Working Papers

PHILADELPHIA REGION

INPUT-OUTPUT

STUDY

Part III

FINAL DEMAND
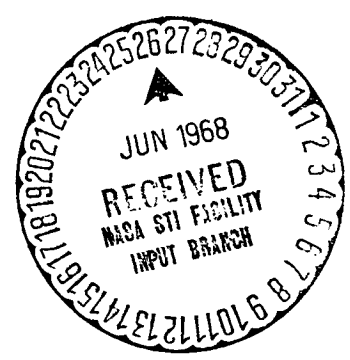
by

Walter Isard
Thomas W. Langford, Jr.

of the
Regional Science Research Institute
and
Department of Regional Science
Wharton School
University of Pennsylvania
Philadelphia, Pennsylvania

TABLE OF CONTENTS

Introduction

PART III

FINAL DEMAND

(Included within this Volume is also a working paper relating
to the dummy allocative sectors, which are to be in-
cluded in the intermediate matrix).

Introduction

This volume represents the third in the set of preliminary working papers of the Philadelphia Region Input-Output Study. The study represents an attempt to provide a more rigorous and scientific basis for regional economic impact and projection analysis. Since 1962, when the study was initiated, there has been a continuing concern among government agencies and the business community regarding the possible undesirable local effects of major changes in federal programs and expenditure patterns. As one of the several possible alternatives of investigation, the project director and his associates decided to conduct a highly detailed input-output study of the Philadelphia region ... thereby to make available the basic disaggregate data with which to investigate the local impacts of diverse changes of expenditure patterns.

Beyond assistance in the search for solutions to basic problems, this study had and continues to have the additional aim to provide a major contribution to the standardization of procedures for developing regional accounts and input-output coefficients. By so doing, it should make possible major economies in the construction of regional accounts and input-output tables for both metropolitan and non-metropolitan regions.[1]

Initially research for this study was undertaken by the Department of Regional Science, Wharton School of Finance and Commerce, University of Pennsylvania under a grant from the National Aeronautics and Space

---

[1] Work along these lines is already being conducted by the Regional Input-Output Committee (Professor W. Leontief, Chairman; W. Isard, Secretary) of the Regional Science Research Institute.

Administration.[1] Most recently the objectives of the study have been extended. In view of the new pressing problems of water and atmospheric pollution which have developed in the major metropolitan regions, it was felt that the input-output study could be fruitfully applied to the projection of basic magnitudes affecting these problems. In particular, it was judged that on the basis of population, industrial, and other economic projections and their spatial distribution in the Philadelphia region, the demand for water and the generation of diverse pollutants could be estimated under differing sets of meaningful assumptions. In view of these additional new research objectives, grants for research on the economics of water quality were made by the Federal Water Pollution Control Administration[2] and Resources for the Future, Inc. to the Regional Science Research Institute. The research has been conducted under the direction of Walter Isard, in close association with Thomas W. Langford, Jr. and Eliahu Romanoff. Willis J. Winn, Dean of the Wharton School, has generously made available the full facilities of the School. There were of course many others who assisted in the study; their help will be acknowledged in the final report.

The previous volumes presented in great detail the development of the coefficients and related materials for the 500 sectors in the intermediate matrix. This volume presents the development of one set of estimates for eighty six final demand sectors. These estimates are necessary for both a comprehensive presentation of social accounts for year 1959, as well as for projections of relevant magnitudes to the years 1985 and 2010. Other related reports will be forthcoming.

Currently available with this volume are panels 8 and 9 of the Philadelphia region input-output coefficient table which presents in matrix form the sector data developed in this volume.

While the materials presented in Volumes I and II and the related panels 1-7 of the table were in preliminary form, subject to major revision, the materials presented in this volume and the related panels are in near final form. Time has been available to reconcile the control totals, and hence the data presented are subject only to minor revision.

W. I.
T. W. L.

Regional Input-Output Study
Department of Regional Science
University of Pennsylvania
Philadelphia, Pennsylvania

Preliminary Draft
August 1967

DUMMY ALLOCATIVE SECTORS

Introduction

Three dummy sectors have been developed within the Philadelphia region input-output intermediate matrix which are non-productive, and allocative in nature. These sectors are:

RIS 1509   Maintenance and Repair Construction

RIS 9826   Office Supplies

RIS 9842   Transportation (Aggregate)

Each of these sectors do represent a pattern of purchases from many producing sectors, and have sales to almost every other sector. Frequently consumers of their goods and services were unable to provide explicit distributions regarding the specific goods and services purchased, but were able to provide values for the generic aggregate. Although it is recognized that there exists significant differences in the pattern of expenditures among consumers, there did not exist sufficient data to warrant adjustments at this time.

Maintenance and Repair Construction[1]

The inputs to this sector are definitionally limited to the special trade contractors (RIS 1711, Mechanical Contractors; RIS 1731, Electrical Contractors; and RIS 1701, Special Trade Contractors, n.e.c.).

----

[1] This sector is discussed in detail in Vol. I, Chapter 4, pp. 4-37-43.

The output of this dummy allocative sector was distributed to each productive sector on the basis of the survey data or, in its absence, the value of OBE sector 11 in the 1958 U.S. interindustry study.

Office Supplies

This dummy allocative sector was developed to distribute the purchases of the many products generally consumed in relatively small quantities by all productive sectors under the generic term office supplies.

The basic input data utilized in the development of coefficients for this RIS sector were provided by the Office of Business Economics, based on the 1958 U.S. Interindustry Study.

The output of this dummy allocative sector was distributed to each consuming sector on the basis of the survey data where available and, in their absence, on the basis of purchases from OBE sector 73 in the 1958 U.S. interindustry study. It was assumed that the mix of office supplies purchased by the various productive sectors does not vary significantly from sector to sector, and hence can be estimated with the use of a single percentage allocator.

Transportation (Aggregate)

The demand for transportation services is presented in two distinct ways within the current interindustry matrix. First, the eight producing sectors exist both as rows and columns. Second, an aggregate row for transportation services exist, developed as the transportation margin on the material goods at OBE rates.[1]

---

[1] See Volume I, Chapter 2, pp 2-10 and 2-38-41.

Survey information was not obtained relating to the mode of transportation utilized for the material purchases of the consuming sectors. Hence that demand generated by the margin has not been specified as to the type (mode) of transportation services purchased by the consuming sector.

Since transportation margins were developed for the material goods only, the inputs into the dummy allocative sector, RIS 9842, were assumed to exclude those personal transportation services, namely sectors RIS 4111, Local and Suburban Transit, and RIS 4121, Taxicabs. The output of these sectors were primarily assigned to households.

Inputs of warehousing services (RIS 4220) into RIS 9842 were estimated independent of the other transport sectors. It is clear that with the significant magnitude of port activity in Philadelphia, a large proportion of warehousing services are exported. The imports of warehousing are those purchases by entities within the region from warehouses located outside the region. Imports were estimated not to exceed 25% of the estimate of exports, i.e. $835,380. Thus, with a total supply of $20,491,380 of warehouse services and reported demand for these services of $7,003,208; the residual amounting to $13,488,172 was designated as an input into the RIS 9842. This input represented 2.95% of the total inputs into RIS 9842.

There exists little data regarding the actual composition of the total consumption of transportation services by the consuming sectors. The 1963 Census of Transportation[1] provided limited data relating only to shipments from the region by manufacturers as shown in Table I.

[1] U.S. Bureau of the Census, Census of Transportation: 1963, Volume III, Commodity Transportation Survey, Parts 3 & 4 (Washington: U.S. Government Printing Office, 1966) p. 388.

Table I

Means of Transport

Mode	Percent of Total Ton-miles
Rail	30.2
Motor Carrier	28.8
Private Truck	8.0
Air	0.3
Water	31.0
Other & Unknown	1.7

These data relate to Production Area 5, which includes the Standard Metropolitan Statistical Areas of: Philadelphia, Pa.-N.J.; Wilmington, Del.-N.J.-Md.; and Trenton, N.J. In 1963, the Philadelphia, Pa.-N.J. SMSA represented approximately 84.6% of the total manufacturing output of Production Area 5.

The ton-miles distribution does not account for differential rates by mode. An estimated index of these rates was obtained by dividing the estimated U.S. output for each relevant RIS transportation sector by the estimated ton-miles available in the 1963 Census of Transportation, as shown in Table II.

Table II

RIS Sector	Total U.S. (Million Ton Miles)	Estimated U.S. Output ($000,000)	Index of Estimated Average Cost per ton mile
4011	225646.512	14,197.0	.062916
4210	88026.936	7,366.0	.083678
4400	272759.520	3,395.0	.012446
4500	619.908	193.5[1]	.312143
4190	32855.124	3,359.0	.109450

[1] For air transportation (RIS 4500) output was defined in terms of freight and expressage revenues only, which were estimated on the basis of C.A.B. data to account for approximately 6.17% of total airline revenues.

Hence a distribution of modes of transportation was developed by multiplying the initial distribution noted in Table I by the index of rates in Table II and normalizing the results, as shown in Table III.

Table III

RIS Sector	Distribution
4011	.324743
4210	.411872
4400	.065936
4500	.015996
4190	.181453
	1.000000

The distribution shown in Table III was used to allocate the inputs from the five transportation sectors listed in Table III into RIS sector 9842. The total dollar values of these five inputs was defined as equal to the total dollar value of demand for RIS 9842 less the amount previously estimated from RIS 4220, warehousing inputs.

Table IV presents in preliminary dollar values a summary analysis of the transportation demands and supply within the matrix.

Table IV

SUMMARY ANALYSIS OF THE TRANSPORTATION SECTORS

RIS Sectors	Title	Demand	Unallocated Demand	Dummy 9842	Total Demand	Production	Imports 9995	Total Supply
4011	RAILROADS	90,015,043	-	162,892,505	252,907,548	173,471,000	79,436,548	252,907,548
4111	LOCAL TRANSIT	61,496,206	34,666,225		96,162,458	95,657,000	505,458	96,162,458
4121	TAXI	9,891,799	14,812,601		24,704,400	20,587,000	4,117,400	24,704,400
4190	TRANS-SERVICES, NEC	15,021,540	-	32,570,413	47,591,953	23,671,000	23,920,953	47,591,953
4210	TRUCKING	125,406,048	-	206,596,704	332,002,752	193,845,000	138,157,752	332,002,752
4220	WAREHOUSING	7,003,208	-	13,488,172	20,491,380	19,656,000	835,380	20,491,380
4400	WATER TRANSP.	157,787,170	54,398,339	33,074,491	245,260,000	212,260,000	33,000,000	245,260,000
4500	AIR TRANSP.	14,597,129	14,729,114	8,024,117	37,350,360	36,618,000	732,360	37,350,360
SUB TOTALS		481,218,170	118,606,279	456,646,402	1,056,470,851	775,765,000	280,705,851	1,056,470,851

Chapter 13

PERSONAL CONSUMPTION EXPENDITURES

INTRODUCTION

The largest final demand sector wholly within the Philadelphia region in 1959 was Personal (Household) Consumption. This Sector (RIS 9988) represents the goods and services required by the households within the Philadelphia Standard Metropolitan Statistical Area.

The estimates for this sector of final demand were developed in six basic steps:

1. estimation of the total dollar value of personal consumption expenditures (PCE) for the Philadelphia SMSA;

2. initial distribution of the regional PCE value by 19 aggregate sectors;

3. estimation of a twentieth sector pertaining to "personal insurance, gifts, and contributions";

4. disaggregation of the twenty aggregate sectors by 182 commodity groups;

5. decomposition of each commodity group value into the component parts (RIS sectors) representing the appropriate wholesale and retail trades, transportation services, and the primary producer; and,

6. reconciliation and adjustment of the above generated distributions in conformity with the input-output framework.

Total Regional Personal Consumption Expenditures

The estimate of the total dollar value of personal consumption ex-
penditures within the Philadelphia SMSA was obtained by multuplying the
total number of family units (including single person families)[1] by the
average PCE per family for the Philadelphia SMSA.[2] This procedure re-
sulted in the estimate for the total PCE of $7,090,473,920 in 1959.

Initial Distribution

The initial allocation of the regional PCE to the appropriate gross
commodity (product) groups was based on the BLS study of consumer expen-
ditures and income.[3] This study permitted the allocation of the total
regional PCE into the first 19 aggregate sectors for the Philadelphia
region. Table 13-1 presents for the average family within the Philadel-
phia SMSA, the personal consumption expenditures for each of these 19
aggregate sectors in the BLS study.

To the 19 aggregate sectors available from the BLS study for the
Philadelphia region was added an additional twentieth sector representing
expenditures on personal insurance, gifts and contribution. Expendi-
tures for this sector were estimated on the basis of the BLS study of
the Northeastern region.[4] Table 13-1 shows the percentage distribution
of the adjusted twenty aggregate sectors.

[1] U.S. Bureau of the Census, U.S. Census of Population: 1960, General
Social and Economic Characteristics, Pennsylvania. PC(1)-40C,
(Washington: U.S. Government Printing Office, 1962).

[2] Bureau of Labor Statistics, Summary of Family Expenditures, Income and
Savings by Income Class: All Urban Families and Single Consumers
Philadelphia SMSA. 1960-61 Report 237-58 (Washington: U.S. Government
Printing Office, 1965).

[3] Ibid. p. 9.

[4] Bureau of Labor Statistics, Consumer Expenditures and Income, Detail of
Expenditures and Income, Urban Places in the Northeastern Region, 1960-
61, Report 237-34 Supplement 3, Part A, (Washington: U.S. Government
Printing Office, 1964).

Table 13 - 1

PRELIMINARY DISTRIBUTION OF PERSONAL CONSUMPTION EXPENDITURES
by 20 Aggregate Sectors, Philadelphia, SMSA

Aggregate Sector	Dollar Expenditures per Family Unit $	Proportion of Total Expenditures
1. Food at home	1,214	.186205
2. Food away	301	.046168
3. Tobacco	106	.016258
4. Alcohol	122	.018712
5. Rented shelter	230	.035278
6. Owned shelter	422	.064726
7. Other shelter	72	.011043
8. Fuel, light, refrigeration, water	275	.042179
9. Household operations	364	.055831
10. Household furnishings & equipment	316	.048468
11. Clothing	607	.093102
12. Personal care	169	.025921
13. Medical care	340	.052149
14. Recreation	237	.036351
15. Reading	53	.008130
16. Education	116	.017792
17. Automobile transportation	636	.097551
18. Other transportation & travel	101	.015491
19. Other expenditures	156	.023927
Sub Total (BLS-Philadelphia Study)	$5,837	.895282
20. Personal insurance, gifts, contributions	683	.104718
Total Philadelphia PCE	$6,520	1.000000

The total expenditures for each of these aggregate sectors were then disaggregated by the 182 commodity groups corresponding to the BLS study for the Northeastern region of the United States. Table 13-2 presents the proportionate distribution of each of the 20 aggregated sectors previously defined. While for each aggregate sector, the intra-sector expenditure mix in the Northeastern U.S. region may differ from that of the Philadelphia region, it was judged that the additional detail possible warranted the use of the data pertaining to the larger region. Furthermore, the Northeastern region is primarily metropolitan in character, as is the study region.[1]

[1] In addition to the above cited sources, the following studies were utilized for secondary information: (a) "Historical National Income and Product Statistics: Personal Consumption Expenditures, by Type of Product" Survey of Current Business, Vol. 45, No. 11 (November, 1965), and (b) Wharton Consumer Expenditure Study, 1959.

Table 13-2

ALLOCATION SCHEDULE OF 20 REGIONAL PCE
AGGREGATE SECTORS TO 182 COMMODITY GROUPS

Aggregate Sector Commodity Group	Average Expenditures Per Family Unit, NE-US ($)	Proportion within Aggregate Sector
1. <u>Food at home</u>	(1)	(1)
2. <u>Food away</u>	(2)	(2)
3. <u>Tobacco</u>	(3)	(3)
4. <u>Alcohol</u>	(3)	(3)
5. <u>Rented Shelter</u>	401.27	1.000000
Rent	387.11	.964712
Repairs	12.95	.032273
Special fees, etc.	1.21	.003015

See footnotes at end of table.

Table 13-2 (Continued)

Aggregate Sector Commodity Group	Average Expenditures Per Family Unit, NE-US ($)	Proportion within Aggregate Sector
6. Owned Shelter	387.94	1.000000
Interest on mortgage	96.22	.248028
Taxes	137.01	.353173
Property insurance	24.39	.064159
Repair & replacement	113.54	.292674
Other expenses	16.28	.041966
7. Other Shelter	61.25	1.000000
Interest on mortgage	.87	.014204
Taxes	3.84	.062694
Property insurance	1.10	.017959
Repairs & replacement	2.62	.042776
Other expenses	1.07	.017469
Lodging Out of City	51.75	.844898
8. Fuel, Light, Refrigeration & Water	268.43	1.000000
Coal & coke	8.93	.033268
Wood & logs	.62	.002310
Kerosene	11.53	.042953
Fuel oil	71.98	.268152
Other solid & petro. fuels	1.22	.004545
Gas	58.71	.218716
Electricity	71.57	.266624
Gas & electric (combined)	21.93	.081697
Water	13.95	.051969
Sewage	2.68	.009984
Garbage & trash collection	2.11	.007861
Water, sewage, garbage (combined)	2.28	.008494
Water softening	.11	.000409
Ice	.38	.001416
Food freezer rentals	.17	.000633
Other expenses	.26	.000969
9. Household Operations	336.20	1.000000
Laundry supplies	32.70	.097264
Cleaning supplies	17.93	.053331
Household paper supplies	21.69	.064515
Laundry & cleaning services	50.42	.149970
Domestic services	54.09	.160886
Day nursery care	1.39	.004134
Telephone & telegraph	96.10	.285843
Repair of furniture & equip.	14.78	.043962
Moving, frt, express, & storage	5.38	.016002
Postage & writing materials	24.08	.071624
Other expenses	17.64	.052469

Table 13-2 (Continued)

Aggregate Sector Commodity Group	Average Expenditures Per Family Unit, NE-US ($)	Proportion within Aggregate Sector
10. House Furnishings & Equipment	277.96	1.000000
House textiles	40.71	.146460
Furniture	85.99	.309361
Soft floor covering, etc.	25.57	.091992
Hard floor covering	6.18	.022233
Refrigerators	15.24	.054828
Home freezers	3.08	.011080
Dish washers	.81	.002914
Cooking stoves	7.22	.025975
Garbage disposal units	.32	.001151
Vacuum cleaners	6.56	.023601
Washing machines	12.04	.043316
Clothes dryers	2.61	.009390
Washer-dryer combinations	1.33	.004785
Air conditioners (demountable)	2.85	.010253
Dehumidifiers	.49	.001763
Sewing machines	4.55	.016369
Ironing machines	.09	.000324
Small appliances	7.11	.025579
China & glassware	7.06	.025399
Knives, forks, spoons, etc.	1.66	.005972
Cooking utensils (non-electric	2.61	.009390
Kitchenware	.86	.003094
Cleaning equipment	1.74	.006260
Laundry equipment	.82	.002950
Insurance on furnishings, equip. & apparel	5.98	.021514
Other	34.48	.124047
11. Clothing	943.65	1.000000
Clothes	849.54	.900270
Notions	18.58	.019690
Shoe repair	8.67	.009188
Clothing services	7.14	.007566
Dry cleaning	59.72	.063286
12. Personal Care	154.51	1.000000
Haircuts (male)	34.28	.221862
Haircuts (female)	6.27	.040580
Shaves	.22	.001424
Waves, shampoos, tinting, etc.	30.77	.199146
Other personal care services	1.85	.011973

Table 13-2 (Continued)

Aggregate Sector Commodity Group	Average Expenditures Per Family Unit, NE-US ($)	Proportion within Aggregate Sector
12. Personal Care (Continued)		
Toilet soap	11.11	.071905
Dental supplies	14.23	.092098
Shaving equipment	12.27	.079412
Cleansing tissues	7.53	.048735
Cosmetics, creams, etc.	17.32	.112096
Hair equip. & preparations	12.19	.078895
Other personal care supplies	6.47	.041874
13. Medical Care	354.40	1.000000
Prepaid care	80.02	.225790
Hospitalized care	49.01	.138290
Physician's services outside hospital	63.54	.179289
Dental services	61.58	.173758
Eye care & glasses	15.36	.043341
Other practitioners	2.05	.005784
Drugs and medicines	66.25	.186936
Medical appliances & supplies	4.69	.013234
Other medical care	11.90	.033578
14. Recreation	219.46	1.000000
TV	39.87	.181673
Radio	8.79	.040053
Phonographs, tape recorders	18.31	.083432
Musical instruments	7.93	.036134
Movies	21.49	.097922
Sports events	4.56	.020778
Concerts, plays, etc.	7.37	.033582
Sports (fees, dues & equipment)	30.38	.138431
Club dues & memberships	13.32	.060694
Hobbies	20.79	.094733
Pets	18.38	.083751
Toys & play equipment	16.81	.076597
Recreation out of home city	5.58	.025426
Other recreation	5.88	.026794
15. Reading	56.84	1.000000
Newspapers	36.48	.641802
Magazines	10.24	.180155
Books, non-technical	9.06	.159395
Other reading	1.06	.018648

Table 13-2 (Continued)

Aggregate Sector Commodity Group	Average Expenditures Per Family Unit, NE-US ($)	Proportion within Aggregate Sector
16. Education	69.52	1.000000
Tuition and fees	49.64	.714039
Books, supplies, & equipment	7.97	.114643
Music & other lessons	6.88	.098964
Other education	5.03	.072354
17. Automobile	635.27	1.000000
Auto purchase	282.37	.444488
Gas	132.44	.208478
Oil	10.00	.015741
Lube, washing, etc.	12.55	.019755
Tires & tubes	19.10	.030066
Battery, other equip.	7.66	.012058
Other operating exp.	9.29	.014624
Repair & parts	36.23	.057031
Registration & other expenses	38.50	.060605
Insurance	87.13	.137154
18. Other Travel	112.87	1.000000
Public in home city	61.99	.549216
Car pool	4.93	.043679
Public out of home city	33.82	.299637
Other transportation	12.12	.107468
19. Other Expenditures	132.13	1.000000
All expense tours, etc.	49.53	.374858
Other	82.60	.625142
20. Contributions & Insurance	682.64	1.000000
Gifts to persons not in family	186.17	.272721
Community Chest, Red Cross, etc.	29.11	.042643
Churches & religious organizations	110.69	.162150
Education, medical, political, etc.	14.75	.021607
Insurance		
Veterans	9.55	.013990
Group	9.26	.013565
Other	137.02	.200721
mutual aid	.19	.000278
Disability income	3.47	.005083
Other personal	2.34	.003428
S.S., railroad, govt. retirement	161.00	.235849
Private retirement	19.09	.027965

[1] Distribution of food purchases for consumption at home is based upon

the food allocator developed for this purpose. For the description of the methodology see page 13-17-18 of this chapter.

(2)Distribution of food purchases away from home was based upon the food allocator as noted above, after the application of the retail margin for sector 5812.

(3)Distributions for tobacco and alcohol products were based upon U.S. shipments data, U. S. Bureau of the Census. Census of Manufactures: 1958 Volume II, Part I. (Washington: U. S. Government Printing Office, 1961).

Table 13-3 presents the percentage and dollar distribution of the regional personal consumption expenditures for each of the 182 commodity groups. This table is obtained by multiplying the percentage distributions of the commodity groups within each of the 20 aggregate sectors (shown in Table 13-2) by the derived dollar value for the appropriate aggregate sector as shown in Table 13-1.

The further disaggregation of the 182 commodity groups into SIC producing industries was based largely upon the data contained in the Census of Manufactures: 1958, Volume II, Tables 5-B. These tables present the dollar value of "product-class" shipped in the United States, where each product-class is distributed among the SIC producing industries. With the use of the percentage distributions that can be derived from these data, it is possible to allocate each of the 182 commodity groups among the specific SIC producing industries.[1]

---

[1]Adjustments were made in the distributions so that household expenditures would not appear for the products of heavy manufacturing industries. This allocation removed small amounts of secondary products produced by these industries and calculated the distributions over the reduced base. This step eliminated sectors such as 3312, 3741, etc. from the allocation of PCE by SIC producing industry.

Table 13-3

DISTRIBUTION OF REGIONAL PCE BY 182 COMMODITY GROUPS

Aggregate Sector Commodity Group	Distribution	Phila. Regional P.C.E. by Commodity Group
1. Food at home	.186205	1,320,281,696
2. Food away	.046168	327,353,000
3. Tobacco	.016258	115,276,925
4. Alcohol	.018712	132,676,948
5. Rented Shelter	.035278	250,137,739
Rent	.034033	241,310,099
Repairs	.001139	8,076,050
Special fees, etc.	.000106	675,158
6. Owned Shelter	.064726	458,938,015
Interest on mortgage	.016055	113,837,559
Taxes	.022859	162,081,143
Property insurance	.004153	29,446,738
Repair & replacement	.018943	134,314,848
Other expenses	.002716	19,257,727
7. Other Shelter	.011043	78,300,103
Interest on mortgage	.000157	1,113,204
Taxes	.000692	4,906,608
Property insurance	.000199	1,411,004
Repairs & replacement	.000473	3,353,794
Other expenses	.000192	1,361,371
Lodging out of city	.009330	66,154,122
8. Fuel, Light, Refrigeration, & Water	.042179	299,069,099
Coal & coke	.001403	9,947,935
Wood & logs	.000098	694,866
Kerosene	.001812	12,847,939
Fuel oil	.011309	80,186,170
Other solid & petroleum fuels	.000192	1,361,371
Gas	.009225	65,409,622
Electricity	.011245	79,732,379
Gas & electric (combined)	.003446	24,433,773
Water	.002192	15,542,319
Sewage	.000422	2,992,180
Garbage & trash collection	.000332	2,354,037
Water, sewage, garbage (combined)	.000358	2,538,390
Water softening	.000017	120,538

Aggregate Sector Commodity Group	Distribution	Phila. Regional P.C.E. by Commodity Group
8. Fuel, Light, Refrigeration & Water (Continued)		
Ice	.000060	425,428
Food freezer rentals	.000027	191,443
Other expenses	.000041	**290,709**
9. Household Operations	.055831	395,868,249
Laundry supplies	.005430	38,501,273
Cleaning supplies	.002978	21,115,431
Household paper supplies	.003602	25,539,887
Laundry & cleaning services	.008373	59,368,539
Domestic services	.008983	63,693,727
Day nursery care	.000231	1,637,899
Telephone & telegraph	.015958	113,149,784
Repair of furniture & equipment	.002455	17,407,113
Moving, frt., express, storage	.000893	6,331,793
Postage & writing materials	.003999	28,354,805
Other expenses	.002929	20,767,998
10. House Furnishings & Equipment	.048468	343,661,090
Household textiles	.007099	50,335,274
Furniture	.014994	106,314,566
Soft floor covering, etc.	.004459	31,616,423
Hard floor covering	.001078	7,643,531
Refrigerators	.002657	18,839,389
Home freezers	.000537	3,807,584
Dish washers	.000141	999,757
Cooking stoves	.001259	8,926,907
Garbage disposal units	.000056	397,067
Vacuum cleaners	.001144	8,111,502
Washing machines	.002099	14,882,905
Clothes dryers	.000455	3,226,166
Washer-dryer com- binations	.000232	1,644,990
Air conditioners (demountable)	.000497	3,523,966
Dehumidifiers	.000085	602,690
Sewing machines	.000793	5,622,746
Ironing machines	.000016	113,447
Small appliances	.001240	8,792,188
China & glassware	.001231	8,728,373

Aggregate Sector Commodity Group	Distribution	Phila. Regional P.C.E. by Commodity Group
10. House Furnishings & Equipment (Continued)		
Knives, forks, spoons, etc.	.000289	2,049,147
Cooking utensils (non-electric)	.000455	3,226,166
Kitchenware	.000150	1,063,571
Cleaning equipment	.000303	2,148,413
Laundry equipment	.000143	1,013,938
Insurance on furnishings, equipment & apparel	.001043	7,395,364
Other	.006013	42,635,020
11. Clothing	.093102	660,137,303
Clothes	.083817	594,302,253
Notions	.001834	13,003,929
Shoe repair	.000855	6,062,355
Clothing services	.000705	4,998,784
Dry cleaning	.005891	41,769,982
12. Personal Care	.025921	183,792,174
Haircuts, (male)	.005751	40,777,316
Haircuts, (female)	.001052	7,459,179
Shaves	.000037	262,347
Waves, shampoos, tinting, etc.	.005162	36,601,027
Other personal care services	.000311	2,205,137
Toilet soap	.001864	13,216,643
Dental supplies	.002387	16,924,961
Shaving equipment	.002058	14,592,195
Cleansing tissues	.001263	8,955,269
Cosmetics, creams, etc.	.002906	20,604,917
Hair equip. & prepa- rations	.002045	14,500,019
Other personal care supplies	.001085	7,693,164
13. Medical Care	.052149	369,761,124
Prepaid care	.011775	83,490,330
Hospitalized care	.007212	51,136,498
Physician's services, outside hospital	.009349	66,288,841
Dental services	.009061	64,246,784
Eye care & glasses	.002261	16,031,562
Other practitioners	.000302	2,141,323
Drugs and medicines	.009749	69,125,030
Medical appliances & supplies	.000690	4,892,427
Other medical care	.001750	12,408,329

Aggregate Sector Commodity Group	Distribution	Phila. Regional P.C.E. by Commodity Group
14. Recreation	.036351	257,745,818
TV	.006604	46,825,490
Radio	.001456	10,323,730
Phonographs, tape re- corders	.003033	21,505,407
Musical instruments	.001313	9,309,792
Movies	.003560	25,242,087
Sports events	.000756	5,360,398
Concerts, plays, etc.	.001221	8,657,469
Sports (fees, dues, & equipment)	.005032	35,679,265
Club dues & memberships	.002206	15,641,586
Hobbies	.003443	24,412,502
Pets	.003045	21,590,493
Toys & play equipment	.002784	19,739,879
Recreation out of home city	.000924	6,551,598
Other recreation	.000974	6,906,122
15. Reading	.008130	57,645,553
Newspapers	.005218	36,998,093
Magazines	.001465	10,387,544
Books, non-technical	.001295	9,182,164
Other reading	.000152	1,077,752
16. Education	.017792	126,153,712
Tuition and fees	.012704	90,077,381
Books, supplies & equip.	.002039	14,457,476
Music & other lessons	.001761	12,486,325
Other education	.001288	9,132,530
17. Automobile	.097551	691,682,821
Auto purchase	.043359	307,435,859
Gas	.020338	144,206,058
Oil	.001536	10,890,968
Lube, washing, etc.	.001928	13,670,434
Tires & tubes	.002934	20,803,450
Battery, other equip.	.001176	8,338,397
Other operating expense	.001426	10,111,016
Repair & parts	.005563	39,444,306
Registration, other expense	.005912	41,918,882
Insurance	.013379	94,863,451
18. Other Travel	.015491	109,838,532
Public in home city	.008508	60,325,752
Car pool	.000677	4,800,251
Public out of home city	.004642	32,913,980
Other transportation	.001664	11,798,549

Aggregate Sector Commodity Group	Destination	Phila. Regional P.C.E. by Commodity Group
19. Other Expenditures	.023927	169,653,770
All expense tours, etc.	.008969	63,594,461
Other	.014958	106,059,309
20. Contributions & Insurance	.104718	742,500,248
Gifts to person not in family	.028559	202,496,845
Community chest, Red Cross, etc.	.004465	31,658,966
Church, religious organizations	.016981	120,403,338
Education, medical, political, etc.	.002263	16,045,742
Insurance		
Veterans	.001465	10,387,544
Group	.001420	10,068,473
Other	.021019	149,034,671
Mutual aid	.000029	205,624
Disability income	.000532	3,772,132
Other personal	.000359	2,545,480
S.S., railroad, govt. retirement	.024698	175,120,525
Private retirement	.002928	20,760,908
	1.000000	7,090,473,920

As an illustrative example of the disaggregation process consider the commodity group Magazines, a part of the aggregate sector 15, Reading Material. Table 13-4 shows the Census of Manufactures breakdown of the shipments of magazines by SIC producing industries, dollarwise (column 1) and proportionately (column 2). As magazines accounted for $10,290,815 of the total regional PCE;[1] this value is multiplied by the proportions in column 2 of Table 13-4 to obtain the dollar value produced by each of the SIC producing industries to meet the regional personal consumption demand for magazines, as shown in column 3.

