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PRODUCTIVITY MEASURES FOR THE
TRANSPORTATION INDUSTRY,

A Research Report of the Office of Productivity
and Technology, Bureau of Labor Statistics,
U.S. Department of Labor, Prepared for the
" U.S. Department of Transportation

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Introduction

Measuring productivity change is one way to determine whether resources are being used efficiently. If output per man-hour is increasing, then more goods are being produced per unit of labor input and the economy is potentially richer. Thus, knowledge of the degree and direction of productivity movements is essential for those responsible for encouraging economic growth.

Industry productivity measures have several valuable uses. By combining these measures with other industry data, one can study the effects of changes in manpower utilization, project future manpower requirements, analyze trends in labor costs, compare productivity progress among countries, and examine the impact of technological improvements on employment.

The measures presented in this report relate output to one input--man-hours. They do not measure the specific contribution of labor, capital, or any other single factor. Rather, they reflect the joint effect of a number of interrelated influences such as changes in technology, capital investment per worker, capacity utilization, layout and flow of operations, skill and effort of the work force, managerial ability, and labor-management relations.

These measures are subject to certain limitations. Because of the difficulties of measuring quality change, of maintaining consistent coverage between output and labor input, of reflecting changes in the degree of plant integration and specialization, and other statistical limitations, productivity indexes should be regarded as general rather than specific indications of output per man-hour movements.

The original intention of this report had been to construct measures of productivity for the various types of privately owned for-hire carriers¹ which provide the transportation and services² included in the Standard Industrial Classification Manual under Major Groups 40-47.³ These Groups include the 5 major modes of transportation: water, railroad, pipeline, motor vehicle, and air, and transportation services such as freight forwarding, warehousing and storage, and terminal services. The indexes also would have been combined into a productivity measure for total transportation.

¹ A privately owned for-hire carrier is any carrier except those government owned that carry freight or passengers or provide transportation services for compensation.

² Transportation services are also provided by persons and households for their own use, by other private enterprises in the form of ancillary service or intermediate product, and by governments for both their own use and for hire. None of these types of transportation services are included in the study.

³ The SIC definitions of the industries in Major Groups 40-47 are shown in Appendix A. The relative importance of each group is shown in Appendix A, part II.

Data to construct valid productivity measures for all types of carriers and to combine these measures into one for total transportation are not available. The usual source of total data for an industry is economic censuses taken at intervals over a period of time. The Census of Transportation was published only for 1963. Except for motor carriers, it does not have total figures for the various types of carriers. In fact for several types of carriers, practically no data are given.

The only transportation data that permit the construction of reasonably consistent productivity measures are those data available from the Interstate Commerce Commission (ICC). Most of these data are published annually by the ICC in Transport Statistics in the United States. Therefore, the scope of this report is limited to the measurement of output per man-hour of for-hire carriers regulated by the Interstate Commerce Commission.

Every effort was made to construct measures which are conceptually consistent with the measures the Bureau of Labor Statistics publishes in Indexes of Output per Man-Hour, Selected Industries. For this reason 1947, 1954, 1958 and 1963 were used as years for base weighting. Whenever possible, 1957-59=100 is the index base. The transportation series do not all begin in 1947, either because data were not available or because the data for the earlier years were not strictly comparable with later years. The major departure from the BLS concept was that ICC definitions based on the Interstate Commerce Act were used rather than the SIC definitions for Selected Industries.

The Interstate Commerce Act was first called the Act to Regulate Commerce and was approved in 1887. This act established the Federal regulation of railroads and set up the Interstate Commerce Commission. The purpose of the act was to provide for safe, adequate, economical transportation at reasonable cost. This act has been amended many times and since 1920 has been known as the Interstate Commerce Act. Amendments brought other modes of transportation--motor carriers, water carriers, pipelines, etc., and other transportation services--under Federal regulation. Airlines are regulated by a supplementary act, the Civil Aeronautics Act. Some interstate common carriers have been exempted from Federal regulation. These carriers include school buses, taxis, and some bulk water carriers.⁴

The Interstate Commerce Act also gives the ICC the authority to inquire into the business of all common carriers subject to regulation. This part of the act is the basis for the reports the carriers file with ICC. All carriers of a given type are subject to the same regulations, but the carriers may be divided into different classes and subject to different ICC reporting rules. The ICC often divides the types of carriers into classes based on the average annual revenue of the carrier. The relation of the ICC definitions and classes to the SIC is shown in Appendix B, parts II and III.

⁴ Definitions of carriers and exemptions may be found in the Interstate Commerce Act. These definitions and exemptions may be found in Appendix B, part I.

In some instances, the ICC definitions differ from the SIC definitions in that the ICC is concerned with only that part of the transportation carriers which are subject to ICC regulation.

The report includes an analysis of the data problems, recommendations for better data, and improvements which could be made in the indexes if more time and resources were available. There are detailed technical notes with each series which describe the data sources and statistical techniques utilized.

OUTPUT

The conventional measure of output of the transportation industry is a unit of commodity moved one mile. For freight, this is usually a ton of goods moved one mile -- or a ton mile. For passengers, it is a passenger moved one mile or a passenger mile. These are the units used to construct the transportation output indexes. The exception is petroleum where barrel miles rather than ton miles of petroleum are used. When carriers use different methods of movement for different commodities, it may be more accurate to weight the commodities together rather than to simply aggregate them. Of course, the ideal weight would be man-hours per unit mile. In reality, these are not available and in an attempt to reflect man-hour weights, revenue per unit mile or compensation per unit mile are used. For freight forwarders, we departed from this concept and used the tons of goods received as the measure of output.

INPUT

For most of the BLS Selected Industries study, 6 input indexes are constructed: all employees, production workers, nonproduction workers, all employee man-hours, production worker man-hours and nonproduction worker man-hours. For most nonmanufacturing industries, nonsupervisory and supervisory workers are substituted for production and nonproduction workers, respectively.

The ICC usually published all employees, and for some carriers supervisory and nonsupervisory employment and nonsupervisory man-hours are available. Because these data are not available for every type of carrier, all of the input indexes could not be constructed. The input indexes were constructed in the usual manner using 1957-58=100 as a base where possible.

Except for railroads, indexes for all employee man-hours and supervisory man-hours are not available for the various types of carriers. In the manufacturing industries indexes in Selected Industries, BLS estimates of nonproduction worker man-hours are used. However, BLS does not make estimates for the nonmanufacturing industries. The data for railroad supervisory man-hours are published by the ICC.

PROBLEMS

Except for the productivity series for railroads and for airlines,⁵ We cannot give whole-hearted endorsement to these series. There are many questions as to the accuracy, consistency and completeness of

⁵ The productivity indexes for Class I railroads and for scheduled airlines are currently published by the BLS as a part of Selected Industries.

the published data available. Some data are collected but not published and, in many cases, the data necessary to construct meaningful productivity indexes are not even collected.

In computing the indexes, much time was spent in checking irregularities in the data. Several mistakes were found early in the study so that major irregularities were first treated as though a mistake existed. The mistakes found included the transposition of digits, numbers published in the wrong column, and the left-most digit dropped.

In some places the irregularities were caused not by mistakes in the data but in unexplained reclassifications of individual carriers from one type of carrier to another. If, as happened in one instance, the carrier is the largest in the group, the effect can be drastic.

Changes in definitions of class sizes and local and intercity carriers also presented problems. Because of these changes, series could not always be constructed from 1947 forward but had to start at whatever point a consistent series could begin.

The definitions themselves presented some problem. Because they are based on average revenue, a carrier may easily move between classes. Since all the data are not published for each carrier class, the series could not be linked and may, therefore, show some fluctuations which are not real.

RECOMMENDATIONS

Specific recommendations for improvement of the data and indexes are given in the notes for each type of carrier but there are many recommendations which apply to almost all the carriers and are so important that they bear stating here.

(1) The data on ICC regulated carriers should be more carefully tabulated and edited so that for economic analysis, the data are internally consistent and continuous series can be derived either directly or by linking.

(2) A Census of Transportation which shows the universe of transportation industries as defined by the SIC is needed. This Census should show supervisory and nonsupervisory, employment, nonsupervisory man-hours, payroll, ton miles and revenue of goods moved, revenue of other transportation services, etc.

(3) Wholesale price indexes for the transportation and services of the various types of carriers would be useful to construct deflated value indexes to use as a comparison with the physical output indexes.

(4) Supervisory and nonsupervisory, employment and nonsupervisory man-hours should be collected and published for all ICC regulated carriers.

(5) Passenger miles by type of service and freight ton miles by commodities should be collected and published for all ICC regulated carriers.

TECHNICAL NOTES

Motor Carriers of Passengers

This study covers the ICC Class I motor carriers of passengers from 1954 to the present. Class I is defined as those carriers regulated by the ICC that have a 3-year average operating revenue of \$ 200,000 or more.

The ICC divides Class I into two types of carriers: local and intercity. From 1954 to 1965, the ICC defined local carriers as those carriers whose average revenue per passenger was \$.20 or less. This definition was modified by the fact that the ICC also used the carriers own determination as to whether it was a local or intercity carrier. In 1965, the ICC changed the definition of local carriers to be those carriers who derive 50 percent or more of their revenue from local service. Under both definitions, any carrier that is not a local carrier is an intercity carrier. Local service is defined as transportation performed within a city or town including suburban areas contiguous thereto.

The operations of both local and intercity carriers are divided into 3 types of service: intercity, charter and local. Any carrier, no matter whether it is classified as a local or intercity carrier, can engage in one, two or all three types of service.

METHODOLOGY

Output

Output indexes for each of the 3 types of service - intercity, charter and local - were constructed. These 3 indexes were then combined into 1 output index for Class I local and intercity motor carriers of passengers. The weights used to combine the type of service indexes into the total

index are the ratios of passenger revenue of each type of service to the total operating revenue of Class I local and intercity carriers. The weights are base weights for the years 1954, 1958 and 1963. The index is then linked together to form a continuous series.

Intercity Service

The output index for intercity service is based on the unweighted intercity passenger miles published by the ICC in Transport Statistics in the United States, Part 7, Motor Carriers. A discrepancy between the 1961 and 1962 passenger miles data and the redefinition between the 1964 and 1965 data necessitated using a linking procedure for these two periods. The linking was done so that the index would be consistent from 1954 forward. The percent change of intercity passenger bus miles from 1961 to 1962 and from 1964 to 1965 were used in these two instances to move the indexes in place of passenger miles.

Charter Service

The output index for charter service is constructed from bus miles for intercity and for local charter service. The data are from the ICC annual issue of Statement Q 750, Revenue, Expenses, Other Income and Statistics of Class I, Motor Carriers of Passengers. Base year revenue per bus mile weights were used to weight the intercity and local service together. Statement Q 750 publishes the more recent year and the preceding year on each sheet. The two years published together are comparable. Because of classification problems, these comparable years rather than the latest data for each year were used. The indexes were then linked each year to form a continuous series.

Local Service

The output index is based on the deflated revenue derived from local service of both local and intercity carriers. The local revenues for the 2 types of carriers were added together. The ICC publish these revenue data in Transport Statistics in the United States, Part 7, Motor Carriers. The total local revenue was then deflated by the Consumer Price Index (CPI) for local transit for each year. The deflated revenue was then indexed. The CPI indexes for local transit were rebased to 1954, 1958 and 1963 equals 100 and the deflated revenues were indexed to the same bases, to facilitate the combining of the local service index with the intercity service and charter service indexes.

Input

The input indexes for Class I local and intercity motor carriers of passengers were constructed from data published by the ICC in Transport Statistics in the United States, Part 7, Motor Carriers, from 1954 to the present. Four input indexes were developed: all employees, supervisory employees, nonsupervisory employees, and nonsupervisory man-hours. Supervisory man-hours are not available; therefore, indexes for supervisory man-hours and all employee man-hours were not constructed. The indexes were calculated in the usual manner using 1957-59=100 as the base.

EVALUATION

Output Data

Definitional problems and a large error found in the published data have led to questioning of the validity of the ICC data as currently published. It is also probable that there are errors other than the one found in the data. The error was an understatement of the 1960 passenger miles by 1 billion. By correcting the error, the index rather than declining 9 percent between 1959 and 1960, rose 1 percent.

The system used to classify carriers as either intercity or local carriers has resulted in some inconsistencies in the ICC published data. The use of an average revenue per passenger of \$.20 or less from 1957 to 1964 as the criteria to determine whether or not a carrier was local or intercity meant a carrier could be reclassified as a result of a fare increase instead of as the result of a change in operations. Definition of a local carrier was changed in 1965. ICC still uses a carrier's own determination of where it belongs. Therefore, changes in classification can be made without a corresponding change in operations.

In the Transport Statistics, revisions to prior years data because of reclassifications are not shown. To obtain consistent data, the reports filed annually by the carriers would have to be retabulated.

The charter index was affected by this movement of carriers between local and first class. This necessitated using the series published on the Q750 statements rather than Transport Statistics in the United States, Part 7.

The index for intercity service was also affected by the somewhat arbitrary moving of carriers between local and intercity service. Intercity passenger miles are collected for both intercity and local service but are published only for intercity. The adjustments made for the 1962 index was primarily the result of moving Public Service Coordinated Transport Company from local to intercity service in 1962. The 1965 adjustment was made because of the 1965 redefinition. The passenger miles are not published by carrier so that the adjustment could not be made on a carrier-by-carrier basis.

The index probably contains the effects of other shifts which were not adjusted for. Time did not permit going through each year on a carrier-by-carrier basis to determine whether or not they were classified in the same type of service each year.

Output Methodology

The problems with the output for intercity service are data problems and not methodology. The use of passenger miles to measure output for intercity service is an accepted procedure.

Passenger miles for charter service are not available. Bus miles traveled in charter service were used instead. Charter buses probably are filled with practicable loads to make it feasible to charter a bus. Therefore, we feel that bus miles are a meaningful measure of the output. The charter bus miles for intercity and local were weighted together rather than merely aggregated because there would seem to be a man-hours difference between a bus mile on the highway and a bus mile around the city. Average charter trips for carriers engaged in intercity service

are longer and the revenue per bus mile is less than charter trips by those carriers engaged in local and intercity service. Changes in the average size of buses could cause biases in the index for charter bus service. Some investigation into this problem has led us to believe it is not a serious problem.

While we feel the methodology gives a reasonable measure of output, the inconsistency of the ICC published data forbids a whole-hearted endorsement of these series. We attempted to minimize year-to-year inconsistencies by using the data published in Statement Q750. Local and intercity charter bus miles are still published wrong using this approach. The only way to correct these errors would be to retabulate the data on a carrier-by-carrier basis for each year.

Passenger mile data are not available for local service. The deflated revenue used as the output index for local service may not accurately reflect the output of ICC regulated local service. The local transit CPI is based on fares collected by urban transit systems within cities. The majority of the local service regulated by the ICC is suburban service. Many of the carriers included in the CPI sample are municipally owned and subsidized. Therefore, their fare structure may not be comparable to the fare structure of the privately owned suburban carriers. The ICC regulated carriers are privately owned. The methodology used is the best estimate available at the present time.

