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Sol D. Helfand, Vito Natrella, and Alan E. Pisarski; Committee on National Statistics; Commission on Behavioral and Social Sciences and Education; National Research Council

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Helfand, S. D. ; Natrella, V. ; Pisarski, A. E.
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The report determines the adequacy of statistics for transportation, communication, and finance and insurance sectors of the economy that are collected by the federal statistical system, regulatory agencies, and private organizations; ascertains the needs of the federal government and others for data on their industry sectors; and makes recommendations for consideration by federal statistical agencies and others in order to satisfy current or future needs for data. For each service sector, the report attempts to determine: what data collection programs are currently conducted by regulatory agencies, other agencies, and private organizations; what changes in data collection activities have occurred or are expected to occur as a result of deregulation; what specific uses are made of the data; what proxy measures are used if adequate data are not available; what industry segments and data items require improvements; and what changes are needed in the Standard Industrial Classification manual for these industry sectors.

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Sol D. Helfand, Vito Natrella, and Alan E. Pisarski

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This report has been reviewed by a group other than the authors according to procedures approved by a Report Review Committee consisting of members of the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine.

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## COMMITTEE ON NATIONAL STATISTICS

CONTENTS

## TABLES AND FIGURES

# SECTION I. OVERVIEW AND GENERAL RECOMMENDATIONS

## A. BACKGROUND

The main objectives of the study were to: (1) determine the adequacy of statistics for transportation, communication, and finance and insurance collected by the federal statistical system, regulatory agencies, and private organizations; (2) ascertain the needs of the federal government and others for data on their industry segments; and (3) make recommendations for consideration by federal statistical agencies and others in order to satisfy current or future needs. This section presents the general findings and broad recommendations.

The study considered both sides of the data--supply and demand. For each sector, the authors attempted to determine:

- What data collection programs are presently conducted by regulatory agencies, by other agencies, and by private organizations.
- What changes in data collection activities have occurred or are expected to occur as a result of deregulation.
- What specific uses are made of the data.
- What proxy measures are used if adequate data are not available.
- What industry segments and data items require improvements.
- What changes are needed in the Standard Industrial Classification (SIC) manual for these industry sectors.

The authors supplemented their own knowledge and experience with visits and calls to representatives of a considerable number of organizations, both private and public, to identify what they presently collect, what use they make of the data, and what data gaps exist. Some agencies are both suppliers and users. Appendix B lists the organizations consulted and participating staff.

## B. ORGANIZATION OF THE REPORT

This report is in four sections: Section II is on transportation, Section III on communication, and Section IV on finance and insurance.

The recommendations that apply generally to all three sectors are summarized at the end of this section. Sections II, III, and IV are organized as follows:

- Background and scope.
- Recent developments, including the impact of technology and deregulation, and industry structure.
- Statistical coverage.
- Findings.
- Recommendations.

C. SCOPE

The study focused on data for commercial domestic organizations classified in the Standard Industrial Classification Manual under the following SIC codes:

| Major Group | Description |
|---|---|
| 40 | Railroad transportation |
| 41 | Local and suburban transit and interurban highway and passenger transportation |
| 42 | Motor freight transportation and warehousing |
| 44 | Water transportation |
| 45 | Transportation by air |
| 46 | Pipe lines, except natural gas |
| 47 | Transportation services |
| 48 | Communication |
| 60 | Banking |
| 61 | Credit agencies other than banks |
| 62 | Security and commodity brokers, dealers, exchanges, and services |
| 63 | Insurance |
| 64 | Insurance agents, brokers, and service |
| 67 | Holding and other investment offices |

The three-digit and four-digit industry codes and descriptions for these major groups are shown in Appendix A.

Constraints of time and staff limited the scope of the study. Only limited research was conducted on household expenditures for these services, international and government services, and measures of prices and productivity. Where these subjects are especially relevant to a specific industry, they are given some attention in Sections II-IV of this report.

## D. GENERAL FINDINGS

1. The transportation, communication, finance and insurance industries are among the fastest growing and most volatile sectors of the U.S. economy. They are being reshaped by a number of recent developments:

a. New technologies in these industries have affected their structure, convenience, and cost. The impact of technology applies both to the products of the industry and the delivery of their services. Satellite services emphasize the advances made in communication technology.

b. As a result of deregulation, the collection and publication of data by the agencies regulating these industries generally is being reduced, and in some cases, abolished. Examples include the series on financial data for radio and television stations that was discontinued by the Federal Communications Commission. In addition to its impact on the availability of data, deregulation has expanded the scope of these industries in two directions. First, companies which have never competed in regulated industries are entering the market. Second, regulated companies are expanding the range of services offered.

c. Dramatic changes are taking place not only in the way we communicate with each other, transport goods and people, and serve the financial and insurance needs of society, but also in the prices we pay for these services. The current volatile and competitive nature of these industries is affecting the prices we pay for airline tickets, telephones and long-distance phone rates, and financial services.

d. There has been a deemphasis in data collection as a result of policy changes created by budgetary restraints and the goal of reducing reporting burden.

2. Transportation, communication, finance and insurance comprise a very significant portion of the U. S. economy. Very little aggregate data are available for these industries. Information on employment from the Bureau of Labor Statistics shows that in December 1983 there were 8.9 million people employed in these industries. This represents 11.3 percent of total employees on nonagricultural payrolls in the private sector. Data from the Internal Revenue Service show that these industries represented 14.6 percent of total U. S. nonfarm business receipts in 1980 (see Table I.1).

3. The Standard Industrial Classification (SIC) system has two major weaknesses in measuring transportation, communication, and finance and insurance. First, the SIC has not yet established separate classifications for emerging and rapidly growing segments of these industries, such as cable television and other pay television services. Since most government and many private data gatherers collect and publish by SIC code, separate information is not available where classification is under a "basket" code. Second, the system makes it difficult to measure transportation, communication, finance and insurance activities of firms whose primary activity is outside these industries.

Table I.1 Number of Returns and Business Receipts for Selected Service Industries: 1980
(Estimates based on samples--money amounts are in billions of dollars)

| Industry | Number of Returns | | | | Receipts* | | | |
|---|---|---|---|---|---|---|---|---|
| | Total | Sole Proprietorship | Partnership | Corporation | Total | Sole Proprietorship | Partnership | Corporation |
| All Nonfarm Industries | 13,637,912 | 9,730,019 | 1,253,430 | 2,654,463 | 6,984.8 | 411.2 | 264.4 | 6,309.2 |
| Total Transportation | 512,907 | 405,622 | 16,675 | 90,610 | 230.5 | 19.2 | 4.5 | 206.8 |
| Railroad transportation | 240 | — | — | 240 | 42.6 | — | — | 42.6 |
| Local and interurban passenger transit | 55,076 | 43,315 | 1,238 | 10,523 | 5.4 | 1.0 | 0.1 | 4.3 |
| Trucking and warehousing | 377,372 | 322,302 | 10,777 | 44,293 | 79.7 | 16.2 | 1.7 | 61.8 |
| Water transportation | 23,258 | 11,776 | 1,343 | 10,139 | 16.9 | 0.4 | 0.6 | 15.9 |
| Air transportation | 16,560 | 9,131 | 1,112 | 6,317 | 44.0 | 0.3 | 0.1 | 43.6 |
| Pipelines, except natural gas | 286 | — | — | 286 | 16.8 | — | — | 16.8 |
| Transportation services | 40,115 | 19,098 | 2,205 | 18,812 | 25.1 | 1.3 | 2.0 | 21.8 |
| Total Communication | 17,732 | 5,512 | 1,811 | 10,409 | 103.5 | 0.1 | 0.1 | 103.3 |
| Telephone, telegraph, and other communication services | NA | NA | NA | 5,011 | NA | NA | NA | 89.6 |
| Radio and television broadcasting | NA | NA | NA | 5,398 | NA | NA | NA | 13.7 |
| Total Finance and Insurance | 650,684 | 276,637 | 173,095 | 200,952 | 687.8 | 9.4 | 26.5 | 651.9 |
| Banking | 15,298 | 1,060 | 314 | 13,924 | 220.7 | 0.1 | 0.2 | 220.4 |
| Credit agencies other than banks | 68,076 | 3,647 | 2,114 | 62,315 | 78.9 | 0.1 | 0.2 | 78.6 |
| Security and commodity brokers and services | 41,350 | 33,113 | 2,069 | 6,168 | 41.6 | 2.7 | 12.7 | 26.2 |
| Insurance | 10,620 | — | — | 10,620 | 282.8 | — | — | 282.8 |
| Insurance agents, brokers, and service | 293,442 | 238,817 | 7,127 | 47,498 | 23.7 | 6.5 | 3.1 | 14.1 |
| Holding and other investment companies | 221,898 | — | 161,471 | 60,427 | 40.1 | — | 10.3 | 29.8 |

Source: Internal Revenue Service Statistics of Income, 1980.
*Total receipts for partnerships in finance and insurance and for all corporations. Business receipts for other partnerships and for all sole proprietorships

4. There is a considerable variation in the quality of statistics available for transportation, communication, and finance and insurance. Where regulatory agencies continue to collect data for regulatory purposes, the information is usually of high quality. In many cases only selected companies are required to report to the regulatory agency. For example, only the 60-70 largest telephone companies report data to the Federal Communications Commission.

Information from other sources, including trade associations and private organizations, is of varying quality. Data collection skills and resources vary from organization to organization. Members reporting to trade associations may represent only part of an industry. Response can vary quite substantially. For example, both a radio survey taken by the National Association of Broadcasters and a survey taken by the Mortgage Bankers Association had response rates of 20 percent.

Specific statements on data quality, applicable to appropriate sub-industry groups, appear in Sections II, III, and IV.

## E. DEFICIENCIES IN SERVICE STATISTICS AND GENERAL DATA NEEDS

Several agencies and observers have discussed the lack of adequate statistics for service industries.

1. The Bureau of Economic Analysis (BEA), commenting on a Census Bureau service industry data improvement document, listed BEA needs for expanded coverage of service-related industries. The following listing shows, in descending priority sequence, SIC industries for which annual sales/receipts were stated as needed:

| SIC CODE | Industry |
|---|---|
| 44 | Water transportation |
| 495 | Sanitary services |
| 48 | Communication |
| 60-66 | Finance, insurance, and real estate |
| 40-42 | Railroad transportation, local and interurban passenger transit, and trucking and warehousing |
| 45 | Transportation by air |
| 47 | Transportation services |

2. "Increasingly, economic statistics have failed to keep up with the dizzying pace of an economy in flux. At a time when the economy is being shaped by high-technology industries and the fast-growing service sector, the data tend to emphasize older, mature or declining industries. This makes it difficult to get a clear picture of the structure of the economy and produces distortions about economic growth and inflation" ("Why Economic Indicators are often Wrong," Business Week, Oct. 17, 1983).

3. "Economic indicators used by the Federal Government to shape economic policy do not adequately reflect the dominant role of service in our economy. We do not gather data on services anywhere equivalent to the data we accumulate on other kinds of economic activity. Further, the U.S. and other economies at best can only measure services trade in the aggregate and are unable to gauge sector-by-sector service activities. U.S. domestic and international policies towards the service sector will remain stop-gap until more adequate data are developed. The Coalition is studying this problem and will make recommendations to correct the current situation" (statement of objective by the Coalition of Service Industries, Inc., Task Force on Data Collection and Statistical Improvement).

4. ". . . I urge you to redouble your efforts to secure for the service sector its rightful place in the economic and political institutions of our country. This task will not be easy, for not only is there still a misunderstanding of the significance of services in the American economy, but older industries may attempt to freeze the processes of economic change that have given services their current prominence" (message by Senator Daniel K. Inouye to the annual meeting of the Coalition of Service Industries, Inc., February 9, 1984).

5. "Employment in the service industries greatly exceeds that in manufacturing, and most new jobs created are in the service sector. However data and analysis for this very prominent sector are extremely underdeveloped. The requested resources would be used to: examine the contributions of selected service industries to overall inflation; improve and expand data and analysis pertaining to service industry productivity; support Departmental initiatives with respect to export development and international trade policy relating to service industries; analyze the effects of Government actions and policies on the domestic service industries; and support Departmental programs aimed at the development of minority and small business where the service sector is particularly important" (budget proposal for FY 1982, Bureau of Industrial Economics, U.S. Department of Commerce).

## F. GENERAL RECOMMENDATIONS[1]

This section presents the recommendations applicable to all the industry segments covered in this study. Priorities have been assigned to them as follows: Recommendations with highest priority are marked with two asterisks, and those with secondary priority are marked with one asterisk. Specific recommendations applicable to each industry segment are given in Sections II, III, and IV.

**1. Develop aggregate benchmark data for establishments primarily engaged in transportation, communication, finance and insurance. This can be done as part of or coordinated with the 5-year economic censuses.

[1]The recommendations are those of the authors and do not necessarily represent the views of the Committee on National Statistics.

2. Consider the development of periodic benchmark data to measure total economic activity for transportation, communication, finance and insurance whether or not the firm's primary activity is in these areas. This can be done in four ways:

*a. By measuring the in-house transportation, communication, finance and insurance activities which are owned by the firms and operated as administrative and auxiliary activities.

b. By measuring the sales to outside customers of these services by establishments whose primary activity is outside the scope of the industry. For example, measures could be developed for the insurance and brokerage activities of department stores.

c. By measuring the sales of these services by establishments whose secondary activity is in another segment of the same industry. For example, measures could be developed for the brokerage activities of banks.

d. By measuring the sales of these activities by firms having excess capacity of systems installed for internal use. For example, measures could be developed for non-communications companies which are developing their own private-line telephone systems and offering excess capacity to other companies, employees, and local residents.

