
Outbound.....	16,463	5,930	10,533
Local.....	16,111	--	16,111

As a percent of the total tonnage moving through the ports in 1957, the tonnage figures shown in Table T-10 are as follows:

Table T-11.--WATERBORNE COMMERCE, DELAWARE RIVER  
PORTS, TYPES OF TRAFFIC, 1957

(In percent)

Type of movement	Total	Foreign	Domestic
Total.....	100.0	45.0	55.0
Inbound.....	68.4	39.2	29.2
Outbound.....	16.0	5.8	10.2
Local.....	15.6	--	15.6

<sup>a/</sup>Data on foreign tonnage from U. S. Department of Commerce, and Foreign Commerce, 1957, Delaware River Port, Delaware River Port Authority. Domestic data from special tabulation obtained from the U. S. Corps of Engineers, North Atlantic Division, New York.



It can be seen that the volume of port receipts overall exceeds the volume of shipments by a substantial margin. The Delaware River ports are clearly net receivers of cargo. However, inbound and outbound traffic are more balanced in domestic trade than in foreign. In terms of port receipts foreign traffic exceeds domestic by about one third. For shipments, domestic traffic is about 80 percent greater than foreign. Domestic traffic by and large moves over shorter distances than foreign, but there can be no doubt of the great significance of domestic traffic in the total tonnage of the port. An outstanding example of its importance is shown by the case of lumber and shingles, where there were, in 1957, 277,000 tons of domestic receipts as opposed to 78,000 tons of foreign imports. In the case of crude oil domestic receipts were 20,800,000 tons as opposed to 23,700,000 tons of foreign imports. Receipts of sugar from domestic sources were 333,100 tons, as compared with 451,600 tons from foreign ports.

In addition, there are many industries to which the port is invaluable in providing economical local transportation from one part of the port area to another. Paper mills, coal and coke companies, electric companies, petroleum refineries, petroleum products distributors, concrete and other construction materials producers, coal tar products producers, chemical companies, and fertilizer producers are examples of firms which make extensive use of the port waters for local cargo movement.

Value of Cargo

In order to develop figures for comparison with the total costs of materials and volume of business of industry within the 11-county area, tonnages of port traffic were converted to dollar values. When converted to dollar values, the figures shown in Table T-10 above look as follows:

Table T-12.--VALUE OF INBOUND AND OUTBOUND WATERBORNE  
COMMERCE, DELAWARE RIVER PORTS,  
BY TYPE OF TRAFFIC, 1957

(Millions of dollars)

Type of movement	Total	Foreign	Domestic
Total.....	\$2,960	\$1,333	\$1,627
Inbound.....	1,857	917	940
Outbound.....	1,103	416	687

The total value of cargo moving through The Delaware River ports approaches \$3,000,000,000, even when local traffic is entirely omitted.

In terms of percent, the above dollar figures are as follows:

Table T-13.--VALUE OF INBOUND AND OUTBOUND WATERBORNE  
COMMERCE, DELAWARE RIVER PORTS,  
BY TYPE OF TRAFFIC, 1957

(In percent)

Type of movement	Total	Foreign	Domestic
Total.....	100.0	45.0	55.0
Inbound.....	62.7	31.0	31.7
Outbound.....	37.3	14.0	23.3

By comparing the above figures with the distribution shown in Table T-11, it can be seen that outbound traffic through the Delaware River ports compares favorably in size with inbound in terms of dollar value.



The overwhelming proportion of inbound traffic involves commodities which are of lower value than those moving out through the ports.

Inland origins and destinations of port traffic

Out of the total traffic which moved either in or out of the Delaware River port area, some originated or terminated within the 11-county area, while the remainder moved to or from inland areas beyond the 11-counties. In terms of dollar value, the amount moving to or from beyond the 11-county area is as follows:

Table T-14.--VALUE OF TRAFFIC MOVING TO  
OR FROM INLAND POINTS OUTSIDE  
THE 11-COUNTY AREA THROUGH  
THE DELAWARE RIVER PORTS

Item	Traffic	
	Millions of dollars	Percent
Total inbound traffic....	1,856	100.0
Total destined for points beyond 11-county area...	416	22.4
Total outbound traffic...	1,103	100.0
Total coming from points beyond 11-county area...	292	26.5

22 percent of inbound traffic moves to points beyond the 11-county area, while 27 percent of outbound traffic comes from points beyond the area.