Input

There seem to be no problems with either the data or the methodology used to construct the input indexes. The methodology used except for the estimated all employee man-hours is the conventional one used to construct input indexes. The estimates for all employee man-hours is reasonable. Nonsupervisory employment comprises about 90 percent of total employment. Therefore, total man-hours can be expected to move similarly to nonsupervisory man-hours.

RECOMMENDATIONS

(1) Passenger miles for intercity service should be published for local carriers as well as intercity carriers since both are collected.

(2) Passenger miles, bus miles, revenue, employment, etc., should be published for Class II and III passenger carriers. These data are currently collected by the ICC.

(3) Employment and man-hours by type of service -- local, charter, and intercity -- should be collected and published.

(4) Definitions of local and intercity should be established which have more economic usefulness.

(5) If there is a need for change in definition, the data should be published on both the old and new definition for one year.

(6) A count of the "leased drivers" is needed.

(7) Price indexes of fares for intercity and privately owned local service are needed so that a deflated value output index could be developed for comparison. The price index would be useful to others as well.

BACKGROUND NOTES

Much of the ground transportation of persons by common carrier other than railroads is by non regulated local service. For this reason we attempted to measure the output of these local carriers. Then data used are published by the American Transit Association (ATA) in The Transit Fact Book. A deflated revenue index was constructed using the Consumer Price Index for local transit as the deflator. The revenue was for both municipally and privately owned local transit. Our interest is in private systems. Municipal and private systems can not be separated because of the change from private to municipal ownership of local transit systems. Any separated series that was not adjusted for the ownership changes would have serious inconsistencies.

The local transit CHI is heavily weighted toward municipal ownership. Because of subsidies of municipal systems which may not be priced in the CHI, this price index may not be an accurate measure for privately owned systems.

No employment series for private local motor carriers of passengers is available. ATA employment includes both public and private systems. BLS employment series includes only the private systems and such things as airport service and suburban railroads which are not included in the output.

Comparison with OBE

The OBE output index attempts to measure all ground services movement of passengers other than railroads. Their index includes all local and intercity service and taxi cabs. ICC intercity passenger miles are used for intercity. Revenue of local private transit firms is deflated for the local portion. No adjustment is made for the change from local to municipal ownership. Taxi service is also measured by deflated revenue.

Comparison with Kendrick

Kendrick does two output measures. One for intercity which is computed from passenger miles data based on ICC data but published by the National Association of Bus Owners. He does not make adjustment for changes in definition of local and intercity. The employment is derived from a number of sources some of which are based on ICC data. There is no reason for not using the published ICC data.

Kendrick constructed an output indexes of local revenue passengers carried or privately owned carriers based on data from the American Transit Association and for passenger miles and freight car miles of electric railroads. He then weighted them by their revenue in one output index. Neither index is adjusted for the many changes. The local transit index is not adjusted for the change from private to public ownership. The Electric railroad index is not adjusted for changes from Electric railroad to Class 11 railroad, or for the railroads that have ceased to do business.

We did not feel that there was sufficient data to construct output and input indexes for local transit.

Class I Local and Intercity Motor Carriers of Passengers
Indexes of Output All Employees, All Employee Man-Hours, Output
per All Employee and Output Per All Employee Man-Hour

Year	Output	All Employees	All Employee Man-Hours	Output Per All Employee	Output Per All Employee Man-Hours
1954...	107.1	111.6	113.9	96.0	94.0
1955...	104.7	106.2	107.7	98.6	97.2
1956...	104.5	104.1	105.3	100.4	99.2
1957...	104.5	104.3	105.3	100.2	99.2
1958...	98.4	99.3	98.8	99.1	99.6
1959...	97.1	96.4	95.9	100.7	101.3
1960...	98.0	98.3	98.7	99.7	99.3
1961...	101.0	99.5	99.0	101.5	102.0
1962...	103.5	100.7	101.4	102.8	102.1
1963...	104.0	100.9	100.0	103.1	104.0
1964...	109.5	103.7	103.3	105.6	105.0
1965...	111.5	104.1	103.2	107.1	108.0
1966...	115.8	106.5	105.3	108.7	110.0
1967...	114.4	110.2	109.9	103.8	104.1
1968...	110.4	108.7	108.6	101.6	101.7

Source: Unpublished indexes Bureau of Labor Statistics, U.S.
Department of Labor. Based on data from the Interstate Commerce
Commission.

Class I Local and Intercity Motor Carriers of Passengers
Indexes of Output, Nonsupervisory Employees, Nonsupervisory Man-Hours
Output per Nonsupervisory Employer and Output per Nonsupervisory Man-Hours

(1957-59=100)

Year	Output	Non-supervisory Employees	Non-supervisory Employee Man-Hours	Output per Non-supervisory Employee	Output per Non-supervisory Man-Hour
1954...	107.1	111.6	113.9	96.0	94.0
1955...	104.7	105.9	107.4	98.9	97.5
1956...	104.5	104.2	105.4	100.3	99.1
1957...	104.5	104.6	105.6	99.9	99.0
1958...	98.4	99.5	99.0	98.9	99.4
1959...	97.1	95.9	95.4	101.3	101.8
1960...	98.0	97.7	98.0	100.3	100.0
1961...	101.0	98.8	98.4	102.2	102.6
1962...	103.5	100.3	100.9	103.2	102.6
1963...	104.0	100.3	99.5	103.7	104.5
1964...	109.5	103.1	102.6	106.2	106.7
1965...	111.5	103.3	102.4	107.9	108.9
1966...	115.8	105.9	104.6	109.3	110.7
1967...	114.4	109.5	109.2	104.5	104.8
1968...	110.4	108.1	108.0	102.1	102.2

Source: Unpublished indexes Bureau of Labor Statistics, U.S. Department of Labor. Based on data from the Interstate Commerce Commission.

Class I Local and Intercity Motor Carriers of Passengers
Indexes of Output, Supervisory Employees and Output per
Supervisory Employee

(1957-59=100)

Year	Output	Supervisory Employees	Output per Supervisory Employer
1954.....	107.1	112.1	95.5
1955.....	104.7	109.9	95.3
1956.....	104.5	103.3	101.2
1957.....	104.5	101.0	103.5
1958.....	98.4	97.1	101.3
1959.....	97.1	101.8	95.4
1960.....	98.0	105.6	92.8
1961.....	101.0	106.7	94.7
1962.....	103.5	105.9	97.7
1963.....	104.0	107.1	97.1
1964.....	109.5	111.0	98.6
1965.....	111.5	112.8	98.8
1966.....	115.8	113.9	101.7
1967.....	114.4	118.4	96.6
1968.....	110.4	116.2	95.0

Source: Unpublished indexes Bureau of Labor Statistics, U.S.
Department of Labor. Based on data from the Interstate Commerce
Commission.

Motor Carriers of Property

This study covers the ICC Class I intercity motor carriers of property from 1954 to 1956 and Class I and II intercity motor carriers of property after 1956. These are subdivided into Common Carriers of General Freight, Common Carriers of Other than General Freight and Contract Carriers. From 1957 forward, Class I and II are comparable to the old Class I. Prior to 1957, Class I was defined as those carriers having a 3-year annual average increase of \$ 200,000 or more. In 1957, Class I was redefined as those carriers having a 3-year average annual revenue of \$1 million or more and Class II from \$200,000 to \$1,000,000. Class I and II local motor carriers of property are excluded because of the absence of output data.

METHODOLOGY

Output

The output index was constructed using ton-miles for Class I intercity motor carriers of property from 1954 to 1957 and ton-miles for Class I and II intercity motor carriers of property thereafter. All data are published in Transport Statistics in the U.S., Part 7, Motor Carriers. The ton-miles were divided into three groups: General freight, other than general freight, and contract. Class I and II carriers were combined after 1956. The ton-miles were weighted together by revenue per thousand ton-miles. Weights used were for 1954, 1958, and 1963. The indexes were linked in these years to form a comparable series.

Input

The all employees index was constructed in the usual manner with 1957 - 59 = 100 used as the base period. The employment data are based on the average annual employment of the ICC Class I intercity carriers from 1954 to 1956 and Class I and II from 1957 forward. These data are also published in Transport Statistics in the U.S., Part 7, Motor Carriers.

EVALUATION

Output Data

The intercity ton-miles data used to construct the indexes are supposed to be reported by all Class I and II carriers. In reality, ton-miles for about 98 percent of the total intercity freight revenue are reported. The small amount of nonreported ton-miles, since it appears to remain stable from year to year, does not affect the validity of the indexes.

However, more serious data problems do exist. In 1964, there were two large discrepancies in the revenue data of companies reporting ton-miles for Class I common carriers engaged in intercity service as published in Transport Statistics of the U.S., part 7. The discrepancies were caused by transposition in the revenue figures for two regions. While these discrepancies had no effect on the indexes, the fact that such errors do exist casts doubt on the accuracy of the other data. Another problem is the noncomparability of data as a result of changes in definition. In 1965, the definition of a local carrier was changed from those having 25 percent or more of their revenue from

local carriage to those having 50 percent or more of their revenue in local carriage. This change resulted in a large number of companies being counted as intercity carriers for the first time with a corresponding increase in intercity ton-miles. These ton-miles had been previously reported by the carriers but not published by ICC. The ICC also stated that they feel many of the smaller carriers do not accurately calculate their ton-miles data.

Input Data

The input data are for all Class I and II intercity carriers, not only those reporting ton-miles, but since those reporting ton-miles are such a high percentage there is no serious discrepancy. There may, however, be a serious understating of employment. The output of vehicles rented with drivers is counted in the output but the drivers are not in the input of the company renting the vehicles. Most of these vehicles are leased from companies set up to only lease vehicles back to a "parent" company. These leases are long-term agreements usually covering the useful life of the vehicles. It may be possible to add the number of vehicles leased with drivers to the published employment figure and arrive at a better employment estimate.

The uncounted employees could be one-tenth of total employment and a larger percent of nonsupervisory. For this reason, no attempt to develop indexes for supervisory employees, nonsupervisory employees and nonsupervisory man-hours was made.

Two other problems were found, one in 1965 data and one in 1968. While adjustment could be made for both problems, the need for closer editing and better year-to-year consistency in the data is shown.

For 1965, employment data for 13 companies with over \$5,000,000 annual revenue were not published in the Transport Statistics. These data were obtained from the company reports and added to the published employment figure. Because company data are published only for those companies with average annual revenue of over \$5,000,000, there is no way of knowing whether or not other companies were missed.

In 1968, United Parcel Service data were included in intercity carriers for the first time when the company was reclassified from local to intercity service. However, a large portion of United Parcel Service business is in local service which is not measured in the output index. Because of the large number of employees involved in local service, the increase in the input index was larger than the corresponding increase in output. To present a more consistent series, both the input and output were adjusted to exclude United Parcel Service for 1968. Further study is necessary to ascertain the best method of linking in data for United Parcel Service in future years.

Output Methodology

The basic concept used in constructing the output index is an accepted one. Man-hours per ton mile rather than revenue per ton mile as weights, of course, would give a more accurate output index. Another improvement in the index would be to have household movers data separate from the other than general freight category. Most of the man-hours difference

in moving various commodities are the result of loading and unloading rather than over the road movement. Except for household goods, the other than general freight carriers often use sepcialized carriers which probably takes a minimum of man-hours to load and unload. Household goods are loaded and unloaded by hand.

Input Methodology

The methodology used to construct the all employee index was the conventional one used in input index construction. The input index needs an adjustment for the drivers leased with vehicles. Until this adjustment is made, separate supervisory employees, nonsupervisory employees and nonsupervisory employee man-hours indexes cannot be developed.

RECOMMENDATIONS

- (1) Intercity ton miles should be published as Class I and II local carriers as well as intercity carriers.
- (2) Supervisory and nonsupervisory employment and nonsupervisory man-hours should be published for all classes; not just Class I general freight.
- (3) Ton miles and employment for Class III should be published.

(4) Definitions of local and intercity should be established which have more economic usefulness.

(5) When definitions or class limits are changed, data for both the old and new definitions or limits should be published for one year so that a continuous series could be maintained.

(6) A more complete input count to include persons hired with vehicles is needed. Currently an adjustment of the input for "leased drivers" is needed.

(7) Publish ton-miles by type of carrier, i.e., general freight, household goods, motor vehicles, liquid petroleum products, etc. These data currently are collected by ICC.

(8) Further study into the different man-hour requirements of the various types of carriers lumped into other than general freight.

(9) A price index of freight rates are needed so that a deflated value output index could be developed for comparison. The price index would be useful to others as well.

BACKGROUND NOTES

Attempts were made to use more detail on the motor carriers of property output index. Trinc Associates publish ICC detailed data by type of carrier for general freight, automobile transport, household goods, petroleum carrier, and others from 1958 to 1968. In 1964, they started publishing detail for refrigerated products and agricultural products also. So many errors were found in these data that the approach was not feasible.

A straight ton miles index and an index using revenue per ton miles were calculated. These do not vary a great deal from our suggested series primarily because common carriers of general freight are such a large proportion of the total.

Comparison with Kendrick

The indexes calculated for this study were comparable with the indexes done for the Kendrick transportation study, GNP series. Each uses a different method and trends are in the same direction but the rates of increase are different.

Kendrick constructed ton miles figures from data published in American Trucking Trends published by the American Trucking Association. The American Trucking Association derived their data from the ICC data. There is no reason to use the constructed data rather than the published ton miles.

Kendrick used the same source for employment. The employment data are also an estimated series taking average employees per carrier times the number of carriers. Again total employment is published by ICC and there is no reason not to use it. Kendrick's figure does not make any adjustment for "leased drivers." The BLS data Kendrick used to obtain a man-hour series include average man-hours non-regulated trucking and warehousing as well as regulated trucking. The man-hours for nonregulated trucking and warehousing probably behave differently than the man-hours for regulated trucking. The employment of ICC regulated carriers is less than 50 percent of the BLS series.

Comparison with OBE

The OBE deflates the gross product originating for motor freight transportation to obtain their output measure. They include unregulated intercity traffic, local traffic and warehousing in the gross revenue. The deflator is the average revenue per ton mile, of Class I carriers. The differences between their index and ours are not extreme even though the BLS output includes only about 50 percent of the OBE.

Motor Carriers of Property - Class I and Class II
Indexes of Output, All Employees, and Output per All Employee

1957-59=100

Year	Output	All Employees	Output per all Employee
1954....	76.3	83.4	91.5
1955....	87.9	91.2	96.4
1956....	91.1	94.8	96.1
1957....	94.4	99.0	95.4
1958....	95.5	95.8	99.7
1959....	110.1	105.2	104.7
1960....	109.8	107.0	102.6
1961....	110.9	105.4	105.2
1962....	118.2	110.7	106.8
1963....	124.9	112.8	110.7
1964....	133.2	116.4	114.4
1965....	149.2	120.7	123.6
1966....	170.5	133.1	128.1
1967....	165.9	133.8	124.0
1968 ¹	184.6	141.0	130.9

¹ Preliminary.