**3. For specific industries in these sectors where current data are not available, incomplete, or contradictory, develop or expand current series to include data for these industries.

**4. For the next SIC update, modify the classifications for transportation, communication, finance and insurance by (a) adding specific industries that meet the requirements on size and specialization; and (b) combining industries that are no longer large enough for separate identification.

5. Statistical coordination should play a major role in considering the recommendations on data collection and classification updates. Interagency cooperation, particularly between regulatory agencies and general purpose statistical agencies, is needed to evaluate the data requirements created by deregulation and take steps to remedy the problem. Cooperation is also needed in order to develop statistical uses of administrative data. The Statistical Policy Office of OMB should lead the way in promoting these efforts.

# SECTION II. TRANSPORTATION

## A. INTRODUCTION

This section presents an assessment of needed statistical improvements in the transportation services industries. Important changes in these industries have been occurring that prompt this review. Chief among these changes is wide-spread deregulation of many of the industries treated here. Deregulation has changed both the structure of those industries and the statistical reporting systems that support our understanding of them. In addition to deregulation, other changes in the industries under study driven by institutional and technological developments are changing the need for--and availability of--industrial statistics.

This section is organized into five parts.

Part B, following this introduction, entitled "Background," discusses some of the basic divisions between elements of the transportation industry and how they relate to the SIC structuring of the industry. Two important characteristics of the industry, not usually a part of the SIC structure, specifically the distinction between public and private elements, and the distinction between regulated and non-regulated elements, are also discussed because of their potential importance to many of the data development issues under study.

The first segment of Part C, "Scope", identifies the portion of transportation activity that is within the scope of this report and relates it to the entire sector of transportation. The second segment addresses the kinds of data that are in the scope of the report and presents survey results on how users of transportation data see the importance of the kinds of data in scope relative to other transportation data requirements.

Part D presents detailed analyses of statistical coverage and requirements on an industry by industry basis. First, the aspects of industry structure pertinent to data development issues are examined. Then the trends in public statistical coverage and private alternative sources of statistics are presented.

Part E presents general findings and recommendations broadly applicable to transportation service industries. Part F presents more detailed findings and recommendations for each of the individual industries considered.

## B. BACKGROUND

Transportation in its broadest sense is a service activity in which the demand for the movement of people, or goods, is derived from demand in the other sectors of economic and social activity. As a result, transport activities are so intertwined with the other activities they serve that clear-cut demarcations between transportation and non-transportation activities are difficult to achieve. In part this is because a large segment of transportation is performed as an internal activity of business or as a personal activity in which no financial transactions take place. In fact, the largest segment of transportation activity is that performed by individuals serving their own needs in their own vehicles.

Total transportation activities can be stratified in a number of different ways using varying organizing principles to assist in understanding and description:

- Typically, the first-order distinction made is the dichotomy between transportation of freight and of passengers. This seemingly straightforward distinction is not always easy to depict accurately, because passenger and freight movements often occur simultaneously in the same vehicle.
- A geographically oriented organizing principle is sometimes used to separate transport activities into local, intercity, and international components. Here also the boundaries between groupings are not always precisely determined. Because government jurisdiction is often important in transport matters, terms such as interstate become important distinctions. (In Europe an important distinction is made between international and intercontinental travel--a distinction of little significance in the United States.)
- Finally a major stratifier of transport activity is by mode of travel, i. e., the technological means of travel.

The Standard Industrial Classification uses all of these stratifying principles. The major structuring element of the transportation parts of SIC Division E is mode of travel, with subordinate strata separating passengers and freight, and finally geography.

### 1. Public-Private Roles in Transportation

An important additional distinction to be made in treating transportation information is that between publicly and privately provided transportation facilities and services. A frequently employed generalization is that transportation rights-of-way and infrastructure are publicly provided, whereas vehicles and services are typically privately provided. There are important exceptions to the generalization--rail and pipeline rights-of-way are private; and mass transit vehicles and services are almost always publicly provided. As noted in Transport Tomorrow, a report of the National Chamber Foundation:

"Historically transportation services have developed through the complex interaction of free-market forces, government regulation, and private and public investment. There are examples of almost any combination of ownership, operation, or financial support. Port facilities, airports, roads, railroads, and local transit facilities may be owned by almost any level of government, or by the private sector."

There are important implications for the present study of transportation data capabilities and requirements in this complex ownership structure. Public and private organizations differ markedly in their data requirements, ability to collect data, and need to disseminate information.

Beyond the simple public-private split, there are important distinctions in the responsibilities of levels of government from mode to mode. In addition to federal, state, and local jurisdictions' involvement, transportation institutions are rich in innovative quasi-governmental structures. Inter-state compacts, authorities, federal corporations, and special districts are used in almost every modal area to plan, develop, and operate facilities and services. These further complicate the need for--and ability to obtain--data.

Because of the impact this rich mix of institutions has on data development issues, the institutional structure in each transportation SIC group will be examined as part of the process of data review.

2. Deregulation

Transport services have traditionally been the object of extensive federal and state economic regulation. In recent years deregulation, or reduced levels of regulation, has occurred in almost every mode, beginning with the Airline Deregulation Act in 1978. Since then reductions in the level of regulation have occurred in the rail, trucking, and intercity bus sectors. Interest in further deregulation continues, and eventually all of the transportation elements of Division E of the SIC code will be affected.

The major impact of deregulation on data requirements and development includes the following:

-Market Entry and Exit - The ability of firms to enter and leave the entire market, or segments of it, has been greatly eased. Consequently, the number of firms in a market sector is subject to rapid change. New airlines, trucking firms and bus companies are being created almost overnight and, in some cases, are disappearing just as fast. In 1983, for instance, the first year of bus deregulation, one thousand applications for bus charter operating rights, and two hundred for scheduled services, were filed in an industry that had approximately fourteen hundred firms in 1982. This volatility makes firm and establishment level statistics increasingly important and increasingly difficult to maintain. Further complication is introduced as a product of new freedom for private firms to provide for-hire services with their private fleets.

-Fare and Rate Setting Freedom - Carriers have acquired greater freedom in setting and changing rates and fares. Price competition and complex pricing systems have resulted. Requirements for publication of price data have diminished. As a result, revenues and pricing data are more difficult to develop and more subject to sharp changes.

-Regulatory Reporting - As carriers have been given more freedom to function in the market, their reporting burden to regulatory agencies has been reduced in parallel. In most cases the warrants to require reporting are directly tied to the warrants to regulate. Coupled with pressures to reduce reporting burdens generally as part of paperwork reduction programs, the development of statistics on regulated transport has declined markedly. This decline in available information has impacts beyond the regulatory sphere. In many areas regulatory data sets evolved over time into the fundamental data bases about transport services. They were used by both the public and private sectors for many purposes--facility planning, investment analysis, equipment design--outside the regulatory sphere. These activities are now sharply affected by the loss of detailed current information.

In summary, the two greatest impacts of the deregulatory process have been the increased volatility of the firms, services, and rates in the regulated sectors, on the one hand; and the decline of reporting systems to monitor those changes, on the other.

## C. SCOPE

### 1. Transportation Services

This inquiry into transportation data availability and requirements takes as its major focus the sector of transportation represented by the SIC categories in Division E of the Standard Industrial Classification (see Appendix A). This Division generally includes those firms engaged in providing transportation service for freight and passengers in all modal categories. As noted in Section 1 these industries generate receipts of over $200 billion per year and employ approximately 2.77 million people. Although a major segment of the economy, this scope of effort embraces only about 25% of total transportation activity in the society, excluding major elements of what is typically encompassed by the term transportation. The general areas excluded are:

SIC Major Group 16 Facility Construction
SIC Major Group 37 Vehicle Manufacturing
SIC Major Group 55 Vehicle Sales & Services
SIC Major Group 75 Vehicle Repair Services

Each of these major groups is a very large industry. Road construction and maintenance alone is a $50 billion a year activity;

vehicle manufacturing exceeds $200 billion; and vehicle servicing is also in the $50 billion per year range. Contrasted to the 2.77 million employees in freight and passenger services, total industry employment is put at approximately 10 million in 1981 as shown in Table II.1 (The extensive footnoting to that table is evidence of the difficulty in compiling complete estimates of employment for an industry involving so many different SIC categories.)

It is inappropriate to infer from the previous delineation of focus by SIC category that the boundaries between SIC Major Groups clearly demarcate the different functional areas of transportation. There are overlaps and definitional problems both in areas to be included and excluded if the SIC coding is followed stringently. As examples:

- Right-of-way construction and maintenance excluded from the 40-47 series is primarily public construction, i.e., highways, waterways, airports. Rail and pipeline expenditures for right-of-way are included under their respective service industry codes.
- Vehicle manufacturing and maintenance is generally excluded from the scope of this project. However, because a large part of rail car building and repair is performed by railroads they are included in that industry. (Rail car manufacturing can appear in at least three areas).
- Transportation services to freight and passengers are generally included within the scope of effort but automotive rental services, a major service mode, appears in SIC 75 with vehicle repair and parking services.
- Trucking services (SIC 42) exemplifies the problems of SIC coding. All other transport modes - rail, air, water - own and use trucking as a part of their operations. In addition, many manufacturing, agricultural, extractive, and service industries own private truck fleets. The sum of these trucking activities exceeds the scale of all trucking under SIC 42.

These, plus other concerns discussed in the background section, will sometimes require that a broader treatment than that defined in each major group be used in order to assure comprehensiveness.

## 2. Kinds of Data

The term transportation data encompasses a number of areas of interest quite different in their needs, applications, and methods. The spectrum of interest includes the following:

- Engineering/Operations Data: This area includes physical inventory statistics on the available vehicles, facilities, and infrastructure of the transportation system. Measures focus on the capacity, operating characteristics, and life cycle attributes of the system.

- Marketing/Planning Data: Utilizes engineering data, demographic, and economic data to measure utilization of the system, evaluate its performance, and forecast future demand. Key measures are: travel volumes and patterns; level-of-service measures; and the links between socio-economic qualities and transport demands.
- Regulatory Data: The focus of regulatory data is on the firm providing transportation services. Data utilized include: the services provided by the firm; its fitness to provide service; the rates and fees it charges; and its income, expenditures, and profitability.
- National Economic Analysis Data: In this area the data of interest are broad measures of industry scale, level of activity, and linkage to other parts of the economy. To be effective such data must: be representative of the entire industry; identify employment levels and characteristics; measure cost impacts on industries using its products; and measure its purchases of other industries' goods and services. An important part of data requirements in this area is the measurement of inputs and outputs for development of productivity measures.

Any typology of data sets such as the foregoing can not be too precise, because data are frequently used for many purposes. Regulatory data, for instance, have become major sources for non-regulatory purposes such as vehicle design, facility planning and marketing.

In transportation, another simplified way to stratify data has been as follows:

1. Characteristics of the System
2. Characteristics of the Trip
3. Characteristics of the Persons and Goods Traveling
4. Characteristics of the Firms Providing Transportation Services

Of these the fourth: "Characteristics of the Firms Providing Transportation Services" is the main focus of this inquiry. Relating back to the earlier typology of data sets, it is the data set most likely to be applied to regulatory data needs and national economic analysis requirements. It is the area more likely to concentrate on dollar flows related to transportation than on the physical flows of persons and goods.

In 1981 the Transportation Research Board of the National Research Council conducted a survey of data users which shed considerable light on how different sets of data were used by different users. Users were stratified into groups according to type of organization, geographic region, and interest area.