---

[1] Obtained by multiplying total PCE ($7,090,473,920) by the distribution coefficient for magazines (0.001636) from Table 13-3.

For each SIC producing industry, the dollar value of products over all 182 commodity groups required to meet personal consumption demand were summed to give a gross total. This gross total for each of the SIC producing industries was reduced to take into account the retail, wholesale, and transportation services (margins) to yield the dollar value of expenditures by Personal (Household) Consumption sector at producers' prices. Table 13-5 illustrates the allocation of the PCE values (SIC producing industries at consumers' prices) to the RIS sectors at producers' prices.

Table 13-4

DISTRIBUTION OF SHIPMENTS BY PRODUCING INDUSTRY
MAGAZINES

Producing Industry (SIC)	Value of Shipments Originating in Producing Industry: U.S. [1] ($000) (1)	Proportion (2)	Value of PCE Magazines ($) (3)
2711	1,365	.004477	46,505
2721	293,431	.962384	9,996,806
2731	5,742	.018832	195,618
2741	1,365	.004477	45,505
2751	1,632	.005353	55,605
2752	1,365	.004477	46,505
	$304,900	1.000000	$10,387,544

[1] U.S. Bureau of the Census, Census of Manufactures: 1958, Volume II Industry Statistics, Part I, Major Groups 20 to 28. (Washington: U.S. Government Printing Office, 1961) Table 5-B, p. 27A-16.

Table 13-5

SCHEDULE OF CONSUMERS' PRICES TO PRODUCERS' PRICES

SIC Producing Sector 2721

(Periodicals)

Consumers' Price	$15,980,954[1]
Retail Sector 5990 margin ratio (0.437934) estimated margin	$ 6,998,603
Subtotal	$ 8,982,351
Wholesale Sector 5099 margin ratio (0.264205) estimated margin	$ 2,373,182
Subtotal	$ 6,609,169
Transportation Sector 9842 margin ratio (0.020000) estimated margin	$ 132,183
Producers' Price Producing Sector 2721	$ 6,476,986

---

[1] The total dollar value of purchases from producing sector 2721
includes: $9,996,806, magazines; $5,905,924, Educational books,
supplies, etc., and $78,224 other reading materials.

Reconciliation and Adjustments

1. Food Consumption

The allocation of the purchase of food products (aggregate sector one) for consumption by households to the RIS producing sectors was accomplished with reference to the following data sources.

Preliminary distributions were made on the basis of per-capita production values for food producing sectors for the nation as a whole with appropriate adjustments for intermediate demands using the Census of Manufactures: 1958 as a source. Comparisons were then made with the detailed price and quantity data available from the U.S.D.A. food consumption study[1] and staff estimates of the regional taste preferences. The preliminary distribution was accordingly modified in the light of these comparisons. These values were again examined with respect to the input-output matrix data for the Philadelphia region, in particular the preliminary estimates of production and export flows. The data as finally adjusted are shown in Table 13-6.

The detailed food consumption distribution, as detailed above, together with food consumption data by broad food categories available from hospitals was used to disaggregate the intermediate food demands for those sectors recorded as consuming food services, either self-prepared or catered. Where the food was provided by outside establishments, the margin for RIS 5812 was first applied, and the residual was then disaggregated as above.

2. Consumption of Retail Trade Services

The output of the retail trade sector was considered to be consumed only by households. Although this ignores all intermediate sector

_____

[1] U.S. Department of Agriculture, U.S. Food Consumption, Sources of Data and Trends, 1909-63, Statistical Bulletin No. 364 (Washington: U.S. Government Printing Office, 1965).

Table 13-6

FOOD ALLOCATION

(Household Consumption)

RIS Sector	Title	Distribution (Producer's Prices)
0122	Fruit Farms	.050832
0123	Vegetable Farms	.047826
0133	Poultry Farms	.026266
0190	Other Agricultural Products	.003952
2011	Meat Packing Plants	.236573
2013	Sausages & Other Prepared Meats	.040864
2015	Poultry & Small Game	.037342
2021	Creamery Butter	.020240
2022	Natural Cheese	.013532
2023	Condensed & Evaporated Milk	.009314
2024	Ice Cream & Frozen Desserts	.018719
2025	Special Dairy Products	.003745
2026	Fluid Mild	.108226
2031	Canned & Cured Seafoods	.006429
2032	Canned Specialties	.016748
2033	Canned Fruits, Vegetables Preserves, etc.	.044043
2034	Dried & Dehyd. Fruit & Vegetables	.005405
2035	Pickled Fruit, Vegetables, Sauces, & Dressings	.010389
2036	Fresh or Frozen Packaged Fish	.006079
2037	Frozen Fruit, Juices, Vegetables & Spec.	.002029
2041	Flour & Other Grain Mill Products	.012059
2043	Cereal Preparations	.008783
2044	Rice Milling	.001256
2045	Blended & Prepared Flour	.002479
2046	Wet Corn Milling	.000827
2051	Bread & Other Bakery Products	.089942
2052	Biscuits, Crackers, & Pretzels	.019396
2062	Cane Sugar Refining	.010777
2063	Beet Sugar	
2071	Candy & Other Confectionery Products	.025274
2072	Chocolate & Cocoa Products	.004125
2073	Chewing Gum	.003479
2086	Bottled & Canned Soft Drinks	.029914
2087	Flavoring Extracts, Sirups, n.e.c.	.000811
2096	Shortening, Oils, Magarine	.009406
2097	Manufactured Ice	.001480
2098	Macaroni, Spaghetti, Vermicelli, etc.	.003564
2099	Food Preparations, n.e.c.	.067875
	TOTAL	1.000000

purchases of materials from retailers, such purchases are estimated to be a very small proportion of total retail sales. Since the total regional consumption of retail trade services was defined as households, the sector demand could be defined as the regional output plus estimated imports (representing purchases by regional households from retailers located outside the region) less estimated exports (representing purchases from regional retailers by households located outside the region, e.g. tourists).

The adjusted estimates of personal consumption of retail trade services developed as shown in Table 13-7 agreed reasonably well with the preliminary estimates obtained through the standard procedure for adjusting the purchaser's prices to producer's prices as previously noted on page 13 - 17.

3. Consumption of Hospital and Medical Services

A final review of the personal consumption demands upon the producing sectors of the regional economy, with reference to estimates of exports, imports, and intermediate demands, suggested only two other adjustments. The preliminary estimates developed for Hospital Services RIS 8061, and Medical Services, n.e.c., RIS 8090 appeared significantly lower than suggested by the available supply and demand data. Both the initial and revised estimates are recorded as follows:

Estimated Personal Consumption Expenditures

	Initial $	Revised $
RIS 8061 Hospital Services	108,406,848	150,847,116
RIS 8090 Medical Services, n.e.c.	106,975,734	191,430,238
TOTAL	215,382,582	342,277,354
Net Change	+	$126,894,772

TABLE 13-7

SUMMARY

REGIONAL SUPPLY, & DEMAND OF RETAIL TRADE SERVICES

RIS	OUTPUT $	IMPORT $	EXPORT $	CONSUMPTION PCE $
5210	51,676,000	98,381	2,583,800	49,190,581
5221	3,305,000	6,292	165,250	3,146,042
5231	6,889,000	66,802	275,560	6,680,242
5241	1,110,000	2,113	55,500	1,056,613
5250	19,684,000	385,645	787,360	19,282,285
5311	185,382,000	7,183,553	12,976,740	179,588,813
5331	35,899,000	1,076,970	1,076,970	35,899,000
5342	106,953,000	240,098	95,188,170[1]	12,004,928
5351	73,889,000	0	3,694,450	70,194,550
5390	30,699,000	607,715	920,970	30,385,745
5411	196,364,000	3,847,131	7,854,560	192,356,571
5420	25,271,000	500,263	758,130	25,013,133
5431	5,771,000	114,242	173,130	5,712,112
5441	12,025,000	360,750	360,750	12,025,000
5460	18,305,000	362,364	549,150	18,118,214
5490	7,210,000	139,786	360,500	6,989,286
5511	216,052,000	402,662	15,123,640	201,331,022
5521	9,416,000	17,926	470,800	8,963,126
5531	12,531,000	375,930	375,930	12,531,000
5541	63,806,000	3,156,718	3,828,360	63,134,358
5599	4,124,000	122,444	164,960	4,081,484
5610	32,436,000	635,481	1,297,440	31,774,041
5621	46,684,000	914,625	1,867,360	45,731,265
5630	14,143,000	277,087	565,720	13,854,367
5641	6,418,000	62,235	256,720	6,223,515
5651	15,670,000	51,952	526,800	15,195,152
5660	23,852,000	231,292	954,080	23,129,212
5690	11,294,000	216,660	677,640	10,833,020
5710	57,007,000	108,230	2,850,350	54,264,880
5722	17,757,000	33,806	887,850	16,902,956
5730	10,802,000	51,567	540,100	10,313,467
5812	183,929,000	7,127,249	12,875,030	176,897,737[2]
5813	84,151,000	3,295,914	5,049,060	82,397,854
5912	58,430,000	2,034,454	2,337,200	58,127,254
5921	4,781,000	92,693	239,050	4,634,643
5940	7,532,000	147,566	301,280	7,378,286
5950	4,112,000	80,562	164,480	4,028,082
5971	12,281,000	117,848	614,050	11,784,798
5980	53,202,000	51,657	1,596,060	51,657,597
5990	71,604,000	694,342	2,864,160	69,434,182
TOTAL	1,802,446,000	35,293,005	184,209,110	1,652,246,413

[1] The relatively high export value is due to a national mail-order establishment within the region.

[2] Intermediate demand for catering services estimated to be approximately $1,283,482.

As the prior distributions for PCE had been verified it was the judgement of the staff that the increase of $126,894,772 should be associated with a corresponding increase in the B.L.S. based estimate of the total gross value of regional personal consumption expenditures. This adjustment was also considered justifiable in that the B.L.S. based estimate was considerably lower than other reliable estimates made by private agencies in the region.

Chapter 14

CAPITAL FORMATION

INTRODUCTION

This chapter presents the methodology employed in the development of the data representing private investment expenditures within the Philadelphia, Pa.-N.J. SMSA for the base year 1959. The total private capital formation expenditures were estimated to be approximately $1,334,903,000 or 5.7% of the total gross output of the region. The total state and local capital expenditures were estimated to be approximately $112,935,000. Federal capital formation expenditures are not separated from their current expenditure.

First, the procedures relating to the equipment expenditure patterns, are presented and then those of plant construction. The equipment expenditures are developed in terms of the purchasing sectors: 1) manufacturing, 2) non-manufacturing (except regulated), 3) regulated non-manufacturing. The identification of the 498 RIS producing sectors included within the 48 capital formation sectors is shown in Table 14-1.

MANUFACTURING SECTORS

Estimation of Total Capital Expenditures by the Manufacturing Sectors

The primary source of Capital Expenditures (C.E.) data for manufacturing industries was a special five county tabulation of value of

Table 14-1

Sector Definitions

RIS Capital Formation Sector	RIS Producing Sectors
4901	0120, 0132, 0133, 0190
9902	0809
9903	0708
9904	1411, 1421, 1441, 1490
9905	1511, 1611, 1621, 1701, 1711, 1731, 6560
9906	1509
9907	1900
9908	20.. (ALL SIC MAJOR GROUP 20)
9909	21.. (ALL SIC MAJOR GROUP 21)
9910	22.. (ALL SIC MAJOR GROUP 22)
9911	23.. (ALL SIC MAJOR GROUP 23)
9912	24.. (ALL SIC MAJOR GROUP 24)
9913	25.. (ALL SIC MAJOR GROUP 25)
9914	26.. (ALL SIC MAJOR GROUP 26)
9915	27.. (ALL SIC MAJOR GROUP 27)
9916	28.. (ALL SIC MAJOR GROUP 28)
9917	29.. (ALL SIC MAJOR GROUP 29)
9918	30.. (ALL SIC MAJOR GROUP 30)
9919	31.. (ALL SIC MAJOR GROUP 31)
9920	32.. (ALL SIC MAJOR GROUP 32)
9921	33.. (ALL SIC MAJOR GROUP 33)
9922	34.. (ALL SIC MAJOR GROUP 34)
9923	35.. (ALL SIC MAJOR GROUP 35)
9924	36.. (ALL SIC MAJOR GROUP 36)
9925	37.. (ALL SIC MAJOR GROUP 37)
9926	38.. (ALL SIC MAJOR GROUP 38)
9927	39.. (ALL SIC MAJOR GROUP 39)
9928	4011
9929	4210
9930	4500
9931	4111, 4121, 4220, 4400, 4190
9932	4811
9933	4832, 4833
9934	4890
9935	4911, 4920
9936	4941, 4990
9937	50.., 52...-59.. (ALL TRADE SECTORS)
9938	6011, 6020, 6120, 6190, 6200, 6301, 6310
9939	6590
9940	7200
9941	7300
9942	7400
9943	7500
9944	7900
9945	8061, 8090, 8211, 8220, 8290, 8486
9946	9201, 9202, 9203, 9204, 9205, 9209
9947	9301, 9302, 9303.
9948	Households

Production and Capital Expenditures prepared by the Pennsylvania Department of Internal Affairs.[1] The tabulation was by 4-digit SIC groups for 1959.

In the estimation of capital expenditures for the eight county SMSA, it was assumed that the ratio of capital expenditures to value of production in the SMSA was the same as the ratio of capital expenditures to value of production in the five Pennsylvania counties.

With the use of previously prepared study estimates of the Value of Production in the SMSA and the Pennsylvania Department of Internal Affairs tabulation, C.E. for each 4-digit SIC group was estimated by:

$$\frac{(\text{Capital Expenditures: 5 Pa. Counties})}{(\text{Value of Production: 5 Pa. Counties})} \; X$$

(Value of Production: SMSA) =

(Total Capital Expenditure: SMSA)

Capital Expenditures: Plant (Construction) and Equipment

Plant and equipment expenditures were estimated on the basis of national data contained in the 1958 Census of Manufactures.[2] The ratio of "new structures and additions to plant" to total "expenditures for new plant and equipment" was calculated for each 4-digit manufacturing industry. Multiplication of this ratio by the previously estimated total capital expenditures for each 4-digit industry provided a value of plant expenditures. Total capital expenditures less estimated expenditures for plant provided the value of capital expenditures for new

[1] Pennsylvania Department of Internal Affairs, Bureau of Statistics special tabulation of "1959 Census of Manufacturing Industries in Pennsylvania" for the 5 Southeastern Counties, November 1961.

[2] U.S. Bureau of the Census, U.S. Census of Manufactures: 1958, Volume 1, Summary Statistics (Washington: U.S. Government Printing Office, 1961) Table 3, pp. 5-5-13.

equipment in each 4-digit manufacturing group. Plant and equipment expenditures, aggregated to 2-digit SIC groups, are presented in Table 14-2.

Allocation of Capital Expenditures - Equipment

The allocation of capital expenditures for equipment among the different equipment i.e.equipment producing industry was based on the National Planning Association (NPA) Report on Capacity Expansion Factors.[1] For each NPA industry[2] the NPA factors provided a breakdown of plant and equipment expenditures which composed a unit addition to the capacity of that industry. These factors represent new additions to capacity only, as opposed to the Census of Manufactures estimates which covered both additional and replacement expenditures. Thus, the NPA factors are the more traditional marginal capital coefficients, and represent the current state of technology in construction and production processes.

As the purpose in this study of the allocation of equipment expenditures was simply to provide a sector breakdown of the estimates of capital formation, including both additions and replacements, it was decided that the disaggregation of the NPA data would provide the necessary detail. In essence, it was felt that the advantage of finer detail more than offset the disadvantage in that the NPA factors pertained to expansion only.

Within each 2-digit SIC a subset of NPA industries was selected, and the NPA factors were applied to only the industries of this subset

[1] National Planning Association, Economic Programming Center, Capacity Expansion Planning Factors, (Washington: _____ November 1965) (preliminary draft).

[2] In general the NPA industries are defined as single four digit SIC industries or aggregates thereof.

Table 14-2

Estimated Capital Expenditures: Manufacturing

TITLE	RIS Sector	SIC	Plant ($)	Equipment ($)	Total Capital Expenditures ($)
Food & Kindred	9908	20	7,149,967	17,150,133	24,300,100
Tobacco	9909	21	164,978	1,287,122	1,452,100
Textiles	9910	22	1,381,557	6,862,443	8,244,000
Apparel	9911	23	1,365,127	3,598,695	4,963,822
Lumber & Wood	9912	24	423,215	738,485	1,161,700
Furniture & Fixtures	9913	25	290,097	855,036	1,145,133
Paper & Allied	9914	26	3,153,549	10,130,451	13,284,000
Printing & Pub.	9915	27	4,659,656	10,173,444	14,833,100
Chemicals & Allied	9916	28	10,166,304	25,469,785	35,636,089
Petroleum	9917	29	16,952,954	4,823,746	21,776,700
Rubber & Plastics	9918	30	1,407,521	5,396,479	6,804,000
Leather	9919	31	138,702	582,098	720,800
Stone, Clay & Glass	9920	32	3,921,843	10,915,957	14,837,800
Primary Metals	9921	33	11,271,290	18,911,412	30,182,702
Fabricated Metal	9922	34	5,711,193	11,205,507	16,916,700
Machinery	9923	35	5,710,153	16,764,347	22,474,500
Electric Machinery	9924	36	14,031,820	28,322,701	42,354,521
Transportation Equipment	9925	37	4,197,861	13,244,823	17,442,684
Instruments	9926	38	979,576	1,096,817	2,076,393
Miscellaneous	9927	39	745,237	1,548,289	2,293,526
TOTAL			$93,822,600	$189,077,770	$282,900,370

rather than to the entire set of industries in the 2-digit SIC. This procedure was adopted because (1) time and cost constraints which made it impossible to treat all 4-digit SIC's and (2) within most 2-digit manufacturing industries, a relatively small number of NPA industries accounted for a large proportion of total capital expenditure in the Philadelphia SMSA. For each 2-digit SIC a minimum coverage criterion of 80 percent was established. Within each 2-digit SIC the NPA industries were ranked by value of total capital expenditures and were treated in this order until 80 percent or more of the total capital expenditures of the 2-digit manufacturing classification was accounted for. The percentage coverage is presented in Table 14-3.

After a number of minor adjustments to equate NPA industry and RIS sector classifications, the NPA factors were applied to the estimated total capital expenditures of each industry included by the 80 percent coverage criterion. The first step was to obtain the dollar value allocation of the capital expenditures for equipment in each NPA industry. Total capital expenditures were first multiplied by each NPA "Process Equipment" factor to obtain an industry breakdown of that equipment used directly in the production process. These breakdowns were then summed across the industries to obtain a weighted average allocation of capital expenditures for process equipment in each 2-digit classification. For an example of this procedure see Table 14-4.

In addition to process equipment, NPA factors were available for "Auxiliary Equipment"; included was the equipment necessary for water, steam, electric power, refrigeration, storage, waste disposal, maintenance and administration. For each NPA industry, the total capital expenditures value was multiplied by the NPA "module" factor for each

Table 14-3

Sector Coverage

Capital Expenditures: Manufacturing

RIS Sector	SIC	Percent of Total CE Covered
9908	20	84.07
9909	21	100.00
9910	22	100.00
9911	23	96.72
9912	24	87.85
9913	25	86.51
9914	26	80.58
9915	27	100.00
9916	28	81.24
9917	29	96.88
9918	30	99.61
9919	31	91.20
9920	32	88.82
9921	33	85.49
9922	34	83.47
9923	35	80.60
9924	36	84.44
9925	37	93.62
9926	38	97.16
9927	39	87.61

Table 14-4

Process Equipment Allocation
Primary Metal Products (Sector 9921) (SIC 33)[1]

| RIS Sectors | NPA Sector 3310 | | NPA Sector 3323 | | Total |
	NPA Factors	Value ($)	NPA Factors	Value ($)	Value ($)
2421	.005709	$ 140,103	.006603	$ 8,348	$ 148,451
3255	.001297	31,829	.001195	1,511	33,340
3259	.000259	6,356			6,356
3295	.001816	44,566	.000896	1,133	45,699
3297	.003114	76,420	.002101	2,656	79,076
3433	.000778	19,093	.000597	755	19,848
3443	.006486	159,172	.003297	4,168	163,340
3590	.003114	76,420			76,420
3535	.009091	223,100	.012001	15,173	238,273
3536	.013930	341,854	.021602	27,311	369,165
3537	.002595	63,683	.002997	3,789	67,472
3541	.018703	458,987	.019203	24,278	483,265
3542	.008573	210,388	.009004	11,384	221,772
3544	.002595	63,683	.002700	3,414	67,097
3545	.014022	344,111	.014401	18,207	362,318
3548	.073743	1,809,712	.000906	1,145	1,810,857
3559	.020000	490,816	.146142	184,767	675,583
3561	.003892	95,514	.004501	5,690	101,204
3564	.002854	70,039	.001504	1,902	71,941
3566	.003373	82,776	.003008	3,803	86,579
3567	.041296	1,013,436	.029114	36,809	1,050,245
3569	.002076	50,947	.008097	10,237	61,184
3576	.003374	82,801	.003297	4,168	86,969
3621	.005458	133,944	.005100	6,448	140,392
3623	.001816	44,566	.001802	2,278	46,844
3741	.002373	58,235			58,235
3742	.005508	135,171			135,171
3811	.000778	19,093			19,093
3831	.001039	25,498			25,498
Total Process Equipment		$ 6,372,313		$ 379,374	$ 6,751,687
Total Equipment Capital Expenditures		$24,540,800		$1,264,300	$25,805,100

[1] NPA sectors 3310 and 3323 account for 85.49% of total capital equipment expenditures in RIS sector 9921. (SIC 33).

general type of auxiliary equipment required by that NPA industry. For the NPA industries in a given 2-digit SIC, the derived module values were summed to obtain the total expenditure by type of auxiliary equipment. See Table 14-5.

For each type of auxiliary equipment, the total module value from Table 14-5 was then multiplied by the NPA auxiliary equipment factors to obtain the dollar value of capital expenditures for each type of equipment as listed in the corresponding column of Table 14-6. As the same types of equipment occurred in a number of the modules, the final step involved the aggregation by RIS equipment producing and related sectors into a single vector of auxiliary equipment expenditures. This appears as the last column in Table 14-6.

Adding the vector of expenditures for process equipment (last column of Table 14-4) to the vector of expenditures for auxiliary equipment (last column of Table 14-6) yielded a total NPA vector of capital expenditures for equipment.[1] This is recorded in column 3 of Table 14-8.

Except for Petroleum (SIC 29), the RIS estimates shown in Table 14-2 based on the Census of Manufactures the ratios estimates listed total equipment expenditures at approximately two and a half times the estimate derived directly from NPA data. This suggests that the marginal capital coefficients for equipment relate to approximately 40 percent of the RIS estimated total of both addition and replacement expenditures.

Since the intent was to use the NPA data only as an estimator of the composition or mix of capital expenditures for equipment, no further

---

[1] The NPA data also indicated the various kinds of equipment used in the construction processes. This equipment was not included in the capital NPA vector of expenditure for equipment as it was judged that construction equipment was generally purchased by the construction contractors and therefore included in the structural matrix sectors 1511, 1611, 1621, 1701, 1711 and 1731.

Table 14-5

PRELIMINARY EXPENDITURE ALLOCATION BY AUXILIARY EQUIPMENT MODULES
Primary Metal Products (RIS Sector 9921) (SIC 33)

Auxiliary Equipment Modules	NPA Sector 3310		NPA Sector 3323		Total Values ($)
	Factors	Values ($)	Factors	Values ($)	
Water	.022535	553,027	.005020	6,347	559,374
Steam Generating	.047186	1,157,982	.035567	44,967	1,202,949
Elec. Gen. & Trans.	.027744	680,860	.015448	19,531	700,391
Elec. Transformation	.005978	146,705	.007809	9,873	156,578
Air	.014681	360,283	.005697	7,203	367,486
Refrig. & Cooling	.007645	187,614	.001822	2,304	189,918
Indust. Gas-Build	.013872	340,430	.017161	21,697	362,127
Indust. Gas-Buy	.000100	2,454	.000737	932	3,386
Product Storage-Solid	.026278	644,883	.029591	37,412	682,295
Product Storage-Fluid	-	-	-	-	-
Waste Disposal	.004102	100,666	.000289	365	101,031
Admin. & Shops	.023643	580,218	.030836	38,986	619,204
Control Lab.	.005059	124,152	-	-	124,152

Table 14-6

EXPENDITURE ALLOCATION OF AUXILIARY EQUIPMENT MODULES (NPA) BY RIS SECTOR.
Primary Metal Products (RIS Sector 9921)

NPA Modules RIS Sector	Water ($)	Steam Generating ($)	Electric Gen. & Trans. ($)	Electric Transform. ($)	Air ($)	Refrigeration & Cooling ($)	Industrial Gas (Build) ($)	Industrial Gas (Buy) ($)	Product Storage (Solids) ($)	Waste Disposal ($)	Administrative & Shops ($)	Control Laboratories ($)	Sector Totals ($)
2421									49,193		13,634		62,827
2490	11,523					4,900			3,480	1,091	2,043		23,037
2521											1,486		1,486
2522											5,511		5,511
2541											4,087		4,087
2542											5,325		5,325
2599											3,406		3,406
3255		19,127								859			19,986
3259		5,052								636			5,688
3272										950			950
3433		9,503								859	5,263		15,625
3443	49,952	324,435			8,489	32,438	16,730	227		19,499	3,963	1,105	456,838
3492											6,811		6,811
3511			98,405										98,405
3519			23,953		28,627	3,608							56,188
3534									1,501		1,362		2,863
3535		24,179							6,004	1,455			31,638
3536		13,593							7,028		4,892		25,513
3537		3,488							5,800	1,091	7,678		18,057
3541											5,820		5,820
3542											12,384		12,384
3544											2,167		2,167
3545											1,734		1,734
3548											10,279		10,279
3553											4,830		4,830
3555											1,362		1,362
3559										7,123	4,892		12,015
3561	27,577	14,556			68,573	7,692	66,342	893		5,850	7,926	2,086	201,495
3564		45,712			3,491	4,900			13,373	1,091	9,350	1,390	79,307
3566	7,216	962	13,588		9,003	2,906	4,563	61	1,160	404	805	112	40,780
3567												2,309	2,309
3569	3,021	1,564			1,323	627	73,765					658	80,958
3571											4,458	9,597	14,055
3576		2,526							12,895			1,465	16,886
3582											619		619
3585						22,011			2,934		1,114	5,388	31,447
3589	7,496										3,653		11,149
3590		7,097											7,097
3612			152,125	73,497									225,622
3621	12,866	5,534	17,160	7,398	38,623	6,970	19,193	227	4,640	1,909	5,820	447	120,787
3623											2,724		2,724
3629			10,016	4,386									14,402
3691			24,724	1,467							557		26,748
3711									682		495		1,177
3715									1,160				1,160
3741									136				136
3742									341				341
3811											3,468	8,057	11,525
3831											186	2,197	2,383
													$1,787,939

investigation was undertaken, although if time had permitted, it would have been desirable to have estimated capital coefficients on account of repair and replacement. In each 2-digit industry, the dollar values of the NPA breakdown were multiplied by adjustment factors (Table 14-7) to equate these equipment values with the RIS estimates of capital expenditures for equipment based on the Census of Manufactures.