Source: Unpublished indexes Bureau of Labor Statistics, U.S. Department of Labor. Based on data from the Interstate Commerce Commission.

Petroleum Pipelines

This study covers the ICC regulated petroleum pipelines from 1947 to the present. These are subdivided into 3 types of pipelines: gathering lines, which are primarily used to move crude petroleum from the oil well to refineries; crude trunk lines, which are used to move crude petroleum to refineries or distribution centers; and refined product trunk lines, which move refined petroleum products from refineries to distribution centers. The gathering lines are not as closely regulated by the ICC as the crude and product trunk lines.

Natural gas pipelines and pipeline carrying products other than petroleum are not included in this study. Natural gas pipelines are regulated by the Federal Power Commission and are considered a part of Gas and Electric Utilities (SIC 491, 492, and 493).¹ While products other than petroleum move through pipelines, none of them currently move in pipelines which are classified as interstate common carriers.

¹ Natural gas pipelines are included as a part of the BLS productivity series for Gas and Electric Utilities. The basic methodology is published in Indexes of Output per Man-Hour, Gas and Electric Utilities Industry, 1932-62, April 1964. The current data are published in Indexes of Output per Man-Hour, Selected Industries, 1939 and 1947-68, December 1969. Bulletin 1652.

METHODOLOGY

Output

The output index for regulated pipelines starts in 1947 and is based on barrel miles of trunk lines data published by the ICC. From 1947 to 1953, these data are published in the Statistics of Railway in the United States. Starting with 1954, the data are published in Transport Statistics in the United States, Part 6, Oil Pipelines. The index is calculated by aggregating barrel miles of crude and product lines and indexing the aggregate on a 1957-59=100 base. The output of gathering lines is assumed to move like the output of trunk lines.

Input

The only consistent employment data published by the ICC are for all employees. The data are published in Transport Statistics in the United States, Part 6, Oil Pipelines, from 1954 forward. Prior to 1954, the data are available in the Statistics of Railroads in the United States. The all employee index was constructed in the usual manner using 1957-59=100 as the base.

An index for all employee man-hours from 1958 to the present was estimated. The index uses the BLS average weekly hours for nonsupervisory employees times the ICC data for all employees and indexing the results. The ICC does not collect man-hours data for pipelines.

EVALUATION

Output Data

The data used in the construction of the output index appear acceptable in that the series moves as expected and no errors were found. However, an error was found in evaluating the data for gathering lines. In the 1965 Transport Statistics, Part 6, revenue figures for one company were placed in the wrong category. The revenue for trunk lines was published as gathering line services and the revenue for delivery was published as trunk line revenue.

Output Methodology

The output index, as shown, is a reasonable measure of the output of trunk lines. The barrel miles data for crude trunk lines and product trunk lines are published separately in Transport Statistics, Part 6.

These data were aggregated rather than weighted together because investigation failed to show any significant difference in the man-hour requirements of crude trunk lines versus the man-hour requirements of product trunk lines.

The pipe valves and pumping equipment are basically alike for both crude and product trunk lines; therefore, crude and products can be moved through the same pipeline. Using the same pipeline is not a common practice because the destinations of crude and products are usually different, and products often tolerate less mixing than crude.

The operations of crude and product pipelines differ slightly. Crude pipelines need to be scraped to remove paraffin deposits while in product pipelines, batching and interfacing are done to keep the products from mixing. However, according to the pipeline specialist at the Department of Interior, Bureau of Mines, these operational differences do not result in differences in the man-hour requirements.

The diameter of the pipe may have some effect on the man-hour requirements. There is less friction in a larger pipe and, therefore, less horsepower per barrel mile is required. Consequently, slightly fewer man-hours per barrel miles may be needed. Not enough is known to make an evaluation of whether or not the difference in diameter is important. No data on barrel miles by diameter are available.

The output for gathering lines is assumed to move like the output for trunk lines. This assumption is made by the ICC to estimate total ton miles of petroleum moved for the ICC Annual Report. It is based on the results of a study done by the ICC some time ago. BLS feels that further study to measure the output of gathering lines should be undertaken in light of the new technology and larger pipes being used for trunk lines.

Input

The ICC data for all employees appear to be correct. The index declines as expected in light of technological advances. The methodology used to construct the all employee index was the conventional one used in input index construction.

The estimate of all employee man-hours is the best available with the existing data. ICC employment is over 86 percent of BLS employment. In the BLS data, the nonsupervisory employment constitutes about 85 percent of the total employment. The average weekly hours have varied little since 1958.

RECOMMENDATIONS

(1) Data on barrel miles moving through gathering lines should be collected. If barrel miles cannot be obtained, then the data on number of barrels received into the system and delivered out of the system on gathering lines should be published. These data are already collected. With these data, an adjustment for output gathering lines could be made.

(2) Some further investigation of unit man-hour requirements might be made. This investigation should study any man-hours, differences between crude and refined lines, trunk and gathering lines, and also the effect of varying pipe diameters. However, since pipelines are a relatively small sector of the transportation industry and since these differences seem to be minimal, this investigation would have a low priority.

(3) If a sizable difference in man-hour requirements for different diameter pipe exists, then data on barrel miles moved by diameter of pipe should be collected.

(4) Data should be collected separately for supervisory and non-supervisory employees and on man-hours for nonsupervisory employees.

(5) A price index of rates should be calculated so that a deflated value series could be constructed.

BACKGROUND NOTES

Pipelines, N.E.C.

Pipelines, n.e.c. (SIC 4619) are not included in the indexes because currently no non-petroleum pipelines are classified as common carriers. While pipelines which could be classified in this SIC do exist, they are not run as common carriers but are typically used by a company to transport its own goods. The longest of these lines is 72 miles long between Bonanza, Utah, and Grand Junction, Colorado, and transports an estimated 18 million tons of gilsonite a year in the form of slurry.

Many products other than gilsonite could fall in the n.e.c. category. The most common is probably slurry, or a mixture of water and solid usually in small pieces and equal weights of each. The usual slurry is coal and water although slurries of water and nickel, copper, copper concentrates, borax, limestone, clay, phosphate rock, or sand and gravel also are moved. Some of the other products moving through pipelines are molten sulfur and liquid ammonia.

Comparison with Kendrick

The output index for pipelines differs from the output index constructed for the Kendrick study because of the estimate for gathering lines used by Kendrick. He assumed proportionately in depreciation and amortization between gathering lines and trunk lines. We feel that this assumption may not be valid. Even if the assumption is valid, it is not relevant to man-hours. Gathering lines are smaller than trunk lines (averaging 4 inches in diameter compared with trunk line average

diameter of 11 inches). They are laid on top of the ground rather than buried as trunk lines are. Gathering lines can be abandoned or moved without ICC permission, trunk lines cannot. Also, different companies use different depreciation schedules. Without additional knowledge, we used the ICC assumption that the output of gathering lines move like the output of trunk lines.

The conversion factors used by Kendrick were the ones published by Barger in 1951. More recent factors are available in the American Petroleum Institute publication Petroleum Facts and Figures. We feel that there is no reason to convert to ton miles.

Comparison with OBE

According to OBE, their output for oil pipelines is measured by "the ton miles of crude and refined oil flowing through trunk and gathering lines" (Transport Statistics in the United States, Part 6, of the ICC). What is used, in fact, is the ton miles for pipelines which include the ICC estimates of gathering lines and nonregulated pipelines, both public and private. These data are published in the ICC Annual Report. Because the OBE output includes these estimates, the index is slightly different from the BLS index.

Regulated Petroleum Pipelines Transportation
Indexes of Output, All Employees, All Employee Man-Hours, Output
Per All Employee and Output Per All Employee Man-Hour

1957-59=100

Year	Output	All employees	All employee man-hours	Output per all employee	Output per all employee man-hour
1947	44.7	116.5		38.4	
1948	49.8	122.8		40.6	
1949	49.0	117.8		41.6	
1950	56.8	112.8		50.4	
1951	67.9	116.9		58.1	
1952	71.3	118.7		60.1	
1953	76.3	115.7		65.9	
1954	80.2	110.8		72.4	
1955	86.8	107.4		80.8	
1956	97.2	105.7		92.0	
1957	98.0	104.6	104.7 ¹	93.7	93.6 ¹
1958	96.9	100.2	100.3	96.7	96.6
1959	105.1	95.3	95.0	110.3	110.6
1960	106.5	91.7	90.5	116.1	117.7
1961	109.1	87.3	85.9	125.0	127.0
1962	111.9	82.6	82.1	135.5	136.3
1963	118.3	78.1	77.8	151.5	152.1
1964	125.6	76.0	76.7	165.3	163.8
1965	145.3	72.6	73.2	200.1	198.5
1966	158.0	69.6	69.9	227.0	226.0
1967	177.3	68.3	69.6	259.6	254.7
1968	184.8	68.6	69.6	269.4	265.5

¹ Based on 1958 data for average weekly hours.

Source: Unpublished indexes Bureau of Labor Statistics, U.S. Department of Labor. Based on data from the Interstate Commerce Commission.

Freight Forwarders

Freight forwarders (SIC 4712) arrange transportation for the shipper to the receiver. The size of any one shipment is often small so that a forwarder will combine shipment to truck load, car load or plane load lots.¹

The ICC regulates only those forwarders which use surface transportation. The CAB regulates air freight forwarders. The Railway Express Agency² which provides much the same service is considered as a separate industry both by the SIC and ICC.

This study covers only the ICC Class A freight forwarders from 1954 to the present. Class A freight forwarders are those with an annual average gross revenue of \$100,000 or more. ICC Class B forwarders and the air freight forwarders are excluded because of lack of data.

METHODOLOGY

Output

An output index for Class A freight forwarders was developed from ICC data published in Transport Statistics in the United States, Part 7, Freight Forwarders. The index is based on the unweighted tons of freight received from shippers with 1957-59=100 as the base period.

¹ For complete description, see Appendix A, page 82.

² See Railway Express Agency under notes on railroads.

Input

The input index was constructed in the usual manner from data published in Transport Statistics in the United States, Part 8, Freight Forwarders. The all employee index is the only index constructed. The ICC does not collect other employment for freight forwarders. BLS does not publish this industry separately.

EVALUATION

Data

While no mistakes were found in the data, there are unusual year-to-year fluctuations which we have not been able to explain. For this reason, validity of the indexes is questionable.

Output Methodology

The basic function of a freight forwarder is to gather small shipments into large enough shipments to fill a railroad car or a truck and then arrange for transportation. As long as this remains the freight forwarders main business, the number of tons handled can be considered a valid measure of output.

If pick up and delivery of the goods is important, the output is understated but at this time, this does not seem the case.

Input Methodology

The methodology used to construct the all employee index was the conventional one used in input index construction.

RECOMMENDATIONS

- (1) Data on local pick up and delivery of freight forwarders should be collected.
- (2) Data for supervisory employees, nonsupervisory employees, and nonsupervisory man-hours should be collected.
- (3) Data for all regulated freight forwarders including air freight forwarders should be collected and published.

Freight Forwarders
Class A
Indexes of Output, All Employees and
Output per All Employee

(1957-59=100)

Year	Output	All Employees	Output per All Employee
1954.....	102.1	101.5	100.6
1955.....	113.3	105.8	107.1
1956.....	110.6	109.5	101.0
1957.....	103.7	106.0	97.8
1958.....	95.6	95.4	100.2
1959.....	100.7	98.6	102.1
1960.....	98.9	98.9	100.0
1961.....	96.7	97.4	99.3
1962.....	104.0	95.2	109.2
1963.....	101.7	91.3	111.4
1964.....	106.5	86.4	123.3
1965.....	96.3	76.7	125.6
1966.....	108.6	84.7	128.2
1967.....	105.0	85.8	122.4
1968.....	108.6	88.7	122.4

Source: Unpublished indexes Bureau of Labor Statistics, U.S. Department of Labor. Based on data from the Interstate Commerce Commission.

NOTES ON OTHER CARRIERS

Notes on Railroad Transportation

Included under railroad transportation¹ are line haul railroads, switching and terminal companies, sleeping car and other passenger car service, and the railway express service. The line haul railroad and switching and terminal companies are divided by the ICC into 2 classes: Class I -- companies having a 3-year average operating revenue of \$5,000,000 or more and Class II -- those companies having a 3-year average operating revenue of less than \$5,000,000.

Class I Railroads

The Bureau of Labor Statistics currently publishes a productivity series for Class I line haul railroads and Class I switching and terminal companies.² The output index is based on freight ton miles and passenger miles published by the ICC in Transport Statistics in the United States for railroad companies. The ton miles and passenger miles are combined by relative unit revenue weights.

Six input indexes are constructed: all employees, production workers, nonproduction workers, all employee man-hours, production worker man-hours, and nonproduction worker man-hours. The employment and man-hour data are published by the ICC annually in Statement No. A300, Wage Statistics of Class I Railroads in the United States.

¹ See Appendix A , page 64, for SIC definitions.

² The detailed methodology is available from the Bureau of Labor Statistics, Office of Productivity and Technology. The current indexes are published in Indexes of Output per Man-Hour, Selected Industries, 1939 and 1947-68 (BLS Bulletin 1652).

We investigated the increasing productivity of the railroad industry, while employment declined and output moved up and down erratically. Part of the reason for the increase was "output" that was not included in the output index, the building of locomotives and railroad cars by the railroads. As this activity has decreased especially since steam engines are no longer built, employment has been cut back, without a corresponding drop in output. Another reason for the increase is the decline in maintenance of both track and cars. Again, employment decreased but output did not. Further increases in productivity may be noted as railroads drop long distance passenger trains and decrease first class and dining car service, which are labor intensive.

Comparison with Other Series

The railroad output indexes constructed by OBE and Kendrick differ slightly in concept from the BLS series. Both OBE and Kendrick include all 3 classes of railroads in the output, while BLS is based only on Class I. However, the differences in the overall trends are small.

The BLS does not include Class II and Class III because of definitional problems and reclassification from electric railroads which caused inconsistencies in the data.

Class II and Electric Railroads

Class II line haul railroads, Class II switching and terminal companies and electric railroads are all part of SIC Group 401, though they are treated separately by the ICC. The Class II line haul and switching and terminal companies are regular railroads with an average annual operating revenue of less than \$ 5,000,000. The electric railroads are the interurban and commercial electric railroads engaged in interstate commerce; not included are the electrified portions of line haul railroads.

Both the number and tons carried by Class II railroads and electric railroads have declined since 1947.

The Class II railroads and electric railroads are being considered together because many electric railroads have been reclassified as Class II railroads. Class II line haul and switching and terminal companies and electric railroads combined account for less than 3 percent of the operating railroads and employed about 25,000 persons in 1968.

An input index based on total employment could be constructed but no output index is available. Freight and passenger car miles are collected for both Class II and electric railroads but are published only for electric. Ton miles and passenger miles are collected and published for Class II but not electric. Therefore, no output index was constructed.