Table S-49 from the statistical section lists 28 commodities of which substantial quantities move to and from beyond the 11-county area. These commodities are dried milk and solids, corn, barley and rye, wheat, oats, soybeans, cotton semi-manufactures, cotton manufactures, sisal, hennequen, jute, burlap, jute bagging, other vegetable fiber products, wool, cork,

and cork products, paper products, coal, glass and glass products, clays and earths, iron ore, pig iron, rolled and finished steel products, metal manufactures and parts, manganese, other non-ferrous ores, construction, mining and industrial machinery, and fertilizer. Substantial quantities of many items reach to the Midwest, Plains, and other areas at great distances from the Delaware River ports.

#### Allocation of traffic

It has been our objective so far as possible, to allocate the waterborne traffic through the Delaware River ports to the various industries in the 11-county area which ship or receive it, and to allocate the remaining tonnage to those inland areas beyond the 11-county area to and from which traffic through this port moves. Out of total receipts and shipments, the following table shows the amount and percent of the total traffic which it was possible to allocate in this manner.

Table T-15.--EXTENT OF ALLOCATION OF 1957 DELAWARE  
RIVER PORTS TRAFFIC TO INDUSTRY AND  
TO GEOGRAPHIC AREAS<sup>a/</sup>

(Thousands of short tons)

Item	Total	Shipments	Receipts
Traffic allocated.....	86,459	16,178	70,281
Total traffic.....	86,852	16,463	70,389
Allocated traffic as a percent of total.....	99.5	98.3	99.8

<sup>a/</sup>Local traffic is discussed separately in a subsequent section.



The tonnage allocated was thus practically 100 percent. The bulk of the remaining tonnage consisted of several categories such as "commodities, n.e.c." Aside from these special categories, the commodities not allocated taken all together constitute a small proportion of the total port tonnage, and, considered individually, they are very small tonnages.

#### Expenditures by cargo ships

In arriving at estimates of the total volume of income generated by direct maritime activities, a pilot study was made (similar to the Port Authority study, "The Value of a Ton of Cargo to the Area's Economy.") On the basis of this study we are able to make some comparisons with findings of the earlier study. The comparative figures are as follows:

Table T-16.--DIRECT EXPENDITURES<sup>1/</sup> INVOLVED IN BRINGING SHIPS AND CARGO THROUGH THE DELAWARE RIVER PORTS

Type of cargo	1950	1958 <sup>a/</sup>
Crude.....	\$0.93	\$0.25
Tanker other than crude.....	0.96	0.17
Ore.....	1.73	1.03
General <sup>b/</sup> .....	9.11	10.78

<sup>a/</sup>1958 figures do not include revenue to Marine Insurance Companies or area banks.

<sup>b/</sup>Because of the small sample, expenditures for bunkers have been eliminated on general cargo vessels.

It is quite apparent that improved handling facilities for crude, tanker, and ore cargos have substantially reduced the expenditures per ton of these commodities. For the most part this reflects decreased costs for labor. This does not mean that labor is less expensive now on a man-hour

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<sup>1/</sup>Figures do not include Rail & Motor Freight, Vessel Crew Expenditures, or Value Added by Manufacturing.

basis, but rather that loading and unloading techniques have gone through extensive mechanization. For general cargo, labor costs have increased from \$4.93 per ton to \$6.95 per ton. This reflects increases in wage rates for labor since automation has not materially reduced the man-hours necessary to handle a ton of general cargo. Similarly, the costs of services such as pilotage, tug hire, etc., were increased from \$0.69 to \$3.16 per ton of general cargo.

It would appear that, overall, the level of expenditures discovered in each study are confirmed by each other, and that differences over the time period are entirely explainable on the basis of known changes in cost factors.