Table 14-7

Adjustment Factors: Ratios of Census Equipment Expenditures
to NPA Equipment Expenditures

RIS Sector	SIC	Factor	RIS Sector	SIC	Factor
9909	20	2.88	9918	30	2.46
9909	21	2.77	9919	31	2.83
9910	22	2.48	9920	32	2.56
9911	23	2.38	9921	33	2.21
9912	24	2.43	9922	34	2.18
9913	25	2.53	9923	35	2.52
9914	26	2.99	9924	36	2.52
9915	27	1.99	9925	37	2.33
9916	28	2.88	9926	38	1.30
9917	29	0.99	9927	39	2.22

The use of the RIS total capital expenditures, for equipment based on Census of Manufactures ratios and the NPA factors for the estimate of the composition (mix) of this expenditure provided the desired vector of the dollar value of equipment expenditures on a RIS sector basis for each 2-digit manufacturing industry at purchasers' prices. Previously calculated RIS estimates of wholesalers' margins were deducted from the purchasers' value of each type of equipment to derive a value net of wholesale services; estimates of transportation charges were then deducted to arrive at a final vector of capital equipment expenditures at producers' prices. See final column of Table 14-8, which also records the wholesale services, by RIS sector, and transportation cost. The

Table 14-8

Final Vector of Capital Expenditures
Primary Metal Products (RIS Sector 9921)

RIS Sector	Process Equipment ($)	Auxiliary Equipment ($)	Total NPA Equipment Estimate ($)	Estimated Total Sector Values (Purchasors' Prices) ($)	Estimated Total Sector Values (Producers' Prices) ($)
2421	148,451	62,827	211,278	467,885	311,562
2490		23,037	23,037	51,017	33,972
2521		1,486	1,486	3,291	2,363
2522		5,511	5,511	12,204	8,764
2541		4,087	4,087	9,051	6,500
2542		5,325	5,325	11,792	8,468
2599		3,406	3,406	7,543	5,417
3255	33,340	19,986	53,326	118,093	80,810
3259	6,356	5,688	12,044	26,672	18,251
3277		950	950	2,104	1,440
3295	45,699		45,699	101,203	69,252
3297	79,076		79,076	175,118	119,831
3433	19,848	15,625	35,473	78,557	65,847
3443	163,340	456,838	620,178	1,373,414	1,041,570
3492		6,811	6,811	15,083	10,860
3511		98,405	98,405	217,923	158,185
3519		56,188	56,188	124,431	90,322
3534		2,863	2,863	6,340	4,564
3535	238,273	31,638	269,911	597,731	430,357
3536	369,165	25,513	394,678	874,033	629,290
3537	67,472	18,057	85,529	189,408	136,370
3541	483,265	5,820	489,085	1,083,102	781,411
3542	221,772	12,384	234,156	518,550	374,111
3544	67,097	2,167	69,264	153,388	110,663
3545	362,318	1,734	364,052	806,211	581,646
3548	1,810,857	10,279	1,821,136	4,032,993	2,909,812
3553		4,830	4,830	10,696	7,756
3555		1,362	1,362	3,016	2,187
3559	675,583	12,015	687,598	1,522,719	1,104,180
3561	101,204	201,495	302,699	670,341	484,116
3564	71,941	79,307	151,248	334,946	227,850
3566	86,579	40,780	127,359	282,043	203,689
3567	1,050,245	2,309	1,052,554	2,330,931	1,683,381
3569	61,184	80,958	142,142	314,780	227,333
3571		14,055	14,055	31,125	22,456
3576	86,969	16,886	103,855	229,992	165,930
3582		619	619	1,371	973
3585		31,447	31,447	69,641	49,423
3589		11,149	11,149	24,690	17,522
3590	76,420	7,097	83,517	184,952	133,435
3612		225,622	225,622	499,651	456,485
3621	140,392	120,787	261,179	578,393	528,425
3623	46,844	2,724	49,568	109,771	78,791
3629		14,402	14,402	31,894	22,893
3691		26,748	26,748	59,235	42,779
3711		1,177	1,177	2,607	2,420
3715		1,160	1,160	2,569	2,385
3741	58,235	136	58,371	129,265	109,896
3742	135,171	341	135,512	300,098	255,133
3811	19,093	11,525	30,618	67,805	57,269
3831	25,498	2,383	27,881	61,744	52,149
Total Equip.	$6,751,687	$1,787,939	$8,539,626	$18,911,412	$13,930,494
5012					252
5063					67,880
5074					11,229
5077					102,683
5082					3,824,439
5086					16,397
5088					61,760
5091					308,414
5097					11,594
5098					248,906
9842					327,364
Construction					11,271,290
Total C.E.					$30,182,702

bottom item of this column also lists the value of plant construction

expenditures required by the (RIS capital formation sector 9921), which

value was estimated as previously described in Table 14-2.

The disaggregation of the total value of plant construction ex-

penditures by RIS construction sectors is described later.

NON-MANUFACTURING SECTORS*

Estimation of Total Capital Expenditures: by the Non-Manufacturing
Sectors

Total SMSA capital expenditures for each of the eighteen non-

manufacturing sectors listed in the last column of Table 14-9 were esti-

mated on the basis of national capital/output ratios and study data on

regional output. Specifically, for each sector the ratio of total plant

and equipment expenditures to total output[1] for the United States was

multiplied by estimates of total regional output to obtain the total

regional capital expenditures for that sector.

Capital Expenditures: Plant and Equipment

For each of the eighteen non-manufacturing sectors listed in Table

14-9, dollar values of capital expenditures for plant and equipment were

estimated with the use of ratios derived from preliminary data of the

Bureau of Labor Statistics on the 1958 capital flows.[2] These ratios

---

*The development of the coefficients of this segment, was greatly facili-
tated by access to unpublished materials of the U.S. Bureau of Labor
Statistics, Division of Economic Growth.

[1]Preliminary estimates of total plant and equipment expenditures were
obtained from: U.S. Department of Labor, Bureau of Labor Statistics,
Division of Economic Growth, 1958 Capital Expenditures by Purchasing
Industries; April 1965 and total output data are from: Office of
Business Economics, "The Transactions Table of the 1958 Input-Output
Study and Revised Direct and Total Requirements Data," Survey of
Current Business, Vol. 45, No. 9, (September 1965) pp. 33-49.

[2]Bureau of Labor Statistics, Division of Economic Growth, "1958 Capital
Flows, Percent Distribution by Consuming Industry (Producer Values)";
U.S. Department of Labor, April 1965. (Preliminary Estimates).

Table 14-9

Capital Expenditures: Non-Manufacturing

Title	OBE Sector	RIS Sector	RIS Estimated Capital Expenditures Plant ($)	Equipment ($)	Total ($)
Agricultural Production	1&2	9901	4,204,585	9,464,919	13,669,504
Forestry & Fisheries	3	9902	-	10,553	10,553
Agric., Forest & Fish. Services	4	9903	-	354,912	354,912
Mining	9	9904	618,711	2,193,614	2,812,325
New Construction	11	9905	906,668	21,207,175	22,113,843
Maintenance & Repair Const.	12	9906	-	3,139,968	3,139,968
Ordnance	13	9907	67,798	159,708	227,506
Radio & TV Broadcasting	67	9933	85,512	7,040,468	7,125,980
Other Communications, N.E.C.	66	9934	1,265,078	15,988,422	17,253,500
Wholesale & Retail Trades	69	9937	54,296,699	116,447,638	170,744,337
Finance & Insurance	70	9938	2,837,458	38,889,869	41,727,327
Real Estate & Rental	71	9939	1,872,531	671,669	2,544,200
Hotel, Personal & Repair Services	72	9940	1,953,445	23,749,777	25,703,222
Business Services	73	9941	4,137,867	16,655,436	20,793,303
Research & Development	74	9942	8,006	325,588	333,594
Automobile Repair & Services	75	9943	1,251,820	6,289,265	7,541,085
Amusement & Recreation	76	9944	7,850,448	5,523,399	13,373,847
Medical, Educational, Non-Profit	77	9945	108,285,086	51,663,343	159,948,429
Total			$189,641,712	$319,775,723	$509,417,435

provided the percentages by which total capital expenditures were broken down into expenditures for plant (column 3, Table 14-9) and expenditure for equipment (column 4, Table 14-9).

The derivation of the capital expenditure vector for the non-manufacturing sectors listed in Table 14-9 was somewhat different from that used for the manufacturing sectors. Given the BLS percentage breakdown of equipment expenditures by OBE equipment producing sector,[1] it was necessary to disaggregate the percentages by RIS equipment producing sectors. This disaggregation was made on the basis of information on the operations in each sector and miscellaneous data accumulated by the RIS. An illustration of this procedure is presented in the first five columns of Table 14-10 for RIS sector 9904. The first column of Table 14-10 lists the equipment producing OBE sectors selling to RIS sector 9904. Column (2) lists the corresponding derived coefficients. Columns (3) and (4) list the RIS sectors and their percentage share of each OBE sector. Column (5) records the relevant equipment coefficients by RIS sector (obtained by multiplying column (2) by column (4)).

An adjustment was necessary for flows to OBE sector 83[2], a dummy sector reflecting net sales of scrap, used, and second hand goods. In this adjustment it was assumed that the distribution of the net sales (or negative purchases) of OBE sector 83 was similar to the distribution of capital equipment purchases. Therefore, the coefficients of column 5 were appropriately reduced to yield the adjusted coefficients of column 6. The dollar value breakdown of equipment expenditures was then calculated by multiplying these adjusted equipment coefficients by the previous estimates of total capital expenditures for the given

---

[1] Ibid.

[2] Within the 18 sectors considered, the net sales to OBE 83 was estimated to range between 0.5 to 4.3 percent of total capital expenditures.

Table 14-10

Allocation of Equipment Expenditures
RIS Sector 9904: Mining (OBE Sector 9)

(1) OBE Sector	(2) Der.Agg. Coeff.	(3) RIS Sectors	(4) RIS %	(5) Coeff.	(6) Adjusted Coeff.	(7) Capital Expenditures
23	.005	2521	10	.000500	.000491	1,381
		2522	70	.003500	.003434	9,658
		2542	20	.001000	.000981	2,759
45	.353	3531	25	.088250	.086585	243,505
		3532	75	.264750	.259755	730,515
46	.078	3535	90	.070200	.068875	193,699
		3536	10	.007800	.007653	21,523
48	.094	3559	100	.094000	.092226	259,369
49	.032	3561	35	.011200	.010989	30,905
		3566	60	.019200	.018838	52,979
		3569	5	.001600	.001570	4,415
51	.002	3571	10	.000200	.000196	551
		3572	10	.000200	.000196	551
		3576	80	.001600	.001570	4,415
52	.001	3589	100	.001000	.000981	2,759
53	.020	3612	20	.004000	.003925	11,038
		3621	80	.016000	.015698	44,148
56	.002	3662	100	.002000	.001962	5,518
58	.001	3691	70	.000700	.000687	1,932
		3694	30	.000300	.000294	827
59	.076	3711	60	.045600	.044740	125,823
		3713	10	.007600	.007457	20,972
		3714	30	.022800	.022370	62,912
61	.021	3799	100	.021000	.020604	57,945
62	.004	3811	50	.002000	.001962	5,518
		3821	50	.002000	.001962	5,518
64	.001	3982	50	.000500	.000491	1,381
		3993	50	.000500	.000491	1,381
65	.017	9842	100	.017000	.016677	46,901
69	.088	5000	100	.088000	.086340	242,816
83	-.015					

Total Equipment				.795000	.780000	2,193,614
Total Plant					.220000	618,711
Total Capital Expenditures					1.000000	$2,812,325

non-manufacturing sectors. These expenditures are listed in column 7.
In a similar manner the data were developed for each of the eighteen
non-manufacturing sectors.

Since the coefficients of column (2) were calculated on the basis
of producers' value, no adjustments were necessary for wholesale margins
or transport costs. Percentages of equipment expenditures attributed to
the wholesale sector (OBE 69) and the transport sector (OBE 65) were
already included in the set of coefficients derived on the basis of BLS
preliminary estimates; thus the dollar values for these sectors were
calculated directly from the coefficients rather than by the method used
in the manufacturing sectors.

REGULATED NON-MANUFACTURING SECTORS

The remaining seven Private Capital Formation sectors were treated
individually, and are described separately. They are listed below in
Table 14-11.

Table 14-11

Capital Expenditures: Regulated Non-Manufacturing Sectors

Title	RIS Sector ($)	Estimated Capital Expenditures		
		Plant ($)	Equipment ($)	Total ($)
Railroads	9928	758,771	8,864,275	9,623,046
Trucking	9929	498,612	20,227,849	20,726,461
Air Transportation	9930	1,173,836	9,857,659	11,031,495
Transp. & Whse., N.E.C.	9931	1,037,027	14,769,626	15,806,653
Telephone Communications	9932	4,909,958	50,233,949	55,143,907
Electric & Gas Utilities	9935	4,609,857	33,468,701	38,078,558
Water & Other Utilities, N.E.C.	9936	10,970,833	26,020,566	36,991,399
TOTAL		$23,958,894	$163,442,625	$187,401,519

Railroads (9928): Total Capital Expenditures

The primary source of capital expenditure data for the two major Class I railroads operating in the Philadelphia SMSA was the annual reports filed with the Interstate Commerce Commission of expenditures for additions and betterments to road equipment and property.[1] These reports for the year 1959 provided total capital expenditures and a relatively detailed **breakdown** of construction and equipment expenditures. Expenditures were broken down for both owned and leased property and equipment; however the two expenditure breakdowns were combined into a single breakdown for purposes of capital formation allocation.

It was assumed that the ratio of regional to total system capital expenditures for the Class I railroads was the same as the ratio of their regional current expenditures [2] to their total system current expenditures.[3] This assumption was necessary because of the lack of regional capital expenditures data. Thus, for each railroad, the ratio of regional current expenditures to total system current expenditures was multiplied by the value of total system capital expenditures to provide the regional total capital expenditures, broken down by equipment and construction.

Allocation of Regional Capital Expenditures: Equipment

The I.C.C. reports breakdown equipment expenditures for both owned and leased property and equipment; however, the two expenditure

---

[1] Interstate Commerce Commission 1959, Annual Report Form A, Class I Railroads; (Schedule 211, Road and Equipment Property Expenditures for Additions and Betterments.

[2] See: Chapter 6, Vol. II.

[3] Interstate Commerce Commission, Op. Cit., (Schedule 300, Income Account).

breakdowns were combined into a single breakdown for study purposes. These system equipment expenditures were adjusted to a regional basis as described above.

The standard capital expenditure account titles used by the I.C.C. provide a clear indication of the type of equipment included in each account, (i.e. "Rails", "Ties", etc.). For the most part, the account titles were similar to RIS sectors and the allocation procedure was straight-forward. In those accounts where the title obviously indicated a number of equipment types, such as "Shop Machinery" or "Power Plant Equipment", staff judgement was used to allocate the value to RIS sectors.

Allocation of Regional Capital Expenditures: Construction

The nature of construction expenditures was clearly indicated by the standard account titles such as "Tunnels & Subways", "Station and Office Buildings", which were used by the I.C.C.; the values of these accounts after adjustment to a regional basis (as described above), were allocated directly to the construction sectors indicated.

The composition of two major construction accounts, "Grading" and "Track Laying & Surfacing" is primarily the capitalized value of Force Account Work.[1] However, the force account portions of these accounts were not included as capital expenditures, having been previously included as current operating costs within the structural matrix.

[1] "Force account work" is defined as: construction accomplished for its own use by private business organization not in the construction industries or a governmental unit which acts as its own general contractor and carries out the work by means of employees on its own payroll. See: D.I. Siskind, Chapter 4, "Construction, A Final Demand Sector in the 1947 Interindustry Relations Study:" in, National Bureau of Economic Research, Input-Output Analysis, Technical Supplement; (New York: N.B.E.R., Inc., 1954).

Trucking (9929): Total Capital Expenditures

The primary source of capital expenditure data for the trucking industry was the annual reports filed with the Interstate Commerce Commission providing expenditures for additions and betterments to property and equipment.[1] Reports were obtained for the ten largest Class I Motor Carriers in the region. (These were the same carriers used as a sample for the estimation regional output and technical coefficients.)

The estimate of the value of total regional capital expenditures by the Trucking sector was obtained by multiplying the reported capital expenditures of the ten sample carriers by the previously calculated ratio of total regional revenue[2] of the trucking sector to revenue of the ten sample carriers. Data obtained in an earlier part of the study[3] indicated that the sampled firms reasonably well represented the trucking industry in the region.

Allocation of Capital Expenditures

The expenditures on each item listed in the I.C.C. breakdown were totalled over the ten sample carriers to provide a single breakdown by the uniform account system used by the I.C.C.[4] As the account titles listed fourteen broad categories of construction and equipment, it was

---

[1] Interstate Commerce Commission, Annual Report, Form A, Class I Motor Carriers of Property: 1959. Schedule 1200, Dollar Value of Additions and Betterments during the year, (Carrier Operating Property); and Schedule 1220 Cost of Acquisitions during the year, (Revenue Equipment Owned).

[2] Chapter 6, Vol. II, pp. 6-5-6.

[3] Ibid.

[4] Interstate Commerce Commission, Uniform System of Accounts for Class I and Class II Common and Contract Motor Carriers of Property, (Washington: U.S. Government Printing Office, 1965).

necessary to disaggregate each account to RIS equipment producing sectors to obtain the vector of capital expenditures for equipment by RIS sectors. This disaggregation of the equipment accounts followed closely the detailed statement on items covered by each of the accounts provided in the I.C.C. manual.[1]

Air Transportation (9930): Total Capital Expenditures

Total capital expenditures data for the ten major airlines licensed to operate in Philadelphia in 1959 were obtained from quarterly reports filed with the Civil Aeronautics Board.[2] The four quarterly reports for the year 1959 were summed to obtain the total capital expenditures and the breakdown of these expenditures into twenty-two general equipment and construction categories.

Regional capital expenditures were estimated by the use of the ratio of regional to system revenues for each of the three major types of revenue producing operations: passenger, mail, and freight and express cargo.[3] For each airline, the ratio of total regional revenue to system revenue was multiplied by the total capital expenditure on each capital account listed on the C.A.B. forms to obtain the estimated regional capital expenditure for that account. (An exception was made in the case of two accounts containing capital expenditures for passenger operations only; the ratio of regional to system passenger revenue was used here instead of the aggregate ratio described above). For each C.A.B. capital account, expenditures for all ten airlines were then

---

[1] Ibid.

[2] Civil Aeronautics Board, Reports of Financial and Operating Statistics for Certified Air Carriers; Form 41, Schedule B-5, Washington, D.C.

[3] For the estimation of these ratios, Chapter 6, Vol. II, pp. 6-8-9.

summed to obtain the total regional capital expenditure for that account. Estimated regional capital expenditures for the general equipment accounts were then disaggregated to the RIS sectors. A number of the account titles were similar to the definitions of RIS sectors (i.e. "Air frames", "Aircraft engines", etc.); in others, the disaggregations were based on a C.A.B. publication which provided a detailed list of equipment types covered by each account.[1]

Transportation & Warehousing, not elsewhere classified (9931)
Total Capital Expenditures

This sector is an aggregate which covers the capital expenditures of five small RIS production sectors, and is a component of the O.B.E. transportation and warehousing sector (OBE 65). A national ratio of total capital expenditures to total output[2] was derived for OBE 65. It was multiplied by the previously calculated RIS estimate of regional output of this sector. This provided an estimate of regional capital expenditures, for OBE sector 65, from which was subtracted the previously calculated regional capital expenditure estimates of the Railroad, Trucking and Air transportation sectors. The resulting residual value was taken to be the total regional capital expenditures of RIS sector 9931.

Regional equipment expenditures for RIS 9931 were estimated to constitute the same percentage of total capital expenditures for the

[1] Civil Aeronautics Board, Uniform System of Accounts and Reports for Certificated Air Carriers, Washington, 1961

[2] Preliminary estimates of total plant and equipment expenditures were obtained from: U.S. Dept. of Labor, Bureau of Labor Statistics, Division of Economic Growth, 1958 Capital Expenditures by Purchasing Industries; April 1965, and total output data are from: Office of Business Economics, "The Transactions Table of the 1958 Input-Output Study and Revised Direct and Total Requirements Data", Survey of Current Business, Vol. 45, No. 9, (September 1965) pp. 33-49.

sector as regional equipment expenditures in the other three major sectors (of OBE 65) were of the total for those three sectors.

Allocation of Capital Expenditures for Equipment

Capital expenditures for equipment were allocated individually for each of the five production sectors[1] included in RIS sector 9931 based upon primary data obtained in selected interviews and the judgement of the staff.

Telephone Communications (Sector 9932): Total Capital Expenditures

The value of total capital expenditures for the two-major telephone companies serving the Philadelphia region was obtained from their annual reports filed with the Federal Communications Commission.[2] These reports gave the total capital expenditures and then a breakdown into fifteen general plant and equipment types. F.C.C. account definitions[3] suggest that a significant portion of construction and maintenance accounts was composed of Force Account Work.[4] Telephone company personnel were asked to estimate the force account proportion of the accounts and it was eliminated from the estimates of total capital expenditures.

---

[1] The five production sectors included within RIS sector 9931 are: Local and Suburban Transportation (4111); Taxicabs (4121), Public warehousing (4220), Water transportation (4400), and Miscellaneous transportation, n.e.c. (4190).

[2] Federal Communications Commission, "Annual Report" Form M, Class A & Class B Telephone Companies, Schedule 12-A, Plant Accounts; (Note - 1961 data).

[3] Federal Communications Commission, Rules and Regulations: Uniform System of Accounts for Class A and Class B Telephone Companies, Part 31.

[4] "Force Account Work" is defined as: construction accomplished for its own use by private business organization not in the construction industries or a governmental unit which acts as its own general contractor and carries out the work by means of employees on its own payroll. See: D.I. Siskind, Chapter 4, "Construction, A Final Demand Sector in the 1947 Interindustry Relations Study:" in, National Bureau of Economic Research Input-Output Analysis, Technical Supplement: (New York: N.B.E.R., Inc., 1954).

Regional total capital expenditures were estimated on the basis of the ratio of regional revenue[1] to total system revenue. The estimated system capital expenditures were then multiplied by this ratio to obtain the regional capital expenditures for both telephone companies.

Allocation of Capital Expenditures for Equipment

The distribution of regional capital expenditures was based upon the distribution of the capital expenditure throughout both telephone systems. With the use of the FCC listings[2] of the items composing each account (after eliminating telephone company estimates of the proportion of Force Account Work in each account), each account was disaggregated by RIS sector to obtain the vector of capital expenditures on equipment account.

Electric & Gas Utilities (Sector 9935): Total Capital Expenditures

This sector is composed of (a) three large companies providing both gas and electricity[3], portions of whose operations are in the Philadelphia SMSA, and (b) a number of smaller private or municipal gas and electric companies which provide service for other parts of the region.

Data on capital expenditures were obtained from Federal Power Commission reports on the three major electric and gas companies.[4] These reports gave total capital expenditures as well as equipment and construction expenditures by approximately 40 accounts.

[1] Chapter 6, Vol. II, pp. 6-10-12.

[2] Federal Communications Commission, Rules and Regulations, Op. Cit.

[3] It is estimated that these companies produce approximately 95% of the regional output within sectors 4911 and 4920. See Chapter 6, Vol. II, pp. 6-13-16.

[4] Federal Power Commission, Report Form No. 1, Electric Utilities and Licensees (Classes A and B), Annual Report, 1959, (Washington, D.C.).

Regional capital expenditure estimates were obtained by multiplying the RIS estimated total regional output[1] by the ratio of system capital expenditures to system output for these three major companies.

Allocation of Capital Expenditures for Equipment

Data from the three Federal Power Commission reports were used for the allocation of capital expenditures for equipment and construction. To disaggregate the values reported for each account into RIS equipment producing sectors and to construction, the detailed FPC published list of items charged to each account, was used.[2] The FPC publications indicated that a significant portion of a number of the accounts was composed of Force Account Work; the value of this Force Account Work was estimated by the utility companies and the study staff, and subtracted from the total capital expenditures on construction.

Water and Other Utility Systems N.E.C. (9936) Total Capital Expenditures

Total regional capital expenditures for sector 9936[3] were calculated by subtracting from regional capital expenditures for OBE sector 68 (Electric, Gas, Water and Sanitary Services) the estimated regional capital expenditures for RIS sector 9935. First, however, the previously calculated estimate of the total regional output of the RIS sectors (9935 and 9936) included in OBE 68 was multiplied by the national ratio of

---

[1] Ibid.

[2] Federal Power Commission, Uniform System of Accounts Prescribed for Public Utilities and Licensees (Washington: U.S. Government Printing Office, 1965) and, _____, Uniform System of Accounts Prescribed for Natural Gas Companies, (Washington: U.S. Government Printing Office, 1964).

[3] CapitalExpenditure sector 9936 includes the production sectors 4941 and 4990 within the structural matrix.

total capital expenditures[1] to total output for OBE 68 to obtain regional capital expenditures for OBE 68.

Allocation of Capital Expenditures for Equipment

Total regional capital expenditures for RIS 9936 were then allocated to plant and equipment on the basis of ratios derived from preliminary estimates of 1958 capital flows by the Bureau of Labor Statistics.[2] The estimated total regional capital expenditures value of sector 9936 was multiplied by the national percentages of capital expenditures for construction to obtain the value of regional construction expenditures. The value of Force Account Work was estimated at the same percentage of capital expenditures as in sector 9935, and was subtracted from this value of regional construction expenditures.

The allocation of the estimated regional equipment expenditures to the RIS sectors was accomplished by the use of limited survey information, ratios derived from the BLS flow data for the aggregate industry (OBE 68), and staff judgement.

<div style="text-align:center">

Allocation of the New Construction Demand of
Private Capital Formation Sectors[3]

</div>

In the prior sections, expenditure estimates for plant (i.e. construction) have been listed for each of the RIS capital formation

---

[1] Preliminary estimates of total plant and equipment expenditures were obtained from: U.S. Department of Labor, Bureau of Labor Statistics, Division of Economic Growth, _1958 Capital Expenditure by Purchasing Industries_; April 1965, and total output data are from: Office of Business Economics, "The Transactions Table of the 1958 Input-Output Study and Revised Direct and Total Requirements Data", _Survey of Current Business_, Vol. 45, No. 9, (September 1965).

[2] Bureau of Labor Statistics, Division of Economic Growth, "1958 Capital Flows, Percent Distribution by Consuming Industry (Producer Values)"; U.S. Department of Labor, April 1965. (Preliminary Estimates).

[3] This section was completed with the assistance of Eliahu Romanoff.

sectors. These aggregate estimates were based upon the data sources noted, and developed independently for each sector. These previously determined expenditure levels are shown in Table 14-12 by sector. To meet the requirements of the model it is necessary to disaggregate these expenditures for construction into their appropriate RIS construction sectors. This section presents the disaggregation procedures used on a sector by sector basis, noting the relevant data sources used.

Agricultural Production, Sector 9901. On the basis of staff judgement the construction demand was disaggregated such that approximately 25% was assigned to sector 1511 and 75% to sector 1621.

Forestry and Fisheries, Sector 9902 and Agriculture, Forestry, and Fishery Services, Sector 9903. On the basis of information contained in the BLS capital flow study[1] no new construction demand was estimated in these sectors.

Mining, Sector 9904. Deliveries by the construction sectors to the mining capital formation sector were disaggregated as follows: 90% from sector 1511, representing the construction of buildings and other aboveground structures; and 10% from sector 1621, representing the unique heavy construction work which was not performed by the mining firms on force account.

New Construction, Sector 9905. The purchases of the construction sectors from themselves for plant was estimated to be entirely from sector 1511, representing general work not accomplished as force account construction.

[1]Bureau of Labor Statistics, Division of Economic Growth, "1958 Capital Flows, Percent Distribution by Consuming Industry (Producer Values)" U.S. Department of Labor, April 1965. (Preliminary Estimates)

Table 14-12
Aggregate Construction Demand
by Capital Formation Sector

Sector	Title	Aggregate Construction Demand ($)
9901	Agricultural Production	4,204,585
9902	Forestry and Fisheries	0
9903	Agriculture, Forestry, and Fisheries Services	0
9904	Mining	618,711
9905	New Construction	906,668
9906	Maintenance and Repair Construction	0
9907	Ordnance and Accessories	67,798
9908	Food and Kindred Products	7,149,967
9909	Tobacco Manufactures	164,978
9910	Textile Mill Products	1,381,557
9911	Apparel	1,365,127
9912	Lumber & Wood Products	423,215
9913	Furniture & Fixtures	290,097
9914	Paper & Allied Products	3,153,549
9915	Printing & Publishing	4,659,656
9916	Chemicals & Allied Products	10,166,304
9917	Petroleum Refining & Related	16,952,954
9918	Rubber & Miscellaneous Plastic Products	1,407,521
9919	Leather	138,702
9920	Stone, Clay, & Glass	3,921,843
9921	Primary Metals	11,271,290
9922	Fabricated Metal Products	5,711,193
9923	Machinery, except Electrical	5,710,153
9924	Electrical Machinery	14,031,820
9925	Transportation Equipment	4,197,861
9926	Professional Scientific & Control Instruments	979,576
9927	Miscellaneous Manufacturers	745,237
9928	Railroads	758,771
9929	Trucking	498,612
9930	Air Transportation	1,173,836
9931	Transportation & Warehousing, n.e.c.	1,037,027
9932	Telephone Communications	4,909,958
9933	Radio & TV Broadcasting	85,512
9934	Other Communications, n.e.c.	1,265,078
9935	Electric & Gas Utilities	4,609,857
9936	Water & Other Utilities	10,970,833
9937	Wholesale & Retail Trades	54,296,699
9938	Finance and Insurance	2,837,458
9939	Real Estate and Rentals	1,872,531
9940	Hotel, Personal, & Repair Services	1,953,445
9941	Business Services	4,137,867
9942	Research and Development	8,006
9943	Automobile Repair & Services	1,251,820
9944	Amusement & Recreation	7,850,448
9945	Medical, Educational, Non-Profit, n.e.c.	108,285,086

Maintenance and Repair Construction, Sector 9906. No new construction demand was allocated to this sector, on the basis of information contained in the BLS study.