Express Companies

The Railway Express Agency (REA) is considered a separate industry. Data on revenue, expenses, employment and milage covered by operations are published as a part of Transport Statistics in the United States. No data on the number or the weight of shipments are published; therefore, no output index could be constructed.

Data on tons of goods shipped should be collected and published.

Sleeping Car Companies

Sleeping car companies are a part of SIC 4021. The Pullman Company ran most of the sleeping cars on railroads prior to 1969. They were regulated by the ICC and data on the company were published separately in Transport Statistics. In 1969, the Pullman Company discontinued service of sleeping cars and the railroads took it over.

The railroads had owned most of the sleeping cars and leased them to Pullman so that the change was mostly a matter of service. Some Pullman employees became employees of the railroads while others retired or were given severance pay.

Output

Two output indexes, one based on car miles and one based on revenue passenger miles, were constructed from 1947 to 1968. While both indexes show large declines, the index based on revenue passenger miles declined more from 1947 to 1957 than did car miles. From 1957 forward, the two indexes move almost together.

Input

The input index was constructed in the usual manner and based on total employment reported to the ICC. Employment also has declined almost steadily since 1947.

RECOMMENDATIONS

Perhaps a better method would be to include the passenger miles in Class I railroad output and the Pullman employees in the input.

Sleeping Car Companies (Pullman Company)
Indexes of Output (Passenger Miles), All Employees and
Output per Employee
(1957-59=100)

Year	Output (passenger miles)	All employees	Output per employee
1947.....	308.3	262.9	117.3
1948.....	277.7	214.7	129.3
1949.....	240.5	201.7	119.2
1950.....	240.9	206.6	116.6
1951.....	225.7	216.0	104.5
1952.....	213.0	204.5	104.2
1953.....	187.1	194.9	96.0
1954.....	165.9	179.8	92.3
1955.....	157.0	163.5	96.0
1956.....	151.2	152.0	99.5
1957.....	122.9	137.8	89.2
1958.....	98.1	92.6	105.9
1959.....	79.0	72.6	108.8
1960.....	76.6	66.3	115.5
1961.....	69.5	60.5	114.9
1962.....	66.3	57.9	114.5
1963.....	57.4	53.5	107.3
1964.....	50.6	50.2	100.8
1965.....	45.9	48.4	94.8
1966.....	44.9	44.4	101.1
1967.....	32.7	37.8	86.5
1968.....	22.9	26.7	85.8

Source: Unpublished indexes Bureau of Labor Statistics, U.S.
Department of Labor. Based on data from the Interstate Commerce
Commission.

Sleeping Car Companies (Pullman Company)
Indexes of Output (Car Miles), All Employees and Output
per Employee
(1957-59=100)

Year	Output (car miles)	All employees	Output per employee
1947.....	214.2	262.9	81.5
1948.....	208.3	214.7	97.0
1949.....	N.A.	201.7	--
1950.....	194.1	206.6	93.9
1951.....	203.7	216.0	94.3
1952.....	191.4	204.5	93.6
1953.....	177.3	194.9	91.0
1954.....	161.1	179.8	89.6
1955.....	149.6	163.5	91.5
1956.....	141.8	152.0	93.3
1957.....	122.4	134.8	90.8
1958.....	96.4	92.6	104.1
1959.....	81.2	72.6	111.8
1960.....	75.7	66.3	114.2
1961.....	69.4	60.5	114.7
1962.....	66.8	57.9	115.4
1963.....	60.7	53.5	113.5
1964.....	55.2	50.2	110.0
1965.....	50.0	48.4	103.3
1966.....	46.8	44.4	105.4
1967.....	37.4	37.8	98.9
1968.....	26.3	26.7	98.5

Source: Unpublished indexes Bureau of Labor Statistics, U.S. Department of Labor. Based on data from the Interstate Commerce Commission.

Areas for Study

Without additional investigation into man-hour requirements, the BLS series is based on the best available information. However, there are several areas where studies should be undertaken. The first is the difference in man-hour requirements between first class and coach passengers. Discussion of the requirements with both the Air Transport Association and airline people have led to the conclusion that not enough is known to make any distinction without further study. The second area is that of cargo. Here, the ATA and airline people pointed out that there are differences in the handling of freight, express and mail, but they could not say how much difference. Again, study would be necessary to determine if differences are significant. Third is the greater decline in revenue per passenger mile of international passenger/cargo lines as compared to the decline in revenue per passenger mile of domestic passenger/cargo lines. This decline seems to be the result of changing fare structures rather than any change in man-hour requirements. This shift points up the fact that use of revenue weights in a regulated industry may not truly reflect man-hour requirements.

RECOMMENDATIONS

- (1) Collection of man-hours data for the industry.
- (2) Further studies into the man-hour requirements of different classes of passenger service.
- (3) Studies into the man-hour requirements of the different types of cargo.

Notes on Water Transportation

The water transportation industry includes companies engaged in freight and passenger transportation on the open seas or inland waterways and companies furnishing such incidental services as lighterage, towing, and canal operations.

Companies engaged in water transportation¹ activities are of the 3 types mentioned in the introduction: private carriers, common carriers, and contract carriers. Unlike other modes of transportation, a relatively small amount of the commodities are subject to ICC economic regulation. For example, bulk cargos are not regulated if the cargo space is not used for more than 3 types of commodities. Liquid cargo carried in tank vessels are exempt only if vessels are certificated for such service. Transportation of commodities between a U.S. port and one foreign port is also not covered. It is estimated that less than 10 percent of goods shipped by water are subject to ICC economic regulation. A given company may, of course, carry both regulated and non-regulated freight. Theoretically, this company should report all of its commodities and passenger movements as well as its employment to the ICC.

¹ See Appendix A, page 74, for SIC definition of 441-5, water transportation.

Data Sources and Problems

The Army Corps of Engineers publishes data on total water transportation freight ton (by port, by commodity detail, and by type of vessel) for many years. Since 1962, they also publish data for both regulated freight and exempt for-hire freight and private freight ton miles by 4 geographic divisions: Atlantic and Gulf Coast, Inland, Great Lakes, and Pacific Coast. Unfortunately, the distinction between exempt and nonexempt commodities is not directly related to the total man-hours of the companies reporting to ICC.

The ICC publishes data on freight ton miles and number of passengers from 1964 on, which includes total ton miles and passengers of carriers whose commodities are totally or partially subject to ICC regulations.²

A very provisional output index was attempted from 1964 on, using ICC data for passengers and freight ton miles. The product breakdown utilized was by area³ and weights used were the comparable revenue per ton miles and revenue per passenger. These data were based on ICC Statement No. 650, Revenue and Traffic of Classes A and B Water Carriers.

² It is not clear whether total employment is received for carriers with a minimum percentage of nonexempt commodities.

³ Atlantic and Gulf Coast, Great Lakes, Mississippi River and Tributaries, Pacific Coastal Area, Intercoastal Area.

Serious comparability problems arise when employment data were used as published in Transport Statistics. Carriers are often classified in different areas in the Z ICC reports. In addition, figures shown for freight tonnage and revenue for the same carriers may differ widely. Carriers providing towing services but carrying no freight also present a problem. Including these carriers which amount to about 10 percent of employment in Atlantic and Gulf Coast regions would mean that output would not match input since some of these employees presumably would be used for helping move nonexempt commodities and even foreign ships.

It also proved fruitless to provide a useful index for the entire SIC water transportation industry⁴ by using unweighted ton miles for domestic for-hire freight from the U.S. Corps of Engineers and employment from the published BLS employment series. The output index lacks product detail and leaves out local water transportation services. The published BLS series SIC Group 44 includes deep sea foreign and domestic transportation not included in the output. Deep sea transportation accounts for 36 percent of the employment; man-hours data are not available.

⁴ See Appendix A , page 77, for the additional SIC definition (446, services incidental to water transportation).

RECOMMENDATIONS

(1) The data on water transportation are too important to be regarded as simply a by-product of an administrative process.

(2) It seems especially important to have data for both the total SIC industry and companies subject to ICC economic regulation. To avoid duplication, this may call for one agency collecting both sets of data on output and also input.

(3) Man-hours as well as employment data are needed.

(4) Some study is needed to determine whether or not the output of tugs is similar to the output of freight carriers on the Atlantic and Gulf Coast.

(5) Investigation too is needed into the amount of loading on Inland Waterway carriers that is done by harbor crews and the amount done by vessel crews. This study is important if the amounts have been changing over time, since harbor crews are not in ICC input.

(6) Passenger miles should be collected as well as number of passengers.

Notes on Transportation Services

The major emphasis of this paper has been the construction of productivity measures for those modes of transportation in which some of the carriers are subject to economic regulation of the ICC or the CAB.

The index constructed pertain only to the regulated carriers because of the lack of data on the nonregulated carriers, most of which are involved in local and intrastate transportation.

There are some large areas in the transportation sector where few or none of the companies are subject to ICC or CAB regulation. Because of these areas which employ approximately 300,000 people, some mention must be made of them.

The first is Public Warehousing (SIC 442), which employs about 86,000 persons. This SIC includes storage of farm products, refrigerated warehousing, food lockers, household good warehousing and special warehousing. No data are available to construct a productivity series.

If tons of goods stored and man-hours by type of storage were available, a physical output index weighted by man-hours could be constructed.

Employment and man-hours data for public warehousing are collected by BLS but not published separately. The employment figure could be obtained by subtracting trucking and terminal services from the total group, Motor Freight Transportation and Warehousing.

The second is services incidental to water transportation (SIC 446) which employees about 111,000 persons. Included are marine cargo handling, canal operations and other water transportation services.¹ The longshoremen and stevedores which are part of marine cargo handling account for over 50 percent of the employment in water transportation services. For this industry, an index based on a physical measure of output would be almost impossible to construct. Therefore, we recommend that revenue data be collected and price deflators be developed so that a constant dollar output index can be constructed.

BLS collects but does not publish separately the employment and man-hours data for services incidental to water transportation.

The third, transportation services, n.e.c.,³ employs over 100,000 persons. Included in this group are such miscellaneous things as freight forwarding, arrangement of transportation, stockyard, rental of railroad cars, and packing and crating for shipment. Two small portions of this group are subject to ICC or CAB regulation, freight forwarders,² which has already been discussed and rental of railroad cars. These two account for about one-fifth of the employment in transportation services. The largest portion to transportation services is arrangement of transportation with almost one-half of the employment. Business such as travel agents, rate bureaus, custom brokers, conducted tours and ticket offices are under the heading 'arrangement of transportation,'

¹ See Appendix A, page 77, for complete definition.

² See the technical note on freight forwarders.

³ See Appendix A, page 82, for definition of SIC 47.

The output of transportation services, n.e.c., except for freight forwarders for which we calculated output indexes and stockyard which are unrelated, would probably best be represented by an index of total transportation which we have not been able to construct because of lack of data.

Employment and man-hours data for all of SIC 47 are collected by BLS, and total employment data are published.

CONCLUSION

Conclusion

Since the major interest of the Department of Transportation was in the regulated sectors, our emphasis was on these individual sectors and the associated problems. The Office of Business Economics does publish output only for the total transportation industry and it was necessary for them to make estimates for the nonregulated sectors where data were inadequate. We have compared our results with their unpublished components wherever possible.

At the risk of being repetitious, the following recommendations would permit construction of a valid index for regulated carriers, the nonregulated carriers and the total transportation industry and the major components.

- (1) A Census of Transportation along the lines of the Census of Manufactures or Census of Business.
- (2) Annual survey of the nonregulated portions of transportation.
- (3) Annual revenue data and appropriate price deflators for those areas where physical output indexes are difficult.
- (4) More complete and accurate tabulation of ICC data.
- (5) More complete documentation on classification changes.
- (6) Further research on concepts is needed.

APPENDIXES

APPENDIX A - Part I

Standard Industrial Classification Manual Definitions

Major Group 40.--RAILROAD TRANSPORTATION

The Major Group as a Whole

This major group includes companies furnishing transportation by line-haul railroad, and certain services allied to rail transportation; such as sleeping and dining car services, railway express, and switching and terminal companies. Railway companies serving a single municipality, contiguous municipalities, or a municipality and its suburban areas are classified in Major Group 41.

For purposes of analysis of railway statistics, lessors of railway property classified in Industry 6517 should be included.

Group	Industry
No.	No.

401	RAILROADS
-----	-----------

14011	Railroads, Line-haul Operating
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Companies primarily engaged in line-haul railroad operations. Railways engaged primarily in serving a single municipality, contiguous municipalities, or a municipality and its suburban areas are classified in Major Group 41.

Electric railroads	Railroad cars: Building,
Interurban railways	rebuilding, and repair done
Locomotives: Building,	by railroad companies
rebuilding, and repair	Railroads, line-haul operating
done by railroad com-	Railroads, steam
panies	

14013	Switching and Terminal Companies
-------	----------------------------------

Companies primarily engaged in the furnishing of terminal facilities for rail passenger or freight traffic for line-haul service, and in the movement of railroad cars between terminal yards, industrial sidings, etc. Terminal companies do not necessarily operate any

1/ Supplementary code for Industries 4011 and 4013:

1. Class I - Companies regulated by the Interstate Commerce Commission having 3-year average operating revenues generally of \$5,000,000 or more.
2. Class II - Companies regulated by the Interstate Commerce Commission having 3-year average operating revenues generally below \$5,000,000.
3. Other - Companies not regulated by the Interstate Commerce Commission.

Group No.	Industry No.
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4013 Switching and Terminal Companies - Con't.

vehicles themselves, but may operate the stations and terminals. Nonoperating companies which are lessors of railway property are classified in Industry 6517.

Belt line railroads	Railroad ferries, operated
Bridges operated by switching	by terminal companies
or terminal companies	Stations, operated by
Logging railroads	terminal companies
Port and car ferry services,	Switching and terminal
operated by switching or	companies, railroad
terminal companies	

402 SLEEPING CAR AND OTHER PASSENGER CAR SERVICE

4021 Sleeping Car and Other Passenger Car Service

Companies operating sleeping and other cars to furnish berths and seats to passengers, and companies furnishing dining car service. The Pullman Company is at present the principal company included in this industry.

Dining car services, not	Pullman company
performed by line-haul	Sleeping car and other
railroad companies	passenger car services,
Parlor car services, not	not performed by line-haul
performed by line-haul	railroad companies
railroad companies	

404 RAILWAY EXPRESS SERVICE

4041 Railway Express Service

The Railway Express Agency, Inc., is at present the only company included in this industry.

Railway express service

Major Group 41. -- LOCAL AND SUBURBAN TRANSIT AND INTERURBAN HIGHWAY
PASSENGER TRANSPORTATION

The Major Group as a Whole

This major group includes companies primarily engaged in furnishing local and suburban passenger transportation, such as companies providing passenger transportation within a single municipality, contiguous municipalities, or a municipality and its suburban areas by rail or trolley coach, either separately or in conjunction with motor bus lines, and companies engaged in furnishing transportation to local scenic features, including cable and cog railways. Also included are companies primarily engaged in furnishing highway passenger transportation and companies furnishing highway passenger terminal or maintenance facilities. Interurban railways are classified in Major Group 40, but intercity bus lines are included in this Major Group.