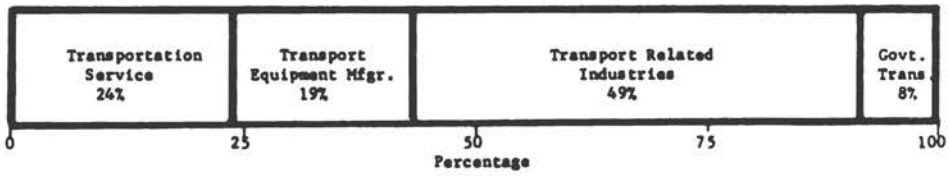
Respondents were asked to identify data sources used, by frequency of use, and to rank source agencies and specific sources according to importance to their work. Table II.2 presents the counts of respondent

## TABLE II.1 EMPLOYMENT IN TRANSPORTATION AND RELATED INDUSTRIES

*Total employment in the transportation and related industries has been steadily declining during the past 30 years, as a share of total U.S. civilian employment, dropping from 13.1% in 1950 to 10.4% in 1981. Total employment in the "Transportation Service" sector dropped in actual numbers, mostly because of a 64% decrease in railroad employment. Total employment in the other three categories listed rose.*

Number of Persons Employed
(In Thousands)

| Transportation Service | 1950 | 1955 | 1960 | 1965 | 1970 | 1975 | 1980 | 1981 |
|---|---|---|---|---|---|---|---|---|
| Air Transport | 86 | 128 | 191 | 229 | 351 | 362 | 453 | 453 |
| Bus - Intercity & Rural | 47 | 43 | 41 | 42 | 43 | 39 | 38 | 38 |
| Local Transport | 157 | 127 | 101 | 83 | 77 | 69 | 79 | 83 |
| Railroads | 1,391 | 1,205 | 885 | 735 | 627 | 538 | 532 | 503 |
| Oil Pipeline | 29 | 27 | 23 | 20 | 18 | 17 | 21 | 22 |
| Taxi | 121 | 124 | 121 | 110 | 107 | 83 | 53 | 52 |
| Trucking & Trucking Terminals | 557 | 688 | 770 | 882 | 998 | 996 | 1,189 | 1,149 |
| Water | 237 | 237 | 232 | 230 | 215 | 190 | 213 | 202 |
| Totals | 2,625 | 2,579 | 2,364 | 2,331 | 2,436 | 2,294 | 2,578 | 2,502 |
| **Transport Equipment Manufacturing** | | | | | | | | |
| Aircraft & Parts | 283 | 761 | 646 | 624 | 669 | 514 | 652 | 657 |
| Motor Vehicles, Equipment, Tires | 926 | 1,010 | 829 | 945 | 914 | 892 | 904 | 841 |
| Railroad Equipment | 60 | 56 | 43 | 56 | 51 | 52 | 71 | 52 |
| Ship & Boat Building & Repair | 85 | 125 | 141 | 160 | 170 | 194 | 221 | 223 |
| Other Transportation Equipment | 25 | 37 | 33 | 57 | 111 | 115 | 149 | 160 |
| Totals | 1,379 | 1,989 | 1,692 | 1,842 | 1,915 | 1,767 | 1,997 | 1,933 |
| **Transport Related Industries** | | | | | | | | |
| Automotive/Accessory Retail Dealers | 652 | 735 | 807 | 902 | 996 | 1,076 | 1,048 | 1,023 |
| Automotive Wholesalers | 176 | 196 | 215 | 255 | 320 | 367 | 418 | 415 |
| Automotive Services & Garages | 161 | 188 | 251 | 324 | 384 | 400 | 571 | 578 |
| Gasoline Service Stations | 343 | 387 | 461 | 522 | 614 | 616 | 561 | 563 |
| Highway & Street Construction | 210 | 242 | 294 | 324 | 331 | 297 | 268 | 211 |
| Petroleum | 282 | 330 | 311 | 292 | 333 | 380 | 533 | 587 |
| Other Industries: | | | | | | | | |
| Truck Drivers & Deliveryman | 1,131 | 1,275 | 1,418 | 1,387 | 1,356 | 1,325 | 1,294 | 1,217 |
| Shipping & Receiving Clerks | 260 | 253 | 240 | 300 | 359 | 419 | 478 | 490 |
| Totals | 3,215 | 3,606 | 3,997 | 4,306 | 4,693 | 4,880 | 5,171 | 5,084 |
| **Government Transport Employees** | | | | | | | | |
| U.S. Department of Transportation | 18 | 16 | 38 | 45 | 66 | 75 | 72 | 73 |
| Highway Employees - State & Local | 380 | 475 | 532 | 571 | 607 | 604 | 588 | 607 |
| Post Office | 75 | 80 | 83 | 83 | 103 | 98 | 92 | 93 |
| Other | 18 | 17 | 18 | 16 | 12 | 13 | 13 | 13 |
| Totals | 491 | 588 | 671 | 715 | 788 | 790 | 765 | 786 |
| TOTAL TRANSPORTATION EMPLOYMENT | 7,710 | 8,762 | 8,724 | 9,194 | 9,832 | 9,731 | 10,511 | 10,305 |
| TOTAL EMPLOYED CIVILIANS | 58,920 | 62,171 | 65,778 | 71,088 | 78,627 | 84,783 | 97,270 | 99,271 |
| PERCENT TRANSPORTATION OF TOTAL | 13.1% | 14.1% | 13.3% | 12.9% | 12.5% | 11.5% | 10.8% | 10.4% |




**Source: Transportation Policy Associates, 1983**

**TABLE II.1 (continued)**

EMPLOYMENT IN TRANSPORTATION AND RELATED INDUSTRIES

Basic source, unless otherwise indicated, is "Employment and Earnings", Bureau of Labor Statistics, U.S. Department of Labor.

Petroleum - Figures derived by TPA to reflect estimated portion of Petroleum Refining, Oil and Gas Extraction, and Petroleum Bulk Stations and Terminals that is devoted to petroleum for transportation purposes (e.g., approximately 50%).
Truck Drivers and Deliverymen - 1975-1950 figures from or based on figures in "Census of Population, Occupation by Industry". Other years are estimated by TPA based on straight-line projections and change in "Transport Equipment Operators", as shown in "Employment and Earnings". Figures represent total employment in this category exclusive of such employment in the transport services, manufacturing, and other transport-related industries.
Shipping and Receiving Clerks - Same sources and method as above.
U.S. Department of Transportation - "Statistical Abstract of the U.S.". Transportation-related Coast Guard military personnel included in "Other".
Highway - State and Local - 1982 and 1980 figures are TPA estimates. 1975 figure from "Public Employment in 1978", Census Bureau, 1978. Earlier years from "Statistical Abstract of the U.S."
Post Office - Figures based on 14% of total U.S. Postal Service employment being for transport; e.g., persons engated in transport work or employees transporting or delivering mail by motor vehicles. Basic source is "Annual Report of the Postmaster General".
Other - "Statistical Abstract of the U.S." and "The Budget of the U.S. Government". Agencies include CAB, FMC, FERC, ICC, Railroad Retirement Board, MarAd and estimated percentage of Coast Guard engaged in transport activities.
Total Employed Civilian Labor Force - "Economic Report of the President" and "Economic Indicators", both published by Council of Economic Advisers.

**TABLE II.2 DISTRIBUTION OF DATA SOURCE USE BY ORGANIZATION TYPE**

| DATA SOURCE | ORGANIZATION TYPES AND NUMBER OF RESPONDENTS USING DATA SOURCE | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | GL 66 | GS 80 | PA 57 | PC 36 | PI 60 | PJ 51 | G 146 | P 204 | All 350 Respondents Number | Percent |
| 1. Air Transportation Assn. of America | 6 | 15 | 16 | 5 | 20 | 12 | 21 | 53 | 74 | 21 % |
| 2. Association of American Railroads | 4 | 28 | 28 | 16 | 33 | 17 | 32 | 94 | 126 | 36 |
| 3. Amer. Assn. of State Hwy & Transp. Officials | 15 | 55 | 30 | 12 | 16 | 24 | 70 | 82 | 152 | 43 |
| 4. American Bus Association | 2 | 10 | 8 | 6 | 10 | 4 | 12 | 28 | 40 | 11 |
| 5. American Petroleum Institute | 4 | 16 | 14 | 8 | 18 | 12 | 20 | 52 | 92 | 26 |
| 6. American Public Transit Assn. | 29 | 25 | 30 | 13 | 8 | 9 | 54 | 60 | 168 | 48 |
| 7. American Trucking Associations, Inc. | 5 | 20 | 30 | 10 | 23 | 15 | 25 | 78 | 103 | 29 |
| 8. Bureau of Census, U.S. Dept. of Commerce | 44 | 46 | 39 | 24 | 38 | 20 | 90 | 121 | 211 | 60 |
| 9. Civil Aeronautics Board | 6 | 19 | 15 | 9 | 22 | 10 | 25 | 56 | 81 | 23 |
| 10. Dun & Bradstreet | 9 | 7 | 3 | 7 | 23 | 13 | 16 | 46 | 62 | 18 |
| 11. Federal Aviation Admin., U.S. DOT | 12 | 34 | 21 | 5 | 20 | 20 | 46 | 66 | 112 | 32 |
| 12. Federal Hwy Admin., U.S. DOT | 44 | 66 | 48 | 26 | 26 | 36 | 110 | 136 | 246 | 70 |
| 13. Federal Railroad Admin., U.S. DOT | 11 | 43 | 19 | 15 | 26 | 13 | 54 | 73 | 127 | 36 |
| 14. Highway Users Federation | 14 | 25 | 19 | 9 | 9 | 13 | 39 | 50 | 89 | 17 |
| 15. Interstate Commerce Commission | 6 | 18 | 17 | 14 | 34 | 20 | 24 | 85 | 109 | 31 |
| 16. Motor Vehicle Manufacturers Assn. | 11 | 27 | 30 | 13 | 20 | 16 | 38 | 79 | 117 | 33 |
| 17. Motorcycle Industry Council | 0 | 5 | 6 | 1 | 0 | 3 | 5 | 10 | 15 | 4 |
| 18. Nat'l Hwy. Traffic Safety Admin, U.S. DOT | 8 | 35 | 20 | 14 | 13 | 16 | 43 | 63 | 106 | 30 |
| 19. Nat'l Industrial Traffic League | 0 | 4 | 2 | 4 | 8 | 10 | 4 | 24 | 28 | 8 |
| 20. National Technical Information Service | 32 | 35 | 36 | 22 | 26 | 23 | 67 | 107 | 174 | 50 |
| 21. R.L. Polk Vehicle Registrations | 5 | 15 | 7 | 6 | 8 | 7 | 20 | 28 | 48 | 14 |
| 22. Research & Special Programs Admin., U.S. DOT | 7 | 12 | 18 | 7 | 11 | 7 | 19 | 43 | 62 | 18 |
| 23. St. Lawrence Seaway Development Corp. | 0 | 0 | 4 | 4 | 1 | 0 | 0 | 9 | 9 | 3 |
| 24. Transportation Association of America | 2 | 11 | 19 | 6 | 24 | 9 | 13 | 58 | 71 | 20 |
| 25. Transportation Research Board | 51 | 69 | 46 | 23 | 31 | 34 | 120 | 134 | 254 | 73 |
| 26. Transportation Systems Center, U.S. DOT | 18 | 21 | 22 | 17 | 23 | 11 | 39 | 73 | 112 | 32 |
| 27. Urban Mass Transportation Admin., U.S. DOT | 46 | 33 | 28 | 14 | 12 | 8 | 79 | 62 | 141 | 40 |
| 28. U.S. Army Corps of Engineers | 10 | 23 | 11 | 15 | 11 | 12 | 33 | 49 | 82 | 23 |
| 29. U.S. Coast Guard, U.S. DOT | 3 | 9 | 4 | 4 | 6 | 2 | 12 | 16 | 28 | 8 |
| 30. U.S. Dept. of Agriculture | 2 | 17 | 7 | 7 | 12 | 9 | 19 | 35 | 54 | 15 |
| 31. U.S. Dept. of Energy | 24 | 26 | 24 | 11 | 27 | 20 | 50 | 82 | 132 | 38 |
| 32. U.S. Maritime Admin., U.S. Dept. of Commerce | 2 | 6 | 7 | 6 | 9 | 3 | 8 | 25 | 33 | 9 |
| 33. U.S. Dept. of Labor | 14 | 18 | 8 | 6 | 19 | 13 | 32 | 46 | 78 | 22 |
| 34. U.S. DOT Library | 8 | 7 | 10 | 15 | 12 | 10 | 15 | 47 | 62 | 18 |
| 35. U.S. Travel Data Center | 1 | 2 | 5 | 4 | 8 | 3 | 3 | 20 | 25 | 7 |
| 36. Airport Operators Council International | 1 | 2 | 0 | 1 | 0 | 0 | 3 | 1 | 4 | 1 |
| 37. American Assn. of Airport Executives | 1 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 1 |
| 38. Amer. Assn. of Motor Vehicle Administrators | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 2 | 1 |
| 39. American Automobile Association | 1 | 2 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 1 |
| 40. American Road & Transp. Builders Assn. | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 2 | 2 | 1 |
| 41. Caltrans | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 2 | 2 | 1 |
| 42. Chicago Transp. Authority | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 1 |
| 43. Gen. Aviation Manufacturers Assn. | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 2 | 1 |
| 44. Helicopter Assn. of America | 1 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 1 |
| 45. Immigration & Naturalization Service | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 1 |
| 46. Institute of Traffic Engineers | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 2 | 1 |
| 47. Institute of Transportation Engineers | 1 | 0 | 2 | 3 | 0 | 0 | 1 | 5 | 6 | 2 |
| 48. Int'l Air Transport Association | 0 | 1 | 0 | 0 | 2 | 0 | 1 | 2 | 3 | 1 |
| 49. Int'l Civil Aviation Organization | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 2 | 3 | 1 |
| 50. Iowa DOT | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 1 |
| 51. Motorcycle Safety Foundation | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 1 |
| 52. Nat'l Assn. of State Aviation Officials | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 1 |
| 53. National Coal Association | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 2 | 2 | 1 |
| 54. Nat'l Governors Conference | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 2 | 1 |
| 55. National Safety Council | 0 | 0 | 2 | 1 | 1 | 1 | 0 | 5 | 5 | 1 |
| 56. Nat'l Transportation Safety Board | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 2 | 2 | 1 |
| 57. Northwestern Univ. Transp. Library | 1 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 1 |
| 58. Tri State Regional Planning Comm. | 2 | 0 | 0 | 0 | 1 | 0 | 2 | 1 | 3 | 1 |
| 59. Univ. of Cal. Transp. Library, Berkeley | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 2 | 2 | 1 |
| 60. U.S. Dept. of Commerce | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 3 | 3 | 1 |
| 61. U.S. Environmental Protection Agency | 3 | 4 | 0 | 1 | 1 | 1 | 7 | 3 | 10 | 3 |
| 62. U.S. General Accounting Office | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 2 | 1 |
| 63. Highway Safety Research Institute | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 2 | 1 |
| Total Use | 469 | 821 | 666 | 387 | 616 | 464 | 1290 | 2133 | 3423 | |
| Average = Total/No. | 7.1 | 10.3 | 11.7 | 10.8 | 10.3 | 9.1 | 8.8 | 10.5 | 9.8 | |

TABLE II.2 (continued)

CODE 1. TYPE OF RESPONDENT ORGANIZATION

G. Non-Federal Government Agency (146)

GL. Regional/Local Government Agency (66)

1. Regional (Interstate/Intrastate) Agency (24)

2. Metropolitan/City Agency (42)

GS. State Government (80)

1. Transportation Agency (73)

2. Other State Agency (7)

P. Private Organization (204)

PA. Academic/Research Institution (57)

1. University (46)

2. Research Institution (11)

PC. Consulting Firm (36)

1. Medium/Large Firm (11)

2. Small/Individual Firm (25)

PI. Transport Industry (60)

1. Carrier Firm/Association (46)

2. Manufacturing/Supply Firm/Association (14)

PJ. Other Business & Industry (51)

1. Transport Oriented Organization (15)

2. Other Organization (36)

use of source agency materials stratified by organization group codes. In terms of frequency of citation the three most frequently mentioned source agencies were:

| | |
|---|---|
| The Transportation Research Board | 73% |
| The Federal Highway Administration | 70% |
| The Bureau of the Census | 50% |

These findings to a great extent reflect the distribution of organizational affiliations in the sample. Particularly, the fact that the survey was conducted by the TRB among respondents who were predominantly TRB members affected the first place ranking.