Ordnance, Sector 9907. Since specific information was not available on the mix of new construction required by this capital formation sector, the allocation to sectors 1511, 1611, and 1621 was based upon that used for the manufacturing sectors as a whole, as noted below.

Manufacturing, Sectors 9908-9927. The total new construction demand by the twenty capital formation sectors for the aggregated manufacturing industries was estimated to be $93,822,600.[1] Unpublished data available from the F. W. Dodge Corporation indicated that approximately 23.5 percent of the output of non-residential construction performed by sector 1511 was delivered to the manufacturing capital accounts. The resultant value was increased by 5 percent to adjust for estimated undercoverage, yielding an estimated aggregate demand for the output of sector 1511 of $76,462,400.

Of the remaining $17,360,200 of construction demand 25 percent was allocated to sector 1611 and 75 percent to sector 1621.

The allocations to the aggregate of manufacturing capital formation sectors is as follows:

Manufacturing Capital Formation Demand
for New Construction

Sector	Demand	Percent
1511	$76,462,400	81.5
1611	4,340,050	4.6
1621	13,020,150	13.9
TOTAL	$93,822,600	100.0

[1] See Supra, Table 14-2.

Although it would have been highly desirable to have disaggregated the construction expenditures for each of the twenty capital formation sectors in manufacturing individually, the available data did not permit this at this time. The common allocator of construction mix is used for each manufacturing sector.

Railroads, Sector 9928. The allocation of the construction demand by railroads, based upon the data provided in the Annual Reports[1] filed with the Interstate Commerce Commission, was estimated as follows:

Sector	Demand	Percent
1511	$347,454	45.8
1611	101,390	13.4
1621	309,927	40.8
TOTAL	$758,771	100.0

Trucking, Sector 9929. The allocation of the new construction demand by the trucking sector, based upon data from the Annual Reports of the carriers filed with the Interstate Commerce Commission,[2] was estimated as follows:

Sector	Demand	Percent
1511	$479,788	96.2
1611	18,824	3.8
TOTAL	$498,612	100.0

Air Transportation, Sector 9930. The allocation of the new construction demand by the air transportation sector was based upon information available from the reports of Financial and Operating Statistics filed by the carriers with the Civil Aeronautics Board[3] and

---

[1] See Supra, pp. 14-19-20.

[2] See Supra, pp. 14-21-22.

[3] See Supra, pp. 14-22-23.

conversations with development personnel in the industry. Approximately 90% of the construction demand was allocated to sector 1511, and 10 percent to sector 1621.

Transportation and Warehousing, not elsewhere classified, Sector 9931. Since adequate data specifically related to this sector were not available, the allocation developed for sectors 9928 and 9929 was utilized here. The resulting estimates are as follows:

Sector	Aggregate Demand Sectors 9928 & 9929	Proportion	Estimated Demand Sector 9931
1511	$ 827,242	.658	$ 682,268
1611	$ 120,214	.096	$ 99,147
1621	$ 309,927	.246	$ 255,612
TOTAL	$1,257,383	1.000	$1,037,027

Telephone Communications, Sector 9932. The allocation of new construction demand by the telephone communication sector was based upon information available from the annual reports filed with the Federal Communications Commission with adjustments for the force account work completed by telephone employees.[1] The construction demands clearly applicable to the specialized construction trade sectors (1701, 1711, and 1731) were assigned to sector 1511.[2] The resulting allocation was as follows:

Sector	Demand	Percent
1511	$4,860,880	99.0
1611	$ 49,078	1.0
TOTAL	$4,909,958	100.0

[1] See p. 7, Supra, p. 14-24.

[2] See Supra, Vol. I, Chapter III, pp. 3-16-51.

Radio and Television Broadcasting, Sector 9933. The allocation of
the new construction demand by the broadcasting sector was based upon
miscellaneous data concerning similar construction activities. These
data indicated that approximately 10 percent of the construction costs
represented the erection of transmission towers; this was assigned to
sector 1621. The remaining 90 percent was assigned to sector 1511.

Other Communication Services, not elsewhere classified, Sector
9934. On the basis of staff judgement and nature of the industry the
total new construction demand by this sector was allocated to sector
1511.

Electric and Gas Utilities, Sector 9935. The allocation of the new
construction demand by the electric and gas utility capital formation
sector was based upon data provided in the Annual Reports filed by the
utilities with the Federal Power Commission. Adjustments were made to
reflect force account construction on the basis of estimates made by the
utility companies and the study staff. This force account work was
estimated to be approximately $34,379,500. The estimated allocation was
as follows:

Sector	Demand	Percentage
1511	$4,190,747	90.9
1621	$ 419,110	9.1
TOTAL	$4,609,857	100.0

Water and Other Utilities, not elsewhere classified, Sector 9936.
On the basis of interviews with knowledgeable people in the industry and
staff judgement, the new construction demand by this sector was allocated
90 percent to sector 1621 and 10 percent to sector 1511.

Wholesale and Retail Trade, Sector 9937. On the basis of staff judgement and industry contacts, the allocation of new construction in the wholesale and retail trade capital sectors was: 5 percent from sector 1611, representing the construction of parking facilities, etc.; and 95 percent from sector 1511.[1]

Finance and Insurance, Sector 9938;
Real Estate & Rental, Sector 9939;
Hotel, Personal & Repair Services, Sector 9940; and,
Business Services, Sector 9941.

On the basis of interviews within the industry and staff judgement the new construction demand by these sectors was allocated entirely to sector 1511.

Research and Development, Sector 9942, and
Automotive Repair and Service, Sector 9943

On the basis of staff judgement, the allocation of new construction to the sector was estimated to be 99 percent from sector 1511; and 1 percent from 1621. The demand for the output of RIS 1621 was taken to represent the specialized facilities required by these two sectors.

Amusement and Recreation, Sector 9944. Since athletic fields, golf courses and country clubs, bathing beaches and swimming pools, picnic grounds, tennis clubs, etc., comprise a significant portion of SIC 794 whose new construction demand is included in the construction demand of RIS 9944, it was necessary to allocate a portion of the construction demand of RIS 9944 to sector 0708 (to include landscaping and other such costs). This portion of construction demand was estimated to be approximately 10 percent of new construction demand by SIC 794.

[1] William L. C. Wheaton, "Agents of Change in Urban Expansion" in M. Weber, ed. Explorations into Urban Structure (Philadelphia: University of Pennsylvania Press, 1963) Table 1, p. 156.

The proportion of the new construction demand of sector 9944 which was required by SIC 794 was estimated to be the same as the proportion of employment in SIC 794 to the employment in Sector 7900.[1]

Accordingly, new construction demand was allocated as follows:

Sector	Demand	Percent
0708	$ 314,018	4.0
1511	7,143,908	91.0
1611	392,522	5.0
TOTAL	$7,850,448	100.0

Medical, Educational, and Non-Profit Institutions, Sector 9945.

Allocation of the new construction demand by this sector from RIS sector 6560 was based upon the requirements for grouped quarters reported by the Census. Group quarters are defined to include "...all persons who are not members of households are regarded as living in group quarters. Group quarters are living arrangements for institutional inmates or for groups containing five or more persons unrelated to the person in charge. Group quarters are located most frequently in institutions, lodging and boarding houses, military and other types of barracks, college dormitories, fraternity and sorority houses, hospitals, homes for nurses, convents, monasteries, and ships."[2] The Census data indicate that 3.2 percent of the population of the Philadelphia SMSA was in group quarters

---

[1] Adjusted County Business Pattern estimates of employment indicate that of the total employment within RIS sector 7900 (11,364), there were 7,927 employed within SIC 79. On the basis of the limited data reported by three digit SIC, and data available from other sources, it was the judgement of the staff that SIC 794 represented approximately 60 percent of the employment within SIC 79. Therefore, 41.85 percent of the employment of RIS sector 7900 was allocated to SIC 794.

[2] U.S. Bureau of the Census, Census of Population: 1960, General Social and Economic Characteristics (Washington: U.S. Government Printing Office, 1962) p. XVII.

Table 14-13

ESTIMATED INPUTS OF CONSTRUCTION SECTORS TO PRIVATE CAPITAL
FORMATION SECTORS

RIS Capital Formation Sector	Total Capital Expenditures For New Construction ($)	Sector 1511 ($)	Sector 1611 ($)	Sector 1621 ($)	Other ($)
9901	4,204,585	1,051,146	-	3,153,439	-
9902	-	-	-	-	-
9903	-	-	-	-	-
9904	618,711	556,840	-	61,871	-
9905	906,668	906,668	-	-	-
9906	-	-	-	-	-
9907	67,798	52,882	4,068	10,848	-
9908-9927	93,822,600	76,462,400	4,340,050	13,020,150	-
9928	758,771	347,454	101,390	309,927	-
9929	498,612	479,788	18,824	-	-
9930	1,173,836	1,056,452	-	117,384	-
9931	1,037,027	682,268	99,147	255,612	-
9932	4,909,958	4,860,880	49,078	-	-
9933	85,512	76,961	-	8,551	-
9934	1,265,078	1,265,078	-	-	-
9935	4,609,857	4,190,747	-	419,110	-
9936	10,970,833	1,097,083	-	9,873,750	-
9937	54,296,699	51,581,864	2,714,835	-	-
9938	2,837,458	2,837,458	-	-	-
9939	1,872,531	1,872,531	-	-	-
9940	1,953,445	1,953,445	-	-	-
9941	4,137,867	4,137,867	-	-	-
9942	8,006	7,926	-	80	-
9943	1,251,820	1,239,302	-	12,518	-
9944	7,850,448	7,143,908	392,522	-	314,018 a)
9945	108,285,086	91,304,635	4,805,507	-	12,174,944 b)
TOTAL	307,423,206	255,165,583	12,525,421	27,243,240	12,488,962

Notes: Other:

a) Sector 0708
b) Sector 6560

in 1960. This percent was multiplied by the regional output of sector 6560 to determine the value of output of sector 6560 required by sector 9945. Such value was estimated to be $12,174,944. On the basis of staff judgement the remaining construction demand of $96,110,142 was allocated 95 percent to sector 1511 and 5 percent to sector 1611.

SUMMARY TABLE

The disaggregation of new construction demand **is** summarized in Table 14-13.

STATE GOVERNMENT CAPITAL EXPENDITURES (RIS 9946)

Capital expenditures by the six State government sectors in the current table were treated as a single sector. The following describes the method of estimating the capital expenditure vector for each of the various institutions and departments of the two State governments. The individual vectors were then summed to obtain a single vector, by RIS sector, of total regional capital expenditures by the two State governments. Table 14-14 presents total capital expenditures by State, sector, and region.

Table 14-14

State Government
Capital Expenditures

Sector	Pennsylvania	New Jersey	Total
9201 Educational	$ 199,554	$ 8,861	$ 208,415
9202 Penal	61,351	8,441	69,792
9203 Health and Welfare	762,134	163,350	925,484
9204 Liquor Control Board	1,486,233	-	1,486,233
9205 Highways	30,592,698	13,200,798	43,793,496
9209 Administrative	866,697	23,888	890,585
TOTAL	$33,968,667	$13,405,338	$47,374,005

Institutions: Educational, Penal, & Health and Welfare

Data on capital expenditures by the fifteen institutions (whose current expenditures are in RIS sectors 9201, 9202 and 9203) in the five Pennsylvania counties were obtained through staff interviews. Within the standard accounts ["Equipment and Machinery" and "Furniture and Furnishings"], the institution personnel were asked to provide actual or estimated expenditures by type of equipment or furnishings. Thus it was possible to obtain a vector of capital expenditures disaggregated by RIS sector for each institution with a minimum of RIS staff estimation.

Capital expenditures by the five institutions in the New Jersey portion of the SMSA were obtained from the Governor's Budget Message.[1] This publication listed capital expenditures by general type of improvement or equipment purchased by each institution. Although the account titles indicated the general nature of the expenditure, it was necessary to estimate the specific RIS sectors included in each aggregate account and their corresponding dollar values.

Pennsylvania Liquor Control Board

The capital expenditure data for the Pennsylvania Liquor Control Board's operations were not readily available and it was necessary to estimate both the total regional capital expenditure and its allocation. The value of output for sector 9204[2] in the region was multiplied by the ratio of capital expenditures to output for the relevant sector 9937[3] to obtain the estimated total regional capital expenditures.

[1] Budget Message for the Fiscal Year Ending June 30, 1962 (Trenton, State of New Jersey, 1961).

[2] Supra, Chapter 12.

[3] RIS Sector 9937 represents the combined Capital Expenditures of both retailing and wholesaling establishments.

Since the Liquor Control Board functions as both wholesaler and retailer, this procedure appeared reasonable.

The total dollar value of regional capital expenditures was allocated to RIS sectors on the basis of data derived from BLS preliminary estimates of capital flows to the wholesaling and retailing sectors[1] modified by staff judgement in view of the nature of the Liquor Control Board operations.

Highway Departments

Data on capital expenditures by the New Jersey Highway Department were obtained from the Governor's Budget Message.[2] Those expenditures within the account titled "Additions and Improvements" (building and grounds, office, vehicular and scientific equipment) were allocated by the ratio of regional to state employment in the Highway Department[3] to obtain regional capital expenditures. In addition, new road and building construction (listed under "Capital Construction ") were included as capital expenditures. These construction expenditures were presented by route number and municipality, making it possible to identify the specific highway expenditures in the New Jersey counties of the SMSA.

An estimate of regional capital expenditures by the Pennsylvania State Highway Department for highway contract construction was obtained from the department. Capital expenditures for buildings and grounds, office, vehicular and scientific equipment were allocated on the basis

---

[1] U.S. Department of Labor, Bureau of Labor Statistics, Division of Economic Growth," 1958 Capital Flows, Percent Distribution by Consuming Industry (Producer Values)";April 1965. (Preliminary Estimates).

[2] Op. Cit.

[3] Division of Research and Planning, Location of State Workers, March 1964, (Trenton: Department of Civil Service, 1964).

of the composition of capital expenditures for these same items by the New Jersey Highway Department.

General Government

Data on capital expenditure by the various departments and agencies in New Jersey were obtained from the Governor's Budget Message.[1] The values of statewide expenditures for additions and improvements to buildings and grounds, and various types of equipment by each department and agency were allocated by the ratio of regional to state employment in that department or agency to obtain regional capital expenditures of each type. These expenditures were then summed to obtain total regional capital expenditure, by type, for all departments and agencies in the New Jersey portion of the SMSA. Where necessary further disaggregations to RIS sectors were made by the staff based on the nature of the operations of the departments and agencies included in current RIS Sector 9209.

Capital expenditure data were not available for the departments and agencies in the Pennsylvania portion of the SMSA. Therefore, the ratio of each type of capital expenditure to total current expenditure for New Jersey was calculated; and the total current expenditures of the departments and agencies in the Pennsylvania portion of the SMSA were multiplied by these ratios to obtain regional capital expenditures of each type. Based on the nature of operations of the departments and agencies included, these expenditures were further disaggregated to RIS sectors. The two vectors of capital expenditures (one for N.J. and one for Penna.) were then summed to obtain a single vector of total regional capital expenditures, by RIS sector, for Sector 9209.

[1] Op. Cit.

Finally, the four capital expenditure vectors representing the grouped current sectors (Institutions, Pennsylvania Liquor Control Board Highways, and General) were summed to yield the single capital expenditure vector for State Government RIS 9946.

Local Government Capital Expenditures (RIS 9947)

This sector represents the statutory capital expenditure of the cities, boroughs, townships and counties in the Philadelphia SMSA. These expenditures are those reported in the cited publications and are generally of a major fixed nature.[1] Smaller equipment, including most motor vehicles, were included in the current expenditures, which are presented in RIS sectors 9301, 9302, and 9303.[2] See Table 14-15 for a summary of capital expenditures by type of government and state.

Table 14-15

Capital Expenditures

	Pennsylvania $	New Jersey $	Total $
Cities	$50,779,596	1,407,280	52,186,876
Boroughs and Townships	9,836,379	2,658,554	12,494,933
Counties	725,251	154,250	879,501
TOTAL	$61,341,226	$4,220,084	$65,561,310

The small amount of data available indicated that the expenditure pattern with respect to the six governmental functions, as listed in Table 14-16, was similar among the four types of civil divisions. However, there was not sufficient detailed information

---

[1]Definitions vary on the nature of capital expenditures; however they may be considered to be items costing more than $300.00 per unit and/ or having a life expectance of greater than 1 year. However for the City of Philadelphia, capital expenditures are considered only to be construction and related major fixed equipment.

[2]See: Supra, Chapter 11, Vol. II.

to justify separate vectors, either for each of the six functions or for each of the four types of civil divisions. Hence all capital expenditures over these civil divisions and functions are shown as a single aggregate vector.

Table 14-16

Capital Expenditures by Function

Function	Cities $	Townships Boroughs $
Public Safety	6,796,421	639,276
Street & Highway	15,542,005	4,932,477
Health & Sanitation	9,306,177	1,374,792
Parks & Recreation	2,026,775	412,374
Municipal Utilities	9,901,655	3,531,938
Others (n.e.c.)	8,613,843	1,604,076
TOTAL	$52,186,876	$12,494,933

The dollar value of capital expenditures by government function for the cities, boroughs and townships were obtained from published state reports.[1] Although the account titles differed in the state reports, it was still possible to aggregate the expenditures into the six relatively homogeneous functional categories of Table 14-16. Further detail as to the exact nature of the expenditures in these functional categories was available only for the City of Philadelphia in the form of a five year capital budget program.[2] Total expenditure values were listed by functional department of the City of Philadelphia, and these totals were disaggregated by general type of purchase on the basis on descriptions

[1] Bureau of Municipal Affairs, Local Government Financial Statistics: 1959, (Harrisburg: Pennsylvania Department of Internal Affairs, 1961); and Division of Local Government, Twenty Second Annual Report: 1959 (Trenton: New Jersey Department of the Treasury, n.d.).

[2] Philadelphia City Planning Commission, Capital Programs 1958-63, as adopted by Council and approved by the Mayor, November 29, 1957, (Philadelphia: _____, 1957).

of the nature of construction or equipment capitalized. Thus it was possible to assign each item a 4-digit RIS code with a minimum of staff estimation. The sum of the dollar values obtained from the Philadelphia capital budget was less than that given in the State publication due to discrepancies between budget and actual expenditures; accordingly all dollar values in the City of Philadelphia capital budget were adjusted.

The City of Philadelphia accounted for 77.5% of total capital expenditures of cities, boroughs and townships. Hence the Philadelphia breakdown by RIS sector of expenditure for any given function was applied to the total for that same function over all cities, boroughs and townships.

Data on capital expenditures by the four Pennsylvania counties were obtained from the annual financial reports filed by each county.[1] The reports provided sufficient detail to identify a number of items by RIS code; others were estimated on the basis of the functional nature of the expenditure by the staff and appropriate county financial personnel. The total dollar values of capital expenditures by the three New Jersey counties were obtained from the state report.[2] No detail was provided as to the breakdown of these expenditures. Since the capital expenditure by the four Pennsylvania counties represented 82.5% of total capital expenditures by the seven counties, the percentage breakdown of capital expenditures by the four Pennsylvania counties was used as the estimator of the composition of total capital expenditures for the seven counties.

---

[1] "Annual Financial Reports: 1959" for the counties of Bucks, Chester, Delaware and Montgomery as filed with the Department of Internal Affairs, Harrisburg, Pennsylvania.

[2] Division of Local Government, Op. Cit.

In order to obtain a single final vector of total capital expenditures for Sector 9947, the previously derived vector of expenditures by RIS sector for cities, boroughs and townships was aggregated with the same vector for counties.

HOUSEHOLD CAPITAL EXPENDITURES (RIS 9947)

This capital expenditure sector constitutes a demand for housing stock by households. Accordingly the entries in the column are limited to the purchases of shelter, that is the output from RIS 6560, Residential Contractors, Developers, Builders, etc. and RIS 3791, Trailer Coaches. The inclusion of mobile homes within this sector indicates the use of these units as prefabricated units for semi-permanent housing.

The estimate of the purchases of mobile homes was made on the basis of population. The U.S. output of RIS 3791 was estimated to be $444,782,000 in 1958.[1] If it is assumed that the Philadelphia region constitutes 2.4% of the U.S. population, then the local sales should be approximately $10,692,559. However it should be noted that the relatively high sales in "retirement climates" would tend to reduce the strict population percentage share. Hence a percentage of only 1.5% was considered reasonable for this region, yielding purchases estimated at $6,671,730.

The estimate of purchases of residential construction was made on the assumption that imports of the construction services are approximately equal to the exports of the same services. Hence the purchases within the region are set equal to production less other demands, or $368,228,056.

---

[1] U.S. Bureau of the Census, U.S. Census of Manufactures: 1958, Vol. II Pt 2, (Washington: U.S. Government Printing Office, 1961) p 37C-19, Table 6-A.

Thus, the column for RIS 9947 appears as:

Row	$	Coefficient
3791	6,671,730	.017796
6560	368,228,056	.982204
TOTALS	374,899,786	1.000000

Chapter 15

FEDERAL GOVERNMENT

INTRODUCTION

The Federal government has played an important role in the economy of the Philadelphia region ever since the formation of the United States of America, with Philadelphia as the first capitol of the new nation.

The vast proliferation and magnitude of the Federal governmental agencies within the region has not been well documented. In 1959, the Federal government was the single largest employer in the region. Its employees numbered over 67,950 with a payroll of over $434,502,000.

SECTORING

The initial classification of Federal Government agencies involved the separation of agencies of the Department of Defense (military) and civilian agencies. The military agencies within the region were further classified as to their primary activity, that is with respect to: (1) procurement; (2) manufacturing and research and development; and (3) military base operations. This specific sectoring pattern was developed to provide the maximum amount of information concerning the federal agencies without duplication. It isolates those agencies, regardless of department, which have unique expenditure patterns, and aggregates the remaining agencies, having similar expenditure patterns into general sectors.

Table 15-1 lists the Federal agencies included within each of the sectors.

TABLE 15-1

FEDERAL GOVERNMENT AGENCIES
By R.I.S. SECTOR

Sector 9101 Department of Agriculture

Forest Service, Eastern Regional Office
Forest and Range Experimental Station
Agricultural Research Service, Eastern Administrative Division
Agricultural Research Service, Utilization Research and
   Development, Eastern Division
Soil Conservation Service

Sector 9102 Post Office Department

Regional Post Office
General Post Offices (322 located throughout the region)
Postal Inspection Service

Sector 9103 Social Security Administration

Social Security Administration Payment Center
Social Security Administration District Offices (10)

Sector 9104 Internal Revenue Service

District Offices
Regional Office
Regional Service Center

Sector 9105 Veterans Administration: Institutions

Veterans Administration Hospital: Philadelphia
Veterans Administration Hospital: Coatesville
Veterans Administration Outpatient Clinic: Philadelphia

Sector 9106 Veterans Administration: Administrative

Veterans Administration Center
Veterans Administration Data Processing Center

Sector 9107 U.S. Coast Guard

Coast Guard Base: Gloucester City

Sector 9108 U.S. Mint

U.S. Mint: Philadelphia

Sector 9109 U.S. Bureau of Customs

    U.S. Customs Service
    Collector of Customs
    Comptroller of Customs
    Appraiser of Merchandise
    Chemical Laboratories

Sector 9110 Treasury Department, Bureau of Accounts

    Regional Office: Division of Disbursement

Sector 9111 Housing and Home Finance Agency

    Office of the Regional Administrator
    Urban Renewal Administration
    Community Facilities Administration
    Federal Housing Administration
    Public Housing Administration
    Voluntary Home Mortgage Credit Program
    Federal National Mortgage Association

Sector 9112 National Park Service

    Northeastern Regional Office
    Eastern Office, Design and Construction
    Independence National Historical Park
    Hopewell Village National Historical Site

Sector 9113 General Services Administration

    Federal Supply Service
    Public Buildings Service
    Transportation and Communications Service
    Utilization and Disposal Service
    Federal Records Center

Sector 9114 Civilian Federal Government Agencies, n.e.c.

  Department of Agriculture
      Agricultural Marketing Service, Marketing Regulatory Program
      Agricultural Marketing Service, Dairy and Poultry Market News
      Engineering and Watershed Planning
      Cooperative State Experimental Stations

  Department of Commerce
      Area Redevelopment Administration
      Business and Defense Services Administration
      Bureau of the Census
      Bureau of Public Roads
      Weather Bureau
      Office of Field Services
      Maritime Administration, Construction Representatives

Department of Health, Education, and Welfare
    Public Health Service
    Bureau of Federal Credit Unions
    Food and Drug Administration

Department of the Interior
    U. S. Geological Survey

Department of Justice
    Office of the U.S. Attorney
    Office of the U.S. Marshals
    Antitrust Division
    Federal Bureau of Investigation
    Immigration and Naturalization Service

Department of Labor
    Bureau of Apprenticeship and Training
    Bureau of Labor Standards
    Bureau of Employees' Compensation
    Office of Labor Management and Welfare Pension Reports

Department of the Treasury
    Comptroller of the Currency
    Bureau of Narcotics, District Office
    U.S. Savings Bonds Division, Regional and District Officies
    U.S. Secret Service, District Office

Independent Agencies
    Central Intelligence Agency
    Federal Aviation Agency
    Federal Communications Commission
    Federal Home Loan Bank Board
    Federal Mediation and Conciliation Service
    Federal Trade Commission
    Interstate Commerce Commission
    National Labor Relations Board
    Railroad Retirement Board
    Small Business Administration
    U.S. Civil Service Commission
    U.S. General Accounting Office

Sector 9116 Philadelphia Quartermaster Depot[1] - Operations

Sector 9117 Philadelphia Quartermaster Depot[1] - Procurement

Sector 9118 Defense Industrial Supply Center - Operations

Sector 9119 Defense Industrial Supply Center - Procurement

Sector 9120 U.S. Army Electronics Materiel Center - Operations

---

[1] This agency has undergone substantial changes: in 1960, it was designated the Philadelphia Quartermaster Center; in 1962, the Defense Clothing and Textile Supply Center; and in 1965, the Defense Personnel Support Center.

Sector 9121 U.S. Army Electronics Materiel Center - Procurement

Sector 9122 U.S. Marine Corps Supply Center - Operations

Sector 9123 U.S. Marine Corps Supply Center - Procurement

Sector 9124 Naval Aviation Supply Office - Operations

Sector 9125 Naval Aviation Supply Office - Procurement

Sector 9126 Defense Contract Administration Service Region,
Philadelphia [2]

Sector 9127 U.S. Navy Clothing and Textile Office

Sector 9128 U.S. Navy Supervisor of Shipbuilding

Sector 9129 U.S. Navy Bureau of Yards and Docks

Sector 9130 Frankford Arsenal

Sector 9131 Army Corps of Engineers

Sector 9132 Naval Air Engineering Center

Sector 9133 Naval Air Development Center

Sector 9134 Naval Publications and Printing Services Office

Sector 9135 U.S. Military Hospitals
Army Hospital, Valley Forge
Naval Hospital, Philadelphia, Pa.

Sector 9136 Naval Air Station, Willow Grove, Pa.

Sector 9137 Naval Shipyard, Philadelphia, Pa.

OUTPUT

In their basic aspects, government agencies are not significant-
ly different from private organizations insofar as input-output techni-
ques are concerned. Like private organizations, government agencies are
engaged in producing goods or services for outside consumption, and in
producing these outputs they require specific amounts of various re-
sources.

[2] Although DCASR, Philadelphia, was not established until 1964 this sec-
tor represents the activities which were then part of various agencies
prior to the consolidation.

The fact that governmental agencies are engaged in providing services does not make them unique. However, an important distinction may be noted in that government services are not sold on the open market and thus not subject to a direct market valuation. Moreover, many governmental services are not intended for or cannot be defined as benefiting individual consumers, but rather apply to society as a whole.

The non-existence of market prices poses some distinct problems. Typically a workable method is to evaluate governmental services by setting the value of output as equal to the resource costs, or the dollar expenditures of the agency. Such a procedure was used in this study. Transfer payments by the Federal agencies were not included within the related sectors, and will be treated in the final chapter concerned with adjustments. It is sufficient at this point to note that inter-governmental transfer payments in terms of program grants etc. are implicitly included in the expenditures of the recipient agency or government. Hence, HUD grants, for example, appear as material and service expenditures by the local governmental agencies receiving the funds.

SURVEY

At the inception of this portion of the study, it was discovered that there did not exist a reliable exhaustive list of the federal agencies maintaining offices within the Philadelphia SMSA. It was only with considerable effort on the part of the staff and others that a tentative listing of approximately 102 agencies was obtained.

The task of developing this list and coordinating the responses was significantly assisted by the full cooperation of the Philadelphia

Federal Executive Board, hereafter designated F.E.B.[1] The FEB is an

inter-agency group comprised of the principal executives of each of the

major agencies within the region. On the basis of an introductory letter

from the Chairman of the Philadelphia FEB, interviews were held with all

representative agencies, and through these contacts it was possible to

further identify agencies within any given department within the region.