Group	Industry
No.	No.
411	

LOCAL AND SUBURBAN PASSENGER TRANSPORTATION

Companies or systems primarily engaged in furnishing passenger transportation confined principally to a municipality, contiguous municipalities, or a municipality and its suburban areas, except by taxicab, school bus or charter service.

²4111

Local and Suburban Transit

Companies or systems primarily engaged in furnishing local and suburban mass passenger transportation over regular routes and on regular schedules. Such transportation may involve use of one or more modes of transportation. Companies primarily engaged in furnishing passenger transportation by automobile or bus to, from, or between airports or rail terminals over regular routes are included in this industry.

Bus Line operation, local
City and suburban bus line
operation
Elevated railway operation
Passenger transportation,
regular route: to, from, or
between airports and rail
terminals

Railway operation, local
Street railway operation
Subway operation
Trolley coach operation
Urban and suburban railway
operation

2/ See footnote at bottom of page 68.

Group	Industry
No.	No.

2	4119	Local Passenger Transportation, Not Elsewhere Classified
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Companies primarily engaged in furnishing miscellaneous passenger transportation, where such operations are principally within a municipality, contiguous municipalities, or a municipality and its suburban areas. Establishments primarily engaged in renting passenger automobiles without drivers are classified in industry 7512.

Aerial tramways	Hearse and limousine, rental--
Ambulance service	with drivers
Automobile rental, with	Sight-seeing busses
drivers	Ski lifts, operated separately
Cable lifts	from lodges
Cog railways	Ski tows

412	TAXICABS
-----	----------

4121	Taxicabs
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Companies primarily engaged in furnishing passenger transportation by automobiles not operated on regular schedules or between fixed terminals. Taxicab fleet owners and organizations are included, regardless of whether drivers are hired, rent cars, or are otherwise compensated. Companies primarily engaged in furnishing passenger transportation by automobile or bus, to, from, or between airports, or rail terminals over regular routes are classified in Industry 4111. Taxicab associations and similar organizations which do not operate taxicabs, but supply maintenance and repair services to their members, are classified in Industry 4172.

Taxicab operation

413	INTERCITY AND RURAL HIGHWAY PASSENGER TRANSPORTATION
-----	--

Companies primarily engaged in furnishing passenger transportation by motor vehicles, the operations of which are principally outside a single municipality, outside one group of contiguous municipalities, and outside a single municipality and its suburban areas.

2/ See footnote at bottom of page 68.

Group No.	Industry No.	
	24131	Intercity Bus Lines
		Companies primarily engaged in furnishing intercity passenger transportation by motor bus over regular routes and on regular schedules.
		Intercity bus lines Interurban bus lines Interstate bus lines
	24132	Intercity Highway Passenger Transportation, Not Elsewhere Classified
		Companies primarily engaged in furnishing intercity motor vehicle passenger transportation not operated on regular schedules, not elsewhere classified.
		Motor vehicle highway passenger transportation, intercity: special service
414		PASSENGER TRANSPORTATION CHARTER SERVICE
	24141	Local Passenger Transportation Charter Service
		Companies primarily engaged in furnishing passenger transportation charter service where such operations are principally within a single municipality, contiguous municipalities, or a municipality and its suburban areas.
		Bus charter service, local
	24142	Passenger Transportation Charter Service, Except Local
		Companies primarily engaged in furnishing passenger transportation charter service where such operations are principally outside a single municipality, outside one group of contiguous municipalities, or outside a single municipality and its suburban areas.
		Bus charter service, nonlocal

2/ Supplementary codes for Industries 4111, 4119, 4131, 4132, 4141, and 4142:

- 1 Class I - Companies holding certificates or permits issued by the Interstate Commerce Commission and having 3-year average operating revenues of \$200,000 or more.
- 2 Class II and Class III - Companies holding certificates or permits issued by the Interstate Commerce Commission and having 3-year average operating revenues below \$200,000.
- 3 Other - Companies not regulated by the Interstate Commerce Commission.

Group No.	Industry No.	
415		SCHOOL BUSES
	4151	School Busses
		Companies primarily engaged in operating busses to transport pupils to and from school.
		School busses
417		TERMINAL AND SERVICE FACILITIES FOR MOTOR VEHICLE PASSENGER TRANSPORTATION
	4171	Terminal and Joint Terminal Maintenance Facilities for Motor Vehicle Passenger Transportation
		Companies primarily engaged in the operation of passenger terminals which are used by highway passenger vehicles operated by others. Also included are such terminal companies which also provide maintenance and service for motor vehicles operated in common or contract passenger service by others.
		Terminal facilities for motor vehicle passenger transportation, with or without maintenance facilities
	4172	Maintenance and Service Facilities for Motor Vehicle Passenger Transportation
		Companies primarily engaged in servicing and maintaining motor vehicles operated in common or contract passenger carriage by others. Companies primarily engaged in the operation of highway passenger terminals in combination with maintenance and servicing of vehicles are classified in Industry 4171; and those which provide for motor vehicle maintenance or service for the general public are classified in Industry 7538.
		Maintenance facilities for motor vehicle passenger transportation, not operated by transportation companies.
		Service facilities for motor vehicle passenger transportation, not operated by transportation companies.

Major Group 42--MOTOR FREIGHT TRANSPORTATION AND WAREHOUSING

The Major Group as a Whole

This major group includes establishments furnishing local or long-distance trucking, transfer, and draying services, or engaged in the storage of farm products, furniture and other household goods, or commercial goods of any nature. The operation of terminal facilities for handling freight, with or without maintenance facilities, is also included. This group does not include delivery departments or warehouses operated by business concerns for their own use. Companies primarily engaged in the storage of natural gas are classified in Industry 4922.

Group No.	Industry No.
421.	

TRUCKING, LOCAL AND LONG DISTANCE

³ 4212	Local Trucking and Draying, Without Storage
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Companies primarily engaged in furnishing trucking, transfer, and draying services without storage, in a single municipality, contiguous municipalities, or a municipality and its suburban areas. Companies primarily engaged in collecting and disposing of refuse by processing or destruction of materials are classified in Industry 4953.

Baggage transfer	Furniture moving, local:
Carting, by truck of	without storage
horse drawn wagon	Mail carriers, contract
Catching and hauling	Motorcycle delivery service
live poultry: on a	Package delivery, by truck
contract or fee basis	Parcel delivery, by truck
Collecting and trans-	Riggers
porting refuse, without	Safe moving
disposal	Truck rental, with drivers
Debris removal, carting	Trucking, local: without
only	storage
Delivery service, vehicular	
Draying, local: without	
storage	
Farm to market hauling	

Group No. Industry No.

³4213 Trucking, Except Local

Companies primarily engaged in furnishing "over the road" trucking service either as common carriers or under special and individual contracts or agreements.

Log trucking	Pack train operation, except amusement
Long distance trucking	
"Over the road" trucking	Trucking, except local
	Trucking timber

³4214 Local Trucking and Storage, Including Household Goods

Companies primarily engaged in furnishing trucking and storage services in a single municipality, contiguous municipalities, or a municipality and its suburban areas. Warehousing and storage of household goods when not combined with trucking is classified in Industry 4224.

Furniture moving, local:	Trucking local: combined
combined with storage	with storage
Household goods moving,	
local: combined with	
storage	

3/ Supplementary codes for Industries 4212, 4213, and 4214:

- 1 Class I Common Carriers - Common carriers of motor freight holding certificates or permits issued by the Interstate Commerce Commission with 3-year average operating revenues of \$1,000,000 or more.
- 2 Class II Common Carriers - Common carriers of motor freight holding certificates or permits issued by the Interstate Commerce Commission with 3-year average operating revenues of \$200,000 but less than \$1,000,000.
- 3 Class III Common Carriers - Common carriers of motor freight holding certificates or permits issued by the Interstate Commerce Commission with 3-year average operating revenues of below \$ 200,000.
- 4 Class I Contract Carriers - Contract carriers of motor freight holding certificates or permits issued by the Interstate Commerce Commission with 3-year average operating revenues of \$1,000,000 or more.
- 5 Class II Contract Carriers - Contract carriers of motor freight holding certificates or permits issued by the Interstate Commerce Commission with 3-year average operating revenues of \$200,000 but less than \$1,000,000.
- 6 Class III Contract Carriers - Contract Carriers of motor freight holding certificates or permits issued by the Interstate Commerce Commission with 3-year average operating revenues of below \$200,000.

Group No.	Industry No.
--------------	-----------------

422 PUBLIC WAREHOUSING

4221 Farm Product Warehousing and Storage

Establishments primarily engaged in the storage of farm products. Refrigerated warehousing is classified in Industries 4222 and 4223.

Bean cleaning and warehousing	Grain elevators, storage only
Bean elevators	Potato cellars
Bean warehouses	Tobacco warehousing and storage
Cotton compresses and warehouses	Wool and mohair warehousing
Farm product warehousing and storage, other than cold storage	

4222 Refrigerated Warehousing, Except Food Lockers

Establishments (except food lockers) primarily engaged in the storage of perishable goods at artificially low temperature.

Cheese warehouses	Warehousing, cold storage or refrigerated, except food lockers
-------------------	--

4223 Food Lockers, With or Without Food Preparation Facilities

Establishments primarily engaged in renting locker space for the storage of food products for individual households, including establishments which provide services for processing, preparing, or packaging such food for storage.

Cold storage locker rental	Frozen food locker rental
Food lockers, rental	

4224 Household Goods Warehousing and Storage

Establishments primarily engaged in the storage of household goods, but not engaged in local trucking.

Furniture storage, without local trucking	Household goods, warehousing and storage, without local trucking
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Group No.	Industry No.
--------------	-----------------

4225	General Warehousing and Storage
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Establishments primarily engaged in the warehousing and storage of a general line of goods.

General warehousing and storage

4226	Special Warehousing and Storage, Not Elsewhere Classified
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Establishments primarily engaged in the storage of special products, not elsewhere classified, such as automobiles (dead storage only). furs (for the trade), textiles, whisky, and goods at foreign trade zones. warehouses primarily engaged in the blending of wines are classified in Industry 5095.

Automobile dead storage	Storage of goods at foreign
Fur storage, for the	trade zones
trade	Storage and warehousing,
Lumber terminals (storage	special: except farm products,
for hire)	cold storage and textile goods
Oil and gasoline storage	Textile warehousing
caverns (for hire)	Whiskey warehousing
Petroleum and chemical	
bulk stations and	
terminals for hire	

Group No.	Industry No.
--------------	-----------------

423	TERMINAL AND JOINT TERMINAL MAINTENANCE FACILITIES FOR MOTOR FREIGHT TRANSPORTATION
-----	--

4231	Terminal and Joint Terminal Maintenance Facilities for Motor Freight Transportation
------	--

Companies primarily engaged in the operation of terminal facilities used by highway property carrying vehicles operated by others. Also included are such terminal companies which also provide maintenance and service for motor vehicles operated in common or contract property carrying service by others. Establishments primarily engaged in the repair of trucks are classified in Industry 7538.

Freight trucking terminals, with or without maintenance facilities.

Major Group 44. WATER TRANSPORTATION 4/

The Major Group as a Whole

This major group includes companies engaged in freight and passenger transportation on the open seas or inland waters, and companies furnishing such incidental services as lighterage, towing, and canal operation. This major group also includes excursion boats, sight-seeing boats, and water taxis. Cargo handling operations when carried on by transportation companies and separately reported are classified in Industry 4463. When separate reports for cargo handling are not available, these operations are classified with the transportation company.

Group	Industry
No.	No.
441	DEEP SEA FOREIGN TRANSPORTATION

4411	Deep Sea Foreign Transportation
------	---------------------------------

Companies primarily engaged in operating vessels for the transportation of freight or passengers on the deep seas between the United States and foreign ports. Companies operating to foreign ports and also to noncontiguous territories are classified in this industry.

Deep sea foreign transportation

442	DEEP SEA DOMESTIC TRANSPORTATION
-----	----------------------------------

4421	Transportation to and Between Noncontiguous Territories
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Companies primarily engaged in operating vessels for the transportation of freight or passengers on the deep seas between the United States mainland and Alaska, and Panama Canal Zone, the Hawaiian Islands, Puerto Rico and island possessions or protectorates and between such territories.

Domestic Transportation, deep sea	Water transportation to noncontiguous territories
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4/ Supplementary Code for Major Group 44.--Type of operation:

- 1 Common carriers--Companies primarily engaged in operating vessels to serve the general public. Frequently these companies operate over fixed routes and on fixed schedules.
- 2 Contract carriers--ocean shipping--Companies primarily engaged in operating vessels under special contracts or agreements for the transportation of goods of others or of passengers.
- 3 Contract carriers--inland and Great Lakes shipping--Companies primarily engaged in operating vessels and/or towing services principally under special contracts or agreements.
- 4 Private carriers--Separate corporations carrying only the goods of corporation to which they are subsidiary.

Group No.	Industry No.
--------------	-----------------

4422	Coastwise Transportation
------	--------------------------

Companies primarily engaged in operating vessels for the transportation of freight or passengers on the deep seas between mainland United States ports, between those located solely on the Atlantic coast and Gulf coast, or between those located solely on the Pacific coast, or along the coasts of Alaska, Hawaii or Puerto Rico. This industry does not include intracoastal transportation performed in inland waterway service on the intracoastal waterways paralleling the Atlantic and Gulf Coasts, classified in Industry 4441.

Coastwise transportation

4423	Intercoastal Transportation
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Companies primarily engaged in operating vessels for the transportation of freight or passengers on the deep seas between ports on the United States Atlantic and Gulf coasts on the one hand, and United States Pacific coast ports on the other, via the Panama Canal.

Intercoastal transportation

443	GREAT LAKES-ST. LAWRENCE SEAWAY TRANSPORTATION
-----	--

4431	Great Lakes-St. Lawrence Seaway Transportation
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Companies primarily engaged in the transportation of freight or passengers on the Great Lakes and St. Lawrence Seaway, either between United States ports or between United States and Canadian ports.

Ferries operating on the Great Lakes and St. Lawrence
Great Lakes and St. Seaway transportation
Lawrence Seaway

Group	Industry
No.	No.
444	

TRANSPORTATION ON RIVERS AND CANALS

4441	Transportation on Rivers and Canals
------	-------------------------------------

Companies primarily engaged in transporting freight or passengers on all inland waterways, including the intracoastal waterway on the Atlantic and Gulf coasts. Transportation on the Great Lakes-St. Lawrence Seaway is classified in Industry 4431; local water transportation including intraport transportation in Group 445; and the maintenance and operation of canals primarily for use by the vessels of others in Industry 4464.