#### Port dependency of railroads operating in Delaware River port area

The three railroads serving the Delaware River ports have employees who are port-dependent engaged in operating waterborne terminals, port facilities, and other functions directly connected with the port. These employees are included in Tables T-4 and T-5. In addition to this total, the remainder of the operating employees on the railroads are port-dependent to a degree because their jobs depend in part on the handling of port traffic. From this latter point of view, it is estimated that for the railroads as a whole, there are 7,400 port-dependent employees throughout their operating systems. These employees account for income of over \$40,000,000. A part of these totals can be added to figures for the 11-county area, in addition to the terminal and other port operating employees already counted above.



Table T-17.--PORT DEPENDENCY OF RAILROADS OPERATING WITHIN  
THE DELAWARE RIVER PORT AREA, 1957

Item	Total	Related to Delaware River ports
Total traffic (thousands of tons)	386,602	19,783
Total employment (thousands).....	158,834	7,435
Total wages (thousands of dollars) <sup>d</sup>	851,606	\$40,203

### Port dependency by industry and by county

Within the manufacturing category in Table T-1, industries are ranked in order of their highest coefficient of port dependency, whether it be on receipts or on shipments. The petroleum industry stands out as the one with the greatest percentage of port traffic, both inbound and outbound. Vast quantities of crude oil come in each year, but this is far from being the complete story. The port also handles millions of tons of receipts of both gasoline and heavier fuels. The petroleum industry ships out over the water almost 10 million tons of these last two commodities, in addition to hundreds of thousands of tons of both shipments and receipts of kerosene, lubricating oils and greases, natural gasoline, and other petroleum products. The refineries of the area are all located on navigable waters so as to make the most of the advantages of the port. In addition to these receipts and shipments, there are over 6,000,000 tons of petroleum products moved through the port area locally. In addition to refining companies, there is a large business carried on by firms engaged in supplying industrial and home heating fuels which are obtained from both in and outside of the port area.

Tobacco is the industry showing the next highest dependence upon the port, with a receipt coefficient of 23 percent. Imports and port receipts of tobacco are not a large tonnage, but they represent a large dollar value arriving at manufacturers in the 11-county area.

The chemical industry is another which depends heavily upon the port, both in terms of the materials it requires and the movement of its final products. The receipts coefficient for the chemical industry is 18



percent, while the shipments ratio is 8 percent. There are many types of chemicals which can be handled most advantageously through a port location. Sulfuric acid is an example of these.

The chemical industry in the Delaware Valley is extensive and diversified. It can be seen from column (1) of Table T-1 that in terms of value added this is the largest industry in the 11-county area. The firms included cover the entire range of products from heavy industrial chemicals to pharmaceutical products of all kinds.

Leather and leather products depend heavily upon the ports. Firms in this industry have extensive requirements for tanning materials the vast bulk of which must come from outside the country.

The paper and allied products industry is also extensive in the Delaware Valley. Paper mills located in this area make almost every kind of industrial, printing, and wrapping paper. In addition, there are firms which make paperboard and construction materials of paper. The paper mills have large requirements for woodpulp, great quantities of which come in through the port. The various kinds of pulp required come from both north and south. Much of this traffic comes from other areas of the United States.

In addition to paper mills, there are numerous converters and other types of firms which buy manufactured paper and make from it boxes, cartons, envelopes, printed wrapping paper, and an almost infinite variety of fabricated paper products. These firms depend heavily upon obtaining their supplies through the port from mills in other locations as well as from mills in the Delaware Valley.

The food and kindred products industry of the 11-county area has extensive requirements for commodities received through the port. Canning companies and food manufacturers bring in substantial materials from both inside and outside the country. Chocolate and candy manufacturing brings in quantities of cocoa, cocoa beans, and shells. Sugar refineries here bring in virtually all of their raw material through the port.