The survey, as one of its findings, noted that data needs of the respondents were quite diverse with respect to types of data and types of transportation. According to kinds of data needed, the following list presents the data categories identified by more than ten respondents.

- Financial data on transport facilities (39 respondents)
- Commodity flows in various modes (35)
- Accident data (18)
- Airline seat availability (17)
- Airport data (17)
- Traffic counts and forecasts (16)
- Travel behavior vs. fuel costs (16)
- Energy/fuel use (16)
- Auto ownership and use (14)
- Pavement life vs. vehicle loads (13)

When queried about specific services provided by major source agencies, responses indicated that the average respondent used about ten different sources and that the total number of national sources identified by all respondents was almost 200. Table II.3 presents the count of respondent citations of sources, from major source agencies, stratified by respondent group. Overall, 17 specific services were identified by more than 50 respondents as shown in Figure II.1.

Seven of the ten Census Bureau surveys in the source listing were in that group. About 20 of the 50 specific sources listed produced by Modal Administrations of the U.S. DOT were used by about 10% of respondents. Remaining sources tended to be of interest only to specific modal specialists.

### 3. Transportation Data Sources

Table II.3 identified the major source agencies for transportation data. In all 63 agencies were identified in the survey described above. These can be roughly grouped into the following categories:

- Agencies of the U.S. DOT
- Regulatory agencies

**Figure II.1**
**Services Used by More Than 50 Respondents**

- National Cooperative Highway Research Program, TRB (178 respondents)
- Transportation Research Information Services, TRB (178)
- Transportation Research Record and Special Reports, TRB (178)
- Highway Statistics, FHWA (151)
- Statistical Abstract of the United States (109)
- National Highway Needs, FHWA (77)
- Nationwide Personal Transportation Study, Census, FHWA, NHTSA (75)
- National Travel Survey, Census (73)
- Fatal and Injury Accident Rates, FHWA (69)
- Journey to Work Supplement, Census, FHWA, UMTA (62)
- Census of Government Statistics, Census(60)
- Commodity Transportation Survey, Census (60)
- Highway Performance Monitoring System, FHWA (58)
- Truck Inventory and Use Summary, Census (55)
- Interstate Statistics, ICC (54)
- Aviation Forecast Information, FAA (52)
- Aviation Statistics, CAB (50)

# TABLE II.3 DISTRIBUTION OF USE OF SPECIFIC SERVICES BY ORGANIZATION TYPES

| DATA SOURCE & SPECIFIC SERVICES | ORGANIZATION TYPES & NUMBER OF RESPONDENTS | | | | | | | | ALL 350 RESPONDENTS | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | GL 66 | GS 80 | PA 57 | PC 36 | PI 60 | PJ 51 | G 146 | P 204 | No. | % Total | %Source |
| 8. Bureau of Census U.S. Dept. of Comm. No. Using(Item4) No. Ranking (Item 5) | 44/25 | 46/22 | 39/13 | 24/14 | 38/21 | 20/10 | 90/47 | 121/58 | 211/105 | 60/30 | 100 |
| A. Census of Gov't Statistics | 12 | 15 | 10 | 10 | 7 | 6 | 27 | 33 | 60 | 17 | 28 |
| B. Census of Non-reg. Bus & Motor Carriers of Property & Pub.Whse | 0 | 4 | 5 | 4 | 7 | 2 | 4 | 18 | 22 | 7 | 11 |
| C. Commodity Transportation Survey | 5 | 12 | 15 | 10 | 16 | 1 | 18 | 42 | 60 | 17 | 28 |
| D. Inland Waterway O&D, Domestic & Int'l Transport of US Foreign Trade | 4 | 5 | 9 | 7 | 10 | 0 | 9 | 26 | 35 | 10 | 17 |
| E. Journey to Work Supplement to Annual Housing Survey (See 12E & 27B) | 23 | 12 | 12 | 5 | 4 | 6 | 35 | 27 | 62 | 18 | 29 |
| F. National Travel Survey | 11 | 15 | 16 | 8 | 13 | 10 | 26 | 47 | 73 | 21 | 35 |
| G. Nationwide Personal Transportation Study (See 12J & 18F) | 9 | 12 | 14 | 5 | 8 | 7 | 21 | 34 | 55 | 16 | 26 |
| H. Statistical Abstracts of the U.S. | 16 | 21 | 20 | 15 | 25 | 12 | 37 | 72 | 109 | 31 | 52 |
| I. Track Inventory & Use Survey | 3 | 16 | 11 | 9 | 12 | 4 | 19 | 36 | 55 | 16 | 26 |
| J. Waterborne Freight | 3 | 2 | 3 | 8 | 9 | 0 | 5 | 20 | 25 | 7 | 12 |
| 9. Civil Aeronautics Board No. Using(Item4) No. Ranking (Item 5) | 6/3 | 19/2 | 15/5 | 9/1 | 22/17 | 10/5 | 25/5 | 56/28 | 81/33 | 23/9 | 100 |
| A. Air Carriers Operating & Financial Statistics | 2 | 6 | 5 | 6 | 19 | 6 | 8 | 36 | 44 | 13 | 54 |
| B. Air Carrier Traffic & Capacity Statistics | 3 | 7 | 6 | 5 | 12 | 4 | 10 | 27 | 37 | 11 | 46 |
| C. Aviation Statistics (See 11H) | 5 | 13 | 9 | 5 | 14 | 4 | 18 | 32 | 50 | 14 | 62 |
| D. International Airlines Passenger Ticket Sample | 2 | 2 | 3 | 2 | 7 | 1 | 4 | 13 | 17 | 5 | 21 |
| E. Ten Percent Airline Passenger Ticket Sample | 5 | 7 | 4 | 1 | 13 | 2 | 12 | 21 | 33 | 9 | 41 |
| 11. Federal Aviation Admin. U.S. DOT No. Using(Item4) No. Ranking (Item 5) | 12/8 | 34/11 | 21/6 | 5/1 | 20/10 | 20/4 | 46/19 | 66/21 | 112/40 | 32/11 | 100 |
| A. Aeromedical Research Information | 0 | 0 | 1 | 0 | 3 | 0 | 0 | 4 | 4 | 1 | 4 |
| B. Aircraft Information | 0 | 8 | 3 | 1 | 7 | 5 | 8 | 16 | 24 | 7 | 21 |
| C. Airmen Information (Non-Medical) | 0 | 1 | 1 | 0 | 3 | 1 | 1 | 5 | 6 | 2 | 5 |
| D. Aviation Accident Incident and Violation Information | 0 | 5 | 3 | 0 | 6 | 6 | 5 | 15 | 20 | 6 | 18 |
| E. Aviation Activity Information | 6 | 15 | 7 | 0 | 10 | 5 | 21 | 22 | 43 | 12 | 38 |
| F. Aviation Facilities Information | 1 | 6 | 4 | 1 | 8 | 3 | 7 | 16 | 23 | 7 | 21 |
| G. Aviation Forecast Information | 6 | 17 | 6 | 5 | 12 | 6 | 23 | 29 | 52 | 15 | 46 |
| H. Aviation Statistics (See 9C) | 5 | 16 | 6 | 2 | 12 | 4 | 21 | 24 | 45 | 13 | 40 |
| I. FAA Aircraft Mgt. Information | 1 | 1 | 0 | 0 | 2 | 1 | 2 | 3 | 5 | 1 | 4 |
| J. Federal Airports Program | 5 | 14 | 8 | 1 | 6 | 6 | 19 | 21 | 40 | 11 | 36 |
| K. National Aviation Systems Plans | 7 | 15 | 4 | 0 | 6 | 6 | 22 | 16 | 38 | 11 | 34 |

TABLE II.3 (continued)

| DATA SOURCES & SPECIFIC SERVICES | ORGANIZATION TYPES & NUMBER OF RESPONDENTS | | | | | | | | ALL 350 RESPONDENTS | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | GL 66 | GS 80 | PA 57 | PC 36 | PI 60 | PJ 51 | G 146 | P 204 | No. | % Total | %Source |
| 12. Federal Highway Admin. U.S. DOT — No. Using(Item4) / No. Ranking (Item 5) | 44/23 | 66/61 | 48/34 | 26/16 | 26/10 | 36/22 | 110/84 | 136/82 | 246/166 | 70/47 | 100 |
| A. Grade-Crossing Inventory System (See 13A) | 6 | 29 | 3 | 2 | 3 | 1 | 35 | 9 | 44 | 13 | 18 |
| B. Highway Performance Monitoring System | 6 | 29 | 9 | 5 | 4 | 4 | 35 | 23 | 58 | 17 | 24 |
| C. Highway Statistics | 20 | 49 | 33 | 16 | 12 | 21 | 69 | 82 | 151 | 43 | 61 |
| D. Fatal and Injury Accident Rates | 5 | 30 | 13 | 9 | 7 | 5 | 35 | 34 | 69 | 20 | 28 |
| E. Journey to Work Supplement to Annual Survey(See 8E &27B) | 16 | 10 | 10 | 5 | 4 | 4 | 26 | 23 | 49 | 14 | 20 |
| F. Motor Carrier Accident Reports | 1 | 14 | 4 | 4 | 9 | 2 | 15 | 19 | 34 | 10 | 14 |
| G. National Accident Sampling System | 3 | 8 | 9 | 5 | 2 | 0 | 11 | 16 | 27 | 8 | 11 |
| H. National Exposure Data System | 1 | 5 | 4 | 2 | 2 | 1 | 6 | 9 | 15 | 4 | 6 |
| I. National Highway Needs | 11 | 23 | 17 | 11 | 7 | 8 | 34 | 43 | 77 | 22 | 31 |
| J. Nationwide Personal Transportation Study | 14 | 24 | 15 | 9 | 7 | 6 | 38 | 37 | 75 | 21 | 30 |
| K. Nationwide Truck Commodity Flow Study | 1 | 19 | 12 | 7 | 7 | 1 | 20 | 27 | 47 | 13 | 19 |
| L. Urban Transportation Reporting System (See 27C) | 6 | 13 | 8 | 4 | 1 | 1 | 20 | 14 | 34 | 10 | 14 |
| 13. Federal Railroad Administration U.S. DOT — No. Using(Item4) / No. Ranking (Item 5) | 11/1 | 43/14 | 19/4 | 15/5 | 26/12 | 13/3 | 54/15 | 73/24 | 54/15 | 36/11 | 100 |
| A. Grade Crossing Inventory System (See 12A) | 2 | 24 | 5 | 4 | 4 | 1 | 26 | 14 | 40 | 11 | 31 |
| B. Rail Carload Waybill Sample (See 15B) | 1 | 9 | 9 | 8 | 14 | 5 | 10 | 36 | 46 | 13 | 36 |
| C. Rail Passenger Data | 2 | 13 | 4 | 2 | 2 | 1 | 15 | 9 | 24 | 7 | 19 |
| D. Railroad Accident Incident Reporting System | 1 | 6 | 3 | 0 | 6 | 3 | 7 | 12 | 19 | 5 | 15 |
| E. Railroad FRA Safety Inspection | 1 | 4 | 2 | 0 | 5 | 1 | 5 | 8 | 13 | 4 | 10 |
| F. Railroad Locomotive Inspection | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 3 | 3 | 1 | 2 |
| G. Track Inspection System | 2 | 8 | 2 | 2 | 3 | 0 | 10 | 7 | 17 | 5 | 13 |
| 15. Interstate Commerce Commission — No.Using(Item4) / No. Ranking (Item 5) | 6/2 | 18/4 | 17/3 | 14/6 | 34/19 | 20/10 | 24/6 | 85/38 | 109/44 | 31/13 | 100 |
| A. Interstate Statistics | 1 | 10 | 8 | 7 | 20 | 8 | 11 | 43 | 54 | 15 | 50 |
| B. Rail Carload Waybill Sample (See 13B) | 1 | 8 | 7 | 5 | 11 | 4 | 9 | 27 | 36 | 10 | 33 |
| 18. Nat'l Hwy Traffic Safety Admin. U.S. DOT — No. Using(Item4) / No. Ranking (Item 5) | 8/3 | 35/7 | 20/7 | 14/6 | 13/1 | 16/4 | 43/10 | 63/18 | 106/28 | 30/8 | 100 |
| A. Fatal Accident Reporting System | 3 | 19 | 8 | 8 | 6 | 6 | 22 | 28 | 50 | 19 | 47 |
| B. National Accident Reporting System | 2 | 11 | 11 | 6 | 1 | 4 | 13 | 22 | 35 | 10 | 33 |
| C. National Accident Sampling System (See 12G) | 2 | 11 | 5 | 6 | 3 | 6 | 13 | 20 | 33 | 9 | 31 |
| D. National Driver Registration Program | 0 | 5 | 2 | 0 | 0 | 1 | 5 | 3 | 8 | 2 | 8 |
| E. National Exposure Data System (See 12H) | 0 | 4 | 4 | 1 | 2 | 1 | 4 | 8 | 12 | 3 | 11 |
| F. Nationwide Personal Transportaiton Study (See 8G and 12J) | 1 | 4 | 3 | 3 | 3 | 3 | 5 | 12 | 17 | 5 | 16 |