Canal barge operation	Log rafting and towing
Canal transportation	River Transportation, other
Intracoastal Transportation	than on the St. Lawrence
	Seaway
Lake transportation, other than on the Great Lakes	Transportation on bays and and sounds of the ocean

445

LOCAL WATER TRANSPORTATION

4452	Ferris
------	--------

Companies primarily engaged in operating ferris across rivers or within harbors. Companies operating ferris across the Great Lakes are classified in Industry 4431.

Car lighters (ferris), separately incorporated or organized	Intraport transportation
	Railroad ferries, separately incorporated or organized
Ferris operating across rivers or within harbors	

4453	Lighterage
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Companies primarily engaged in operating lighters and other harbor vessels for transferring goods and passengers between ship and shore or from one ship to another.

Lighterage

Group	Industry
No.	No.

4454 Towing and Tugboat Service

Companies primarily engaged in furnishing marine towing and tugboat services in the performance of auxiliary or terminal services in harbor areas. The vessels used in performing these services do not carry cargo or passengers.

Docking of ocean vessels	Towing, marine
Shifting of floating equipment within harbors	Tugboat service
	Undocking of ocean vessels

4459 Local Water Transportation, Not Elsewhere Classified

Companies primarily engaged in furnishing local water transportation, not elsewhere classified, such as excursion boats, sight-seeing boats, and water taxis.

Airboats (swamp buggy rides)	Sight-seeing boats
Excursion boats	Water Taxis

446

SERVICES INCIDENTAL TO WATER TRANSPORTATION

4463 Marine Cargo Handling

Establishments primarily engaged in activities directly related to marine cargo handling from the time cargo, for or from a vessel, arrives at shipside, dock, pier, terminal, staging area, or intransit area until cargo loading or unloading operations are completed. This industry includes the operation and maintenance of piers, docks, and associated buildings and facilities; but lessors of such facilities are classified in Industry 6512.

Loading vessels	Ship hold cleaning
Marine cargo handling	Stevedoring
Operation and maintenance of piers and docks, including buildings and facilities	Unloading vessels
	Waterfront terminal operation

4464 Canal Operation

Companies primarily engaged in the maintenance and operation of canals.

Canal operation

Group No.	Industry No.
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4469	Water Transportation Services, Not Elsewhere Classified
------	--

Companies primarily engaged in furnishing miscellaneous services incidental to water transportation, not elsewhere classified, such as boat hiring, except for pleasure; chartering of vessels; ship cleaning, except hold cleaning (Industry 4463); and steamship leasing.

Boat hiring, except pleasure	Marine surveyors
Boat livery, except pleasure	Marine wrecking: salvaging
Boat yards, storage and incidental repair	from sunken craft, removal of underwater hazards by divers, wrecking ships
Boathouses	for scrap
Dismantling ships	Piloting vessels in and out of harbors
Ship registers: survey and classification of ships, engines, and marine equipment; and publication of a register	Rental or charter of commercial boats
Marinas	Salvaging of distressed vessels and their cargoes
Marine basins, renting and operating	Ship cleaning, except hold cleaning
Marine salvaging	Steamship leasing
	Yacht basins

Major Group 45.--TRANSPORTATION BY AIR

The Major Group as a Whole

This major group includes companies engaged in furnishing domestic and foreign transportation by air and also those operating airports and flying fields and furnishing terminal services. Companies primarily engaged in performing services which may incidentally use airplanes (crop dusting, aerial photography, etc.) are classified according to the service performed.

Group No.	Industry No.	
451		AIR TRANSPORTATION, CERTIFICATED CARRIERS
	4511	Air Transportation, Certificated Carriers

Companies holding certificates of public convenience and necessity under the Civil Aeronautics Act, operating over fixed routes on fixed schedules, or in the case of certificated Alaskan carriers over fixed or irregular routes. These companies may be primarily engaged in the transportation of revenue passengers or in the transportation of cargo or freight.

	Air cargo carriers, certificated	Air transportation by certificated carriers
	Air passenger carriers, certificated	Helicopter carriers, certificated

452		AIR TRANSPORTATION, NONCERTIFICATED CARRIERS
	4521	Air Transportation, Noncertificated Carriers

Companies permitted to operate without a showing of public convenience and necessity under the Civil Aeronautics Act, including noncertificated irregular and supplemental air carriers.

Air cargo carriers, noncertificated	Air taxis, noncertificated
Air operators, "fixed- base": noncertificated	Air transportation by noncertificated carriers
Air passenger carriers, noncertificated	Flying charter service
	Sightseeing airplane service

Group	Industry
No.	No.
458	

FIXED FACILITIES AND SERVICES RELATED TO AIR
TRANSPORTATION

4582 Airports and Flying Fields

Companies primarily engaged in the operation and maintenance of airports and flying fields and/or the servicing, repairing (except on a factory basis), and storing of aircraft at such airports. Aircraft modification centers and establishments primarily engaged in factory type overhaul of aircraft are classified in Major Group 37, and flying fields maintained by aviation clubs in Industry 7949.

Aircraft cleaning and janitorial service	Airport hangar rental
Aircraft servicing and repairing, except on a factory basis	Airports
Aircraft storage at airports	Flying fields, except those maintained by aviation clubs
Airport leasing, if operating airport	Hangar operation
Aircraft upholstery repair	Janitorial service on airplanes

4583 Airport Terminal Service

Companies primarily engaged in furnishing coordinated handling services for air freight or passengers at airports. Companies furnishing aircraft services directly associated with aircraft repair, maintenance and storage, either exclusively or in conjunction with other terminal airport services are classified in Industry 4582. Aircraft modification centers and establishments primarily engaged in factory type overhaul of aircraft are classified in Major Group 37.

Air freight handling at airports	Terminal services, coordinated: at airports
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Major Group 46.--PIPE LINE TRANSPORTATION

The Major Group as a Whole

This major group includes companies primarily engaged in the pipe line transportation of petroleum and other commodities, except natural gas (Industry 4922).

Group No.	Industry No.	
461		PIPE LINES, EXCEPT NATURAL GAS
	4612	Crude Petroleum Pipe Lines
		Companies primarily engaged in the transportation of crude petroleum by pipe line.
		Crude petroleum pipe lines
	4613	Refined Petroleum Pipe Lines
		Companies primarily engaged in the transportation of refined products of petroleum, such as gasoline and fuel oil, by pipe line.
		Gasoline pipe lines (common carriers) Refined petroleum pipe lines
	4619	Pipe Lines, Not Elsewhere Classified
		Companies primarily engaged in the pipe line transportation of commodities, except crude petroleum (Industry 4612), refined products of petroleum (Industry 4613), and natural gas (Industry 4922).
		Coal pipe line operation Slurry pipe line operation
		Pipe line operation, except petroleum and natural gas pipe lines

Major Group 47.--TRANSPORTATION SERVICES

The Major Group as a Whole

This major group includes companies furnishing services incidental to transportation, such as forwarding and packing services, arrangement of transportation, and the operation of stockyards.

Group No.	Industry No.
471	FREIGHT FORWARDING
	4712 Freight Forwarding

Companies primarily engaged in undertaking the transportation of goods from shippers to receivers for a charge covering the entire transportation, and in turn making use of the services of other transportation companies as instrumentalities in effecting delivery. A forwarding company pays transportation charges to other companies as part of its costs of doing business and assumes responsibility for delivery of the goods. There are no direct relations between shippers and the transportation companies performing the movement. Foreign freight forwarders assume responsibility for air transportation but not for ocean transportation of the freight. The Railway Express Agency, Inc., is classified in Industry 4041; and companies which merely arrange for dealings between shippers and transportation companies are classified in Industry 4721.

Customs clearance of freight	Freight consolidation
Domestic forwarding	Freight forwarding
Foreign forwarding	Shipping documents preparation

Group . Industry
No. No.
472

ARRANGEMENT OF TRANSPORTATION

4721 Arrangement of Transportation

Establishments primarily engaged in furnishing travel and shipping information and acting as agents in arranging tours and transportation of passengers and freight. Companies operating as domestic or foreign freight forwarders are classified in Industry 4712. When separate reports are available for marine cargo handling operations performed by transportation arranging establishments, the cargo handling is classified in Industry 4463. When separate reports are not available, the cargo handling operations are classified with the arrangement of transportation in this industry.

Arrangement of transportation	Tourist agencies for the arrangement of transportation
Custom house brokers	Tours, conducted: except
Foreign Transportation concerns	sightseeing busses and boats
Freight rate information service	Transportation brokerage
Railroad freight agencies, not operated by railroad companies	Transportation rate services
Shipping agents and brokers	Transport clearing house
Steamship agencies	Travel agencies, bureaus, and offices--not operated by transportation companies
Ticket offices: railroad, bus, steamship, airline--not operated by transportation companies	Truck transportation brokers

473

STOCKYARDS

4731 Stockyards

Establishments primarily engaged in providing public facilities for receiving, shipping, loading, unloading, yarding, weighing, handling, and feeding livestock temporarily held, either pending sale or in transit to or from the market.

Stockyards, not exclusively for fattening livestock

Group	Industry
No.	No.
474	

RENTAL OF RAILROAD CARS

4742 Rental of Railroad Cars with Care of Lading

Companies primarily engaged in renting railroad cars and/or performing services connected with the use thereof. The Fruit Growers Express Company is an example. The Pullman Company, which is engaged in operating railroad cars, is classified in Industry 4021.

Cooling of railroad cars	Railroad car cleaning, icing,
Grain leveling in railroad cars	ventilating, and heating
Grain trimming service, for railroad shipment	Rental of railroad cars, with care of lading
Pre-cooling of fruits and vegetables in connection with railroad transportation	

4743 Rental of Railroad Cars Without Care of Lading

Companies primarily engaged in renting railroad cars without furnishing any services connected with the use thereof. This group does not include insurance, banking, or other financial institutions which purchase and lease railroad cars as investments.

Rental of railroad cars, without care of lading

478 MISCELLANEOUS SERVICES INCIDENTAL TO TRANSPORTATION

4782 Inspection and Weighing Services Connected With Transportation

Companies primarily engaged in inspection and weighing goods in connection with their transportation.

Cargo checkers and surveyors, marine	Weighting services connected with transportation
Inspection services connected with transportation	

Group	Industry
No.	No.

4783	Packing and Crating
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Companies primarily engaged in packing, crating, and otherwise preparing goods for shipping.

Crating goods for shipping	Packing goods for shipping
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4784	Fixed Facilities for Handling Motor Vehicle Transportation, Not Elsewhere Classified
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Companies primarily engaged in the operation of fixed facilities for motor vehicle transportation, such as toll roads, highway bridges, and other fixed facilities, except terminals.

Highway bridges, operation of Toll bridge operation	Toll roads, operation of Tunnel operation, vehicular
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4789	Services Incident to Transportation, not Elsewhere Classified
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Companies primarily engaged in furnishing services incidental to transportation, not elsewhere classified.

Cabs, horse drawn: for hire	Pipe line terminal facilities independently operated
Car loading	
Carriages, horse drawn: for hire	Railroad car repair, not done by railroad companies
Cleaning railroad ballast	of railroad car manufacture
Livery stables	
Loading and unloading freight cars (not truckers)	

Appendix A. Part II

SIC Groups As A Percent of Total Transportation and
Transportation Services - 1966

	Percent of gross product originating (OBE) ¹	Percent of employment Groups 40-47 ²
Total Transportation	100	100
40 Railroad Transportation	30	28
41 Local and Interurban Passenger Transportation	8	10
411 Local and Suburban		3
412 Taxicabs		4
413 Intercity and Rural		2
414 - 415 - 417		1
42 Motor Freight Transportation and Warehousing	36	39
421, 3 Trucking and Terminal		36
422 Public Warehousing		3
44 Water Transportation	8	9
45 Transportation by Air	13	10
46 Pipeline Transportation	2	1
47 Transportation Services	3	

¹ Derived from unpublished tabulation from U.S. Department of Commerce, Office of Business Economics.

² Derived from data published in Employment and Earnings (Bulletin 1312-7) by the U.S. Department of Labor, Bureau of Labor Statistics.

APPENDIX B - PART I

(The following are definitions taken from the Interstate Commerce Act and various supplementary acts.)

RAILROADS AND PIPELINES

SEC. 1. As amended June 29, 1906, April 13, 1908, June 18, 1910, May 29, 1917, August 10, 1917, February 28, 1920, June 19, 1934, August 9, 1935, September 18, 1940, June 24, 1948, August 2, 1949, August 12, 1958.

(1) That the provisions of this part shall apply to common carriers engaged in--

(a) The transportation of passengers or property wholly by railroad, or partly by railroad and partly by water when both are used under a common control, management, or arrangement for a continuous carriage or shipment; or

(b) The transportation of oil or other commodity, except water and except natural or artificial gas, by pipe line, or partly by pipe line and partly by railroad or by water; or

--

--from one State or Territory of the United States, or the District of Columbia, to any other State or Territory of the United States, or the District of Columbia, or from one place in a Territory to another place in the same Territory, or from any place in the United States through a foreign country to any other place in the United States, or from or to any place in the United States to or from a foreign country, but only in so far as such transportation takes place within the United States.

(2) The provisions of this part shall also apply to such transportation of passengers and property, but only in so far as such transportation takes place within the United States, but shall not apply--

(a) To the transportation of passengers or property, or to the receiving, delivering, storage, or handling of property, wholly within one State and not shipped to or from a foreign country from or to any place in the United States as aforesaid, except as otherwise provided in this part;

(b) or

(c) To the transportation of passengers or property by a carrier by water where such transportation would not be subject to the provisions of this part except for the fact that such carrier absorbs, out of its port-to-port water rates or out of its proportional through rates, any switching, terminal, lighterage, car rental, trackage, handling, or other charges by a rail carrier for services within the switching, drayage, lighterage, or corporate limits of a port terminal or district.

(3) (a) The term "common carrier" as used in this part shall include all pipe-line companies; express companies; sleeping-car companies; and all persons, natural or artificial, engaged in such transportation as aforesaid as common carriers for hire. Wherever the word "carrier" is used in this part it shall be held to mean "common carrier." The term "railroad" as used in this part shall include all bridges, car floats, lighters, and ferries used by or operated in connection with any railroad, and also all the road in use by any common carrier operating a railroad, whether owned or operated under a contract, agreement, or lease, and also all switches, spurs, tracks, terminals, and terminal facilities of every kind used or necessary in the transportation of the persons or property designated herein, including all freight depots, yards, and grounds, used or necessary in the transportation or delivery of any such property. The term "transportation" as used in this part shall include locomotives, cars, and other vehicles, vessels, and all instrumentalities and facilities of shipment or carriage, irrespective of ownership or of any contract, express or implied, for the use thereof, and all services in connection with the receipt, delivery, elevation, and transfer in transit, ventilation, refrigeration or icing, storage, and handling of property transported. The term "person" as used in this part includes an individual, firm, copartnership, corporation, company, association, or joint-stock association; and includes a trustee, receiver, assignee, or personal representative thereof.