The sugar refining industry is an example of an industry category which is very highly dependent upon the port. It would be desirable to quote actual port dependency figures for this industry (S.I.C. 206), which would undoubtedly show a coefficient of over 90 percent on receipts. These figures are not available, however, since government data omits figures where there is possible disclosure of the operations of individual firms.

The primary metal industries are of course composed largely of steel producers. About 75 to 80 percent of this category is accounted for by firms and establishments producing steel and steel products, as opposed to non-ferrous metals of all kinds. This industry as a whole shows strong dependence on the port both in terms of receipts and shipments. The receipts coefficient is 10 percent, and the shipments ratio 4 percent. Considering producers of steel and steel products alone, the coefficients are probably higher. For receipts, the principal commodities are of course ores and iron ore in particular. While the steel industry in this area draws a considerable economic advantage from being able to obtain ore over the water, the bulk of the iron ore moving through the Delaware River ports does not stay in the area, but moves very heavily to locations (perhaps less desirable locations) in other parts of Pennsylvania and in



Ohio. The Delaware ports are a very heavy supplier of the Pittsburgh and surrounding area. Most of the ore entering through this area moves to one or another of these locations.

There are also large quantities of chrome, manganese, and other ores and metals which are largely destined for primary metals industries.

In terms of shipments, the primary metal industries move about 4 percent of their product out over the water. This is a relatively high figure in view of the fact that a very high percentage of the output of steel and steel products moves a relatively short distance (by land or by water) in reaching its final market. There are, however, cost savings to be realized in very many cases by shipping steel products over the water. The large amount of steel and steel products capacity in the Delaware Valley will make the Delaware ports an increasingly vital factor in the economics of primary metals in this area.

Stone, clay, and glass products are the business of a large number of vital firms, both large and small, in the Delaware Valley area. These firms as a group depend upon the Delaware River ports for nine percent of their materials. While they tend to ship out a small percentage, this is to be expected for an industry that deals heavily in commodities which are of relatively low value per ton--the market for such products will tend to be located close to the producing plants. The glass industry, some of which is located close to but not in the 11-county area, does use the port much more extensively for shipment of its output.

In terms of receipts, this industry's principal interests are in gypsum or plaster rock, sulfur, non-metallic minerals, and a wide array of heavy industrial chemicals. Included in this category are makers of

refractory brick and other non-clay refractory products. These firms rely on outside sources for large quantities of their raw materials, and taken separately they would show a port dependency on receipts much higher than the 9 percent for the category as a whole.

Data is also unavailable to show in detail the dependency of firms in this area primarily engaged in making gypsum products, primarily construction materials. The port is the prime source of materials for these firms and hence their location in this area is of great advantage to them.

#### Principal commodities

The principal types of commodities which go to make up the total tonnage of traffic moving through the Delaware River ports are shown in Table T-18. These figures are converted to percent in Table T-19.

Crude oil of course dominates the picture. Second in importance are the great variety of petroleum products in addition to crude. It can be seen that these other oil products are vastly important in terms of port receipts as well as port shipments. With respect to shipments, petroleum products constitute by far the largest tonnage.

Iron ore, coal and coke, and grains are the remaining commodity groups which account for more than a million tons of port receipts and shipments. Animal products, inedible, n.e.c., are moved very heavily in local traffic.

In terms of value, the principal commodities moved through the port are as shown on Table T-20.



Table T-18.--PRINCIPAL COMMODITIES IN WATERBORNE COMMERCE,  
DELAWARE RIVER PORTS, 1957

(Thousands of short tons)