**TABLE II.3 (continued)**

| DATA SOURCES & SPECIFIC SERVICES | ORGANIZATION TYPES & NUMBER OF RESPONDENTS | | | | | | | | ALL 350 RESPONDENTS | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | GL 66 | GS 80 | PA 57 | PC 36 | PI 60 | PJ 51 | G 146 | P 204 | No. | % Total | % Source |
| 22. Research & Spec. Programs Admin. U.S. DOT — No. Using(Item4) / No. Ranking (Item 5) | 7/0 | 12/0 | 18/3 | 7/0 | 11/0 | 7/1 | 19/0 | 43/4 | 62/4 | 18/1 | 100 |
| A. Hazardous Materials Incident Reporting System | 1 | 1 | 4 | 0 | 2 | 1 | 2 | 7 | 9 | 3 | 15 |
| B. National Transportation Statistics | 3 | 10 | 11 | 5 | 8 | 3 | 13 | 27 | 40 | 11 | 65 |
| C. Pipeline Carrier Accident Reporting System | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 2 |
| D. Pipeline Certification & Agreement Data | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 2 | 2 | 1 | 3 |
| E. Pipeline Leak and Test Failure Reporting System | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 2 |
| F. Pipeline Safety Grant-in-Aid Program | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 2 |
| 25. Transportation Research Board — No. Using(Item4) / No. Ranking (Item 5) | 51/40 | 69/54 | 46/34 | 23/16 | 31/11 | 34/23 | 120/94 | 134/84 | 254/178 | 73/51 | 100 |
| A. NCHRP Publications | 34 | 58 | 34 | 19 | 11 | 22 | 92 | 86 | 178 | 51 | 70 |
| B. Transportation Research Information Services | 34 | 54 | 33 | 17 | 19 | 21 | 88 | 90 | 178 | 51 | 70 |
| C. TR Record & TRB Special Reports | 37 | 57 | 35 | 18 | 9 | 22 | 94 | 84 | 178 | 51 | 70 |
| 27. Urban Mass Transp. Admin., U.S. DOT — No. Using(Item4) / No. Ranking (Item 5) | 46/25 | 33/15 | 28/11 | 14/3 | 12/6 | 8/3 | 79/40 | 62/23 | 141/63 | 40/18 | 100 |
| A. Uniform System of Transit Accts & Reporting | 11 | 12 | 9 | 4 | 3 | 0 | 23 | 16 | 39 | 11 | 28 |
| B. Journey to Work Supplement (See 8E & 12E) | 12 | 8 | 8 | 3 | 2 | 4 | 20 | 17 | 37 | 11 | 26 |
| C. Urban Transpo. Reporting System (See 12L) | 10 | 6 | 4 | 3 | 1 | 1 | 16 | 9 | 25 | 7 | 18 |
| 29. U.S. Coast Guard U.S. DOT — No. Using(Item4) / No. Ranking (Item 5) | 3/0 | 9/0 | 4/1 | 4/1 | 6/2 | 2/1 | 12/0 | 16/5 | 28/5 | 8/1 | 100 |
| A. Merchant Seamen Information | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 4 |
| B. Merchant Vessels of the U.S. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| C. Merchant Vessel Documentation System | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 4 |
| D. Motorboat Accident Statistics | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 2 | 2 | 1 | 7 |
| E. Nationwide Boating Survey | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 2 | 1 | 7 |
| F. Pollution Incident Reporting System | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 2 | 1 | 7 |
| G. Search & Rescue Information | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 4 |
| H. Std. Aids to Navigation Data System | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 33. U.S. Dept. of Labor — No. Using(Item4) / No. Ranking (Item 5) | 14/2 | 18/3 | 8/1 | 6/1 | 19/4 | 13/5 | 32/5 | 46/11 | 78/16 | 22/5 | 100 |
| A. Consumer Price Index | 8 | 15 | 7 | 6 | 12 | 9 | 23 | 34 | 57 | 16 | 73 |
| B. Union Wages & Hours | 4 | 4 | 1 | 3 | 5 | 2 | 8 | 11 | 19 | 5 | 24 |

- Other Federal agencies
- Associations
- Key regional agencies
- Other state & local
- Private sources

Of these, the U.S. DOT and regulatory agencies predominate in terms of national sources utilized by the transportation community. This is true despite the fact that the data programs of these agencies are, for the most part, inward-looking, i.e., focused on their own internal information requirements, rather than on providing data needed by the general public.

Clearly the programs of all of these agencies and the statistical sources they produce cannot be treated in detail here.

Overall the array of sources is broad and diverse responding to the separate interests and needs of the transportation industry. For the 63 source agencies almost 200 distinct data sources were identified in the 1980 survey. A complete listing of these sources and associated material from the survey is contained in the TRB report Identification of Transportation Data Needs and Measures for Facilitation of Data Flows. In parallel with these listings the Transportation Systems Center of the U.S. DOT surveyed major transportation data bases and identified over 550 separate systems.

The focus of most transportation statistical sources is on the physical state of the transportation system or on the characteristics of the uses made of it. Only the regulatory agencies have an establishment base for most of their statistical activities. Most importantly, almost all of the sources concentrate on a single mode of transportation without emphasis on building statistics that are complementary to those of other producers.

The Bureau of the Census through its programs has generally focused on general purpose statistical data useful to all modes of transportation. The Bureau of Census does not have an extensive program in transportation data. Those activities it does have in transportation are extensively used by public agencies at all levels of government and by the private sector. The following summarizes the major transportation-related activities of the Census Bureau and their major uses:

a. Decennial Census

Since 1960 the decennial census has contained questions relating to work travel. In the 1980 Census these questions included; work place identification; mode of travel to work; and travel time. Compiled with auto ownership, income, and other demographic items available from the decennial census, these sample questions form an extensive data base on work travel. They are used by local communities, urban planning agencies, and states for analysis and planning. Several million dollars worth of specially designed tabulations of the data have been prepared to meet the specific need of urban transportation analysis.

Moreover, the census data have almost entirely supplanted ad-hoc household surveys in each urban area, costing millions of dollars.

A parallel set of questions to those in the Decennial Census have been asked in the Annual Housing Survey providing intercensal updates for the country and selected cities.

b. Census of Transportation

Traditionally, the Census of Transportation taken in years ending in 2 or 7, has consisted of a set of four separate surveys. None of the surveys is a true census. Rather they utilize varying sampling techniques to obtain data in selected transport areas. The four surveys are:

- The National Travel Survey (NTS) obtains long distance person travel information from sample households. The definition of "long distance" has varied from survey to survey embodying the concept of overnight travel, or trips greater than a given length - 75 miles or 100 miles. The survey permits description of long-distance travel by purpose, mode of travel, and characteristics of the traveler, for broad geographic areas - states, or state groups. The survey is used by state transportation planners and those in tourism and travel marketing; sample sizes have been too small to permit route analysis, service planning, or other activities requiring detailed flows data. The National Personal Transportation Survey, funded by the Federal Highway Administration, has been conducted intermittently in concert with the NTS. The NPTS collects data on trips of all lengths for a small national sample of households. The National Travel Survey was not conducted for 1982 but the NPTS was completed and is in processing.
- The Commodity Transportation Survey (CTS) samples shipper records of shipments for establishments in the manufacturing sector. As such it is logically an extension of the Census of Manufactures. Data collected permit tabulation of commodity flows by mode and shipment size for broad areas of geography. Over the years alternative designs have been considered, expanding coverage beyond manufactured goods to mining and agricultural products, at one end of the industrial spectrum, and wholesaler and retailer movements at the other. Also, alternative approaches to reduce respondent reporting burdens and improve data quality have been considered. The survey is used at the national level for marketing and planning applications. The survey was not taken in 1982. A modified, more limited, form of the traditional survey has been conducted in 1984.
- The Truck Inventory & Use Survey (TIUS) assembles inventory statistics on vehicles in the truck fleet and their use characteristics. Detailed vehicle characteristics are

assembled by questionnaire obtained from a sample of State truck registrations. Major users are truck manufacturers and federal and state highway planning agencies. A follow-up survey, funded by FHWA, is under test for the 1982 survey to obtain more detailed data on truck activity patterns.

- The Nonregulated Motor Carriers & Public Warehousing Survey conducted in 1972 and 1977, surveys truck and bus motor carriers and public warehouses (generally, SIC 411, 413 and 414; and 421 and 422). Effectively, the orientation to nonregulated carriers reduces this survey to a survey of intra-state carriers. As such it complements past ICC coverage of regulated trucks and buses. The compatibility between the current versions of this survey and current ICC collection policy is not known. The survey format in 1977 obtained fleet data, fleet operations summary data, and establishment operating expenditures.

c. Census of Governments

The Census of Governments obtains information on funds received and expenditures made, by functional areas, for different levels of government. Employment information is also obtained. For transportation related functions levels of detail vary. For many broad areas transportation sectors reported include highways, parking facilities, airports, water facilities, and mass transit. At detail levels typically only highway agency activities are separately reported.

## D. GROUP LEVEL ANALYSIS

### MAJOR GROUP 40 - RAILROAD TRANSPORTATION

Present SIC structuring of Major Group 40 is limited, and in many respects restricts the ability to collect and present information on the railroad industry. There are only two three-digit level groups identified, one of which, SIC 404--Railway Express Agency, is defunct. The remaining three-digit SIC category 401-Railroads is divided into only two parts, 4011-Railroads, Line-Haul Operating, and 4013 Switching and Terminal Establishments. The SIC also uses industry revenue classes developed by the ICC as a supplementary code. These codes (out of date in the 1972 SIC guide) were, and are, an important bounding classification for regulatory reporting purposes.

#### 1. Industry Structure

a. Concentration

The ICC categorizes railroads by a scale based on revenues. The Class I railroads are those with revenues in excess of $50,000,000 in

1978 constant dollars (currently about $82 million). As mergers have occurred, and as the reporting threshold was adjusted upward, the number of railroads reporting separately as Class I carriers has continually declined. In 1983 there were 31 reporting railroads. In addition to Class I railroads, the Association of American Railroads estimates that there were 26 Class II and 270 Class III line-haul railroads.

Class I railroads thus represented only about 10% of all line haul railroads, but moved 98% of the freight and owned 94% of rail system mileage. In addition there are about 142 switching and terminal companies classifiable under SIC 4013.

b. Public/Private Functions

The major public/private distinctions to be made in railroading are three--all representing quasi-public/private institutions. Amtrak is a quasi-public agency identified in ICC parlance as a Class I line haul railroad. Given that Amtrak now handles almost the entirety of line-haul rail passenger service it represents something of a two part statistical anomaly in SIC 4011 in that it is passenger-oriented while all others are freight oriented, and it is a quasi-government agency while all others, with the exceptions noted below, are privately owned. The second public sector railroad is the Alaskan railroad, a small freight and passenger railroad owned by the Federal Rail Administration of the U.S. DOT. The railroad has been offered for sale to the State, or other buyers, for a number of years. The final exception is Conrail corporation--a government formed corporation that is a major Class I railroad. Conrail, also is presently for sale.

Additionally small rail spurs, typically those slated for abandonment, have been acquired by states or local communities.

2. Statistical Coverage

a. Public Trends

The general trend of railroad statistical development in the public sector in the last decade has been toward decreasing availability of data. The major railroad data agencies are the Federal Rail Administration and the Interstate Commerce Commission. The major remaining statistical activity of the FRA is in accident reporting. At one time the FRA processed and reported the rail waybill sample files collected under ICC authority. This survey, providing interregional commodity flow data, has been returned to ICC, and has now been shifted by contract to the private sector. The main reporting system on rail activity has been that of the ICC. Measured in terms of reporting burden the ICC rail statistics program in 1977 represented over 500 thousand hours of reporting. Budget stringencies, deregulation, pressures to reduce reporting burdens, and changes in the structure of the industry itself have reduced reporting hours to an estimated

185,000 hours at the end of 1983, approximately one-third of 1977 levels. Approximately 40,000 hours of the remaining reporting burden relate to monthly, quarterly, and annual employment and wages data. Because railroad employees are not covered under the Federal Insurance Contributions Act (FICA) railroad employment statistics for the Bureau of Labor Statistics reporting system must be obtained through this part of the ICC reporting process. One reason the reporting burden is still so high in this area is that the ICC requires 124 occupational categories reported. Negotiations to reduce occupational data reporting are now underway.

A second major reporting sector, consuming over 50,000 hours, relates to the Uniform System of Accounts (USOA) which provides detailed cost data systems for freight rate analyses. The R-1 reports derived from USOA data, provide detailed financial and operating data on each railroad, and are a third major reporting sector involving 47,000 hours. The fourth major area of reporting is the QCS, Quarterly Commodity Survey, which monitors movements and revenues by commodity type, requiring over 40,000 reporting hours.