This information was augmented by limited information available from the

Federal Business Association of Philadelphia, the Civil Service Commis-

sion, and the U.S. Government Organizational Manual.[2]

CIVILIAN AGENCIES

Table 15-2 presents the number of agencies identified within the

Philadelphia SMSA, by department.

Special questionnaires were developed for the federal agencies in

an attempt to conform to the expenditure terminology and classification

used by the agencies.[3] The fiscal year accounting period made it

difficult to obtain data for the calendar year; and the fiscal period

July 1, 1959 to June 30, 1960 was generally used. It was the judgement

of the staff that the resulting bias was relatively small.

The record retention programs used by most agencies were such that

only the more recent data were available. As a result the 1959 (Fiscal

year 1960) information was obtained for benchmark data relating to

employment, payroll and total expenditures only. Detailed expenditure

[1] The Federal Executive Boards were established in ten major cities in the United States under the direction of a Presidential Memorandum, dated November 10, 1961. Forty-one member agencies are represented on the Philadelphia Board, as of September 1964.

[2] Office of the Federal Register, U.S. Government Organization Manual, 1962-63, revised as of June 1, 1962 (Washington: U.S. Government Printing Office, 1962).

[3] See pp 15-20-22 for a facsimile of the questionnaire. This form was also used for the state governmental sectors discussed in Chapter 12, Volume II.

information was requested for a more recent period for which adequate data were available. If substantial changes occurred in the expenditure patterns from FY 1960 to the current period, the respondents were requested to detail as best they could the FY 1960 pattern.

TABLE 15-2

Federal Government Agencies
Identified within the Philadelphia SMSA
by Department

Department	Agencies	Number of Employees
Agriculture	9	878
Commerce	7	66
Defense	22	40,706
Health, Education, & Welfare	5	1,392
Interior	5	335
Justice	5	182
Labor	4	55
Post Office	1[1]	15,279
State	0	0
Treasury	15	2,613
Independent Agencies	29	9,724
TOTAL	102	71,230

The long form of the questionnaire, requesting detailed information concerning the purchases of materials and services, was in certain instances ineffective in gaining the necessary data because many used central procurement services. The majority of the agencies, especially the smaller ones, obtained their operating supplies either through their central administrative offices in Washington, or the Federal Supply

[1] Includes 322 local Post Offices, Regional Administrative Offices, and the Postal Inspection Service.

Service of the General Services Administration.[1] Thus, these expenditures were generally not detailed, but when possible were estimated by the respondents.

Similar purchase arrangements were noted by many agencies with regard to real estate rental; utilities (heat, light and power); telephone and other communication services; and some transportation services. These items were in part provided by the various divisions of the General Services Administration. To the extent that it was not possible to identify these expenditures, they were included as purchases by the local General Services Administration activity, rather than within the individual agencies.

The large number of relatively small agencies, the difficulty of obtaining detailed data on their operations, and the assumed similarity of expenditure patterns led to the development of a short questionnaire[2] to be mailed to such respondents. This questionnaire requested data on only employment, payroll, total expenditures, and a breakdown of the latter item as to 1) goods and materials, 2) services, 3) utilities, 4) telephone, and 5) rent. This questionnaire was mailed to a selected group of smaller agencies accompanied by the introductory letter from the Federal Executive Board and an explanatory letter from the staff. It was followed by a personal telephone call by the study staff. The federal agencies in general were very willing to cooperate and provided information to the extent possible at the local level.

Specific studies conducted by the agencies were utilized where appropriate. General information was checked with data available from a

[1] In some cases it was necessary to obtain all information from the central administrative operations, as no records of expenditures whatsoever were maintained in the local offices.

[2] See p 15-23 for a facsimile of the questionnaire.

Budget Bureau study[1] relating to Bureau of Accounts, Treasury Department; Post Office Department; and the Department of Insurance, Veterans Administration.

U. S. DEPARTMENT OF DEFENSE

The military agencies of the federal government within the region were initially classified based upon the nature of their activities. The type of impact or effect upon the regional economy differs significantly between procurement activities, manufacturing or research activities, and military base operations. Since the determination of levels of operations, and the patterns of procurement purchases, are significantly dissimilar, these activities are presented separately.

PROCUREMENT ACTIVITIES

The Philadelphia region has been selected as a major procurement center. The emphasis on procurement and its development with the Philadelphia region has been a partial result of a continuing reorganization and evaluation of the defense department activities.

The Defense Supply Agency (DSA)[2] was established in 1962 to bring under a unified program the various parts of the logistic system of the Department of Defense. Prior to that date, i.e. during the base period for this study, the military services maintained separate procurement and inventory systems within each commodity group.

Currently the Defense Supply Agency operates three major installations within the Philadelphia region. These are the Defense Industrial

---

[1] Bureau of the Budget, Measuring Productivity of Federal Government Organizations (Washington: U.S. Government Printing Office, 1964).

[2] See: Joint Economic Committee, 89th Congress, 2nd Session. "Background Material on Economic Impact of Federal Procurement-1966" (Washington: U.S. Government Printing Office, 1966). pp. 42-59.

Supply Center (DISC); the Defense Personnel Support Center (DPSC); and a

regional office of the Defense Contract Administration Service (DCAS).

The Defense Personnel Support Center was formed in 1965 as the consoli-

dation of the Defense Clothing and Textile Supply Center in Philadelphia;

the Medical Supply Center previously located in Brooklyn, N.Y.; and the

Subsistance Supply Center previously located in Chicago, Illinois.[1]

[Although the Defense Contract Administration Service was not established

until April 1964, the operations which it represents were undertaken by

agencies phased out by 1965.]

The procurement activities in the area also extend to specialized

operations which have remained under the direct jurisdiction of the

various service arms. In the region there are six of these speciality

activities, one Army, one Marine, and four Navy. A complete listing of

the procurement agencies and the sectors to which they have been assigned

are shown in Table 15-1, sectors 9116 through sector 9129.

The procurement agencies may be considered within the framework of

the regional input-output study to have two distinct purchasing patterns.

One pattern represents the actual expenditures for the goods and services

procured for usage by the military services. The other expenditure

pattern represents the purchases of goods and services consumed by the

agency in the completion of its mission.

As an example of the above patterns, consider the activities of

the Defense Industrial Supply Center (DISC) sectors 9118 and 9119. This

agency catalogs and is responsible for the procurement of approximately

690,000 industrial supply items for the armed services. The procurement

categories include: hardware, abrasives, metal bars, sheets, shapes,

---

[1] The current procurement level for the combined agency is estimated to
be approximately $1.3 billion, in comparison to the 1959 level of
$190 million estimated for the then Philadelphia Quartermaster Depot.

blocks, tackles, rigging, fiber rope, cordage, twine, bearings, chain, wire rope, cable fittings, electrical wire and cable. The procurement level of this agency for 1959 was estimated to be approximately $120,300,000.

The bulk of these purchases are made on a nation-wide basis, with little emphasis given to the local or regional suppliers. The only possible exception may be found in the area of small business concerns. A portion of total procurement is set aside for small businesses and a special attempt is made to accommodate these bidders; the opportunity of a local face-to-face contact is assumed to lead to a small increase in the regional proportion of small business contracts. However, it must be noted that "set-asides" represent a relatively small share to total procurement activity.

Table 15-3 shows the allocation of the total procurement activity to the specific RIS sectors, and the amount which is estimated to be procured within the Philadelphia region for sector 9119. Thus out of the $120.3 million in procurement by the agency located within the region, only $9,066,753 or 7.5 percent of the total represents purchases within the region.

To procure these goods, DISC required the services of 783 employees. These employees received wages and salaries of approximately $18,678,374. Additionally expenditures of $2,006,538 were incurred for the operations of the activity. Table 15-4 presents the disaggregated pattern of these operating expenditures. Regional distributions are not available; however DISC personnel estimated at least 95% were purchased within the Philadelphia region.

The expenditure data for the Defense Industrial Supply Center and other procurement agencies were obtained from their staffs in most cases

TABLE 15-3

PROCUREMENT ACTIVITIES
Defense Industrial Supply Center

RIS Sector	Total Procurement $	Regional Procurement $
2298	3,430,956	147,188
2499	435,366	11,145
2821	734,311	111,909
2851	2,203,054	212,154
2852	1,468,743	105,456
2891	710,973	120,297
3079	2,263,685	764,889
3291	4,349,687	606,781
3293	4,349,687	729,443
3312	8,211,558	515,686
3315	4,105,719	219,245
3356	5,800,265	59,163
3357	9,660,210	82,112
3429	7,159,775	234,125
3441	7,843,680	458,071
3452	31,154,332	2,931,623
3481	7,629,546	434,121
3497	2,185,731	33,442
3499	3,088,943	246,807
3562	4,579,460	626,470
3566	3,052,973	292,170
3981	2,222,422	124,456
9842	3,658,924	-
TOTAL	$120,300,000	$9,066,753

TABLE 15-4

OPERATING EXPENDITURES
Defense Industrial Supply Center

RIS Sector	Operating Expenditures $
2522	25,977
2542	15,586
2621	37,348
2641	20,748
2645	20,748
2649	20,748
2655	16,599
2841	17,064
2911	46,849
3069	17,196
3315	16,948
3421	12,935
3481	17,246
3555	17,416
3571	955,047
3572	15,647
3579	32,094
3641	34,526
3651	13,037
3861	36,073
3951	30,152
3952	30,152
3953	17,230
3955	25,845
4811	284,886
4890	113,822
4911	50,081
4941	25,040
9842	39,498
9888	18,678,374

$20,684,912

in terms of the appropriate federal stock codes of the procured materiels. The assignment of these expenditures by the commodity codes to the RIS producing sectors was accomplished with the assistance of the agency staffs and reference to the Defense Supply Agency Cataloging Manual.[1]

The value of maintaining the procurement expenditure pattern separate and distinct from that of the operating expenditure pattern is clear when it is noted that in the Defense Industrial Supply Center the procurement increased 221% in the period 1960 to 1966. See Table 15-5. During this period operating expenditures increased by only 21%. It has been estimated that the pattern of expenditures by commodity remained relatively the same from 1960 to 1966.

TABLE 15-5

Defense Industrial Supply Center

	FY 1960	FY 1966[2]
Procurement	$120,300,000	$386,100,000
Operations	$ 20,684,912	25,060,000

MILITARY MANUFACTURING, RESEARCH, AND DEVELOPMENT INSTALLATIONS

Within the Philadelphia region there are six major military installations which engage in manufacturing, research or development activities. These agencies, shown in Table 15-6, employ in aggregate approximately 22,532 persons, and have an output estimated to be approximately 441.2 million dollars.

[1] Similar classification by SIC was undertaken per selected products in a study by CEIR for the Department of Defense. See C-E-I-R, "Economic Impact Study of 1963 Defense-Related Procurement of Selected Products and Services," Part II, Technical Report No. 3, (Arlington, Va.: C-E-I-R, Inc., November, 1965).

[2] Data provided from continuing joint study by the Philadelphia Federal Executive Board and the Department of Regional Science, Wharton School.

TABLE 15-6

MILITARY MANUFACTURING, RESEARCH, AND DEVELOPMENT

Sector	Installation	Employment	Output $
9130	U.S. Army Frankford Arsenal	6,787	175,839,300
9131	U.S. Army Corps of Engineers	600	46,444,800
9132	U.S. Naval Air Engineering Center	3,825	94,126,870
9133	U.S. Naval Air Development Center	2,259	44,801,900
9134	U.S. Naval Publication and Printing Services Office	53	2,429,163
9137	U.S. Naval Shipyard	9,008	77,567,191
TOTAL		22,532	441,209,224

These agencies were identified and developed as a group in recognition of their common characteristics. They produce products and/or services which can be found in the private sectors of the economy. Because of this, it should be noted that for strategic, economic, and political reasons, the level of activities in each of these installations is subject to large and rapid change.

Although the value of output of these agencies could be measured in terms of the market value of their products, this was not done. To maintain consistency within the Federal governmental sectors and to avoid physical measurement and evaluation, the output was defined as the total expenditures of the installation.[1]

The information used in developing these sectors was obtained from the individual installations, in response to the federal government questionnaire described in a previous section. The highly detailed data

[1] Estimated expenditures included imputed valuation of materials and supplies provided by other military agencies and used in production. For example, Frankford Arsenal consumed an estimated $2.9 million of explosive powder procured through the U.S. Army Munitions Command, rather than directly by the Arsenal.

obtained reflect not only the detailed nature of the questionnaire, but also secondary data previously compiled by the agencies for their internal usage which was made available. In some instances where the available secondary data categories were inadequate, detailed tabulations were prepared by members of the RIS staff from primary source documents.[1]

MILITARY BASE OPERATIONS

The third category of U.S. Department of Defense agencies within the Philadelphia region comprises the operational military bases which serve as an integral part of the national defense program. These bases may be differentiated from the previous two categories of installations by the predominance of military personnel at the former in contrast to the predominance of civilian employees at the latter.

Within the Philadelphia SMSA there exist six major military base operations. Two of these, the U.S. Army Fort Dix and the McGuire Air Force Base, are included in a military complex which is only partially within the Philadelphia SMSA. They were specifically excluded from the study because they do not have a major economic linkage with the study region and because it was difficult to obtain accurate data on their operations.

The large naval operations located within the Philadelphia Naval Base was disaggregated into its major independent components of the Naval Shipyard, the Naval Air Engineering Center, and miscellaneous activities. The miscellaneous activities were difficult to identify and almost impossible to quantify, even in aggregate. Therefore, as they represent a

[1] These special staff tabulations included more than 868 special contracts placed by NAEC (Sector 9132) and 1,911 contracts by the Naval Shipyard, plus a 20% sample of 4,325 non-contract procurement actions. Also tabulated by the RIS staff were 447 major contracts placed by NADC (Sector 9133).

tenant relationship in most cases to the Shipyard, they are included with it in Sector 9137, which has already been categorized as one of the Military Manufacturing Research and Development sectors. The U. S. Naval Air Engineering Center appears as Sector 9132, also under Military Manufacturing Research and Development sector.

The three installations which were developed in this category, Military Base Operations, are the U.S. Army Hospital at Valley Forge and the U.S. Naval Hospital at Philadelphia both included in the U.S. Military Hospitals, Sector 9135, and the U.S. Naval Air Station: Willow Grove, designated Sector 9136.

The output of these sectors was defined as the total expenditures by the installations, with estimates provided for materiel furnished the installation from other agencies. The data reflecting the expenditure patterns was obtained through personal interviews, using the long form questionnaire developed for federal government agencies.

The expenditure patterns were estimated in the standard manner, as previously noted. Wage and salary payments for military personnel include not only the base salary payments but also all allowances and allotments. Because of noncooperation, data relating to the Valley Forge Hospital were estimated on the basis of selected data from Sectors 8061, 9105, and 9201, and published sources.[1]

A summary of the Federal Government sectors, in terms of employment, output, and payroll data, is presented in table 15-7.

---

[1] Output value for the U.S. Army Hospital at Valley Forge was estimated from data published in: American Hospital Association, "Hospitals," Journal of the American Hospital Association, Vol. 34, No. 15 (August 1960).

Table 15-7

Federal Government
Summary

Sector	Title	Employment	Output $
9101	Department of Agriculture	685	6,751,503
9102	Post Office Department	15,279	78,753,953
9103	Social Security Administration	1,317	8,093,845
9104	Internal Revenue Service	1,800	11,204,925
9105	Veterans Admin.: Institutions	2,093	20,372,620
9106	Veterans Admin.: Administration	2,602	17,190,897
9107	U.S. Coast Guard	168	1,008,000
9108	U.S. Mint	299	6,940,399
9109	U.S. Bureau of Customs	278	2,551,864
9110	Bureau of Accounts, Treasury Dept.	144	4,139,229
9111	Housing & Home Finance Agency	567	9,223,763
9112	National Park Service	310	2,893,790
9113	General Services Administration	258	71,764,352
9114	Civilian Federal Agencies, N.E.C.	1,440	13,731,719
9116	Phila. Quartermaster Depot: Oper.	4,834	30,874,177
9117	Proc.	-	159,000,000
9118	Defense Industrial Supply Center: Oper.	783	20,648,912
9119	Proc.	-	120,300,000
9120	U.S. Army Electronics Materiel Center: Oper.	3,342	25,618,815
9121	U.S. Army Electronics Materiel Center: Proc.	-	500,000,000
9122	U.S. Marine Corps Supply Center: Oper.	1,768	9,152,149
9123	Proc.	-	21,444,603
9124	U.S. Naval Aviation Supply Office: Oper.	2,448	15,956,486
9125	Proc.	-	416,502,514
9126	Defense Contract Adm. Services Region	1,190	10,566,525
9127	U.S. Navy Clothing & Textile Office	52	425,302
9128	U.S. Navy Supervisor of Shipbuilding	214	58,975,536
9129	U.S. Navy Bureau of Yards & Docks	234	6,077,703
9130	U.S. Army Frankford Arsenal	6,787	175,839,300
9131	U.S. Army Corps of Engineers	600	34,215,209
9132	U.S. Naval Air Engineering Center	3,825	48,619,416
9133	U.S. Naval Air Development Center	2,259	33,066,400
9134	U.S. Naval Public. & Print. Services	53	723,045
9135	U.S. Military Hospitals	2,446	16,046,298
9136	U.S. Naval Air Station	863	7,951,769
9137	U.S. Naval Shipyard	9,008	77,567,191
TOTAL		67,946	2,044,192,209

CONFIDENTIAL

REGIONAL IMPACT STUDY

Wharton School of Finance and Commerce
University of Pennsylvania

Please report information concerning all activities
of the agency within the Philadelphia SMSA.

The Philadelphia Standard Metropolitan Statistical
Area (SMSA) is comprised of the counties of: Bucks,
Chester, Delaware, Montgomery, and Philadelphia in
Pennsylvania; and Burlington, Camden, and Gloucester
in New Jersey as indicated on the attached map.

Questions A, B, and C refer to fiscal years 1959-1960
and 1964-1965. All other questions refer to fiscal
year 1964-1965.

If any questions arise with regard to specific items
in this questionnaire, please call:

Mr. Thomas W. Langford, Jr.
Dept. of Regional Science
University of Pennsylvania
(215)   594-7737

Agency: _____

Address: _____

_____

Respondent: _____

A. EMPLOYMENT

        Average annual employment (civilian):

                1959-1960 fiscal year   _____

                1964-1965 fiscal year   _____

        Average annual employment (military):

                1959-1960 fiscal year   _____

                1964-1965 fiscal year   _____

B. PAYROLL

        Total annual payroll (civilian):

                1959-1960 fiscal year $_____

                1964-1965 fiscal year $_____

        Total annual payroll (military):

                1959-1960 fiscal year $_____

                1964-1965 fiscal year $_____

C. TOTAL PURCHASES

        Total dollar value of goods and services purchased

                1959-1960 fiscal year $_____

                1964-1965 fiscal year $_____

D. TRANSPORTATION: GOODS & MATERIALS ONLY (1964-1965)

        Dollar value of purchased transportation services:

                Freight In $_____

                Freight Out $_____

E. UTILITIES (1964-1965)

                Electricity $_____

                Water $_____

                Telephone $_____

                Heating fuels
                    Oil
                    Gas
                    Other $_____

F. RENT (1964-1965)

                Real Estate (land and buildings) $_____

                Electronic Data Processing Equip. $_____

                Other Equipment Rental $_____

G. VALUE OF GOODS AND SERVICES PURCHASED   (1964-1965 fiscal year)
(If exact data are not available, please use your
best estimate rather than leaving an item blank.)

Product / Service Classification	Total Cost $	%Purchased In Phila SMSA	% Used In Phila SMSA

CONFIDENTIAL

REGIONAL IMPACT STUDY

Wharton School of Finance and Commerce
University of Pennsylvania

Please report information concerning all activities of
the agency within the Philadelphia region. The region
is comprised of the counties of Bucks, Chester, Dela-
ware, Montgomery, and Philadelphia in Pennsylvania; and
Burlington, Camden, Gloucester in New Jersey as indica-
ted on the enclosed map. Data is requested for fiscal
years 1960 and 1965 as noted.

A. Employment

Average Annual Employment	1960	1965
civilian		
military		

B. Payroll

Average Annual Payroll	1960	1965
civilian	$	$
military	$	$

C. Purchases

	1960	1965
Total	$	$
goods & materials		$
services		$
utilities		$
telephone		$
rent		$

Thank you.

Agency:
Address:

Respondent_____

Regional Input-Output Study   Preliminary Draft
Department of Regional Science   August 1967
University of Pennsylvania
Philadelphia, Pennsylvania

Chapter 16

EXPORT TRADE

General

The estimation of the flow of goods and services across regional
boundaries has constituted a major problem in most regional analyses.
Information on these flows, and their stability, has been most inade-
quate. Estimates of the exports and imports of regions have been subject
to considerable error.

National Input-output accounts have available reasonably reliable
export-import data. Further, when such flows have had to be estimated,
their magnitude relative to the total production for the nation has not
raised the significant problems found in estimation of the export-import
flows in an open region. For a relatively small region, local sales of
goods and services may be only a very small proportion of the total
produced. Also, the nature of a local industry, even in a diversified
region, frequently requires substantial import of specific goods not
produced within the region. Often substantial cross-hauling of the
output of a single industry is the result of the non-homogeneity of
industry products, even at the 4-digit SIC level.

Data

The basic questionnaires developed by the Regional Impact Study re-
quested information for each establishment regarding the location (either

inside or outside the region) of <u>both</u> the suppliers of its specific

inputs <u>and</u> the purchasers of its output. One procedural error arose when

data were requested <u>only</u> for those suppliers of manufactured goods pur-

chased directly from the manufacturer. Information should also have

been requested on the regional location of wholesale or retail suppliers,

when such suppliers were involved in the distribution process. Further,

<u>only</u> sales to <u>other manufacturers</u> were requested regionally, and by

state; hence no information was obtained on the location of wholesalers,

retailers, or households to whom the output was directly sold. Thus

for the majority of (household) consumption goods little, if any,

regional sales data were obtained from the Study questionnaires.

The Regional Impact Study survey of wholesaling establishments in

the region attempted to overcome some of these errors. Specific data

were requested concerning the regional patterns of both purchases and

sales by general product line.[1] Although the information requested

was supplied by the wholesale respondents, the relatively small sample

coverage (17.6% of estimated regional sales) and the inability to match

the purchases and sales by region did not provide the sufficient

regional information.[2]

The Regional Impact Study data were augmented by the use of limited

data from the Regional Economic survey of the Penn Jersey Transportation

Study (P.J.T.S.). This source provided data for some establishments on

the destination of output shipments. The region used in the study was

---

[1] See Chapter 7, Part II, of the Working Papers, pp. 7-11-14, 7-28-37.

[2] The procedure was not entirely fruitless, as considerable insight into the spatial nature of the wholesaling functions was obtained from such data.

the combination of the Philadelphia, Pa-NJ SMSA and Trenton, N.J. SMSA. (Mercer County, N.J.). Since it was not possible to disaggregate the Trenton SMSA area from the P.J.T.S. data, and since in 1959 Mercer County was not a major consumer of most products, no adjustment of the data was made. The destination data from P.J.T.S. were in terms of gross tons of output shipped, rather than dollar value of product obtained (as are the RIS data). Since the output of any industry was considered to be homogeneous, no adjustment of the percentage figures obtained was required. Obvious over-statements of local sales may arise in connection with the fact that value of secondary products and/or waste materials are typically low and are frequently sold within the local area.

A cursory review of the data indicates that the regional distribution of sales was more adequately covered than purchases. It was easier to develop estimates of the spatial distribution of sales of a single commodity from a few local producers than to develop estimates of the spatial distribution of purchases of significantly smaller quantities of imports from a far greater number of establishments. Hence the initial analysis undertaken was that of output distribution, i.e., the estimation of the value of exports and local sales. Changes in inventory were ignored. Thus, in the study framework, Value of production = Value of local sales by local producers + Value of exports of local production.

Estimation of Exports

A series of estimation procedures were developed based upon the coverage of the available information and the nature of the industry. All export estimates of manufactured products were made on the 4-digit SIC basis and aggregated where required to the RIS sectors.

To illustrate the methodology the procedure for two extreme types of situations are presented: (1) where adequate primary data regarding regional sales were available; and (2) where little, if any primary data were available.

1. Adequate primary regional data:

a. If the shipments reported (inclusive of PJTS data) constituted 40 percent of the total estimated production within the region, the primary data were used directly.

b. If the industry was characterized by a relatively large number of establishments, of relatively the same size (that is, if no firm or group of firms clearly dominated the industry), then the regional data was used if the coverage of shipments was 25 percent or more.

c. The only exceptions to the above criteria were taken when the coverage was sufficient to meet the criteria but when the data for a dominating reporting firm did not reflect the probable distribution of the non-covered establishments. In such cases, the estimates of the proportion of output which was exported were made by relative size classes. The data of the dominant firm were used as given; and the proportion of exported output produced by the smaller firms was estimated on the basis of primary data or staff judgement.

RIS sector 2297, Wool scouring, worsted, combing and tow to top mills is an example of the situation where adequate primary regional data were available to estimate the exports. There were ten establishments in the region in 1959, producing an output valued at $35,455,000. Two firms, accounting for 63% of the industry production, reported that regional sales constituted 10% and 14% of their stated outputs respectively. These percentages weighted by output, suggest that 13.8% of the

regional output of RIS sector 2297 is sold within the region.

Although only two out of ten establishments reported, their export percentages were sufficiently similar to justify estimates based on these two establishments alone.

The value of local sales of producers **was** therefore estimated by multiplying regional production by the estimated proportion, i.e., ($35,455,000 x 13.8% = $4,963,700). The value of production exported is hence equal to production less local sales. (i.e. $35,455,000 - $4,963,700 = $30,562,210).

2. Little or no primary regional data:

For any industry for which little or no primary data regarding export production were available, estimates were made on the basis of (1) the sectors consuming the product, and (2) the projected market areas for the firms of the given industry and their size distribution.

a. For those industries producing products predominately consumed by households, the estimates were based upon population percentages. Where firms were taken to have national markets, the estimate of local sales was generally made on the basis that the Philadelphia SMSA represented approximately 2.4 percent of the nation's population in 1959. Where the effective market areas for firms were estimated to be less than national, e.g. East of the Mississippi River, or Middle Atlantic States, the estimate of proportion of local sales was taken to correspond to the respective percentages of the population of these regions in the Philadelphia SMSA. As an illustration consider RIS 2043, Cereal Preparations.

In the absence of regional sales data, local sales were estimated to be 5% of sector output based upon consideration of the transportation costs, perishability, and other characteristics of the product; and that

the single establishment in the region is an operating plant of a major national producer serving a relatively large market.

b. For those industries producing products predominately consumed by intermediate sectors, the estimates of exports were based upon the nature of the product (e.g. ease and cost of transport), the demand for the product by Philadelphia industries, and in general the spatial distribution of the major demand industries. These estimates were developed primarily on the basis of judgement. As an illustration, consider RIS 3651, Radio and Television Receiving Sets, except communication types.

A single establishment, accounting for 0.6% of the sector output, indicated that 27% of production was sold locally. The sector is dominated by two major national producers, accounting for 95% of the sector output. Assuming sales to be primarily distributed in proportion to population, with some recognition of a slight regional preference for locally produced products, the 2 large firms were estimated to have local sales of approximately 3.5% of production. The 5 remaining establishments in the sector were taken to have local sales percentages similar to the sample establishment. Hence the sector local sales were estimated to be 4.6% of sector output.

c. For those industries serving both household and intermediate demand, the output was proportioned and a combination of both of the above procedures was used.

d. For those industries for which some shipment data were available but less than adequate, staff judgement was utilized, in combination with what little insight demand analysis could provide.

In general, the regional allocation of the demand entries was insufficient to constitute a valid check for any of the procedures. However, in the absence of other data, demand analysis was used as a general guideline.

Table 16-1 presents the export estimates developed for each sector. The estimated percentage of local production which was sold within the region is indicated in column 2. The number of establishments in the sample for each sector is shown in column 3, and the sample coverage of sector output is shown in column 4. Where the sample data were adequate and required no adjustment, an asterisk appears in Column 5. A discussion of those sectors requiring special estimation procedures follows the table, in RIS sector order.