Commodity or commodity group	Total	Inbound	Outbound	Local.
Total.....	402,962	70,388	16,463	16,111
Crude oil.....	44,644	44,445	20	179
Petroleum products.....	23,633	6,676	10,264	6,693
Iron ore.....	12,696	12,696	0	0
Coal and coke.....	8,263	1,086	3,219	3,958
Animal products, inedible, n.e.c....	1,751	32	95	1,624
Grain.....	1,014	34	980	0
Steel products.....	905	65	838	2
Sugar.....	791	785	6	0
Industrial chemicals, except sulfuric acid.....	773	382	291	100
Gypsum or plastic rock.....	583	583	*	0
Wood pulp.....	463	301	0	162
Sulfuric acid.....	394	178	54	162
Paper and related products, n.e.c....	385	350	35	0
Lumber and shingles.....	355	355	*	0
Molasses, inedible.....	313	259	54	0
Chrome.....	273	273	*	0
Non-metallic minerals, n.e.c.....	257	252	5	0
Fertilizer and fertilizer materials	247	225	17	5
Manganese.....	189	187	2	0
Coal tar products.....	180	87	84	9
Other non-ferrous ores, scrap, semi-fabricated metals; precious metals and manufactures.....	129	128	1	*
Fruits and preparations.....	88	88	*	0
Sulfur.....	88	88	0	0
Cocoa beans and shells.....	87	85	2	0
Clays and earths.....	71	71	*	0
Standard newsprint paper.....	67	67	*	*
Other.....	4323	610	496	3,217

\*Less than 500 tons.



Table T-12.--PRINCIPAL COMMODITIES IN WATERBORNE COMMERCE,  
DELAWARE RIVER PORTS, 1957

(In percent)

Commodity or commodity group	Total	Inbound	Outbound	Local
Total.....	100.0	100.0	100.0	100.0
Crude oil.....	43.3	63.2	0.0	1.1
Petroleum products.....	22.9	9.5	62.4	41.5
Iron ore.....	12.3	18.1	0.0	0.0
Coal and coke.....	8.0	1.5	19.6	24.6
Animal products, inedible, n.e.c....	1.7	*	0.6	10.1
Grain.....	1.0	*	6.0	0.0
Steel products.....	0.9	0.1	5.1	*
Sugar.....	0.8	1.1	*	0.0
Industrial chemicals, except sulfuric acid.....	0.8	0.5	1.8	0.6
Gypsum or plastic rock.....	0.6	0.8	*	0.0
Wood pulp.....	0.4	0.4	0.0	1.0
Sulfuric acid.....	0.4	0.3	0.3	1.0
Paper and related products, n.e.c....	0.4	0.5	0.2	0.0
Lumber and shingles.....	0.3	0.5	*	0.0
Molasses, inedible.....	0.3	0.4	0.3	0.0
Chrome.....	0.3	0.4	*	0.0
Non-metallic minerals, n.e.c.....	0.2	0.4	*	0.0
Fertilizer and fertilizer materials.	0.2	0.3	0.1	*
Manganese.....	0.2	0.3	*	0.0
Coal tar products.....	0.2	0.1	0.5	0.1
Other non-ferrous ores, scrap, semi-fabricated metals; precious metals and manufactures.....	0.1	0.2	*	*
Fruits and preparations.....	0.1	0.1	*	0.0
Sulfur.....	0.1	0.1	0.0	0.0
Cocoa beans and shells.....	0.1	0.1	*	0.0
Clays and earths.....	0.1	0.1	*	0.0
Standard newsprint paper.....	0.1	0.1	*	*
Other.....	4.2	0.9	3.0	20.0

\*Less than .05 percent.



Table T-20.--VALUE OF PRINCIPAL COMMODITIES IN WATERBORNE COMMERCE,  
DELAWARE RIVER PORTS, 1957

(Millions of dollars)