Aside from the decline in reporting activity, the other major change in the railroad reporting system has been the shifting of much of the actual report collation, editing, and processing activity back to the industry, as reported below.

b. Private Substitutes

An extraordinary attribute of the changes occurring in railroad reporting has been the shift of the processing of regulatory data to the Association of American Railroads. The AAR, among Washington's largest associations, plays an integral, day-to-day role in the operations of America's railroads. Thus, it was well suited to take on the additional activities. Reports are directly received by the AAR, file editing, processing and tabulating are performed, and reports submitted to the ICC. They are generally available to the public for a fee. All are produced for the ICC on a voluntary, unpaid basis. For certain reporting systems ICC auditors visit the AAR and reporting railroads to assure data quality. The rail waybill statistics program, a major coding and data processing activity was originally prepared by the ICC, transferred to DOT, returned to ICC, and is now to be performed under contract to the ICC, by the AAR.

MAJOR GROUP 41 - LOCAL AND SUBURBAN TRANSIT AND INTERURBAN HIGHWAY PASSENGER TRANSPORTATION

Major Group 41 does not have a clear cut conceptual structure. It is almost inclusive of all ground passenger transportation service--except intercity rail is excluded. It almost could be defined as all highway passenger transportation. It does include all of that group but then also includes urban rail transit. Given this weak conceptual structure it is not surprising that its elements are a disparate, unrelated collection of activities.

The Major Group contains six 3 digit SIC Groups:

411 Local and Suburban Passenger Transportation
412 Taxicabs
413 Intercity and Rural Highway Passenger Transportation
414 Passenger Transportation Charter Service
415 School Buses
417 Terminal and Service Facilities for Motor Vehicle Passenger Transportation

SIC Group 411 is divided into two industries: regular route transit; and not elsewhere classified. SIC Groups 412, 413, and 415 are not further differentiated. Charter service under SIC Group 414 is differentiated into local and non-local industries. Finally SIC Group 417 is differentiated into two industries: terminals; and maintenance facilities. Facilities providing both functions are included under terminals.

There are a number of complications and problems in this structure:

-- It does not recognize changes in mass transit in recent years.
  - new systems like jitneys, dial-a-ride, van pools, and others, are hybrid systems using new technologies and new concepts.
  - the most important distinction in transit today is between public and private systems. Almost all major systems are publicly owned.
  - The term "local" in Group 411 is actually interpreted to mean urban. Rural transit should also be "local" in definition. It is classified in the SIC in the intercity category, Group 413, probably a valid grouping fifteen years ago.

-- The taxicab industry has gone through similar changes. There are owner-operators linked through associations that provide services on a fee, or coop basis, as well as the traditional employee or renter relationships. The concept of establishment is weakened by these developments.

-- Industry Category 4141-Local Charter Service is a category generating some confusion. Local charter firms are almost non-existent-having been replaced by charter operations of local transit operators--SIC 4111. Activities carried on there may be a mix of intercity charter 4142 or contract private transit which probably belongs in 411.

-- Independent Service and Terminal Establishments are similarly disappearing. They are typically auxiliary activities of other industry's in Major Group 41, or publicly owned.

## GROUP 411 LOCAL AND SUBURBAN PASSENGER TRANSPORTATION

### 1. Industry Structure

The industry's concentration and public ownership characteristics are linked. Very large public systems dominate total activity levels.

The American Public Transit Association identified 1055 transit properties in 1980, of which 55% were publicly owned, but which represented 90% of transit vehicles and 94% of urban transit trip-making. The APTA definition roughly coincides with SIC 4111 excluding: 16 urban ferry operators (SIC 4452): and three cogways and tramways (SIC 4119). Depending on particularities of the municipal ownership, transit systems might be identifiable as separate establishments, or embedded in government.

Industry 4119 consists of a few municipal transit properties plus a large number of disparate private activities: ambulances; limousine rental; and sightseeing buses. County Business Patterns identifies over 2,500 establishments in this group, almost all of which have fewer than fifty employees.

## 2. Statistical Coverage

### a. Public Trends

The major source of data on transit properties is the Section 15 reporting system operated by the Urban Mass Transportation Administration of the DOT. This system is of recent development, after several years of design and test. In its early stages data quality was variable given the differing sophistication and accounting procedures by transit properties. The standardized reporting process has served to increase quality and uniformity in recent years. Reporting is required of all transit properties receiving transit assistance from the federal government. Thus some transit organizations are not in the system--primarily small private operators.

Section 15 reporting is a comprehensive system obtaining detailed revenue and expenditure accounts; and operating data. Because the reporting mandate is tied to federal aid funds the abolition of assistance would see the end of this reporting mechanisms under present statutes. Other sources of information at the federal level include: the various surveys of the Bureau of Census that obtain local trip making information, i.e., the Decennial Journey-To-Work, the NPTS; and the Census of Governments, which in its special district finance volume, separately identifies transit districts. Household based surveys such as the NPTS and the Decennial Journey-To-Work questions are only of limited utility to transit analyses unless the sample sizes are very large, because transit trips are typically a very small percentage of total trip making.

Transit detail is not obtainable in all reports of the Census of Governments. Employment detail is identified in Volume 3, revenue flows are captured in Volume 4, where transit is included under the "Utility" heading. The County and Municipal reports (#3 and #4) do not present transit detail separately. County Business Patterns provides counts of basic data for 4111 and 4119. The Census of Transportation obtains data on sightseeing and airport buses including revenue, expenditure, and operating statistics. Other elements of SIC 4119 are identified in this survey but excluded from reporting, e.g., ambulances

and limousines. The other sources of transit information are the public properties themselves which publish extensive material. Section 15 reporting serves to bring these disparate reports together in a common format.

b. Private Substitutes

There are no major private providers of transit data. APTA provides annual reports and newsletter material derived from the transit property reports, Section 15 reports, and occasional surveys of its members.

GROUP 412 - TAXICABS

Technological and institutional changes are modifying the traditional meaning of a taxicab company. A recent UMTA report identifies several trends in non-traditional organizational arrangements. These include lease-driven, owner-driven and cooperative arrangements, sometimes within the same company. Firms may own no cabs, providing radio dispatching and other support services. Membership co-ops have also become prevalent.

1. Industry Structure

a. Concentration

One way of interpreting the changing institutional arrangements in the industry is to consider it a process of decreasing concentration with increasing numbers of cabs operated by individual owner-operators linked in various ways to support organizations. This trend to owner-operators will increasingly put comprehensive data outside the reach of establishment-based approaches.

b. Public/Private Functions

This is fundamentally not a factor in this area with the exception that certain innovative public transit approaches, e.g., dial-a-ride services, are increasingly taxi-like in function.

2. Statistical Coverage

a. Public Trends

Available data on the taxicab industry are very limited. Both CBP and BLS report on employment in establishments in the industry. As noted this excludes individual operators, a major and growing component

of the industry. There are no other sources of comprehensive taxicab industry data.

b. Private Substitutes

The International Taxicab Association is the association representing the industry. It is not a major developer of statistics.

GROUP 413 - INTERCITY AND RURAL HIGHWAY PASSENGER TRANSPORTATION
GROUP 414 - PASSENGER TRANSPORTATION CHARTER SERVICE

1. Industry Structure

Group 413 links together intercity and "local" rural bus transportation, in part at least for historical reasons. In past years intercity buses were often the only form of rural transit service for local trips. This has changed. There are now rural local transit systems, often operated at the county level, providing basic service. These systems more appropriately belong to SIC 411--local passenger transportation.

Bus charter services are divided into two sub-categories of local; and non local. Local charter activities are typically provided as an auxiliary service of local scheduled establishments.

a. Concentration

Decreased regulation has exerted considerable change on intercity bus carriers. One major change is that between regulated and non-regulated carriers. This distinction has blurred as many non-regulated carriers have obtained new route authorities. In that sense more carriers are in the industry and concentration has lessened. Two companies still dominate the scheduled industry in share of market. Charter services, and package delivery services, have increased their share of total intercity bus revenues in recent years as they expanded and scheduled service remained relatively constant.

b. Public-Private Functions

Fundamentally this is a private industry. One area, already mentioned, of growing public involvement is in local rural transit service. In addition, in some states, state subsidy to low volume routes has been occurring.

2. Statistical Coverage

a. Public Trends

The major sources of public data on bus travel have been the ICC and the Census of Transportation survey of nonregulated motor carriers. This latter survey, conducted every five years, was constructed to avoid duplication of ICC systems. Both sources are undergoing changes.

The ICC system required some reporting of all regulated carriers, based on revenue class, until 1979. Since that time, only Class I carriers (revenues in excess of $3,000,000) must report. Reporting by smaller carriers has ceased. At the same time Class I carrier reporting has been modified.

The Census survey, which covers both scheduled and charter services, is undergoing rethinking given the changing meaning of regulated and non-regulated carriers. Given the structure of the two data collection approaches it would be inadvisable to believe their results would sum to a full description of the intercity bus industry.

b. Private Substitutes

The American Bus Association has made some attempts to fill in the gaps in small carrier reporting but have not yet established a comprehensive reporting system.

GROUP 415 SCHOOL BUSES

1. Industry Structure

The school bus industry is a complex of large and small; public and private activities. Most education systems are county based and so consequently are the publicly operated schoolbus systems that serve them. The size of school bus systems will vary with county size, population, and busing policies. Because of local control all kinds of organizational combinations exist: public only; publicly owned school buses serving public and private schools; and private systems captive to a private school; or as contractors to public or private schools.

2. Statistical Coverage

Statistically, many school bus operations are submerged as auxiliary activities of public or private schools. The major source of information on these operations, and on private operations, is the National Association of State Directors of Pupil Transportation. This is a loosely linked association of state officials who share their annual in-state reporting. Data available vary by state based on legislative reporting requirements, structure of the system, etc.,

generally providing information on pupils serviced, buses in services, and annual bus miles of operation.

The National School Transportation Association with approximately 1000 members, mostly the larger operations, does not collect data typically. The association indicated that many one-bus operators exist in a distribution that is highly variable by state.

This mix of public and private operators, zero employee operators, and contract operators makes comprehensive identification of the industry very difficult.

## MAJOR GROUP 42 MOTOR FREIGHT TRANSPORTATION AND WAREHOUSING

Major group 42 represents, by far, the largest industry of the transportation groups treated in this document. Specifically, the trucking portion alone--SIC 421--accounts for half of all the employment for transport services in County Business Patterns (CBP) for 1981, with over a million employees. These figures do not include other major portions of the trucking industry, particularly owner-operators and private trucking. Transportation In America produced by Transportation Analysis Associates, is the follow-on of the now defunct Transportation Facts and Trends. It places total trucking employment at over 2 million, based on decennial Census and other sources. That document also places total expenditures for trucking transportation at over $180 billion a year, representing 75% of expenditures for freight transportation.

Current SIC structuring does not adequately represent an industry of this scale. SIC group 421 is subdivided into three industries: Local trucking without storage (4212) and with storage (4214); and trucking, except local (4213). Public Warehousing representing employment of less than 80 thousand is subdivided into five industries by type of warehouse. Trucking terminals, with employment of about 26,000, are also identified with a separate four digit code. The 1981 proposed revision to the SIC, suggested that the local/non-local split in the trucking sector be replaced with a four part structure based on the characteristics of freight moved. This approach also has weaknesses given regulatory changes.

### 1. Industry Structure

#### a. Concentration

The trucking industry has always been complexly structured. Deregulation has added complexity. The first order distinction to be made in the overall industry is between private trucking, i.e., "own-account" trucking such as the truck fleet owned by a department store or brewery, and for-hire trucking where truck owners provide trucking services on a contract or common-carrier basis. It is this latter group that SIC 421 purports to represent. Deregulation has affected this division in a number of ways:

- It has permitted private fleets to use excess capacity to provide for-hire services.
- It will shift the balance between private and for-hire trucking.
- It has opened the door to broader use of contract trucking.
- It has opened entry into the for-hire sector.

These changes are still working out a new structure for the industry. The forseeable future will be a volatile period of change with many mergers, closings and new entries. Owner-operators, individuals who provide services by contract or trip lease, are an area of trucking of exceptional volatility. Estimates of the current number of owner-operators vary from 150,000 to over 300,000. The IRS, statistics of income series for 1980 places sole proprietorships in trucking and warehousing at over 322,000.

b. Public/Private Functions

There are large public fleets of trucks, e.g., the Postal Service, providing fundamentally "private" services. These are considered out of scope here. The trucking fleet providing transport services is wholly private.

2. Statistical Coverage

a. Public Trends

In the broad sense of trucking, the industry requires data in all the areas defined earlier in part 2--Kinds of Data, including: engineering; operating; planning; marketing; and firm-related. Federal, state and local highway agencies which provide the right-of-way for trucking require extensive trucking activity and fleet characteristics information for roadway design, safety, and taxation purposes. Federal agencies require trucking data to monitor aspects of the economy, e.g., the U.S. Department of Agriculture, the BEA can use truck data as direct measures of input/output. Those regulatory functions that remain at the ICC still require information in the regulated portion of the industry. That portion has been estimated at 40% of intercity trucking (SIC 4213) in the past but has, and will continue to decline. Local trucking (4212 and 4214) is outside the purview of the ICC. Mandatory reporting to ICC has significantly declined. In 1977 total respondent burden was approximately 1 million hours. By 1982 this had decreased to 650,000 hours and is proposed to decline further to 320,000 hours, half of which will be in the Uniform System of Accounts (USOA), by the end of 1984. Much of this represented an "attic-cleaning" of old, rarely used data. But, as the data set available on regulated trucking declines, and regulated trucking as a portion of the industry declines, information on trucking, which was never comprehensive or extensive, will go from poor

to almost non-existent. It is extraordinary that so little is known about an industry of this size and importance.