Table 16-1

RIS (1)	Estimated Percentage Local Sales (2)	No. of Sample Establishment (3)	Percentage Sample Coverage (4)	Notes (5)
0120	82.3	-	-	
0132	90.0	-	-	
0133	90.0	-	-	
0190	67.8	-	-	
0708	98.0	-	-	
0809	80.0	-	-	
1411	81.3	2	9.8	
1421	78.0	6	29.2	*
1441	98.0	3	12.7	
1490	75.0	1	34.5	
1900	5.0	4	35.3	
2011	79.2	5	44.2	*
2013	59.5	2	24.2	
2015	85.0	1	15.6	
2020	49.2	-	-	
2024	73.4	17	17.7	*
2026	93.5	9	47.7	
2031	40.0	-	-	
2032	14.0	1	90.0	
2033	18.0	4	56.0	*
2035	24.0	2	46.0	*
2036	48.9	1	90.0	
2037	33.0	1	9.0	

RIS (1)	Estimated Percentage Local Sales (2)	No. of Sample Establishment (3)	Percentage Sample Coverage (4)	Notes (5)
2041	98.0	1	50.0	
2042	73.0	4	23.0	
2043	5.0	-	-	
2045	67.7	-	-	
2046	67.7	-	-	
2051	80.0	-	-	
2052	14.5	2	94.5	*
2062	14.8	1	59.9	
2071	7.2	3	46.5	
2072	11.0	2	14.0	
2073	2.5	1	44.0	
2082	36.3	1	70.0	
2084	3.0	-	-	
2085	7.5	1	90.0	
2086	86.0	-	-	
2087	25.1	3	16.1	
2090	29.7	-	-	
2094	16.7	3	92.0	
2095	80.0	2	88.0	*
2096	31.0	1	100.0	*
2097	99.0	-	-	
2111	5.0	-	-	
2121	4.3	-	-	
2131	2.5	-	-	
2211	24.0	2	6.0	
2221	5.9	4	11.0	
2231	8.0	5	44.0	
2241	8.0	5	20.0	
2251	19.0	5	20.0	
2252	3.8	6	25.0	*
2253	10.0	4	15.6	
2254	4.0	3	12.0	
2256	26.0	4	14.0	
2259	2.7	2	44.0	*
2261	8.0	5	43.8	*
2262	19.8	1	17.0	
2269	23.0	5	49.0	*

RIS (1)	Estimated Percentage Local Sales (2)	No. of Sample Establishment (3)	Percentage Sample Coverage (4)	Notes (5)
2271	16.2	2	31.0	
2272	14.0	1	2.0	
2279	15.4	-	-	
2281	23.1	2	95.0	*
2282	20.8	2	18.8	
2283	47.1	3	32.0	*
2284	24.4	3	45.0	*
2291	12.0	1	2.6	
2292	15.0	-	-	
2293	15.7	3	14.0	
2294	87.5	3	13.0	
2295	90.0	-	-	
2297	13.8	2	63.0	*
2298	50.0	-	-	
2299	25.0	1	79.0	*
2311	9.5	6	27.0	*
2321	9.7	3	59.0	*
2322	16.0	2	96.0	*
2323	7.0	2	25.0	
2327	10.0	8	35.8	
2328	68.6	2	8.0	
2329	10.0	4	16.0	*
2331	6.7	5	22.0	
2335	17.3	4	2.9	
2337	10.9	5	9.6	
2339	9.0	1	0.7	
2341	5.8	4	29.9	*
2342	4.0	-	-	
2351	10.0	3	36.5	
2352	4.0	-	-	
2361	6.7	-	-	
2363	10.0	2	7.0	
2369	7.3	3	31.2	
2371	96.0	2	75.0	*
2381	25.0	-	-	
2384	4.4	2	27.0	*
2385	1.0	1	40.0	
2386	3.8	-	-	
2387	10.0	1	5.0	
2389	11.8	3	70.6	*

RIS (1)	Estimated Percentage Local Sales (2)	No. of Sample Establishment (3)	Percentage Sample Coverage (4)	Notes (5)
2391	34.4	3	31.9	
2392	15.0	5	17.2	*
2393	50.0	2	40.0	*
2394	53.4	3	22.0	*
2395	18.0	3	34.0	
2396	66.0	3	7.5	
2397	45.9	3	93.2	*
2399	13.7	1	3.0	
2421	95.0	-	-	
2431	46.7	4	22.7	*
2433	10.0	1	49.5	
2441	70.4	3	33.8	*
2443	90.0	1	65.0	
2445	100.0	1	98.0	
2490	44.2	-	-	
2511	52.0	8	29.0	*
2512	29.0	3	17.0	
2514	16.2	3	14.7	
2515	14.1	3	37.0	*
2519	2.5	-	-	
2521	15.0	1	8.6	
2522	12.0	1	4.3	
2531	16.0	2	9.8	
2541	21.0	5	44.5	*
2542	22.0	2	17.9	
2591	77.1	2	53.8	*
2599	55.0	1	39.0	
2621	12.4	3	89.9	*
2631	17.1	3	54.8	*
2640	35.9	2	5.9	
2641	20.6	3	13.8	
2642	67.6	2	68.0	*
2643	18.7	2	23.9	
2645	22.4	4	37.0	*

RIS (1)	Estimated Percentage Local Sales (2)	No. of Sample Establishments (3)	Percentage Sample Coverage (4)	Notes (5)
2651	30.5	4	27.5	*
2652	51.7	2	18.0	
2653	77.5	5	38.0	*
2654	29.0	1	3.6	
2655	50.0	1	6.3	
2661	20.0	-	-	
2711	84.9	2	79.2	
2721	5.0	3	75.0	*
2731	6.0	2	4.0	
2732	18.6	3	27.0	*
2741	73.0	4	24.0	
2751	76.0	7	18.0	
2752	66.7	8	16.7	*
2753	51.4	-	-	
2761	55.5	1	6.2	
2771	44.0	2	50.0	*
2782	64.0	7	7.0	
2789	51.0	6	50.2	*
2791	35.0	5	45.0	*
2793	79.0	3	12.0	
2794	73.0	2	35.0	*
2799	99.3	2	100.0	*
2813	18.5	3	46.7	*
2814	4.0	1	92.0	
2815	42.0	-	-	
2816	16.6	2	24.0	*
2818	13.4	2	15.2	
2819	8.9	5	63.0	*
2821	12.4	9	76.4	*
2830	6.0	6	82.1	*
2841	14.2	3	49.2	*
2842	26.0	2	61.1	*
2843	15.0	1	9.2	
2844	55.0	4	7.6	

RIS (1)	Estimated Percentage Local Sales (2)	No. of Sample Establishments (3)	Percentage Sample Coverage (4)	Notes (5)
2851	25.3	5	37.5	*
2852	80.0	-	-	
2861	95.0	-	-	
2870	7.7	2	95.0	
2871	20.0	-	-	
2891	4.9	5	93.0	*
2892	0.0	1	100.0	*
2893	65.0	2	30.0	*
2894	17.0	2	100.0	*
2895	95.0	-	-	
2899	4.0	3	59.0	*
2911	25.9	2	51.9	
2951	79.6	3	85.0	*
2952	20.0	1	62.0	
2992	12.0	5	23.0	*
3011	1.6	2	76.1	*
3021	5.0	1	100.0	*
3031	30.0	1	100.0	*
3069	9.4	10	79.9	*
3079	19.4	11	44.6	*
3111	2.5	3	47.0	*
3121	7.0	1	5.2	
3131	3.1	2	77.0	
3141	4.0	2	5.5	
3142	5.0	2	29.0	*
3161	7.0	4	43.0	*
3171	4.9	2	14.7	
3172	9.5	2	7.9	
3199	34.0	2	26.0	*
3211	1.0	1	100.0	
3221	3.9	2	97.0	*
3229	1.1	2	87.7	*
3231	24.4	4	32.9	*
3241	70.0	1	100.0	*
3251	66.0	2	46.0	
3253	9.7	2	99.4	*
3255	14.0	2	90.9	*
3259	20.4	3	85.6	*

RIS (1)	Estimated Percentage Local Sales (2)	No. of Sample Establishments (3)	Percentage Sample Coverage (4)	Notes (5)
3261	3.0	-	-	
3269	25.0	3	9.0	
3271	80.7	3	84.0	*
3272	53.5	2	33.0	
3273	71.9	5	20.0	*
3274	10.0	1	100.0	*
3275	42.1	-	-	
3281	17.0	3	43.2	*
3291	8.7	3	57.2	*
3292	4.9	5	91.2	*
3293	7.7	2	13.9	
3295	16.6	3	26.4	*
3296	15.0	1	95.5	*
3297	7.7	1	9.0	
3299	5.8	3	36.0	*
3312	23.5	5	51.2	*
3315	2.0	2	50.4	
3316	33.5	2	67.0	*
3317	15.0	2	11.0	
3321	23.0	4	40.0	*
3323	38.7	2	65.5	*
3330	17.6	2	27.3	
3333	90.0	-	-	
3334	23.1	-	-	
3341	11.0	5	33.1	*
3351	12.0	1	91.0	
3352	61.4	1	16.7	
3356	17.9	3	40.9	*
3357	20.4	1	4.0	
3361	10.0	2	1.7	
3362	50.0	3	14.0	
3369	14.7	1	41.0	
3390	7.4	3	90.0	
3391	18.0	4	55.7	*
3411	40.9	2	57.0	*
3421	37.6	1	31.8	
3423	8.8	5	26.3	
3425	5.0	1	99.8	*
3429	11.8	6	39.5	*

RIS (1)	Estimated Percentage Local Sales (2)	No. of Sample Establishments (3)	Percentage Sample Coverage (4)	Notes (5)
3431	10.0	-	-	
3432	16.0	3	16.0	
3433	19.6	3	38.7	*
3441	5.0	2	11.7	
3442	23.1	4	54.4	*
3443	5.0	1	15.0	
3444	24.1	6	14.0	
3449	74.8	9	18.8	*
3451	52.0	6	23.6	*
3452	6.0	3	76.0	*
3461	6.2	5	20.2	*
3471	79.0	4	40.4	
3479	41.0	3	47.0	*
3481	14.1	7	13.1	
3491	83.0	3	32.0	
3493	11.7	4	34.6	*
3494	7.7	5	54.3	*
3496	10.0	1	100.0	*
3497	10.0	-	-	
3498	13.0	3	48.0	*
3499	39.3	10	29.8	
3510	10.8	2	98.1	
3522	4.5	3	29.9	
3531	18.1	2	97.7	*
3534	15.9	3	87.6	*
3535	10.9	3	95.3	*
3536	18.0	1	46.4	*
3537	7.0	1	91.1	*
3541	11.7	6	38.0	
3542	86.0	4	35.0	
3544	17.1	11	18.0	
3545	73.0	2	48.0	*
3548	75.0	-	-	
3551	19.4	2	54.2	
3552	5.6	5	61.5	*
3553	50.0	-	-	
3554	9.8	4	62.9	*
3555	19.0	5	58.7	*
3559	11.0	3	38.0	*

RIS (1)	Estimated Percentage Local Sales (2)	No. of Sample Establishments (3)	Percentage Sample Coverage (4)	Notes (5)
3561	8.0	2	26.0	
3562	7.0	3	77.0	*
3564	52.4	-	-	
3565	80.0	4	39.0	
3566	10.1	8	77.9	*
3567	6.0	3	96.6	*
3569	10.9	5	37.3	
3571	15.2	-	-	
3576	4.0	3	75.0	*
3579	16.0	2	84.0	*
3581	8.7	3	90.6	*
3582	60.0	-	-	
3585	35.0	2	4.0	
3586	1.4	2	38.8	
3589	11.0	6	19.0	
3590	7.1	-	-	
3591	62.0	13	32.0	*
3611	11.0	3	38.1	*
3612	72.0	4	32.0	
3613	3.5	6	96.0	*
3621	6.1	3	47.6	*
3622	3.0	2	85.0	*
3623	10.0	1	32.0	
3624	80.0	-	-	
3629	23.3	1	18.0	*
3631	60.0	-	-	
3633	35.0	-	-	
3634	25.0	1	6.0	
3635	80.0	-	-	
3639	22.4	1	60.8	
3642	8.5	2	6.0	
3643	35.9	4	54.2	*
3644	14.9	4	88.0	*
3651	4.6	1	0.6	
3652	10.0	-	-	
3661	8.0	2	100.0	*
3662	3.6	5	71.8	*
3671	10.0	-	-	
3672	10.0	-	-	
3679	17.7	6	47.6	*

RIS (1)	Estimated Percentage Local Sales (2)	No. of Sample Establishments (3)	Percentage Sample Coverage (4)	Notes (5)
3690	8.5	-	-	
3691	12.0	-	-	
3693	10.0	1	82.0	*
3694	8.0	-	-	
3711	27.6	2	100.0	*
3713	73.0	2	11.0	
3714	1.8	6	47.1	*
3715	4.0	2	98.0	*
3721	34.3	3	97.3	
3722	1.5	3	89.4	*
3729	0.2	3	81.3	
3731	32.4	2	95.5	
3732	95.0	-	-	
3741	5.0	1	100.0	
3791	70.0	-	-	
3799	20.0	2	18.0	*
3811	5.2	8	74.2	*
3821	6.4	4	47.0	
3822	6.9	3	84.8	*
3831	2.7	2	61.1	*
3841	38.0	2	79.8	*
3842	19.5	4	58.3	
3843	42.3	4	57.4	
3861	39.5	3	21.1	
3911	4.1	3	27.1	*
3913	98.0	2	21.0	*
3914	91.2	2	91.2	*
3931	8.0	-	-	
3941	6.0	3	8.9	
3942	4.0	3	11.4	
3949	17.6	3	2.8	
3951	2.7	2	100.0	*
3952	20.0	-	-	
3953	49.2	6	18.9	
3955	7.3	3	94.4	*

RIS (1)	Estimated Percentage Local Sales (2)	No. of Sample Establishments (3)	Percentage Sample Coverage (4)	Notes (5)
3961	59.0	3	58.0	*
3962	23.0	3	30.8	
3964	32.5	1	5.0	
3981	23.8	6	52.5	*
3982	12.1	2	34.2	
3984	5.0	-	-	
3987	38.0	5	29.6	*
3988	79.0	2	36.1	*
3992	17.8	2	100.0	*
3993	31.9	3	9.3	
3995	21.3	2	44.1	
3999	4.8	3	24.0	
4011	72.5	-	-	
4111	99.0	-	-	
4121	80.0	-	-	
4190	67.2	-	-	
4210	49.5	3	15.9	
4220	83.0	-	-	
4400	57.2	-	-	
4500	96.0	-	-	
4811	98.0	-	-	
4832	54.5	-	-	
4833	15.7	-	-	
4890	98.0	-	-	
4911	100.0	-	-	
4920	100.0	-	-	
4941	100.0	-	-	
4990	100.0	-	-	
5012	57.4	4	41.2	*
5013	14.6	7	92.9	
5014	75.6	1	1.4	
5022	40.2	4	13.2	*
5028	68.2	2	4.2	
5029	35.1	7	20.3	*
5032	33.9	3	1.7	
5035	47.9	3	5.1	*
5039	28.1	2	7.4	*

RIS (1)	Estimated Percentage Local Sales (2)	No. of Sample Establishments (3)	Percentage Sample Coverage (4)	Notes (5)
5042	94.8	3	3.2	*
5043	18.8	2	21.1	*
5044	96.5	3	8.9	*
5045	30.9	1	6.6	*
5046	66.7	3	58.5	*
5047	70.2	5	33.9	*
5048	66.7	6	6.5	*
5049	78.7	7	3.6	*
5051	2.9	2	28.5	*
5062	96.7	2	2.0	*
5063	38.3	5	25.9	*
5064	72.0	4	13.6	*
5065	44.5	3	94.5	*
5072	96.0	2	4.5	*
5074	80.1	3	9.4	*
5077	83.7	4	24.4	*
5082	56.6	10	4.2	*
5083	95.0	1	39.6	
5086	88.7	2	11.4	*
5087	45.8	3	13.2	*
5089	58.3	-	-	
5091	59.8	9	5.2	*
5092	90.0	-	-	
5093	21.8	2	3.2	*
5099	63.8	-	-	
5210	95.0	-	-	
5221	95.0	-	-	
5231	96.0	-	-	
5241	95.0	-	-	
5250	96.0	-	-	
5311	93.0	-	-	
5331	97.0	-	-	
5342	11.0	-	-	
5351	95.0	-	-	
5390	97.0	-	-	
5411	96.0	-	-	
5420	97.0	-	-	
5431	97.0	-	-	
5441	97.0	-	-	
5460	97.0	-	-	
5490	95.0	-	-	

RIS (1)	Estimated Percentage Local Sales (2)	No. of Sample Establishments (3)	Percentage Sample Coverage (4)	Notes (5)
5511	93.0	-	-	
5521	95.0	-	-	
5531	97.0	-	-	
5541	94.0	-	-	
5599	96.0	-	-	
5610	96.0	-	-	
5621	96.0	-	-	
5630	96.0	-	-	
5641	96.0	-	-	
5651	96.0	-	-	
5660	96.0	-	-	
5690	94.0	-	-	
5710	95.0	-	-	
5722	95.0	-	-	
5730	95.0	-	-	
5812	93.0	-	-	
5813	94.0	-	-	
5912	96.0	-	-	
5921	95.0	-	-	
5940	96.0	-	-	
5950	96.0	-	-	
5971	95.0	-	-	
5980	97.0	-	-	
5990	96.0	-	-	
6011	38.3	-	-	
6020	95.0	-	-	
6030	98.0	-	-	
6120	99.0	-	-	
6190	95.0	-	-	
6200	90.0	-	-	
6301	11.6	4	64.4	
6310	8.6	6	77.8	
6590	90.0	-	-	
7200	80.5	-	-	
7300	92.0	-	-	
7400	20.7	-	-	
7500	92.7	-	-	

RIS (1)	Estimated Percentage Local Sales (2)	No. of Sample Establishments (3)	Percentage Sample Coverage (4)	Notes (5)
7900	93.3	-	-	
8061	94.8	-	-	
8090	97.0	-	-	
8211	98.5	-	-	
8220	58.0	-	-	
8290	90.0	-	-	
8486	93.9	-	-	
8800	100.0	-	-	

In order to facilitate the use of the percentage estimates and comparison of procedures and factors relevant in the derivation of these percentages, the format of the sector discussion has been standardized to the maximum extent possible.

RIS
0120   Consideration of the large size of the Philadelphia region market, transportation costs, perishability, and competitive producer locations, suggested the following percentage estimates of local sales by type of product.

Vegetables	90%
Irish potatoes	90%
Sweet potatoes	90%
Strawberries	90%
Raspberries	90%
Blueberries	60%
Cranberries	90%
Apples	80%
Peaches	80%
Pears	90%
Grapes	90%
Plums & Prunes	90%
Cherries	90%

These percentages were weighted by output figures developed in Table 5-2 p. 5-4 to yield the estimate that 82.3% of value of output of RIS 0120 was local sales.

0132   In view of the relatively large milk shed serving the Philadelphia SMSA, it was estimated that 90% of output of milk production was sold locally, although substantial output of Bucks and Burlington counties may have been sold to the greater New York areas.

0133   Since the local factors which affect the sales of poultry products are the same as those which affect vegetables and milk, and since the major Delmarva production region is fairly close, it was estimated that 90% of output was sold locally.

0190   A procedure similar to that of RIS 0120 was used as indicated below. The general value of 90% for non-unique products was applied to the data available from Table 5-2, p. 5-4. The following were estimated:

Meat Animals	90%
Other Livestock	90%
Food Grains	90%
Feed Crops	95%
Nursery & Greenhouse	50%
Others	90%

In the case of Feed Crops a somewhat higher percentage figure was considered relevant. The relatively low percentage for Nursery and Greenhouse reflects the large exports of the mushroom producers located in Chester County. (This area is the mushroom center for the nation). These percentages were weighted by output figures in Table 5-2 p. 5-4 to yield the estimate that 67.8% of value of output of RIS 0190 was local sales.

0708   Consistent with the output definitions of the sector found in
        p. 5-8 the local proportion was estimated to be 98% of output.

0809   On the assumption that the bulk of the forest product output
        represented sales to agricultural sectors of raw lumber for fences,
        etc., it was estimated that 95% of the forest product output was
        consumed locally. Because a high proportion of the landings in
        the Philadelphia region consisted of shell-fish and turtles, only
        30% of the local fish products were consumed locally. Weighting
        these two major categories of products, the total sector local
        sales were estimated to be 80% of production.

1411   Sample of 2 establishments accounting for 9.8% of production
        indicates that 81.3% of production is sold locally. This estimate
        is supported by the high transportation costs on dimension stone
        and relative ubiquity of this resource.

1441   Sample of 3 firms, accounting for 12.7% of production, indicate
        100% local sales. The location of the sand and gravel operations
        on the periphery of the region and along the Delaware River suggest
        that a small proportion of local production would be sold in areas
        immediately adjacent to the region. Hence, 98% local sales was
        estimated.

1490   A single return, accounting for 34.5% of production, indicates
        75% local sales. Since the industry represents relatively hetero-
        geneous mining, without specialization in any single mineral,
        this supports the relatively high percentage estimates of local
        sales. This estimate constitutes only 3.3% of total region demand
        for the products of RIS 1490.

1900   Sample of 4 firms, accounting for 35.3% of production, indicates
        5.0% local sales. Since the predominant purchasers are the mili-
        tary procurement agencies, this percentage appears reasonable.
        The heterogeneity of the products produced by this sector does not
        permit any significant analysis of the demand.

2013   Sample of 2 firms, accounting for 24.2% of the industry output,
        reported 59.5% local sales. Although the corresponding dollar
        estimate of local sales would represent approximately 70.9% of
        the preliminary estimate of local demand, the percentage figure
        on local sales seems consistent with the structure of the local
        industry.

2015   A single firm, accounting for only 15.6% of industry output
        reports 85% local sales. Although the corresponding dollar
        estimate would represent only 11.2% of the preliminary estimates
        of local demand, the percentage figures on local sales seems con-
        sistent with the location of the producers within the larger
        megalopolitan market and the possible advantages they may have
        over the Delmarva peninsula operations.

2020   This sector is comprised of SIC 2021 and 2022. In SIC 2021 the major producer, who accounts for over 80% of the output of SIC 2021, reports 38% local sales. In SIC 2022, one of the two producers, accounting for 85.5% of the output, provided no local breakdown but indicated 85% retail sales and 15% wholesale. Since the types of cheeses produced locally are somewhat limited in number, and since there are no substantial problems of transportation or spoilage, a percentage of 75% local sales was assumed for SIC 2022. The weighted estimate for RIS 2020 was 49.2% local sales.

2024   Of the estimated 17 establishments in the region, only 3, accounting for 17.7% of output, reported regional distribution of sales. Their weighted average was 73.4% local sales. However it should be noted that the sample is made up of two relatively small firms with 100% local sales. One of the four major firms furnished data, namely, 70% local sales. Recognizing that the industry is dominated by the four major producers, that there are major problems in the transportation and storage of the products, and further that the region has a larger concentration of the industry than its population would suggest (5.4%), the derived estimate of 73.4% was considered relevant.

2031   In the absence of regional sales data, the local sales were estimated to be 40% of sector output. This estimate was based on the dominance of a single firm assumed to have a relatively large regional market and the larger than average (national) per capita consumption of sea foods within the Philadelphia SMSA.

2032   Single establishment, accounting for 90% of the sector output, indicated that 14% of the production was sold within the region. Although the corresponding dollar value of local sales significantly exceeds the preliminary estimates of local demand, the reported data appear valid. It should be noted that the region produces approximately 18.4% of the national output of this industry.

2036   Single establishment, accounting for 90% of the sector output, indicated that 48.9% of the output was sold to local wholesalers. Although it is doubtful that this percentage was sold entirely within the region, the smaller producers having larger proportions of local sales may offset the non-local sales by the wholesalers. Hence, the single reported percentage was used.

2037   Single establishment, accounting for 9% of the sector output, indicated that 75% of production was sold locally. Dominance of the sector by a second establishment accounting for 70% of sector output suggests that the region's population constitutes approximately 15% of the market of the second establishment. The reported proportion of 75% local sales for the first establishment was assumed to be characteristic of the remaining establishments in the sector. Thus the local sales were estimated to be 33% of the sector output.

2041   Single establishment, accounting for 50% of the sector output, indicated that 100% of production was sold locally. There was little reason to believe that the other establishment in the region was differently oriented. Hence local sales were estimated to be 98% of the sector output.

2042   Sample of 4 establishments representing 23% of the output indicate approximately 73% of production was sold locally. As the industry is comprised of 26 firms of relatively small size, the sample is considered to be reasonably representative.

2043   In the absence of regional sales data, local sales were estimated to be 5% of sector output based upon consideration of the transportation costs, perishability, and other characteristics of the product; and that the single establishment in the region is an operating plant of a major national producer serving a relatively large market.

2045   In the absence of regional sales data, the local sales percentage of production was estimated to be that of the average for the 3-digit sector (RIS 204), namely 67.7%.

2046   In the absence of regional sales data, the local sales percentage of production was estimated to be that of the average for the 3-digit sector (RIS 204), namely 67.7%.

2051   Regional sales data were not available although there were 163 establishments in the sector. The soft-dough industry characteristically does not serve markets in excess of a few hours trucking time due to handling and perishability problems. Since the assumed market extends beyond the SMSA, the local sales were estimated to be approximately 80% of sector output.

2062   Two nationally oriented firms constitute this sector. Survey data for one firm indicated approximately 12.3% of the shipments were to regional manufacturers. If an additional 2.5% were consumed locally by households, this would suggest that local sales were approximately 14.8% of production. It should be noted that the relatively high local sales to other manufacturing firms is primarily sales to RIS 2051, 2071, and 2087, whose returns confirmed this relatively high proportion of local purchases.

2071   Sample of 3 establishments, accounting for 46.5% of the sector output, indicated that 7.2% of production is sold locally. Assuming the five largest establishments, constituting approximately 70% of production, sold 5% of production locally, and that the smaller establishments sold PREDOMINANTLY LOCALLY, this would yield approximately the sample value, which was accepted.

2072   Sample of 2 establishments, accounting for 14% of the sector output, indicated that 2.5% of production was sold locally. If the larger firms within the sector sell only a small proportion of their production locally, (as indicated by one of the firms in the sample), and if the smaller firms in the sector may be

adequately represented by the small establishment in the sample, then the appropriate weighting yields local sales estimate of 11% of production.

2073   Single establishment, accounting for 44% of the sector output, indicated that 1.5% of production was sold locally. Although speciality items constitute a major proportion of the output of the regional firms, it was felt that the population percentage within the SMSA was a more adequate estimator of local sales than the single firm reporting. Hence the local sales were estimated to be 2.5% of output.

2082   The single largest producing unit, representing approximately 70% of output, reported local sales of 17.1%. The remaining firms are primarily oriented to the local market and were estimated to sell approximately 80% of their output within the region. Therefore the local sales estimate for the sector was estimated to be 36.6%.

2084   In the absence of regional sales data, local sales were estimated to be 3% of sector output, based on the population percentage in the SMSA and the assumption of a slight preference for local producers.

2085   The sector is dominated by a single firm accounting for over 90% of the output. This establishment reported that approximately 6% of its sales were to local manufacturers and 51% to wholesalers (with no spatial designation). As the brands produced are nationally marketed, it was estimated that approximately 3% of wholesale sales were within the region. Hence the local sales proportion was estimated to be 7.5%. No adjustment was made for the smaller firms in the region.

2086   This sector is comprised of two major groups: (1) the major franchised firms and the smaller independent producers and (2) the larger independent firms. The first group accounts for approximately 70% of the output. Its regional sales were estimated to be approximately 95% due to franchise restrictions, transportation costs, and effective advertising markets. The larger independent producers, accounting for approximately 30% of production were estimated to have 65% local sales. This estimate was based on sample data representing two of three major independent producers. Therefore the sector local sales were estimated as the weighted average, or 86% of production.

2087   Sample of 3 establishments, accounting for 16.1% of the sector output, indicated that 25.1% of the output was sold locally. Although the data were clearly insufficient, the estimate of 25.1% appeared reasonable in consideration of the characteristics of the products, and limited demand information available.

2090   This sector is an aggregate of SIC 2025, 2095, 2098, and 2099. Regional shipment data were not available for SIC's 2025, or 2093, which in aggregate comprise only about 7% of the sector

output. Data for SIC 2098 and 2099 indicate 35% and 29% respectively of sales are local. Thus a sector estimate of 29.7% local was developed as a weighted average.

2094   Sample of 3 establishments accounting for 92% of the sector output indicated that 16.7% of production was sold locally. This relatively low proportion of local sales is due to the major international operations of a single dominant firm in the region.

2096   Single firm in the industry reported 31% of the sales were local.

2097   In the absence of sample information, a local sales proportion of 99% was assumed in view of excessively high transportation costs, and the storage problems.

TOBACCO MANUFACTURES

2111   No local data were available concerning the single establishment in this sector. In view of the general market structure for cigarettes and the population distribution, local sales were estimated to be twice the population percentage within the SMSA. Thus 5% of output was estimated to be sold locally.

2121   Philadelphia produces over 15% of the national output of cigars. Since reliable data regarding sales distributions were not available, the estimate of local sales was made based upon estimated demand. On the basis of observed preference for local brands, it was estimated that at least 30% of the demand was satisfied locally. This estimate is consistent with local sales of approximately 4.27% of output.

2131   A single establishment in the sector produces for a national market. Although of relatively small size its local sales were estimated at 2.5% on the basis of population percentage within the SMSA.

TEXTILE MILL PRODUCTS

2211   Sample of two establishments accounting for 6% of sector output indicated 24% of production is sold locally. Considering the locational factors of production and the market, the value appears to be reasonable. A brief analysis of demand indicates that most intermediate industries purchase 5% or less from regional producers. The large final demand purchaser, Defense Personnel Support Command, reported less than 1 percent local purchases from this industry. Hence, the local sales estimate appears to be in agreement with the available demand data.

2221   Sample of four establishments accounting for 11% of sector output indicate that approximately 5.9% of production was sold locally. This appeared to be substantiated by the limited demand data available.

2231 Sample of five establishments accounting for 44% of the sector production indicate that 13.8% of output is sold within the region. This value appeared to be too high in the light of purchase data available, even allowing for significant under-reporting of demand for the products. Hence, a revised value of 8% was used.

2241 Sample of five establishments, accounting for 20% of the sector output, indicated that 8% of the production was sold locally. Considering the proportion of local purchases made by the Defense Personnel Support Command (2%), the corresponding dollar estimate of local purchases by all other consumers is substantially less than that estimated by the producers. As the producers' estimates did not appear to vary significantly by firm size or speciality products, the sample estimate of 8% was used.

2251 Sample of five small, independent establishments, accounting for 20% of the sector output, indicates 26.2% of production was sold locally. The corresponding dollar value estimate of sales would represent more than 45% of the preliminary estimate of local demand. Since such a high percent of local demand appears inconsistent with the large purchase within the SMSA of national brands, the percentage estimate of local sales was reduced to 19% of production.