Commodity or commodity group	Total	Inbound	Outbound	Local
Total.....	3,687.6	1,856.2	1,103.3	728.2
Petroleum products.....	930.2	283.8	437.6	208.8
Crude oil.....	757.5	754.2	0.3	3.0
Industrial chemicals except sulfuric acid.....	265.1	107.6	123.4	34.1
Steel products.....	131.3	10.4	120.5	0.4
Iron ore.....	90.5	90.5	0.0	0.0
Sugar.....	87.0	82.6	4.4	0.0
Coal and coke.....	86.4	10.0	39.8	36.6
Grain.....	59.3	2.3	57.0	0.0
Sulfuric acid.....	51.6	23.3	7.0	21.2
Wool, unmanufactured.....	50.5	50.3	0.2	0.0
Paper and related products, n.e.c....	46.3	37.0	9.3	0.0
Cocoa beans and shells.....	44.7	43.4	1.3	0.0
Automobiles, trucks, and busses.....	44.0	34.9	9.1	0.0
Electrical machinery and apparatus...	36.7	3.4	33.3	0.0
Other machinery <sup>a</sup> .....	35.6	31.0	4.1	0.5
Nickel ore, scrap, and semi-fabricated forms.....	34.6	32.8	1.8	0.0
Wood pulp.....	32.5	21.1	0.0	11.4
Coal tar products.....	31.3	10.0	19.7	1.6
Railway locomotives, cars, and parts.	24.8	0.0	24.8	0.0
Fruits and preparations.....	21.9	21.8	0.1	0.0
Lumber and shingles.....	15.5	15.5	*	0.0
Other non-ferrous ores, scrap, semi-fabricated metals, precious metals and manufactures.....	13.2	11.8	1.4	*
Lead ores, scrap, and alloys, crude and semi-fabricated.....	11.6	11.5	0.1	0.0
Tobacco, unmanufactured.....	11.0	9.7	1.3	0.0
Meat and meat products, canned and preserved.....	10.7	9.4	0.6	0.7
Textile, sewing, and shoe machinery..	10.6	4.4	6.2	0.0
Hides and skins.....	10.5	8.5	2.0	0.0
Manganese.....	10.3	10.0	0.3	0.0
Non-metallic minerals and manufactures, n.e.c.....	10.0	8.7	1.2	0.0

<sup>a</sup>/See commodity code 745 in general commodity tables.

\*Less than \$50,000.



By comparing the above figures with the distribution shown in Table T-19 it can be seen that there are numerous shifts in the relative sizes of commodities and commodity groups. Some items which appear in Table T-19 disappear from Table T-20.<sup>1/</sup> Petroleum products now heads the list. Its shift to first position indicates not only the vast importance of the port in transporting petroleum products of all kinds, but also indicates the high ratio of value added to cost of materials which is characteristic of petroleum refining.

Many commodities classed under the heading of general cargo appear in Table T-20, replacing heavy bulk items in Table T-19. Table T-20 brings to light the importance of the port to a wide variety of industries in and out of the 11-county Delaware Valley area.

### Local traffic

Local traffic, by the definition used in this study, refers to all waterborne movements which both originate and terminate within the area of the Delaware River ports. The number of commodities which are moved locally within the port area is very small, but this traffic warrants consideration because it accounts for more than 16 million tons out of a total recorded tonnage of almost 103 million moving through the Delaware River ports in 1957. The important commodities involved are listed below, followed by a discussion of the types of business which carry on this traffic and the reasons for doing so.

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<sup>1/</sup>Commodities which move predominantly in local traffic have been omitted from this table, since value of these commodities is somewhat uncertain.



<u>Commodity</u>	<u>Local Tonnage</u>
040 - Fish and fish products, fresh or frozen, except shellfish	10,432
049 - Shellfish and products	81,134

The bulk of this substantial tonnage reflects the indigenous fishing industry in the Delaware River port area. The port area, in accordance with U. S. Customs territorial classification, is defined to include the ocean shore of southern New Jersey, and there is a contribution to this tonnage of fish from that area as well as from Delaware Bay.

441 - Wood pulp	162,490
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Wood pulp moves in local traffic largely because it frequently arrives aboard ship in the port area along with other commodities. Wood pulp is frequently unloaded along with other cargo at a general port terminal, and then subsequently moved from one point to another within the port area by barges and small vessels. The great bulk of the local traffic in pulp moves from several terminals in the area to piers in Delaware County.

502 - Bituminous coal and lignite	3,958,476
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Local traffic in bituminous coal is primarily carried on by utilities and secondarily by coke companies. Virtually all of the local traffic originates at a rail terminal in Philadelphia County. Most of this moves to other points in Philadelphia County, some goes to Camden County, while a small amount is moved to Burlington County.