Other, non-regulatory, sources of trucking information have typically focused on the vehicle and its characteristics and activities rather than on the firm or establishment. Recent major studies on taxation and vehicle characteristics leading to important legislative changes, have used extensively the Census Truck Inventory and Use Survey (TIUS) and to a lesser extent the Commodity Transportation Survey (CTS). In that process the weaknesses of existing information were highlighted. In particular the lack of truck commodity movement data in adequate depth and detail was noted; and the lack of information on trucking firms and their economic condition. The former of these two concerns is being addressed partially by the development of a follow-on survey to the TIUS designed to obtain data linking commodity flows to truck type and the road system. This survey as designed will not produce flow data at comprehensive levels of detail. No plans exist to deal with the data gaps in the area of the firm. The TIUS survey, because it uses vehicle registrations as the basis for its sample is not designed to be effective in addressing needs for firm or establishment data. However the possibility of obtaining firm data via the truck registration linkage, at least on a sample basis, is worthy of consideration. Present public decisions regarding delineation of a national truck network, vehicle sizes and weights, and taxation systems will all demand current, comprehensive information. In particular the fact that Census of Transportation data are produced only every five years and then often take two years to process has been identified by industry sources as a serious problem in that policies are based on the structure of an industry no longer valid.

The Non-Regulated Motor Carriers and Public Warehousing Survey conducted as part of the quinquennial Census of Transportation, mentioned earlier as a potential resource for SIC 41-Passenger Motor Carriers, has substantial potential as a data source in this area. It produces detailed firm level and basic establishment data for a sample of non-regulated trucking, and all warehousing. In the 1977 survey, all 38,000 establishments in SIC's 421 and 422 with payrolls over $25,000, and a one in ten sample (4,000) of employer establishments under $25,000 were contacted. Operating revenues, expenses, and some fleet data were collected for ten truck carrier types. In warehousing similar financial data, plus warehouse physical characteristics were obtained for 12 warehouse categories.

b. Private Substitutes

There are a number of private sources of trucking data. These are typically narrow in scope or dependent on public sources. A number of private vendors provide truck industry data, based on ICC reporting, or truck commodity flow data based on Census sources. The Association of American Railroads, through private vendors, conducted truck surveys at truck stops on major truck routes for a number of years. While that survey provided useful insights its sample structure did not permit

nationally applicable analysis. That activity has apparently ended. The American Trucking Association has produced data on the function of the regulated industry it represents. These activities have also been reduced in recent years.

## MAJOR GROUP 44--WATER TRANSPORTATION

Major group 44 brings together all service activities related to water transportation. At the industry group level this sector is divided into Deep Sea Foreign (SIC 441), Deep Sea Domestic (442), Great Lakes-St. Lawrence Seaway (443), Transportation on Rivers and Canals (444), Local Water Transportation (445), and Incidental Services (446). This disparate collection of industries includes facility operators, ship operators, and associated services. It is the industry that has been least affected by deregulation to date. The 1981 proposals for SIC revision in this area are therefore still applicable.

In order to treat this area systematically the following discussion focuses at the three digit level of SIC identification with the exception that SIC 441 Deep Sea Foreign Transportation has been defined as out of scope.

### 1. Industry Structure

#### a. Concentration

Under the existing SIC structure major group 442--Deep Sea Domestic Transportation--is subdivided by area of operations into Noncontiguous (4421), Coastwise (4422), and Intercoastal (4423) transportation. Each of these is an activity of limited scope. The CBP for 1981 identifies only 134 establishments with a total employment of less than 9,000 for all three areas. The 1981 SIC revision proposal proposed merging the three into a single group.

Great Lakes-St. Lawrence Seaway Transportation (443) and River and Canal Transportation (444) cover the domestic carriers operating on the river and lake systems of the United States. About 470 firms are identified by CBP in the two areas. SIC 445--Local Water Transportation includes Ferries (4452), Lighterage Operations (4453), Towing Service (4454), and a Not Elsewhere Classified Category (4459). As noted in the discussion of Motor Carrier transport, government programs and statistics tend to include ferry operations under local mass transit. CBP data indicate about 1500 establishments exist in this industry group (445) with an average size of 35 employees.

Major Group 446--Services Incidental To Water Transportation--includes three groups providing services to waterborne shipping. Marine Cargo Handling (4463) and Canal Operations (4464) are, like airports and bus terminals, a mixture of public and private facilities. Marine Cargo Handling is a major industry with 800 establishments and 85,000 employees. Canals has only 8 establishments with less than a thousand employees in total. Finally SIC 4469--Water

Transportation Services, NEC contains all of the small supporting services and recreational boating operations, representing over 3300 establishments and 37,000 employees. The 1981 proposed SIC revision suggested merging this industry with the NEC category of Group 44.

b. Public/Private Functions

The maritime industry is fundamentally a private sector industry with carriers (SIC 441-445) entirely private; and the portions of SIC 446 dealing with the provision of port and canal facilities predominantly public. In addition a large number of federal, state and local agencies are involved in funding, regulating, and servicing the industry.

2. Statistical Coverage

a. Public Trends

It is difficult to characterize the state of information in an industry as broad as the waterborne commerce industry. In 1981 the Maritime Transportation Research Board of the National Research Council completed a critical appraisal of maritime information that covers most elements of the industry. Over 290 separate data sources are referenced. That review indicates that the focus of data resources is on the physical characteristics of the systems, vessels, and port facilities of the industry; or on the actual commodity movements occurring. Data recommendations also focus on needed improvements in these areas. There is almost no reference to establishment level data for ports, port services, or carriers. The U.S. DOT inventory of transportation data bases lists about 100 sources of waterborne data excluding Census Foreign Trade data.

With respect to carriers, the U.S. Corps of Engineers produces an annual set of documents entitled U.S. Transportation Lines covering coastal, river system, and Great Lake carriers in three volumes. The first volume provides lists of operating carriers and their addresses. Subsequent volumes provide information on fleets owned by these operators and the type of services provided. Until 1980 the ICC collected financial data on a limited portion of the inland waterway operator fleet amounting to 23,000 hours of reporting burden. All reporting was eliminated in 1980. The Census of Governments provides revenue and expenditure data for water transport and terminals.

Other financial data regarding the financing of port facilities is developed on an occasional basis by the Maritime Administration of U.S. DOT. Their most recent report on public port financing will be available this year. Other port financial data are available in the form of annual financial reports by the major port agencies. These are typically quasi-public entities. The Maritime Administration has also produced a document on the relationship of U.S. ports to the economy which traces the economic linkages of the inputs and outputs of U.S. ports.

Information on the operation of the lake and river systems is primarily provided by the public agencies that operate them. The St. Lawrence Seaway Corporation provides comprehensive reporting on its facilities and their use by shippers. The U.S. Army Corps of Engineers responsible for maintenance and operation of the inland waterway systems of the United States generate extensive reporting on the physical state of the system and the flows of vessels and commodities through the system. The U.S. Coast Guard with its responsibilities for waterborne safety, environmental protection, and control of navigation provides statistical reporting in these areas.

b. Private Substitutes

A number of private or quasi public organizations provide information on waterborne commerce. These sources are primarily limited to association or insurance industry information on ships or port characteristics.

MAJOR GROUP 45 - TRANSPORTATION BY AIR

Current SIC group designations for Major Group 45 no longer have meaning under airline deregulation: the distinction in the two SIC groups is between certificated carriers (SIC 451) holding certificates of public convenience and necessity, and non-certificated carriers (SIC 452) that do not. Typically certificated carriers are scheduled carriers flying over fixed routes, while non-certificated carriers are not.

Current structuring of the industry, developed to reflect CAB regulatory approaches and FAA safety regulations, have centered on aircraft size (seats) as the major discriminator of regulatory action. Under present structure an airline with any aircraft with over 60 seats falls into a category treated as major carriers. Almost all airlines with such aircraft would have traditionally been labeled SIC 451-Certificated. Airlines with no aircraft having more than 60 seats are treated as a separate group. Within that group are both scheduled carriers and the airlines traditionally associated with SIC 452-Noncertificated. SIC 458-Fixed Facilities and Services, and its 4-digit disaggregation, remain valid as a structuring device.

1. Industry Structure

a. Concentration

In past years the air carrier industry was rather neatly compartmentalized by groupings primarily regulatory in nature. Deregulation has not only changed that, it has admitted numbers of new small carriers that have blurred the distinction in carrier typology and decreased concentration in the industry. Because of new entries

and changes in the meaning of certification the number of reporting carriers has increased dramatically despite cuts in data requirements. These trends have not caused significant changes in the support industries.

b. Public/Private Functions

The air carrier industry remains private in the United States unlike almost all other nations. Fixed facilities and services however are mixed. Most airports are public or quasi-public facilities owned by municipalities or special districts. Service activities are almost entirely private in nature.

2. Statistical Coverage

a. Public Trends

The airline industry, under SIC 451 and 452, has been covered statistically by one of the most extensive and sophisticated data systems in federal operations. The CAB operation comprehensively covered airlines under its jurisdiction. A stratified system covered airlines in decreasing scale depending upon carrier characteristics. Coverage of fixed-based operators, air "taxis", and charter services were limited.

Under deregulation the CAB undertook a process of evaluation of data requirements. This examined future needs of government for regulation and oversight, but also recognized the other, non-regulatory, uses of the data for airport and aircraft design, operations planning, and marketing. Substantial reductions were made in required reporting. A 36% decrease in hours of reporting burden was achieved and total reports were reduced by 50%. Form 41, the central financial and statistical reporting device, was reduced from 73 individual schedules to 51 in 1983 and to 18 at sunset in Jan. 1, 1985. The number of other schedules dropped from 22 to 5. Primarily these dealt with consumer protection areas, such as schedule adherence, lost baggage, booking failures, etc.

At sunset, when remaining CAB functions are transferred to DOT, the CAB estimates that 65% of data elements will be justified by formerly CAB requirements, 30% by DOT requirements, 2% by Air Force requirements, and 3% for international reporting to the International Civil Aviation Organization (ICAO). The Air Force requirement is a significant example of the nonregulatory uses of regulatory data. Air Force use consisted of applying CAB cost and rate data in the air freight sector to determine budgets for air freight and for cost-based contracting. The loss of these data would have required the Air Force to establish a substitute data set or substitute method.

Because no definitive provision was made for data program transfer in the sunset legislation, final disposition of the programs is unclear. Pending legislation would specifically require transfer of

the main program elements. A key issue concerns continuation of the origin-destination data base developed for all air travel from a sample of passenger ticket stubs.

In a rulemaking still pending scheduled carriers in the under 60 seat class would be required to provide data on operating expenses and finances on a quarterly basis, and other items annually, including: traffic summaries, seats available, operating revenues and expenses, net income, and profit/loss statements. The purpose of this reporting is to maintain the ability to measure total national air carrier capacity, passenger flows, and financial health.

A large segment of aviation, notably air taxis, numbering approximately 4500 firms, are outside the reporting system, and report insurance certifications only.

FAA reporting systems have not been affected by CAB deregulation, other than in plans to assume or replace lost data of use to FAA. FAA's data programs measure airport activity and capacity, and safety in all areas of aviation, e.g., air crews, mechanics, aircraft and airports. The federal aid to airport programs, managed by FAA, also require extensive reporting. FAA reporting does not extend to coverage of the airport services portions of SIC 458. The Census of Governments contains some basic airport level reporting for municipal and special district operated facilities.

### b. Private Substitutes

The program of the CAB in data development used private vendors under contract as the main source of data processing and data distribution. At this time, vendors continue to make available data obtained by CAB order. There are no apparent plans by vendors to try to sustain privately, data services deleted from public reporting requirements. The associations in this area have been typically opposed to maintaining existing data sets and have argued for greater cuts in required reporting. Reasons for this vary, including: fear of the marketing utility of the data by new entrants; general fear of reporting more than absolutely necessary; and concerns for the burden and costs of reporting.

## MAJOR GROUP 46-PIPELINES, EXCEPT NATURAL GAS

Pipeline companies, although few in number, constitute a major element in freight transport. The SIC differentiates three industries in pipeline Group 461. SIC 4612 covers the firms engaged in transport of crude petroleum; 4613 transport of refined petroleum; and 4619 other pipelines. The notable exception, as classified, is natural gas transmission which is covered under utilities (SIC 492). From a transport perspective this is inappropriate. Natural gas transmission over long distances, as opposed to local gas main distribution systems, is considered a transportation activity.

1. Industry Structure

a. Concentration

The 1981 County Business Patterns (CBP) identified 530 establishments engaged in petroleum and petroleum product transmission, 32 of which fall into SIC 4619, Not Elsewhere Classified. This indicates that about 500 establishments are engaged in petroleum or product transport. In contrast, the Federal Energy Regulatory Commission identifies approximately 150 firms under its regulatory authority. The association of Oil Pipe Lines has about 100 of these as members, typically the largest firms. Presumably, the differences in these numbers is represented by the smaller intra-state firms not engaged in interstate common carrier service, and therefore not subject to federal regulation.

a. Public/Private Functions

The pipeline industry is wholly a private industry.

2. Statistical Coverage

a. Public Trends

At the time of the creation of the Department of Energy in 1977, jurisdiction over pipelines was transferred from the ICC to FERC. The main reporting tool at FERC is Form Number 6, formerly known as ICC Form P. This form is required of all regulated carriers, with the exception that waivers are granted to firms where costs of compliance can be shown to be excessively burdensome. Only a handful of firms have received waiver on reporting. Form 6 is an annual report, considerably scaled down from the ICC document. It obtains: ownership and stock information; income and expense accounts; capital expenditures; and statistics of operations. A quarterly report of large firms is no longer required.