Interstate Commerce Commission; Appointment,
Term, and Qualification of Commissioners

SEC. 11. /As amended July 16, 1935, August 9, 1935./ That a Commission is hereby created and established to be known as the Interstate Commerce Commission, which shall be composed of five Commissioners, who shall be appointed by the President, by and with the advice and consent of the Senate. The Commissioners first appointed under this part shall continue in office for the term of two, three, four, five, and six years, respectively, from the first day of January, Anno Domini eighteen hundred and eighty-seven, the term of each to be designated by the President; but their successors shall be appointed for terms of six years, except that any person chosen to fill a vacancy shall be appointed only for the unexpired term of the Commissioner whom he shall succeed. Any Commissioner may be removed by the President for inefficiency, neglect of duty, or malfeasance in office. Not more than three of the Commissioners shall be appointed from the same political party. No person in the employ of or holding any official relation to any common carrier subject to the provisions of this part, or owning stock or bonds thereof, or who is in any manner pecuniarily interested therein, shall enter upon the duties of or hold such office. Said Commissioners shall not engage in any other business, vocation, or employment. No vacancy in the Commission shall impair the right of the remaining Commissioners to exercise all the powers of the Commission. Upon the expiration of his term of office a Commissioner shall continue to serve until his successor is appointed and shall have qualified.

Authority and Duties of Commission; Witnesses;
Depositions

SEC. 12. /As amended March 2, 1889, February 10, 1891, February 28, 1920, August 9, 1935, September 18, 1940./ (1) The Commission shall have authority, in order to perform the duties and carry out the objects for which it was created, to inquire into and report on the management of the business of all common carriers subject to the provisions of this part, and to inquire into and report on the management of the business of persons controlling, controlled by, or under a common control with, such carriers, to the extent that the business of such persons is related to the management of the business of one or more such carriers, and the Commission shall keep itself informed as to the manner and method in which the same are conducted. The Commission may obtain from such carriers and persons such information as the Commission deems necessary to

carry out the provisions of this part; and may transmit to Congress from time to time such recommendations (including recommendations as to additional legislation) as the Commission may deem necessary. The Commission is hereby authorized and required to execute and enforce the provisions of this part; and, upon the request of the Commission, it shall be the duty of any district attorney of the United States to whom the Commission may apply to institute in the proper court and to prosecute under the direction of the Attorney General of the United States all necessary proceedings for the enforcement of the provisions of this part and for the punishment of all violations thereof, and the costs and expenses of such prosecution shall be paid out of the appropriation for the expenses of the courts of the United States; and for the purposes of this part the Commission shall have power to require, by subpoena, the attendance and testimony of witnesses and the production of all books, papers, tariffs, contracts, agreements, and documents relating to any matter under investigation.

MOTOR CARRIERS OF PROPERTY AND OF PASSENGERS

SEC. 202. /August 9, 1935, amended September 18, 1940, May 16, 1942.7 (a) The provisions of this part apply to the transportation of passengers or property by motor carriers engaged in interstate or foreign commerce and to the procurement of and the provision of facilities for such transportation, and the regulation of such transportation, and of the procurement thereof, and the provision of facilities therefor, is hereby vested in the Interstate Commerce Commission.

(b) Nothing in this part shall be construed to affect the powers of taxation of the several States or to authorize a motor carrier to do an intrastate business on the highways of any State, or to interfere with the exclusive exercise by each State of the power of regulation of intrastate commerce by motor carriers on the highways thereof.

(c) Notwithstanding any provision of this section or of section 203, the provisions of this part, except the provisions of section 204 relative to qualifications and maximum hours of service of employees and safety of operation and equipment, shall not apply--

(1) To transportation by motor vehicle by a carrier by railroad subject to part I, or by a water carrier subject to part III, or by a freight forwarder subject to part IV, incidental to transportation

or service subject to such parts, in the performance within terminal areas of transfer, collection, or delivery services; but such transportation shall be considered to be and shall be regulated as transportation subject to part I when performed by such carrier by railroad, as transportation subject to part III when performed by such water carrier, and as transportation or service subject to part IV when performed by such freight forwarder;

(2) To transportation by motor vehicle by any person (whether as agent or under a contractual arrangement) for a common carrier by railroad subject to part I, an express company subject to part I, a motor carrier subject to this part, a water carrier subject to part III, or a freight forwarder subject to part IV, in the performance within terminal areas of transfer, collection, or delivery service; but such transportation shall be considered to be performed by such carrier, express company, or freight forwarder as part of, and shall be regulated in the same manner as, the transportation by railroad, express, motor vehicle, or water, or the freight forwarder transportation or service, to which such services are incidental.

Definitions

SEC. 203. [August 9, 1935, amended June 23, 1938, June 29, 1938, September 18, 1940, September 1, 1950, July 9, 1952, July 22, 1954, August 3, 1956, August 22, 1957, August 12, 1958.] (a) As used in this part--

(1) The term "person" means any individual, firm, copartnership, corporation, company, association, or joint-stock association; and includes any trustee, receiver, assignee, or personal representative thereof,

(10) The term "interstate commerce" means commerce between any place in a State and any place in another State or between places in the same State through another State, whether such commerce moves wholly by motor vehicle or partly by motor vehicle and partly by rail, express, or water.

(11) The term "foreign commerce" means commerce, whether such commerce moves wholly by motor vehicle or partly by motor vehicle and partly by rail, express, or water, (A) between any place in the United States and any place in a foreign country, or between places in the United States through a foreign country; or (B) between any place

in the United States and any place in a Territory or possession of the United States insofar as such transportation takes place within the United States. The term "foreign commerce" also includes transportation between places in a foreign country, or between a place in one foreign country and a place in another foreign country, insofar as such transportation takes place within the United States, but only for purposes of the application, to carriers engaged in such transportation, of the following provisions of this part: Section 215 (which relates to insurance for the protection of the public), section 221 (which relates to designation of an agent for service of process), and those provisions of section 204 which relate to qualifications and maximum hours of service of employees and safety of operation and equipment.

(12) The term "highway" means the roads, highways, streets, and ways in any State.

(13) The term "motor vehicle" means any vehicle, machine, tractor, trailer, or semitrailer propelled or drawn by mechanical power and used upon the highways in the transportation of passengers or property, or any combination thereof determined by the Commission, but does not include any vehicle, locomotive, or car operated exclusively on a rail or rails, or a trolley bus operated by electric power derived from a fixed overhead wire, furnishing local passenger transportation similar to street railway service.

(14) The term "common carrier by motor vehicle" means any person which holds itself out to the general public to engage in the transportation by motor vehicle in interstate or foreign commerce of passengers or property or any class or classes thereof for compensation, whether over regular or irregular routes, except transportation by motor vehicle by an express company to the extent that such transportation has heretofore been subject to part I, to which extent such transportation shall continue to be considered to be and shall be regulated as transportation subject to part I.

(15) The term "contract carrier by motor vehicle" means any person which engages in transportation by motor vehicle of passengers or property in interstate or foreign commerce, for compensation (other than transportation referred to in paragraph (14) and the exception therein), under continuing contracts with one person or a limited number of persons either (a) for the furnishing of transportation services through the assignment of motor vehicles for a continuing period of time to the exclusive use of each person served or (b) for the furnishing of transportation services designed to meet the distinct need of each individual customer.

(16) The term "motor carrier" includes both a common carrier by motor vehicle and a contract carrier by motor vehicle.

(17) The term "private carrier of property by motor vehicle" means any person not included in the terms "common carrier by motor vehicle" or "contract carrier by motor vehicle," who or which transports in interstate or foreign commerce by motor vehicle property of which such person is the owner, lessee, or bailee, when such transportation is for the purpose of sale, lease, rent, or bailment, or in furtherance of any commercial enterprise.

(18) The term "broker" means any person not included in the term "motor carrier" and not a bona fide employee or agent of any such carrier, who or which, as principal or agent, sells or offers for sale any transportation subject to this part, or negotiates for, or holds himself or itself out by solicitation, advertisement, or otherwise as one who sells, provides, furnishes, contracts, or arranges for such transportation.

(19) The "services" and "transportation" to which this part applies include all vehicles operated by, for, or in the interest of any motor carrier irrespective of ownership or of contract, express or implied, together with all facilities and property operated or controlled by any such carrier or carriers and used in the transportation of passengers or property in interstate or foreign commerce or in the performance of any service in connection therewith.

(23) The term "migrant worker" means any individual proceeding to or returning from employment in agriculture as defined in section 3 (f) of the Fair Labor Standards Act of 1938, as amended (29 U. S. C. 203 (f), or section 3121 (g) of the Internal Revenue Code of 1954 /26 U. S. C. 3121 (g)).

(b) Nothing in this part, except the provisions of section 204 relative to qualifications and maximum hours of service of employees and safety of operation or standards of equipment shall be construed to include (1) motor vehicles employed solely in transporting school children and teachers to or from school; or (2) taxicabs, or other motor vehicles performing a bona fide taxicab service, having a capacity of not more than six passengers and not operated on a regular route or between fixed termini; or (3) motor vehicles owned or operated by or on behalf of hotels and used exclusively for the transportation of hotel patrons between hotels and local railroad or other common carrier stations; or (4) motor vehicles operated, under authorization, regulation, and control of the Secretary of the Interior, principally for the purpose

of transporting persons in and about the national parks and national monuments; or (4a) motor vehicles controlled and operated by any farmer when used in the transportation of his agricultural (including horticultural) commodities and products thereof, or in the transportation of supplies to his farm; or (5) motor vehicles controlled and operated by a cooperative association as defined in the Agricultural Marketing Act, approved June 15, 1929, as amended, or by a federation of such cooperative association, if such federation possesses no greater powers or purposes than cooperative associations so defined; or (6) motor vehicles used in carrying property consisting of ordinary livestock, fish (including shell fish), or agricultural (including horticultural) commodities (not including manufactured products thereof), if such motor vehicles are not used in carrying any other property, or passengers, for compensation: Provided, That the words "property consisting of ordinary livestock, fish (including shell fish) or agricultural (including horticultural) commodities (not including manufactured products thereof)" as used herein shall include property shown as "Exempt" in the "Commodity List" incorporated in ruling numbered 107, March 19, 1958, Bureau of Motor Carriers, Interstate Commerce Commission, but shall not include property shown therein as "Not exempt": Provided further, however, That notwithstanding the preceding proviso the words "property consisting of ordinary livestock, fish (including shell fish), or agricultural (including horticultural) commodities (not including manufactured products thereof)" shall not be deemed to include frozen fruits frozen berries, frozen vegetables, cocoa beans, coffee beans, tea, bananas, or hemp, and wool imported from any foreign country, wool tops and noils, or wool waste (carded, spun, woven, or knitted), and shall be deemed to include cooked or uncooked (including breaded) fish or shell fish when frozen or fresh (but not including fish and shell fish which have been treated for preserving, such as canned, smoked, pickled, spiced, corned or kippered products); or (7) motor vehicles used exclusively in the distribution of newspapers; or (7a) the transportation of persons or property by motor vehicle when incidental to transportation by aircraft nor, unless and to the extent that the Commission shall from time to time find that such application is necessary to carry out the national transportation policy declared in this Act, shall the provisions of this part, except the provisions of section 204 relative to qualifications and maximum hours of service of employees and safety of operation or standards of equipment apply to: (8) the transportation of passengers or property in interstate or foreign commerce wholly within a municipality or between contiguous municipalities or within a zone adjacent to and commercially a part of any such municipality or municipalities, except when such transportation is under a common control, management, or arrangement for a continuous carriage or shipment to or from a point without such municipality, municipalities, or zone, and provided that the

motor carrier engaged in such transportation of passengers over regular route or routes in interstate commerce is also lawfully engaged in the intrastate transportation of passengers over the entire length of such interstate route or routes in accordance with the laws of each State having jurisdiction; or (9) the casual, occasional, or reciprocal transportation of passengers or property by motor vehicle in interstate or foreign commerce for compensation by any person not engaged in transportation by motor vehicle as a regular occupation or business, unless, in the case of transportation of passengers, such transportation is sold or offered for sale, or provided or procured or furnished or arranged for, by a broker, or by any other person who sells or offers for sale transportation furnished by a person lawfully engaged in the transportation of passengers by motor vehicle under a certificate or permit issued under this part or under a pending application for such a certificate or permit.

WATER CARRIERS

SEC. 302 September 18, 1940. 49 U.S.C. 902. For the purposes of this part--

(a) The term "person" includes any individual, firm, copartnership, corporation, company, association, joint stock association, and any trustee, receiver, assignee, or personal representative thereof.

(b) The term "Commission" means the Interstate Commerce Commission.

(c) The term "water carrier" means a common carrier by water or a contract carrier by water.

(d) The term "common carrier by water" means any person which holds itself out to the general public to engage in the transportation by water in interstate or foreign commerce of passengers or property or any class or classes thereof for compensation, except transportation by water by an express company subject to part I in the conduct of its express business, which shall be considered to be and shall be regulated as transportation subject to part I.

(e) The term "contract carrier by water," means any person which, under individual contracts or agreements, engages in the transportation (other than transportation referred to in paragraph (d) and the exception therein) by water of passengers or property in interstate or foreign commerce for compensation.

The furnishing for compensation (under a charter, lease, or other agreement) of a vessel, to a person other than a carrier subject to this Act, to be used by the person to whom such vessel is furnished in the transportation of its own property, shall be considered to constitute, as to the vessel so furnished, engaging in transportation for compensation by the person furnishing such vessel, within the meaning of the foregoing definition of "contract carrier by water." Whenever the Commission, upon its own motion or upon application of any interested party, determines that the application of the preceding sentence to any person or class of persons is not necessary in order to effectuate the national transportation policy declared in this Act, it shall by order exempt such person or class of persons from the provisions of this part for such period of time as may be specified in such order. The Commission may by order revoke any such exemption whenever it shall find that the application of such sentence to the exempted person or class of persons is necessary in order to effectuate such national transportation policy. No such exemption shall be denied or revoked except after reasonable opportunity for hearing

(f) The term "vessel" means any watercraft or other artificial contrivance of whatever description which is used, or is capable of being, or is intended to be, used as a means of transportation by water.

(g) The term "transportation facility" includes any vessel, warehouse, wharf, pier, dock, yard, grounds, or any other instrumentality or equipment of any kind, used in or in connection with transportation by water subject to this part.

(h) the term "transportation" includes the use of any transportation facility (irrespective of ownership or of any contract, express or implied, for such use), and includes any and all services in or in connection with transportation, including the receipt, delivery, elevation, transfer in transit, refrigeration or icing, ventilation, storage, and handling of property transported or the interchange thereof with any other agency of transportation.