2253 Sample of four establishments, accounting for 15.6% of sector output, indicated 19.3% of the output was sold locally. The corresponding dollar value of local sales is excessive relative to the preliminary estimates of local demand. (If total local household demand were satisfied locally, such demand would account for approximately 9% of sector production.) Taking into account local wholesale purchases for resale outside the region which may have been reported by the manufacturers as local sales, the local sales percentage of output was reduced to 10%.

2254 Sample of three establishments, accounting for 12% of the sector output, indicated that 3% of production was sold locally after adjustment. A single firm reported 100% local sales; however this firm was found to be a national mail order house within the region. Accordingly the value was revised to 4%.

2256 Sample of four establishments, accounting for 14% of the sector production, indicated that 26% of output was sold locally. Although the proportion of local sales appears high relative to preliminary estimates of demand, the estimate was used due to the absence of significant variation among the four establishments.

2262 Single establishment accounting for 17% of the sector production, reported no local sales. As this establishment was a "captive firm", the data were not considered valid for the sector. The average local sales of RIS sectors 2261 and 2269 namely 19.8% was used.

2271 Sample of two establishments, accounting for 31% of the sector production, indicated that 31.2% of the output was sold locally.

This value is excessive since the region produces more than 11% of the nation's output. Hence, if the local producers were to supply 75% of the local market, the local sales proportion would be approximately 16.2% of production. This figure of 16.2% was used as a preliminary estimate.

2272   Single establishment accounting for 2% of the sector output indicated that 14% production was sold locally. This appears reasonable in the light of the analysis for RIS 2271.

2279   In the absence of regional sales data, the average of RIS sectors 2271 and 2272 was used. That is, 15.4% of production was taken to be sold locally.

2282   Sample of two establishments, accounting for 18.8% of sector production, indicated 20.8% of output was sold locally. The corresponding dollar value of local sales constituted approximately 80% of preliminary estimated demand. The demand however was considered to be significantly understated. Hence, the sample estimate is used as a tentative value.

2291   Single establishment, accounting for only 2.6% of sector production, indicated 10% of output was sold locally. Additionally a major firm accounting for 50% of sector production indicated 20% retail sales and 80% wholesale sales. Local sales were estimated to be approximately 12% of output.

2292   In the absence of regional sales data, an analysis of the limited demand data suggests approximately 15% of the sector production is sold locally.

2293   Sample of three establishments, accounting for 14% of the sector output, indicated that 15.7% of the production was sold locally. Although the sample coverage was relatively low, the dollar value of local sales corresponded reasonably well with the preliminary estimates of local demand.

2294   Sample of three establishments, accounting for 13% of the sector output, indicated that 87.5% of the production was sold locally. Reasonably detailed demand data supported such an estimate.

2295   In the absence of regional sales data, the local sales were estimated to be approximately 90% of sector production in view of the small size of regional firms.

2298   The sector was developed as a statistical industry; therefore no sales distribution data were available for the three firms in the region. The regional production was estimated to be approximately 2.6% that of the nation. The local sales proportion was estimated to be approximately 50% in view of the relatively undifferentiated nature of the product and low unit cost.

APPAREL AND OTHER FINISHED PRODUCTS MADE FROM FABRICS AND
SIMILAR MATERIALS

2323   Sample of two establishments, accounting for 25% of the sector
output, indicated that 7% of production was sold locally. Pre-
liminary estimates of demand indicate that the corresponding
dollar value of local sales constitute approximately 50% of total
demand. Although this appears high, it is anticipated that demand
is understated.

2327   Sample of 8 establishments, accounting for 35.8% of the sec-
tor output, indicated that 62.9% of production was shipped
locally. Since a large proportion of these shipments were by
contractors and jobbers to local manufacturers, who had sub-
contracted work, the sample data do not accurately reflect local
sales. Accordingly, the actual local sales of finished goods to
final users was then independently estimated to be only 10% of
the sector output.

2328   Sample of 2 establishments, accounting for only 8% of sector
output, indicated that 68.6% of production was sold locally. Al-
though the sample represented only the smaller establishments,
the estimated dollar value of local sales constituted approxi-
mately 55% of the preliminary estimated demand. Further, since
Philadelphia accounts for approximately 1.4% of the national
output of SIC 2328, the sample value was considered valid.

2331   Sample of 5 establishments, accounting for 22% of the sector
output, indicated that 6.7% of production was sold locally. Since
the sample included a reasonable mix of both large and small firms,
it was considered to be a valid estimate.

2335   Sector was divided between manufacturers and contractors;
local purchase estimates were made for each. Sample of 4 con-
tracting establishments, accounting for 2.9% of total sector
output, indicated that 22% of contractor production was sold
locally. Sample of 4 manufacturing establishments, accounting
for 23.5% of total sector output, indicated that 8.2% of manu-
facturers production was sold locally. On the basis of estimated
employment by the two type of establishments developed previously
(see Appendix B-4, p. B-4-3, Vol. II.), a weighted average was
calculated yielding an estimate of 17.3% of the total sector
output as local sales.

2337   Sample of 5 establishments, accounting for 9.6% of sector
output, indicates that 10.9% of production was sold locally. The
sample was primarily of smaller firms; however the relatively
small local sales percentage seems appropriate also for the larger
firms in the sector.

2339   Data from a single establishment, accounting for less than one
percent of sector production, indicated approximately 8.5%
locally. Considering the structure of the industry (contractor -
manufacturer) and its similarity to other sectors within the
three digit classification, local sales were estimated to be
approximately 9% of sector output.

2342   No local sales data were available for this sector. Insofar as the sector is dominated by two major firms producing nationally branded products, the local sales were estimated on the basis of the SMSA population percentage. Allowing for the sales of smaller producers, local sales were estimated to be 4% of sector output.

2351   Sample of 3 establishments, accounting for 36.5% of sector output, indicated that 5% of production was sold locally. Since the sample did not include the small boutique shops which would have a relatively high proportion of local sales, the estimate was adjusted to 10%.

2352   This sector is dominated by John B. Stetson and Company, accounting for approximately 90% of sector output. As this firm produces hats for an international market, the local sales are approximated at 3% of production. Adjustments for the other local producers is estimated to increase this figure to approximately 4%.

2361   In the absence of regional sales data, local sales were estimated at the same proportion of production as in RIS 2331, i.e. 6.7%.

2363   Sample of 2 establishments, accounting for 7% of sector output, indicated that 25% of production was sold locally. Adjustments to account for two major firms with national markets suggested that the significantly lower value of 10% be used.

2369   Sample of 3 establishments, accounting for 31.2% of sector output, indicated that 7.3% of production was sold locally. One large establishment, accounting for 39% of sector output is a division of a New York firm, and therefore this relatively low percentage figure seems acceptable for the entire sector.

2381   In the absence of regional sales data, the local sales of the single firm in the region were estimated to be approximately 25% of production.

2385   Single establishment, accounting for 40% of sector output, indicated no local sales. The largest establishment, accounting for 50% of output, is a manufacturing establishment of a New York enterprise and as such would not have significant local sales. Local sales for the sector were estimated to be one percent of output.

2386   Single establishment in the region did not report sales distribution, although it indicated that the effective market was limited to the Eastern Atlantic Seaboard, predominantly North of Virginia. Since the local sales of this single establishment were estimated not to have exceeded 30% of the local market, the corresponding dollar value was approximately 3.0% of the sector output. This value was used as the sector estimate of local sales.

2387 Single establishment, accounting for 5% of the sector output, indicated 10% of production was sold locally. Although the corresponding dollar value of local sales constituted approximately 55% of the preliminary estimate of demand, the figure of 10% was accepted. The estimate of demand was considered to be significantly understated.

2391 Sample of 3 establishments, accounting for 31.9% of the sector output, indicated that 34.4% of production was sold locally. Considering the custom design and fabrication of the product, this relatively high proportion of local sales appears valid.

2395 Sample of 3 establishments, accounting for 34% of the sector output, indicated that 12% of production was sold locally. As this sector constitutes a contract service to the trade, the spatial integration is expected to be somewhat greater than indicated by the sample. Therefore, the estimate of local sales was increased to 18% of production.

2396 Sample of 3 establishments, accounting for 7.5% of the sector output, indicated that 66% of production was sold locally. The corresponding dollar value constitutes approximately 32% of the preliminary estimated value of demand, and appears plausible. Therefore the figure was accepted.

2399 Single firm, accounting for 3% of the sector output, indicated that 25% of production was sold locally. The product breakdown available from the largest firm, accounting for 20% of sector output, permitted the estimation of local sales for that firm as approximately 12%. Taking into account both the large and small firms in the industry the local sales proportion was estimated to be approximately 13.7%.

LUMBER AND WOOD PRODUCTS, EXCEPT FURNITURE

2421 In the absence of adequate data, the local sales were estimated to be approximately 95% of the sector production considering the low quality of native woods, high transportation costs, and small scale of production.

2433 Single establishment, accounting for 49.5% of the sector output, indicated that 10% of production was sold locally. Although the corresponding dollar value significantly exceeds the preliminary final demand estimates, the 10% figure was used.

2443 Single establishment, accounting for 65% of the sector output, indicated that 90% of production was sold locally. The other 3 establishments on the industry were not expected to have significantly different sales patterns due to high transport costs and low value of finished product.

2445 Single establishment, accounting for 98% of the sector output, indicated all sales were within the region. Since the sample coverage was almost complete, the local sales proportion for the sector was accepted as 100%.

2490   This RIS aggregate sector is comprised of SIC 2411, 2442, 2491, 2499. These segments were estimated independently. No local sales data were reported within SIC 2411; however discussions with knowledgeable people in the industry suggested approximately 87% of production was sold locally. No local data were reported for SIC 2442. On the basis of relatively low value of output and high transportation costs, the local sales were estimated to be 95% of production. Local sales for SIC 2491 were estimated to be approximately 87% of production. Sample of 2 establishments, accounting for 32.5% of SIC 2499 output, indicated that 23% of the output was sold locally. Therefore, the aggregate sector RIS 2490 was estimated on average to have sold locally 44.2% of the aggregate output.

FURNITURE AND FIXTURES

2512   Sample of 3 establishments, accounting for 17% of the sector output, indicated that 29% of production was sold locally. This value appears reasonable in the light of the preliminary demand data available.

2514   Sample of 3 establishments, accounting for 14.7% of the sector output, indicated that 16.2% of production was sold locally. The data suggests that the major firms (sales in excess of $2 million) sell approximately 5% of production locally, and the smaller firms sell substantially more locally. The sample figure appears reasonable.

2519   In the absence of sample data, local sales were estimated to be approximately 2.5% of sector output. This estimate was based on the relatively high proportion (18%) of national production within this region, the nature of the product (orientation to vacation areas), and its relatively high transport cost.

2521   Single establishment, accounting for 8.6% of sector output, indicated that 15% of production was sold locally. The largest producer, accounting for 50.9% sector output, indicated that all sales were direct to retailers (without spatial designation). In view of relatively high transportation costs, it is reasonable to assume that the Philadelphia region constitutes approximately 15% of the effective market area of the major producer. Hence, the sample estimate was used, even though the sample accounted for a small proportion of the sector output.

2522   Single establishment, accounting for 4.3% of the sector output, indicated that 20% of production was sold locally. Four major establishments dominate the sector within the region. The extent of the markets for the larger firms is estimated to be such that only 10% of their output is sold locally. Assuming the single firm to be representative of the smaller firms, the local sales of the sector were estimated to be 12% of production.

2531   Sample of 2 establishments accounting for 9.8% of sector output, indicated that 42% of production was sold locally. As the two

major producers within the region specialize in school laboratory and gymnasium equipment, local sales were estimated to constitute approximately 10% of production for these major firms. Assuming the sample to be representative of the smaller establishments, the local sales of the sector were estimated to be 16% of production.

2542   Sample of 2 establishments, accounting for 17.9% of sector output, indicated 29% of production was sold locally. If the largest producer, accounting for approximately one-third of the output, is estimated to sell 8% of production locally, and if the sample is taken to represent the smaller producers, the sector local sales would be 22% of production. Such a figure appears reasonable in the light of preliminary demand analysis.

2599   Single establishment, accounting for 39% of the sector output, indicated that 55% of production was sold locally. As the industry is comprised of very small firms producing custom and speciality items, the relatively high local sales proportion reported by the single establishment appears reasonable.

PAPER AND ALLIED PRODUCTS

2640   This aggregate sector is comprised of SIC 2644 and 2649. Local sales were estimated to be approximately 50% of production of SIC 2644 on the basis of the size of firm and the general market structures. Sample of two establishments, accounting for 6.1% of the output of SIC 2649, indicated that 35.6% of production was sold locally. Therefore, on the average the aggregate sector was estimated to have local sales of approximately 35.9% of aggregate production.

2641   Sample of 3 establishments, accounting for 13.8% of sector output, indicated that 26.2% of production was sold locally. The major producer, accounting for approximately 47% of sector output, had local sales estimated to be 15% of production based on location of competing producers, market structure, etc. On the basis of a weighted average, the sector was estimated to have local sales of approximately 20.6% of production.

2643   Sample of 2 establishments, accounting for 23.9% of sector output, indicated that 18.7% of production was sold locally. Although firms reporting are of different size, the lack of significant variation in their local sales proportions suggests that the sample estimate is valid.

2652   Sample of 2 establishments, accounting for 18% of sector output, indicated that 34.5% of production was sold locally. Interview notes with large producers indicate that substantially more than the sample proportion was sold locally. Local sales of the sector were estimated to be 50% higher than that of the sample, namely, 51.7%.

2654   Single establishment, accounting for 3.6% of the sector output, indicated that 15% of production was sold locally. The major establishment, accounting for one-half of sector output, produces milk cartons. If this producer controls approximately 60% of the market for this product, then corresponding dollar value of the preliminary estimated demand is approximately 30% of production. Assuming similar distribution for each size of firm, the local sales of the sector were estimated to be 29% of the production.

2655   Single establishment, accounting for 6.3% of sector output, indicated that 50% of production was sold locally. In view of the high transportation costs, the relatively high local sales value of the sample was accepted.

2661   In the absence of local sales data, local sales were estimated to have been approximately 20% of sector output on the basis of limited wholesale data available.

PRINTING, PUBLISHING, AND ALLIED INDUSTRIES

2711   The sales distribution of the two major regional newspapers determined by Audit Bureau of Circulation indicates 81.5% of daily and 72.3% of Sunday editions to be sold locally. Assuming a ratio of 1:2 on sales price and 6:1 on number of issues, the local sales would constitute approximately 79.2% of output. If the many small establishments, accounting for 32% of sector output have local sales of approximately 95% of production, then the sector estimate of local sales is 84.9% of production.

2731   Sample of 2 establishments, accounting for 4% of sector output, indicated that 11% of output was sold locally. The two major producers constitute 30% of the sector and serve international markets. Their proportion of local sales is estimated to be significantly less than that reported by the sample establishments. Hence, the local sales of the sector are estimated to be 6% of output.

2741   Sample of 4 establishments, accounting for 24.0% of the sector output, indicated that 73% of the production was sold locally. In view of the diverse products of this sector, the sample value appeared valid.

2751   Sample of 7 establishments, accounting for 18% of the sector output, indicated that 76% of the production was sold locally. Although the sector is characterized by a large number of very small establishments producing custom work for local clients, there are in this region a few major producers whose markets are greater than that of the region. Therefore the sample figure was accepted.

2753   In the absence of regional sales data, local sales were estimated to be 51.4% of production. This estimate was based on an assumption of 5% local sales for the largest producer whose

specialty products account for 42% of sector output and 85% local sales for the other 16 establishments in the region.

2761   Single establishment, accounting for 6.2% of the sector output, indicated that 50% of production was sold locally. Three major firms account for approximately 70% of sector output and have markets substantially beyond the region. Hence if the major establishments are assumed to sell 40% of their output locally, and the remaining producers assumed to sell 90% locally, the resultant sector local sales would be 55.5% of output, or reasonably close to that of the reporting establishment. The 55.5% figure was used.

2782   Sample of 7 establishments, accounting for 7% of the sector output, indicated that 64% of production was sold locally. This estimate appears to be supported by the limited demand information available.

2793   Sample of 3 establishments, accounting for 12% of the sector output, indicated that 79% of production was sold locally. The absence of major firms in this sector suggested the sample values to be reasonably valid.

CHEMICALS AND ALLIED PRODUCTS

2814   Single firm accounting for 92% of the sector output, indicated that 3% of production was sold locally. This value was increased to 4% to account for the 3 other firms having predominantly local sales.

2815   In the absence of regional sales data, local sales were estimated to be approximately 42% of sector output on the basis of the structure of the local market and limited demand information available.

2818   Sample of 2 establishments, accounting for 15.2% of the sector output, indicates that 13.4% of production was sold locally. Although the sector coverage is poor, there is not sufficient basis for substantial adjustment.

2843   Single establishment, accounting for 9.2% of the sector output, indicated that 15% of production was sold locally. Preliminary demand information indicates close agreement with the corresponding dollar value of the estimated local sales.

2844   Sample of 4 establishments, accounting for 7.6% of the sector output, indicated that 55% of production was sold locally. As the small firms of the sample appear to be representative of the entire industry, the sample estimated figure was used.

2852   In the absence of regional sales data, the local sales were estimated to constitute approximately 80% of the sector output on the basis of the small size of the three establishments located within the region.

2861   Single establishment in the region did not report regional sales. Based on the extremely small size of the establishment, local sales were estimated to constitute approximately 95% of the sector output.

2870   This aggregate sector is comprised of SIC 2873 and 2879. Sample of 2 establishments, accounting for 28.6% of the output of SIC 2873, indicated 44% of production was sold locally. Single establishment, accounting for 100% of the output of SIC 2879, indicated that 5% of production was sold locally. The aggregate sector local sales were determined, on the basis of a weighted average, at 7.7% of aggregate sector output.

2871   In the absence of regional sales data, the local sales were estimated to constitute approximately 20% of the sector output based upon the size and structure of the industry.

2895   In the absence of regional sales data, the local sales were estimated to constitute approximately 95% of sector output based upon the small size of the single establishment in the region and the relatively large regional demand for the product.

PETROLEUM REFINING AND RELATED INDUSTRIES

2911   Sample of 2 establishments, accounting for 51.9% of the sector output, indicated that 25.9% of production was sold locally. Additional data suggested that the remaining 9 establishments within the region did not have significantly different sales distributions.

2952   Single establishment, accounting for 62% of the sector output, indicated that 30% of production was sold locally. The presence of another large establishment, with national affiliations, suggests a reduction of the estimate of local sales to 20% of sector production.

RUBBER AND MISCELLANEOUS PLASTICS PRODUCTS

LEATHER AND LEATHER PRODUCTS

3121   Single establishment, accounting for 5.2% of the sector output, indicated that 12.6% of production was sold locally. Additional information on markets suggests that this proportion of local sales indicated by the responding establishment is too high. Sector local sales were adjusted downward to 7% of production.

3131   Sample of 2 establishments, accounting for 77% of the sector output, indicated that 3.1% of production was sold locally. This estimate was verified by the limited preliminary demand information available.

3141 Sample of 2 establishments, accounting for 5.5% of the sector output, indicated that 14% of production was sold locally. Three major establishments, accounting for approximately 43% of the sector output, are estimated to have had regional sales approximating 3%. The sector proportion of local sales was therefore adjusted to 4.0% of production.

3171 Sample of 2 establishments, accounting for 14.7% of the sector output, indicated that 10% of production was sold locally. The major four establishments, accounting for approximately 80% of sector output, indicate major orientation to the NYC fashion center. Hence local sales for these establishments were estimated to be 4% of production. If the sample value is assumed to be valid for the remaining establishments, sector local sales would constitute 4.9% of sector output.

3172 Sample of 2 establishments, accounting for 7.9% of the sector output, indicated that 9.5% of production was sold locally. In view of the speciality nature of the products, this figure was accepted as representative of the industry in spite of the relatively low sample coverage.

STONE, CLAY, AND GLASS PRODUCTS

3211 Single establishment, accounting for 100% of the sector output, indicated that 1% of production was sold locally. Although this figure seems to be inconsistent with the high costs of transportation and breakage, the data appear valid.

3251 Sample of 2 establishments, accounting for 46% of the sector output, indicated that 66% of production was sold locally. Since the pre-requisite clay deposits are located at the periphery of the region, the transportation disadvantage for firms located immediately adjacent to the region is not significant. Therefore the relatively low percent which local sales constitute of total demand can be accounted for by large imports.

3261 In the absence of regional sales data, the local sales were estimated to constitute approximately 3% of sector output, on the basis of domination by a very few firms with national markets.

3269 Sample of 3 establishments, accounting for 9% of the sector output, indicated that 25% of production was sold locally. As the sector is comprised of relatively small establishments, the sample was considered valid.

3272 Sample of 2 establishments, accounting for 33% of the sector output, indicated that 53.5% of production was sold locally. In view of the diversity of products, and the location of the producers, the sample figure appears valid.

3275 In the absence of regional sales data, the local sales were estimated to constitute approximately 80% of the dollar value of

the preliminary demand estimate. This estimated dollar value corresponded with a local sales estimate of approximately 42.1% of sector output. This appears reasonable for this industry (where product is subject to high transportation cost), since all production is by the plants of three national producers.

3293 Sample of 2 establishments, accounting for 13.9% of the sector output, indicated that 38.9% of production was sold locally. The corresponding dollar value of local sales significantly exceeds the preliminary estimate of demand for the product. Since the sample does not include the three major producers, the value was adjusted to 7.7%, the average for RIS 329. However even this value may be too high since the region produces approximately 13% of the national output of SIC 3293. The estimate of 7.7% corresponds reasonably well, however, with the demand information.

3297 Single establishment, accounting for 9% of the sector output, indicated that 15% of production was sold locally. Since 3 firms, not in the sample, appear to dominate the regional sector, the sample value appears too high. Hence it was thought best to use the average of RIS 329. Local sales were thus estimated to be 7.7% of sector output.

PRIMARY METAL INDUSTRIES

3315 Sample of 2 establishments, accounting for 50.4% of the sector output, indicated that 2.0% of production was sold locally. This relatively low proportion of local sales appears consistent with the specialty grade products produced by the regional establishments.

3317 Sample of 2 establishments, accounting for 11% of the sector output, indicated that 15% of production was sold locally. This percentage is consistent with the predominance of specialty stainless steel tube and is also consistent with preliminary demand analysis.

3330 This aggregate sector is comprised of SIC 3331 and 3339. Local sales were estimated to be approximately 23.1% of the production of SIC 3331 based on the size distribution of firms and the structure of the market. Sample of 2 establishments, accounting for 27% of the production of SIC 3339, indicated that 11% of production was sold locally. Therefore, local sales of the aggregate sector 3330 were estimated to be 17.6% of aggregate production.

3333 In the absence of regional sales data, the local sales were estimated to be approximately 90% of the sector output based on the relatively small size of the single establishment in the region.

3334 In the absence of regional sales data, the local sales were estimated to be approximately 23.1% on the basis of the average of RIS 331, 332, and 333.

3351 Single establishment, accounting for 91% of the sector output, indicated no local sales to manufacturers and approximately 25% to regionally unspecified wholesalers. Limited wholesale data suggests that approximately one-half or 12% of production was sold locally.

3352 Single establishment, accounting for 16.7% of the sector output, indicated that 61.4% of production was sold locally. This appears reasonable in the light of preliminary demand analysis and the very small proportion (0.26%) of national production of SIC 3352 in the region.

3357 Single establishment, accounting for 4% of the sector output, indicated that 90% of production was sold locally. As this "captive" establishment was not considered representative of the regional industry, the average of RIS 335 was used to estimate local sales at 20.4% of sector output.

3361 Sample of 2 establishments, accounting for 1.7% of the sector output, indicated that 66% of production was sold locally. Analysis of the limited sales data available from the dominant firm (accounting for 65% of sector output) indicates less than 8% of the output is sold locally. Thus, local sales were estimated to be 10% of the sector output.

3362 Sample of 3 establishments, accounting for 14% of the sector output, indicated that 89% of production was sold locally. Two major establishments, accounting for approximately 80% of sector output, although not included in the sample, were estimated to have sold approximately 40% of production locally. Assuming the sample to be representative of the remaining establishments, local sales of the sector were estimated to be 50% of output.

3369 Single establishment, accounting for 41% of the sector output, indicated that 14.7% of production was sold locally. This appears reasonable in view of the structure of the local industry and the preliminary demand information available.

3390 This aggregate sector is comprised of SIC 3392 and 3399. In the absence of regional sales data for SIC 3392, local sales were estimated to be approximately 45% of production based on preliminary demand information available. Sample of 3 establishments, accounting for 90% of the output of SIC 3399, indicated that 5% of production was sold locally. Therefore, on the basis of a weighted average, the local sales of the aggregated sector were estimated to be 7.4% of aggregate output.

FABRICATED METAL PRODUCTS, EXCEPT ORDNANCE, MACHINERY, & TRANSPORTATION EQUIPMENT

3421 Single establishment, accounting for 31.8% of the sector output, indicated that 37.6% of production was sold locally. Assuming that the other two establishments of similar size do not have

substantially different sales distributions, the single establishment value was accepted.

3423   Sample of 5 establishments, accounting for 26.3% of sector output, indicated that 8.8% of production was sold locally. Insomuch as two national firms account for 50.8% of the sector output, this relatively low proportion of local sales appears reasonable.

3431   In the absence of regional sales data, local sales were estimated to be 10% of sector output based on the consideration that the major firms are branch operations of national firms serving national markets.

3432   Sample of 3 establishments, accounting for 16% of sector output, indicated that 16% of production was sold locally. As the regional firms are of uniformly small size, the sample was considered valid.

3441   Sample of 2 establishments, accounting for 11.7% of the sector output, indicated that 5% of production was sold locally. As both the large and the small firm reported the same proportion of local sales, the value was used.

3443   Single establishment, accounting for 15% of the sector output, indicated that 5% of production was sold locally. No additional information was available to suggest any different percentage figure.

3444   Sample of 6 establishments, accounting for 14.0% of the sector output, indicated that 24.1% of production was sold locally. As the sample appeared to have proportionate representation of large and small establishments, the estimate was considered valid.

3471   Sample of 4 establishments, accounting for 25.2% of the sector output, indicated that 91.9% of production was sold locally. The four relatively large firms, accounting for 40.4% of the sector output, were assumed to have a significantly smaller proportion of local sales than indicated by the sample. The sector local sales were therefore estimated to be approximately 79% of sector output.

3481   Sample of 7 establishments, accounting for 13.1% of the sector output, indicated that 14.1% of production was sold locally. Although the sample did not include the 3 major firms, accounting for approximately 31% of the sector output, the dollar value of local sales resulting when the 14.1% figure is used agree reasonably well with the preliminary demand information available. Therefore, the 14.1% figure was considered valid.

3491   Sample of 3 establishments, accounting for 32% of the sector output, indicated that 83% of production was sold locally. Relatively high transportation costs suggest the local sales percentage estimate is correct.

3497   In the absence of regional sales data, local sales were estimated to be approximately 10% of the sector output. This estimate was made on the basis of the type of products produced by the two establishments in the region, and the assumed distribution among the major local users.

3499   Sample of 10 establishments, accounting for 29.8% of the sector output, indicated that 55% of production was sold locally. A single establishment accounts for approximately 45% of the sector output, and is assumed to have a significantly lower proportion of local sales than the sample. Assuming the dominant firm sold 20% of its production locally, and that the sample is representative of the remaining establishments within the sector, the local sales would be approximately 39.3% of sector output.

MACHINERY, EXCEPT ELECTRICAL

3510   This RIS sector is an aggregate of SIC 3511 and 3519. Sample of 2 establishments, accounting for 100% of the output of SIC 3511, indicated that 10.8% of production was sold locally. In the absence of regional sales data for the 3 establishments in SIC 3519, the local sales were estimated to be approximately 10% of the output based on limited demand information available. The local sales of the aggregate sector were therefore estimated to be 10.8% of the aggregate output.

3522   Sample of 3 establishments, accounting for 29.9% of the sector output, indicated that 7% of production was sold locally. As the sector is dominated by a single establishment accounting for 62% of the sector output, which was assumed to have primarily a national market, the local sales were adjusted to 4.5% of sector output.

3541   Sample of 6 establishments, accounting for 38% of the sector output, indicated that 20% of production was sold locally. The dominant establishment in the region, accounting for approximately 55% of sector output, was assumed to have a significantly lower proportion of local sales, estimated to be 5% of production. Assuming the remaining establishments in the sector had a local sales proportion similar to that of the sample, the sector local sales were estimated to be 11.7% of sector output.

3542   Sample of 4 establishments, accounting for 35% of the sector output, indicated that 86% of production was sold locally. Since there were no major establishments within the sector, and since the sector accounted for only approximately one-half of one percent of the national output of SIC 3542, the relatively high local sales proportion was accepted.

3544   Sample of 11 establishments, accounting for 18.0% of the sector output, indicated that 17.1% of production was sold locally. This estimate appeared consistent with the preliminary demand information available.

3548   In the absence of regional sales data, local sales were estimated to be approximately 75% of sector output based upon the small size of the establishments within the region. The region produced approximately one tenth of one percent of the national output of this sector.

3551   Sample of 2 establishments, accounting for 54.2% of the sector output, indicated that 19.4% of production was sold locally. (In estimating the local sales of the largest establishment in the sector which was included in the sample, it was necessary to take an average of two contradictory sources.) The above percentage estimate appears consistent with limited demand information available.

3553   In the absence of regional sales data, local sales were estimated to be approximately 50.0% of sector output based on the small size of the establishments within the region, the small proportion of total national output produced within the region (0.5%), and the limited demand information available.

3561   Sample of 2 establishments, accounting for 26% of the sector output, indicated that 8% of production was sold locally. Single establishment, accounting for 45% of the sector output, was assumed to have local sales consistent with the sample estimate, which was supported by the limited demand information available.