505 - Gasoline and other motor fuels	1,443,347
510 - Gas oil, distillate fuel oil, and residual fuel oil, in- cluding bunker oil	4,944,562
511 - Crude petroleum	179,187
513 - Kerosene	105,197
516 - Petroleum asphalt and products	76,630
519 - Lubricating oils and greases	75,010
520 - Petroleum products, n.e.c.	47,282

Local traffic in petroleum products represents a very large tonnage. The economics of transportation for these commodities are such that firms interested in distributing these commodities find it to their advantage to move as much tonnage by water as possible. Refineries and refining companies which also distribute in this area maintain bulk stations in many directions away from the refineries and reaching as close to local markets as is possible. Movements are made largely on small vessels with drafts which make it possible to carry these commodities up some of the smaller tributaries of the Delaware River. In addition to refineries, there are companies engaged in bringing in heavier fuels to the area and distributing them over the area via smaller vessels to the home heating market and to that wide variety of industries which require fuel for their operations. It is almost certain that the transportation of finished petroleum products makes for cost savings such that retail gasoline and other prices can be lower than they might be were the port waters not available. This is an advantage in addition to the basic dependence of the refineries upon their port location for the economical procurement of crude petroleum.



554 - Sand, gravel, and crushed rock, except limestone	3,092,372
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These commodities are the prime constituents of materials used for major construction. Raw sources of these materials are located on both sides of the Delaware, in the north of the port area, in Bucks and Burlington counties. A number of firms engaged in the manufacture and distribution of these construction materials are largely responsible for local traffic in sand and gravel, while the Philadelphia Transportation Company maintains a sand and gravel pier for its own uses. Philadelphia, Delaware, Camden, Burlington, and New Castle counties are the locations of the principal piers where these commodities are put ashore, either to manufacturing or processing plants or for distribution to end uses.

800 - Coal tar products	9,335
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This bulk item is moved principally by two or more firms in Philadelphia county which produce roofing materials, paints, and other chemical products.

830 - Industrial chemicals, except sulphuric acid; chemical specialties and miscellaneous chemical products	99,545
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These commodities are produced largely in Bucks, Philadelphia, New Castle and Gloucester counties by chemical and refining companies. For the most part these same industries are also the receivers of chemicals. The major portion of local traffic of this commodity consists of shipments between different establishments of the same industries.

About two-thirds of the chemicals are received in the New Jersey counties of the port area--primarily Gloucester and Camden counties. About a sixth of the total is received by the refineries.

Three-quarters of the shipments of this commodity are shipped from Bucks and New Castle counties. Again the petroleum industry accounts for about one-sixth of the total.

825 - Sulphuric Acid

162,196

This commodity is very closely tied to the Delaware River Port. Because it is very widely used but very difficult and expensive to ship, the economies of waterborne shipments are highly attractive. Large sulphuric acid producers are located in Gloucester, New Castle, Philadelphia, and Bucks Counties, although in Philadelphia the production is mainly for internal use.

Sulphuric acid is used heavily in the chemical, fertilizer, petroleum, steel and synthetic fiber industries in the port area. All but the last of these are heavily dependent on the port for receipts of acid.

A rough percentage breakdown of local traffic in sulphuric acid is shown in the following tables.

Table T-21.--LOCAL SHIPMENTS OF SULPHURIC ACID

(In percent)

County shipped from	Total	Industry	
		Chemicals	Petroleum
Total.....	100	98	2
Philadelphia.....	2	0	2
Bucks & New Castle..	29	29	0
Gloucester.....	69	69	0



Table T-22.--LOCAL RECEIPTS OF SULPHURIC ACID

(In percent)

County received in	Total	Industry	
		Chemical	Petroleum
Total.....	100	98	2
Philadelphia.....	7	5	2
Bucks & New Castle...	47	47	0
Camden.....	12	12	0
Cloucester.....	34	34	0

859 - Fertilizer, and fertilizer  
materials

4,933

This commodity is moved principally over piers in Philadelphia county by a small number of firms which process raw fertilizer materials, or which produce finished fertilizer products.