(i) The term "interstate or foreign transportation" or "transportation in interstate or foreign commerce," as used in this part, means transportation of persons or property--

(1) wholly by water from a place in a State to a place in any other State, whether or not such transportation takes place wholly in the United States;

(2) partly by water and partly by railroad or motor vehicle, from a place in a State to a place in any other State; except that with respect to such transportation taking place partly in the United States and partly outside thereof, such terms shall include transportation by water only insofar as it takes place from a place in the United States to another place in the United States;

(3) wholly by water, or partly by water and partly by railroad or motor vehicle from or to a place in the United States to or from a place outside the United States, but only (A) insofar as such transportation by rail or by motor vehicle takes place within the United States, and (B) in the case of a movement to a place outside the United States, only insofar as much transportation by water takes place from any place in the United States to any other place therein prior to transshipment at a place within the United States for movement to a place outside thereof, and, in the case of a movement from a place outside the United States, only insofar as much transportation by water takes place from any place in the United States to any other place therein after transshipment at a place within the United States in a movement, from a place outside thereof.

APPLICATION OF PROVISIONS; EXEMPTIONS

(b) Nothing in this part shall apply to the transportation by a water carrier of commodities in bulk when the cargo space of the vessel in which such commodities are transported is being used for the carrying of not more than three such commodities. This subsection shall apply only in the case of commodities in bulk which are (in accordance with the existing custom of the trade in the handling and transportation of such commodities as of June 1, 1939) loaded and carried without wrappers or containers and received and delivered by the carrier without transportation mark or count. For the purposes of this subsection two or more vessels while navigated as a unit shall be considered to be a single vessel. This subsection shall not apply to transportation subject, at the time this part takes effect, to the provisions of the Intercoastal Shipping Act, 1933, as amended.

(c) Nothing in this part shall apply to transportation by a contract carrier by water of commodities in bulk in a non-ocean-going vessel on a normal voyage during which (1) the cargo space of such vessel is used for the carrying of not more than three such commodities, and (2) such vessel passes within or through waters which are made international for navigation purposes by any treaty to which the United States is a party.

(d) Nothing in this part shall apply to the transportation by water of liquid cargoes in bulk in tank vessels designed for use exclusively in such service and certified under regulations approved by the Secretary of Commerce pursuant to the provisions of section 4417a of the Revised Statutes (U.S.C., 1934 edition, Supp. IV, title 46, sec. 391a).

FREIGHT FORWARDERS

SEC. 402. (May 16, 1942, amended, Dec. 20, 1950) (49 U.S.C. 1002)

(a) For the purposes of this part--

(5) The term "freight forwarder" means any person which (otherwise than as a carrier subject to part I, II, or III of this Act) holds itself out to the general public as a common carrier to transport or provide transportation of property, or any class or classes of property, for compensation, in interstate commerce, and which, in the ordinary and usual course of its undertaking, (A) assembles and consolidates or provides for assembling and consolidating shipments of such property, and performs or provides for the preformance of break-bulk and distributing operations with respect to such consolidated shipments, and (B) assumes responsibility for the transportation of such property

from point of receipt to point of destination, and (C) utilizes, for the whole or any part of the transportation of such shipments, the services of a carrier or carriers subject to part I, II, or III of this Act.

(6) The term "interstate commerce" means transportation (A) between a point in a State and a point in another State, whether or not such transportation takes place wholly within the United States; (B) between points within the same State but through any place outside thereof; or (C) from or to any point in the United States to or from any point outside thereof, but only insofar as such transportation takes place within the United States.

(7) The term "service subject to this part" means any or all of the service in connection with the transportation in interstate commerce which any person undertakes to perform or provide as a freight forwarder, or which such person is authorized or required by or under the authority of this part to perform or provide; but such term shall not include that part of the undertaking of any such person for the performance of which the services of an air carrier subject to the 1/ Civil Aeronautics Act of 1938, as amended, are utilized, or for the performance of which transportation by motor vehicle exempted under the provisions of section 203 (b) (7a) of this Act is utilized.

1/ By act of August 23, 1958, 72 Stat. 731, the act of June 23, 1938, Civil Aeronautics Act of 1938, was repealed (1401(b))⁰ and was superseded by the Federal Aviation Act of 1958.

FEDERAL AVIATION ACT OF 1958

Designation of Boards

SEC. 1003 (June 23, 1938, May 16, 1942, August 4, 1947. August 23, 1958) (49 U.S.C. 643.) (a) The (Civil Aeronautics) Board and Interstate Commerce Commission shall direct their respective chairmen to designate, from time to time, a like number of members of each to act as a joint board to consider and pass upon matters referred to such board as provided in subsection (c) of this section.

(b) Air carriers may establish reasonable through service and joint rates, fares, and charges with other common carriers; except that with respect to transportation of property, air carriers not directly engaged in the operation of aircraft in air transportation (other than companies engaged in the air express business) may not establish joint rates or charges, under the provisions of this subsection, with common carriers subject to the Interstate Commerce Act. In case of through service by air carriers and common carriers subject to the interstate Commerce Act, it shall be the duty of the carriers parties thereto to establish just and reasonable rates, fares, or charges and just the reasonable classification, rules, regulations, and practices affecting such rates, fares, or charges, or the value of the service thereunder, and if joint rates, fares, or charges shall have been established with respect to such through service, just, reasonable, and equitable divisions of such joint rates, fares, or charges us between the carriers participating therein. Any air carrier, and any common carrier subject to the Interstate Commerce Act, which is participating in such through service and joint rates, fares, or charges, shall include in its tariffs, filed with the Civil Aeronautics Board or the Interstate Commerce Commission, as the case may be, a statement showing such through service and joint rates, fares, or charges.

Jurisdiction of Boards

(c) Matters relating to such through service and joint rates, fares, or charges may be referred by the Board or the Interstate Commerce Commission, upon complaint or upon its own initiative, to a joint board created as provided in subsection (a). Complaints may be made to the Interstate Commerce Commission or the Board with respect to any matter which may be referred to a joint board under this subsection.

Power of Boards

(d) With respect to matters referred to any joint board as provided in subsection (c), if such board finds, after notice and hearing, that any such joint rate, fare, or charge, or classification, rule, regulation, or practice, affecting such joint rate, fare, or charge or the value of the service thereunder is or will be unjust, unreasonable, unjustly discriminatory, or unduly preferential or prejudicial, or that any division of any such joint rate, fare, or charge, is or will be unjust, unreasonable, inequitable, or unduly preferential or prejudicial as between the carriers parties thereto, it is authorized and directed to take the same action with respect thereto as the Board is empowered to take with respect to any joint rate, fare, or charge, between air carriers, or any divisions thereof, or any classification, rule, regulation, or practice affecting such joint rate, fare, or charge or the value of the service thereunder.

Judicial Enforcement and Review

(e) Orders of the joint boards shall be enforceable and reviewable as provided in this Act with respect to orders of the Board.

Appendix B - Part II
Relationship of SIC Definitions to ICC Definitions

SIC	ICC	Index
4011, Railroad-Line haul	Class I - Line-haul railroad--Three years annual average operating revenue of \$5,000,000 or more. <u>1/</u> Class II - Line-haul railroad--Three year annual average operating revenue of under \$5,000,000. <u>1/</u> Electric railroad--Interurban and commercial electric railroads not part of "steam railroad" but engaged in interstate commerce.	Class I
4012, Railroads-Switching and Terminal Company	Class I - switching and terminal Class II - switching and terminal	Class I
4021, Sleeping Cars and other Passenger Car Service	Pullman Company	None
4041, Railway Express Service	Railway Express Agency	None
4011, Local and Suburban Transit Bus Lines Elevated railway Local Railroads Trolleys	Class I - Local and Suburban--Average gross operating revenue of \$200,000 or over annual and less than 50 percent of the revenue in from intercity service. <u>2/</u> Class II - Local and Suburban --Average gross operating revenue of less than \$200,000 annually and less than 50 percent of the revenue is from intercity service.	Class I

1/ From 1966 through 1956 Class I was \$3,000,000 and over and Class II was under \$3,000,000 and prior to 1956 Class I was \$1,000,000 or more, Class II over 100,000 but less than 1,000,000 and Class III under \$100,000.

2/ Prior to 1965 a carrier was local if the average fare was less than 20 cents.

APPENDIX B - Part II - Cont'd.

SIC	ICC	Index
4119, Local Passenger Transportation NEC Ambulance Automobile Rental with Driver Driver Cog Railroads Ski Tows Sight-seeing	Class I Local and Suburban - Charter Service Class II Local and Suburban - Charter Service	
4121, Taxicab	None	
4131, Intercity Bus Lines Regularly Scheduled Bus	Class I Common Carrier - Intercity service --Average gross operating revenue of over \$200,000 and 50 percent or more of operating revenue from intercity service . Class II Common Carrier - Intercity Service--Average gross operating revenue of less than \$200,000 and 50 percent or more of operating revenue from intercity service.	Class I
4132, Intercity Highway Passenger Transportation NEC Service not Regularly Scheduled	Class I Common Carrier - Intercity service Class II Common Carrier - Intercity service	Class I
4141, Passenger Transportation Charter Service	Class I Contract Carrier - Local - Charter Service Class II Contract Carrier - Local - Charter Service	Class I
4142, Passenger Transportation Charter Service, Except Local	Class I Contract Carrier - Intercity - Charter Service Class II Contract Carrier - Intercity - Charter Service	Class I

APPENDIX B - Part II - Cont'd

SIC	ICC	Index
4151, School Buses	None	None
4171, Terminal and Joint Terminal Maintenance Facilities for Motor Vehicle Passenger Transportation	None	None
4172, Maintenance and Service Facilities for Motor Vehicle Passenger Transportation	None	None
421, Trucking Local and long distant	Class I Common Carrier of Motor Freight holding certificates or permits issued by the ICC with 3 year average operating revenue of \$1,000,000 or more.	
4212, Local Trucking and Draying without Storage	Class I Contract Carrier Local of Motor Freight holding certificates or permits issued by the ICC with 3 year average operating revenue of \$1,000,000 or more. Class II Common Carrier of Motor Freight holding certificates or permits issued by the ICC with 3 year average operating revenues of \$2,000,000 but less than \$1,000,000. Class II Contract Carriers of Motor Freight holding certificates or permits issued by the ICC with 3 year average operating revenue of \$200,000 but less than \$1,000,000.	

APPENDIX B - Part II - Cont'd

SIC	ICC	INDEX
4213, Trucking, Except Local	Class I, II and III - Common and Contract Carriers	Class I and II, intercity
4214, Local Trucking and Storage Including Household Goods	Class I, II and III - Common and Contract Carriers	None
422, Public Warehousing		
4221, Farm Product Warehousing and Storage	None	None
4222, Refrigerated Warehousing except Food Lockers	None	None
4223, Food Lockers, with or without Food Preparation Facilities	None	None
4224, Household Goods Warehousing and Storage	None	None
4225, General Warehousing and Storage	None	None
4226 Special Warehousing and Storage NEC	None	None

APPENDIX B - Part II - Cont'd

SIC	ICC	Index
4231, Terminal and Joing Terminal Maintenance Facilities for Motor Freight Transportation	None	None
4411, Deep Sea Foreign Transportation	None	None
4421, Transportation to and between noncontiguous territories	Maritime carriers	None
4422, Coastwise Transpor- tation	Class A companies - those having average annual operating revenue exceeding \$500,000. Class B companies - those having average annual operating revenue exceeding \$100,000 but under \$500,000 and Class C having annual operating of under \$100,000.	None
4423, Intercoastal Transportation	Maritime Carriers	None
4431, Great Lakes - St. Lawrence Seaway Transportation	Class A, Class B and Class C	None
4441, Transportation on Rivers and Canals	Class A, Class B and Class C	None
4452, Ferries	None	None

APPENDIX B - Part II - Cont'd

SIC	ICC	Index
4453, Lighterage	Class A, Class B, and Class C.	None
4434, Towing and Tugboat Service	Class A, Class B, and Class C	one
4459, Local Water Transportation NEC	None	None
4463, Marine Cargo Handling	None	None
4464, Canal Operation	None	None
4469, Water Transportation Service, NEC	None	None
45, Transportation by Air		
4511, Air Transportation Certificated Carriers	Certificated Air Carriers	
4521, Air Transportation Non-certificated Carriers	Supplemental Carriers Air Taxis	None
4582, Airports and Flying Fields	None FAA	None
4583, Airport Terminal Services	None FAA	None

APPENDIX B - Part II - Cont'd

SIC	ICC	Index
46, Pipeline Transportation		
4612, Crude Petroleum Pipelines	Common carriers engaged in interstate transportation of oil or other commodity, except water and natural or artificial gas. by pipe line.	Crude and refined
4613, Refined Petroleum Pipeline	Common carriers engaged in interstate transportation of oil or other commodity except water and natural or artificial gas by pipe line.	
4619, Pipelines, NEC	Common carriers engaged in interstate transportation of oil or other commodity except water and natural artificial gas by pipe line.	None
4712, Freight Forwarders	Class A forwarders are those having average annual gross operating revenues of \$100,000 or more; and Class B includes all forwarders having average annual gross operating revenues less than \$100,000. Ther term "gross operating revenues" is used in this connection to mean the total forwarder revenue before deduction of the amount paid for transportation purchased.	Class A
4721, Arrangement of Transportation	None	None
4731, Stockyards	None	None
4742, Rental of Railroads with Care of Lading	Those owning 1000 cars or more Those owning less than 1000 cars	None

APPENDIX B - Part II - Cont'd

SIC	ICC	Index
4743, Rental of Railroad Cars without Care of Lading	Those owning 1000 cars or more Those owning less than 1000 cars.	None
4782, Inspection and Weighing Services Connected with Transportation	None	None
4783, Packing and Crating	None	None
4784, Fixed Facilities for Handling Motor Vehicle Transportation NEC	None	None
4789, Services Incidental to Transportation NEC	None	None

Appendix B - Part III
SIC Coverage of Regulated Carriers and Carriers Included in
Productivity Indexes

			Regulated : Indexes (percent of total SIC)	
SIC 40 11	Railroads, line haul	Class I line haul railroads	100	100
40 13	Switching and terminal companies	Class II line haul railroads	100	0
		Electric railroads	100	0
		Class I switching and terminal companies	100	100
		Class II switching and terminal companies	100	0
SIC 40 21		Sleeping car companies (Pullman Company)	100	100
SIC 40 41		Railway Express	100	0
SIC 41 11		Motor carriers of passengers	63	63
41 13		Intercity	97	97
41 14		Local	16	16
SIC 41 12		Other motor carriers of passengers	0	0
41 12				
41 15				
41 17				
SIC 42 1		Motor carriers of property	79	63
		Class I and II, intercity	86	86
		Class I and II, local	34	0
		Class III, intercity and local	8	0
SIC 42 2 and 42 3		Warehousing - storage and other services	0	0
SIC 44		Water transportation	8	0
SIC 45 11		Certified air carriers	100	100
SIC 45 21		Supplemental air taxis	100	0
SIC 45 8		Air terminals	0	0
SIC 46		Pipelines	86	86
SIC 47 12		Freight forwarders	N.A.	N.A.
SIC 47 2				
47 3		Other transportation services	0	0
47 4				
47 8				