3564   In the absence of regional sales data, local sales were estimated to be approximately 52.4% of sector output based on the available demand information and the relatively small size of the establishments in the sector.

3565   Sample of 4 establishments, accounting for 39% of the sector output, indicated that 80% of production was sold locally. Insofar as the sector is comprised of relatively small establishments and the industry is characterized by the need for close customer relationships, the sample percentage for local sales appears valid.

3569   Sample of 5 establishments, accounting for 37.3% of the sector output, indicated that 10.9% of production was sold locally. Data on the 4 major establishments, accounting for approximately 71% of the sector output, appear to confirm the sample estimate.

3571   In the absence of regional sales data, local sales were estimated to be approximately 15.2% of the sector output based upon preliminary demand analysis and general information concerning computer sales of the 3 major producers in the region.

3582   In the absence of regional sales data, local sales were estimated to be approximately 60% of sector production on the basis of the very small employment (3) of the single firm in the region.

3585   Sample of 2 establishments, accounting for 4% of the sector output, indicated that 40% of production was sold locally. Since

85% of the industry is accounted for by 6 major firms, the small sample does not appear representative. The largest producer, accounting for approximately 48% of the sector output, does a substantial quantity of installation of heating-cooling systems within the region. The local sales were therefore estimated to be approximately 35% of the sector output.

3586 Sample of 2 establishments, accounting for 38.8% of the sector output, indicated that 1.4% of production was sold locally. As the sample represented the proportionate size distribution of establishments within the sector, the sample data were used.

3589 Sample of 6 establishments, accounting for 19.0% of the sector output, indicated that 25% of production was sold locally. Two major establishments, accounting for approximately 70% of sector output, were assumed to have local sales of approximately 5% of production. Assuming the remaining establishments in the sector had local sales proportions similar to that of the sample, the sector local sales were estimated to be 11.0% of sector output.

3590 This aggregate sector is comprised of SIC 3532 and 3599. In the absence of data relating to the regional sales of the single establishment in SIC 3532, the local sales were estimated to be approximately 90% of the establishment's output. Sample of 3 establishments, accounting for 20% of the output of SIC 3599, indicated that 7% of production was sold locally. The local sales of the aggregate sector were estimated to be 7.1% of the aggregate output.

ELECTRICAL MACHINERY, EQUIPMENT, AND SUPPLIES

3612 Sample of 4 establishments, accounting for 32% of the sector output, indicated that 72% of production was sold locally. The SMSA accounted for 0.7% of national output.

3623 Single establishment, accounting for 32% of the sector output, indicated that 10% of production was sold locally. Preliminary demand information appears to support the data provided by the single establishment.

3624 In the absence of regional sales data, local sales were estimated to be approximately 80% of the sector output on the basis of the small size of the 3 establishments in the sector and limited demand information available.

3631 In the absence of regional sales data, local sales were estimated to be approximately 60% of sector output on the basis of the extremely small size of the single firm in the region and the general line of products produced.

3633 In the absence of regional sales data, local sales were estimated to be approximately 35% of sector output on the basis of the relatively small size of the 3 firms in the region.

3634   Single establishment, accounting for 6% of the sector output, indicated that 75% of production was sold locally. As the sector is dominated by one establishment, accounting for approximately 85% of sector output, the local sales proportion was accordingly reduced to 25% to account for the significantly lower proportion of local sales by larger establishments.

3635   In the absence of regional sales data, local sales were estimated to be 80% of sector output based on the small size of the single establishment within the region.

3639   Single establishment, accounting for 60.8% of the sector output, indicated that 35% of production was sold to local wholesalers. Wholesale distribution patterns suggest that only 64% of wholesale sales are within the region. Thus, local sales are estimated to be 22.4% of sector output. This percentage appears consistent with the preliminary demand information available, and the range of products within the sector.

3642   Sample of 2 establishments, accounting for 6% of the sector output, indicated that 9% of production was sold locally. Nine major establishments (not in sample) appeared to have large market areas, and were estimated to sell not more than 8% of their production locally. The major firms constitute 50% of the sector output. Assuming the sample was representative of the remaining small establishments within the sector, the local sales were estimated to be 8.5% of sector output. This estimate was consistent with preliminary demand information available.

3651   Single establishment, accounting for 0.6% of the sector output, indicated that 27% of production was sold locally. The sector is dominated by two major, national producers, accounting for 95% of the sector output. Assuming sales to be primarily distributed in proportion to population, with some recognition of a slight regional preference for locally produced products, the 2 large firms were estimated to have local sales of approximately 3.5% of production. The 5 remaining establishments in the sector were taken to have local sales percentages similar to the sample establishments. Hence, the sector local sales were estimated to be 4.6% of sector output.

3652   In the absence of regional sales data, the local sales were estimated to be approximately 10% of the sector output based on the nature of the demand for the product and the size of the establishments within the region.

3671   In the absence of regional sales data, the local sales were estimated to be approximately 10% of the sector output based on the preliminary demand information available and the relatively large size of the firms within the sector.

3672   In the absence of regional sales data, the local sales were estimated to be approximately 10% of the sector output on the basis of the size distribution of the firms within the sector,

and the assumed purchasing patterns of the major consumers of the products within the region.

3690   This aggregate sector is comprised of SIC 3641 and 3699. In the absence of regional sales data for either constituent SIC, the local sales were estimated to be approximately 8.5% of production on the basis of the size of the sector establishments, and some limited demand information.

3691   In the absence of regional sales data, the local sales proportion was estimated to be approximately 12% of sector output on the basis of limited demand analysis.

3694   In the absence of regional sales data, the local sales were estimated to be approximately 8% of the sector output on the basis of limited demand information available.

TRANSPORTATION EQUIPMENT

3713   Sample of 2 establishments, accounting for 11% of the sector output, indicated that 73% of production was sold locally. As other establishments not covered are also small, the relatively high proportion of local sales was accepted.

3721   Sample of 3 establishments, accounting for 97.3% of the sector output, indicated that 34.3% of production was sold locally. It should be noted that the local sales include sales to local defense agencies as included within the Final Demand Sectors.

3729   Sample of 3 establishments, accounting for 81.3% of the sector output, indicated that 0.2% of production was sold locally. It should be noted that almost all sales are to federal agencies (predominately NASA) not within the region.

3731   Sample of 2 establishments, accounting for 95.5% of the sector output, indicated that all shipments were local, in the trivial sense that delivery was taken at the ways. The major purchaser of ships from this sector was the U.S. Navy. Data from the Supervisor of Shipbuilding located in the region and defined as RIS sector 9128 indicated that this sector's purchases during the period accounted for approximately 32.4% of output of RIS sector 3731. Assuming no other local industry purchased ships at that time, the percentage estimate of 32.4, based on the U.S. Navy purchases, was used.

3732   In the absence of regional sales data, local sales were estimated to be approximately 95% of the sector output based on the relatively small size of the establishments, and the nature of the boating activities in the Delaware River Basin.

3741   Single establishment, accounting for 100% of the sector output, indicated that 10% of production was shipped to its local warehouse. Based on preliminary demand information and related data

from the establishment, it was estimated that one-half of the warehouse shipments were subsequently shipped to local purchasers and one-half to purchasers outside the region. Hence, local sales were estimated to be 5% of the sector output.

3791   In the absence of regional sales data, local sales were estimated to be approximately 70% of the sector output based on the relatively small size of the two establishments within the region.

PROFESSIONAL, SCIENTIFIC, AND CONTROLLING INSTRUMENTS; PHOTOGRAPHIC AND OPTICAL GOODS; WATCHES AND CLOCKS.

3821   Sample of 4 establishments, accounting for 47.0% of the sector output, indicated that 1.9% of production was sold locally. The sector includes 12 major establishments accounting for approximately 75% of the sector output. These firms are assumed to have national (international) markets, such that the sample estimate appears to hold for those major firms. The remaining smaller firms were assumed to have a significantly larger proportion of local sales, approximately 20% of production. Hence the sector local sales were estimated to be 6.4% of output. This appears consistent with the region's production of approximately 17.6% of the national output.

3842   Sample of 4 establishments, accounting for 58.3% of the sector output, indicated that 14.0% of production was sold locally. Three major establishments accounted for 71.5% of sector output. Two of these establishments reported in the sample that approximately 5% of production was sold locally. Assuming the smaller establishments sell 55% of their production locally, the sector local sales were estimated to be 19.5% of output.

3843   Sample of 4 establishments, accounting for 57.4% of the sector output, indicated that approximately 10% of production was sold locally. The sample is composed predominantly of large national firms. The smaller establishments were assumed to have a significantly higher proportion of local sales. Accordingly, the sector local sales were estimated to be 42.3% of sector output. This estimate appears consistent with preliminary demand information available.

3861   Sample of 3 establishments, accounting for 21.1% of sector output, indicated that 39.5% of production was sold locally. Insofar as the establishments are all of relatively the same small size, the sample estimate appears representative.

MISCELLANEOUS MANUFACTURING INDUSTRIES

3931   In the absence of regional sales data, the regional sales were estimated to be approximately 8% of production in view of the national markets for the two firms dominating the industry.

3491   Sample of 3 establishments, accounting for 8.9% of the sector output, indicated that 6.0% of production was sold locally. Since the sample, composed of relatively small establishments, indicated a relatively small proportion of local sales, it was assumed that the larger firms' sales pattern would not be substantially different. Therefore the sample value was accepted.

3942   Sample of 3 establishments, accounting for 11.4% of the sector output, indicated that 4.0% of production was sold locally. Using the same reasoning as in RIS 3941 above, the sample value was accepted.

3949   Sample of 3 establishments, accounting for 2.8% of the sector output, indicated that 24.3% of production was sold locally. Two major establishments accounting for 41.1% of the sector output were assumed to have markets covering most of the nation. Therefore local sales for these two establishments were estimated to be approximately 8% of production. Assuming the remaining small establishments in the region had a sales pattern similar to the sample, the sector local sales were estimated to be 17.6% of sector output.

3952   In the absence of regional sales data, the local sales were estimated to be approximately 20% of the sector output in view of the moderate size of establishments within the sector.

3953   Sample of 6 establishments, accounting for 18.9% of the sector output, indicated that 63.6% of production was sold locally. Single establishment, accounting for 32.7% of the sector output, was estimated to have sold 20% of production locally. The smaller establishments were assumed to have sales patterns similar to that of the sample. The sector local sales were estimated therefore to be 49.2% of sector output.

3962   Sample of 3 establishments, accounting for 30.8% of the sector output, indicated that 55.3% of production was sold locally. Two large establishments, accounting for approximately 75% of the sector employment, were assumed to have significantly lower proportions of local sales, namely 10%. Sector local sales were estimated to be approximately 23% of sector output.

3964   Single establishment, accounting for 5.0% of sector output, indicated that all sales were local. The sample firm was a captive establishment of a local firm. Approximately 75% of sector output is accounted for by a single establishment assumed to have sold 10% of production locally. Assuming the remaining 2 very small firms sold all their output locally, the sector local sales were estimated to be 32.5% of sector output.

3982   Sample of 2 establishments, accounting for 34.2% of the sector output, indicated that 25.7% of production was sold locally. Additional information available from the remaining establishment within the sector suggested that only 5% of that establishment's

production was sold locally. Therefore the sector local sales were estimated to have been 12.1% of sector output. It should be noted that the region accounts for approximately 13.7% of the national output of SIC 3982.

3984   In the absence of regional sales data, the local sales were estimated to have been approximately 5% of sector output on the basis of estimated markets for the two establishments within the sector.

3993   Sample of 3 establishments, accounting for 9.3% of the sector output, indicated that 31.9% of production was sold locally. Although the sample constitutes a relatively small proportion of the sector, the size distribution of establishments and the speciality nature of some producers in the sector suggest that the estimated local sales proportion may be reasonably accurate. Further, the corresponding dollar value of local sales agrees with the preliminary demand estimates.

3995   Sample of 2 establishments, accounting for 44.1% of the sector output, indicated that 38.9% of production was sold locally Two major establishments, which account for 84.4% of sector output, were estimated to have markets such that the local sales accounted for approximately 12% of production. The three small establishments in the sector were estimated to have sold approximately 75% of production locally. Therefore the sector local sales were estimated to have been 21.3% of sector output.

3999   This aggregate sector is composed of SIC 3851, 3912, 3963 and 3999. In the absence of regional sales data for SIC 3851, local sales were estimated to have been 65% of production for that SIC based on the size of the establishments and limited demand information available. Local sales were estimated for SIC 3912 to be approximately 8% of production on the same basis as for SIC 3851. Local sales were estimated to be approximately 32.5% of production of SIC 3963 on the basis of limited information available concerning the two establishments within the region. A sample of 3 establishments, accounting for 24% of the output of SIC 3999, indicated that 2.5% of production was sold locally. The weighted average of the component SIC_s yielded the local sales estimate of 4.8% of the aggregate sector output.

Local sales and export estimates for those sectors included within SIC Division E, Transportation, Communication, Electric, Gas and Sanitary Services were derived from sample interview information, and considerations based on location theory. Further, certain sectors were so defined as to preclude either imports, or exports, or both.

TRANSPORTATION

4011   Freight and passenger revenue information available from the two major operating railroads within the region were adjusted to

reflect the proportion of central office incomes in the SMSA. The resulting dollar value estimate of local sales was 72.5% of the sector output.

4111   Local sales of local and suburban transit were estimated to account for 99% of sector output in view of the very small amount of charter operations outside the region.

4121   Local sales of taxicabs were estimated to account for 80% of sector output. Approximately 20% of output was estimated to be consumed by tourists and other non-local users.

4190   The local sales of this aggregate sector were estimated to approximate the average of all transportation sectors, and thus were estimated to be 67.2% of sector output.

4210   Sample of 3 Class I carriers, accounting for 15.9% of the sector output, indicated that 34.9% of output was sold locally. Assuming the Class II carriers have significantly greater local sales (approximately 52.3%), the local sales for the sector were estimated to have been 49.5% of the sector output.

4220   In the absence of regional sales data, local sales were estimated to have been approximately 83% of sector output in view of the port-related warehousing activities serving firms outside the region.

4400   Preliminary weighted cargo data available from the Delaware River Port Authority origin-destination study for the current period indicated that 57.2% of the water bourne transportation was generated by regional users.

4500   Local sales were estimated to have been approximately 96% of sector output in view of the relatively small amount of services rendered individuals and establishments outside the region.

COMMUNICATIONS

4811   In accord with the definition of output of the sector and in view of the relatively small proportion of services rendered to individuals and establishments outside the region, local sales were estimated to have been approximately 98% of the sector.

4832   Information published by the Federal Communications Commission in "Final AM-FM Broadcast Financial Data - 1959" (Public Notice B-95209) indicated that local sales ("Local" plus "Regional") constituted 54.5% of total time sales.

4833   Information published by the Federal Communications Commission in "Final TV Broadcast Financial Data-1959" (Public Notice B-92983) indicated that local sales ("Local" plus "Regional") constituted 15.7% of the total time sales.

4890   In accord with the definition of output of the sector and in view of the relatively small proportion of services rendered to individuals and establishments outside the region, local sales were estimated to have been approximately 98% of the sector.

ELECTRIC, GAS, AND SANITARY SERVICES

4911   Local sales were defined to be 100% of sector output (see Text, p. 6-14).

4920   Local sales were defined to be 100% of sector output (see Text, p. 6-16).

4941   Local sales were defined to be 100% of sector output (see Text, p. 6-16).

4990   Local sales were defined to be 100% of sector output (see Text, p. 6-17).

WHOLESALE TRADE

The regional allocation of the output (margin) of the whole-sale trade sectors was made on the basis of the regional distribution of the sales (of products purchased for resale) by the wholesalers. This allocation is consistent with the economic accounting convention of accruing the trade margin as costs to the consumer of the product. The regional distribution of whole-sale sales was obtained by interview for each major product line (see Text, pp. 7-1 - 7-16). No adjustments for type of wholesaler (merchant - non-merchant) or for product-line were made in these regional allocations. Since data relating to the size distribution of establishments in these sectors were not available, no adjustment of the reported data was attempted.

5013   Sample of 7 establishments, accounting for 92.9% of the sector sales, indicated that 14.6% of the sales were within the region. The relatively low proportion was due to a major international sales operation within the region.

5014   Single establishment, accounting for 1.4% of the sector sales, indicated that 19.9% of the sales were within the region. This low proportion of local sales was not considered representative of the sector. Sector local sales were estimated on the basis of RIS 5013, excluding the major international establishment. This procedure yielded a local sales percentage of 75.6.

5028   Sample of 2 establishments, accounting for 4.2% of the sector sales, indicated that 68.2% of the sales were within the region. This estimate was verified by telephone conversations with two major establishments which accounted for 15% of sector sales.

5032   Sample of 3 establishments, accounting for 1.7% of the sector sales, indicated that 2.3% of the sales were within the region.

This very low proportion of local sales appears inconsistent with the assumed distribution of purchasers for the types of goods handled. The sample weighted average of the RIS 503 sectors was used as an estimate of local sector sales, namely 33.9%.

5083   Single establishment, accounting for 39.6% of the sector sales, indicated that all of the sales were within the region. The sector estimate of local sales was revised to 95% in view of the other establishments within the sector.

5089   In the absence of regional sales data, the local proportion of the sector sales was estimated to be the weighted average of RIS 508 sectors, namely 58.3%.

5092   In the absence of regional sales data, the local proportion of sector sales was estimated to have been 90% on the basis of known market areas and transportation costs.

5099   In the absence of regional sales data, the local proportion of the sector sales was estimated to be the weighted average of all other wholesale sectors, that is, 63.8%.

RETAIL TRADES

In the absence of sample information concerning the regional distribution of output of the retail trade sectors, estimates were based on assumed market characteristics by type of retailer. Those sectors having relatively large operations serving large market areas (reflecting major scale economies) were assumed to have sold approximately 94% locally. Those sectors having relatively small establishments serving markets of very limited geographic extent were assumed to have sold a greater proportion locally. Consideration was also given to the nature and homogeneity of the products handled by the retail sectors.

The estimates of the local sales percentage for each of the retail sectors were within the range of 93% to 97% and are recorded in the following table.

ESTIMATED LOCAL SALES PERCENTAGE
BY RIS RETAIL SECTOR

RIS SECTOR	LOCAL SALES PERCENTAGE
5210	95
5221	95
5231	96
5241	95
5250	96
5311	93
5331	97
5342	11*
5351	95
5390	97
5411	96
5420	97
5431	97
5441	97
5460	97
5490	95
5511	93
5521	95
5531	97
5541	94
5599	96
5610	96
5621	96
5630	96
5641	96
5651	96
5660	96
5690	94
5710	95
5722	95
5730	95
5812	93
5813	94
5912	96
5921	95
5940	96
5950	96
5971	95
5980	97
5990	96

(*) Sector 5342 was estimated on the basis of information from vending machine operations which indicated that only 8.5% of their total sales was within the region and on the assumption that mail order operations within the region sell approximately 12% locally.

FINANCE, INSURANCE, AND REAL ESTATE

FINANCE

6011   The proportion of services allocated to users within the region were estimated by the research staff of the Federal Reserve Bank (FRB) to be approximately 38.3% on the basis of functional group expenditures.

6020   Estimates provided by the FRB suggest that 48.3% of the total assets of commercial banks within the 3rd FRB district are within the Philadelphia SMSA, and further that the SMSA represents approximately 45.5% of the population and 46.0% of the employment within the 3rd FRB district. Assuming assets to be a reliable measure of activity, it would appear, on the basis of the differences in the percentages just noted, that the region exports approximately 5% of banking services. Therefore the local service proportion was estimated to be 95% of total output.

6030   In view of the estimates made for commercial banks (RIS 6020) and noting that the mutual savings banks do not engage in appreciable amounts of correspondent relations with banks outside the region, the local service proportion was estimated to be approximately 98% of sector output.

6120   In view of the relatively small size and nature of the savings and loan associations, the local service proportion was estimated to be approximately 99% of sector output.

6190   In view of the hetrogeneous mix of financial institutions within this aggregate sector and their specialized nature, the local service proportion was estimated to be approximately 95% of sector output.

6200   In view of the operations of the regional stock exchange (Philadelphia-Baltimore-Washington) and the assumed market area serviced by the regional brokerage firms, the local service proportion was estimated to be approximately 90% of sector output.

INSURANCE

6301   Sample of 4 carriers, accounting for 64.4% of the total premiums earned, indicated that 9.1% were earned within the region. Related information available from the Insurance Department of the Commonwealth of Pennsylvania suggests the remaining relatively small carriers sell approximately 16.0% within the region. Therefore the local proportion of sector output was estimated to be 11.6%.

6310   A sample of 6 carriers, accounting for 77.8% of the sector output, indicated that 8.6% of their premiums earned were from within the region. Assuming the spatial allocation of sector

output may be approximated by the distribution of premiums earned, the local service proportion was estimated to be 8.6%.

REAL ESTATE

6590 Since no data at all were available, the local proportion of output of this aggregate service sector was estimated to be approximately 90%.

SERVICES

7200 In the absence of regional sales data, the proportion of local sales for each constituent 3 digit SIC was estimated by the staff on the basis of the proportion of tourist sales and type of operation. The weighted estimate indicated that approximately 80.5% of sector output was sold locally.

7300 In the absence of regional sales data, the local sales proportion was estimated to be 92% of sector output in view of the size and structure of the constituent business service industries.

7400 Information available from the research and development study undertaken by the Southeastern Pennsylvania Economic Development Corporation suggests that for the private portion of the sector the sales were distributed 50% to federal government, 20% to industry, and 30% to own company. For educational institutions the proportions were approximately 83%, 6% and 11% respectively. It was assumed that all federal research not specifically noted in the demand analysis of local federal agencies was exported, that the general industry research was allocated 50% to the region, and finally that all internal research of any establishment was local. Appropriately weighting the private and educational segments of the sector yielded the estimate that 20.7% of the sector output was sold within the region.

7500 In the absence of regional sales data, the proportion of local sales for each constituent 3 digit SIC was estimated by the staff on the basis of the proportion of tourist sales and the type of operation. The weighted estimate indicated that approximately 92.7% of the sector output was sold locally.

7900 In the absence of regional sales data, the proportion of local sales for each constituent 3 digit SIC was estimated by the staff on the basis of the proportion of tourist sales and the type of operation. The weighted estimate indicated that approximately 93.3% of the sector output was sold locally.

8061 On the basis of information relating to residence of patients using the regional hospitals as reported in the Philadelphia-South Jersey Metropolitan Hospital Study by Alderson Associates, Inc., the local service proportion was estimated to be 94.8% of sector output.

8090   In the absence of regional service data, the proportion of local services were estimated to be approximately 97% of sector output in view of the basic local nature of medical services and the proportion noted above for hospital services.

8211   The export or import of elementary and secondary school services may be considered as the interchange of students in jointure (consolidated) school districts which cut across the regional boundaries, and nonresidents in private boarding schools. The local service proportion was estimated to be 98.5% of total sector output.

8220   Information relating to permanent residence of students enrolled in the institutions of higher education within the Pennsylvania portion of the SMSA compiled by the Greater Philadelphia Movement Study in 1966 indicated that 72% of the enrolled students came from within the Philadelphia SMSA. Assuming this proportion to hold for those institutions in the 3 New Jersey counties, and that greater expenditures by the educational institutions are required for non-local students in terms of housing, etc. a figure of 58% was used to represent the local service proportion of sector output.

8290   In the absence of regional data, and in view of the proportions estimated for RIS sectors 8211 and 8220 and the nature and size of the schools, the local service proportion for this sector was estimated to be approximately 90% of sector output.

8486   It is assumed that the output of the non-profit and related organizations is regional distributed identically with the spatial distribution of income to these organizations. Weighted sub-sector estimates of income sources indicate that approximately 93.9% of the income to the sector establishments came from within the region. Therefore, the local service proportion was estimated at 93.9% of sector output.

8800   In the absence of regional data, it was assumed that there was no export or import flow of domestic services performed in private households; therefore the local service proportion was 100% of sector output.

Chapter 17

Import and Unallocated

As noted in the previous chapter, the estimation of flows of goods and services across regional boundaries has constituted a major problem in most regional analyses. The information obtained from the study sample and other sources provided reasonable estimates with regard to the movement of goods and services _from_ the Philadelphia region _to_ the rest of the world.

The importation of goods and services _to_ the Philadelphia region _from_ the rest of the world were not as accurately measured by the survey due to the characteristics of the purchases. The vast number of purchasers of imports, many of whom purchase only small quantities of diverse items, make it extremely difficult to account accurately for import purchases. Too few import items were reported to justify the development of any procedure based solely on reported items.

The preliminary estimates which have been developed are indirect. They are based upon the fundamental concept that the supply of goods or services available within the region is equal to the demand for those goods or services within the region. The total regional demand for any good or service can be obtained by reading across the relevant row of a flows table:

(Intermediate Demand) ÷ (Personal Consumption) + (Capital Formation

Requirements) + (Federal Government Requirements) ÷ (Export) =

Total Demand[1]

The total supply of any good or service available to meet the above de-

fined demand can be obtained by summing the last two items in the rele-

vant row of a flows table:

(Regional Production) + (Imports) = Total Supply[1]

If all the required values in the above equations are specified

except for imports, estimate value of imports is determined residually.

It was by such a procedure that the imports were estimated.

The import estimates undoubtedly involve significant errors.

Clearly, any errors in estimating the magnitude of any of the items in

the above two equations will lead to an error in imports. (There of

course can be compensating errors.) In particular, we recognize that

the survey procedure pursued has led to serious under-estimation of

intermediate demands for a number of items. For example, an item such

as machine shop products is purchased, in general, in too small a quantity

to be reported by a survey questionnaire; hence the aggregate intermediate

demand for machine shop products (RIS 3591) is underreported. In a

number of cases, such underreporting was identified and relevant adjust-

ments were made. Undoubtedly many cases exist which were not identified.

In general, when the local sales of local producers exceeded total

local demand (excluding exports), such excess was assigned to the sector

"unallocated"; and it was the opinion of the study staff that this un-

allocated demand should be considered to accrue to the intermediate

---

[1] Although inventories may be significant sources of demand or supply
for goods within the region, the net inventory changes for the base
period were defined to be zero; hence they do not enter into the
calculations.

sectors. At the same time it was also decided to set arbitrarily at zero the level of imports for any commodity or service for which there was unallocated demand, except when sufficient data were available to determine reliably the import values. It is recognized that such an arbitrary convention understates imports and correspondingly the magnitude of the unallocated demand.

It is anticipated that a number of the unallocated demands now reported will be distributed to the appropriate sectors through review procedures being currently undertaken.

The sectors having unallocated demand are listed in Table 17-1.

Table 17 - 1

RIS Sector	Minimum Value ($)	Proportion of Total Local Demand
1411	611,362	.383343
1421	6,400,394	.436215
1509	237,044,587	.849141
1621	22,641,893	.367625
2026	20,276,892	.117050
2032	9,833,617	.330394
2042	5,328,020	.236555
2051	11,964,609	.096082
2269	3,215,802	.701648
2282	9,000,468	.652063
2291	1,104,307	.800222
2397	1,297,442	.835743
2442	337,991	.605068
2443	196,826	.302902
2445	778,293	.751974
2491	444,210	.223158
2541	145,502	.080286
2599	253,174	.234975
2641	1,111,911	.112582
2642	4,242,445	.637720
2653	58,862,462	.771818
2655	1,969,650	.501056
2711	95,767,620	.797921
2751	20,492,688	.321207
2752	13,188,999	.309907
2782	2,607,746	.357924
2791	1,145,769	.235767
2793	3,069,905	.345633
2794	2,619,091	.925166
2799	321,536	.544206
2813	2,594,111	.475716
2952	19,721	.038383
3121	383,187	.985082
3296	481,219	.159545
3341	3,082,829	.546133

RIS Sector	Minimum Value ($)	Proportion of Total Local Demand
3442	3,748,369	.412631
3444	6,430,882	.503048
3449	5,314,262	.375787
3471	2,389,509	.467703
3491	257,692	.018594
3493	1,085,773	.453928
3496	130,396	.372454
3565	1,840,446	.939386
3591	11,089,738	.649338
3721	1,656,668	.119037
3912	5,931	.245488
3953	504,662	.326148
3962	703,862	.659683
3987	172,828	.146524
4111	34,666,225	.364120
4121	14,812,601	.719512
4400	54,398,339	.352292
4500	14,729,114	.410446
4811	54,735,341	.205294
4890	58,296,262	.906840
4911	171,252,208	.801181
4920	52,142,220	.367491
4941	13,657,821	.346689
5014	22,234,998	.702730
5022	2,055,201	.180818
5028	16,802,045	.944105
5029	4,385,631	.659558
5032	1,980,971	.363474
5042	2,611,142	.261127
5044	2,370,567	.274168
5047	30,825	.002248
5049	8,868,648	.109948
5051	134,274	.824601
5062	36,139,867	.991016
5064	17,674,803	.558946
5065	4,026,384	.960107
5072	13,784,952	.717966
5074	16,645,905	.959437
5077	970,958	.095171
5082	40,595,495	.390088
5083	395,130	.150262
5086	7,095,470	.621120
5087	3,623,022	.577664
5091	169,634,885	.934365
5092	31,513,040	.533936

RIS Sector	Minimum Value ($)	Proportion of Total Local Demand
5093	1,945,214	1.000000
5099	189,251,488	.582020
5521	432,976	.048403
6011	2,635,964	.846441
6020	102,679,370	.344411
6030	94,568,055	.669056
6190	67,592,774	.754766
6200	47,530,348	.850861
7301	385,906,849	.702881
7500	20,495,282	.180118
7900	14,218,481	.146948
8061	6,616,364	.040160
8211	296,022,009	.851099
8220	9,813,255	.133839
8486	18,505,785	.086054
	$2,708,839,139	