Extensive changes have occurred since the late seventies in data publication. The following statistical reports are no longer available:

Transport Statistics In the U. S., Pipelines Section
ceased, 1976

Crude Oil and Refined Produce Pipeline Mileage in the U.S.
ceased 1977

Transportation of Petroleum Products by Pipeline
ceased 1980

These cuts would appear to be based on policy or budget decisions related to publications. For the most part the data for these reports are still generated from Form 6.

Active efforts continue in the courts and in Congress regarding further deregulation of this industry. Success in these efforts will undoubtedly lead to a further decline in available information.

b. Private Substitutes

In the oil industry the Oil and Gas Journal functions as something of the journal of record. It is an excellent source of industry information. In this area it has attempted to fill in some of the statistical gaps by reporting selected Form 6 data. This is a limited effort.

The Association of Oil Pipelines does not have a primary source statistical program.

## MAJOR GROUP 47 - TRANSPORTATION SERVICES

This group represents something of a miscellaneous collection of services provided in and to the transportation industry. The analysis presented here selectively treats those elements of the Major Group warranting detailed consideration.

Several unrelated industries are represented in SIC 47, covering freight and passenger modes, public and private organizations, and major and minor industries. They are approached separately below:

### GROUP 471 FREIGHT FORWARDING

1. Industry Structure

Freight forwarding covers a relatively small but changing and growing activity. If linked with SIC 4723 Arrangement of Transportation of Freight and Cargo the sum is a significant industry. In some cases, particularly trucking, deregulation has created new roles for brokers and forwarders. Industry concentration has probably been affected by deregulation (no definitive data are available) in that new firms have entered the field.

2. Statistical Coverage

Freight forwarding was under ICC reporting requirements until 1980 when all reporting stopped. Industry sources have not supplanted previously available public data.

## GROUP-4722 ARRANGEMENT OF PASSENGER TRANSPORTATION

### 1. Industry Structure

Arrangement of Passenger Transportation is a dynamic industry that has grown rapidly in recent years. By industry figures the number of agencies accredited by the Air Traffic Conference (ATC) has grown from under 7,000 in 1970 to over 20,000 in 1982. The processes of deregulation relating to this industry derivative of airline deregulation are not complete. Court and legislative decisions pending in the House and Senate at this time could significantly affect industry structure.

#### a. Concentration

The industry is primarily composed of small firms including a considerable number of zero employee arrangements. The IRS statistics identify 16,000 sole proprietorships. An industry survey indicated that 97% of agencies had fewer than fifteen employees, and 95% qualified under SBA definitions as small businesses. Some large firms with national distribution systems exist, but CBP identifies only 140 establishments with more than fifty employees. CBP data for 1981 put total establishments at 16,000 while industry estimates place the current size of the industry at 14-15,000 firms at 23,000 locations. ASTA the industry association has about 10,000 members. Changes in regulatory rules could dramatically affect both the number of agencies and the scale of activity of establishments.

#### b. Public/Private Functions

One of the key regulatory issues concerns private functions. The Air Traffic Conference of the Air Transport Association now governs accreditation of agents, and keeps records of firms accredited. This process has been challenged with the goal of "opening up" the industry to greater competition. At issue is the anti-trust immunity granted airlines to set joint standards of accreditation for travel agents. Without such immunity the accreditation process would cease.

### 2. Statistical Coverage

#### a. Public Trends

There is little public information on the industry. The Services Census now collects some items on this industry in its five year survey. CBP and IRS sources have been quoted earlier. The Census survey identifies the number of establishments, revenues, payroll and employees. In that survey the industry is separately reported for travel agencies, tour operators, and other arrangers of passenger transportation.

b. Private Substitutes

The single, major, private source of information is the ATC listing of accredited agents which is not publicly available. The continued existence of the listing is dependent on the outcome of the regulatory process. In 1982 the industry conducted its own survey to obtain travel agency characteristics. This was a one-time survey.

GROUP 4784 - FIXED FACILITIES FOR HANDLING MOTOR VEHICLE TRANSPORTATION NOT ELSEWHERE CLASSIFIED

This SIC industry code represents a large industry in the U.S. highway system. Tunnels, toll roads, and other toll facilities are represented in this category. Federal Highway Administration statistics identify about 90 facilities with revenues of about $2.6 billion.

1. Industry Structure

Most facilities are publicly owned, often by special districts, authorities, or other special purpose agencies. Authorities vary in the extent to which they are imbedded in existing governmental structures.

2. Statistical Coverage

a. Public Trends

Highway Statistics, an annual report of the Federal Highway Administration reports revenues and disbursements for "State-Administered" toll facilities, defined as facilities that are, or will become, state facilities (once bonded indebtedness is cleared), or are facilities of a national character. The Census of Governments reports receipts to states and other levels of government for toll facilities as a single item. CBP does not separately identify this 4 digit industry.

b. Private Substitutes

The International Bridge, Tunnel and Turnpike Association (IBTTA) does survey its members, representing 90-95% of industry activity, regarding traffic volumes, toll rates, safety data, and revenue.

## E. TRANSPORTATION-WIDE FINDINGS AND RECOMMENDATIONS[2]

Part D, preceding this part, is a group by group analysis of current data availability, gaps, and requirements. The individual analyses indicate that distinctly parallel patterns are emerging in many areas of transportation data. These are sufficient to suggest that some generic observations may be meaningful guides to policy-making regarding the provision of transportation data. Some of the common characteristics noted in the detailed examination of data needs in the separate industries follow.

1. Deregulation has changed the amount of data available, both in that the data required of reporting firms has declined, and more significantly in that the thresholds for any reporting by regulated firms have been raised. Thus, data sets generated by the regulatory process, which historically failed to comprehensively cover the universe of firms in an industry, now cover even a smaller portion of industry activity. Typically only the largest carriers, identified by a revenue threshold, are required to report. This is true, with varying degrees of applicability, of the following areas: railroads, trucking, aviation, intercity bus, and pipelines.

The problem is exacerbated in some areas by new openness to new entries into the industry. This has increased the number of players significantly in some cases, almost always, given the size of new entrants, in the non-reporting category. This suggests that an appropriate need is accounting for the overall "universe" of activity in a modal area, either by counting non-reporting entities and developing a full picture of firms and activities by melding census and regulatory sources; or by counting all elements--regulated, both reporting and non-reporting, and non-regulated elements also, where they exist. The latter approach would provide external benchmarks on elements in the regulated reporting sector and complementary data in the other sectors. This approach will be the preferred approach, but may meet obstacles of duplication, overlap, etc. This will vary in both feasibility and desirability from mode to mode depending on the proportion of existing coverage to the size of the industry and the overall size of the industry.

2. In many individual sectors of interest in the transportation area there are both public and private entities providing services. This creates a very complex environment from a statistical design perspective. Such areas include: mass transit, airports, bus terminals, school buses, charter buses, tollways, tunnels, and bridges, and port facilities.

Innovative techniques are required to provide for comprehensive statistics in these areas, either by counting public facilities as private entities would be, or by separate coverage in, for example, the Census of Governments and Census of Service Industries, and merging of the elements. Current approaches create data of unknown relationship to the universe of activity.

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[2]Recommendations are those of the author and do not necessarily represent the views of the Committee on National Statistics.

3. Current data collection policies of the major transportation agencies are premised on the belief that the only justifications for data collection are a demonstrable direct programmatic or regulatory need of the agency or other federal agencies. No agency recognizes as its own the responsibility to provide general public data on the state of transportation as an industry, rather than as an assortment of federal programs. This approach damages both more effective public decisions about transportation and more efficient private markets.

4. Both deregulation and technological change have acted to blur distinctions in the conventional boundaries between transportation service industries. The statistical system must be responsive to this new environment. Its elements include the following:

a. Multimodal transportation companies will be more prevalent in the future. Particularly, trucking services will be provided by many rail, air, and water-based services. These activities must be identifiable to fill in a complete trucking picture.

b. Private non-transportation companies are increasingly providing transport services with their own private fleets when they have economic spare capacity. The scope of trucking activity will be incomplete without discrete information on these auxiliary activities.

c. Intermodal linking through containerization, and design of trailers oriented to piggy-backing on rail, have created new industries and new interrelationships between modes that will require restructuring of statistical reporting.

5. There is a reporting "exhaustion" among many regulated firms recently relieved of heavy reporting burdens. This exhaustion, coupled with fears of the competitive impacts of broadly available data in an unregulated environment, will cause antagonism to new reporting activities. The Bureau of Census, precisely because of its disclosure protection rules, can be a more acceptable tool for data collection. Regulatory reporting explicitly means detailed data about individual firms; Census Bureau reporting assures anonymity. This can be particularly valuable in picking up an area of reporting completely abandoned by the regulatory processes, that of measuring service quality through monitoring of schedule adherence, losses of baggage and cargo, and damages to goods in transit. Measured at the industry level these can be important components of productivity measurement.

6. Census Bureau delays in publication of data collected, particularly in the Census of Transportation, reduces the relevance of and interest in its products. It also generates reluctance among users to support expanded programs of collection. The Census Bureau must improve the speed of its regular publication and topic programs, and the responsiveness of its special tabulation programs to gain user confidence. A stronger Census User's service activity in the economic areas could be a desirable first step.

7. The continuing policies regarding deregulation of transport industries have had a substantial and negative impact on the development and availability of transportation statistics. Because of the excessive dependence of the statistical system on regulatory

reporting for information this trend had been more damaging than it should have been. Both legal and philosophical factors have been important in creating this new context for data development:

a. Data reporting at regulatory agencies is tightly tied to the legal warrants for requiring reporting. Those warrants declined or disappeared with reduced regulation.

b. Other agencies, particularly the Bureau of Census were precluded, by statute, from collecting data "covered" by regulatory agencies.

c. Philosophically, the desire to reduce federal intrusion in private sector matters has argued for reduced data reporting.

8. Current policy, both implicitly and explicitly, has mistakenly associated a "free" market with less data; and a strong government-regulated market with more data. This linkage is inappropriate. The "more perfect markets" that government seeks to establish by deregulation is highly dependent on more perfect information for proper functioning. Substantial arguments exist supporting the view that data needs are greater in a deregulated market. Better information can serve as a "regulatory force" assuring more efficient market transactions.

9. The Census Survey of Nonregulated Motor Carriers is both a symptom of these problems and a potential solution. It has attempted to increase understanding of the residual unregulated portions of transport services. Deregulatory actions and decreases in reporting have expanded its potential scope. Careful redesign of this survey assuring consistency with other sources could make it the centerpiece of a responsive federal transportation statistics program.

10. The decline of regulatory data as the basis for all transport statistics provides an opportunity for the development of a new transportation statistics structure based on a broader, more comprehensive perception of the transportation industry and the information requirements of all of its elements.

11. Given the time and resources available it has not been possible to make data quality a major focus of this effort. However where data quality is a major issue in an industry sector it has been briefly treated. A number of general observations are appropriate regarding the nature of data quality issues in the transportation sector:

a. Most data sources important to the transportation services sector are based on administrative records rather than sample surveys. Because of the regulatory basis for many of the sources used the records often are of an accounting and legal nature, with extensive auditing procedures. Thus the records are frequently of high quality for the purposes intended.

b. Quality issues become significant in using administrative records when:

- Submissions to regulatory agencies are simply stored pending future need without audit, transcription to electronic data

processing, or review. After several years of such a process data quality will deteriorate.

• Due to the lack of appropriate data, regulatory sources are used for many non-regulatory purposes for which the data were not intended, e.g., the regulated portion of an industry may become the surrogate for the entire industry simply because the data are available. This is more an issue of analytical quality, or of data requirements than of data quality.

c. A second set of sources of information are the associations. Data quality there is more variable because data collection skills and resources vary from organization to organization; but more importantly because association membership often bears an unknown relationship to total industry activity and response rates to internal membership surveys by associations vary significantly.

d. Sample surveys have generally been employed to measure vehicle, passenger, or commodity flows in the transportation system. Almost always these surveys, given the time and great expense involved, are too small for the purposes for which they are designed. Moreover, because they are often the only sources available they are used at levels of detail far greater than their designs permit. The National Travel Survey, which measures long distance passenger trip-making, and the Commodity Transportation Survey which measures the geographic movements of manufactured goods are both examples of this problem. For example, the air travel portion of the NTS has never checked at all against sample airline ticket data developed by the CAB.

12. This study has not directly undertaken an analysis of the data requirements for producing productivity statistics in transportation service industries. However, both the importance and the difficulty of developing productivity measures for service industries have been recognized.

The key question for productivity statistics in service industries, of course, is how is the product, the "output," of the industry identified, structured, and measured. In passenger transportation the "passenger-mile" or "seat-mile" is often used as a measure of output (e.g., a 50 seat bus going 10 miles produces 500 seat miles of travel). The ton-mile plays a similar role in freight transportation. While these measures of the product of transportation are in many respects more tangible than "output" in other service industries such as communications, finance, or insurance, a few moments inspection will reveal the weaknesses in such measures. (If a circuitous route is chosen from A to B rather than a direct one, more passenger miles will be produced but the "product" will be the same, displacement to B from A). Despite the evident weakness their utility for comparative purposes is great and they are extensively employed. All passenger service modes use revenue per seat mile, or passenger mile and costs per seat mile, or passenger-mile, as quick measures of performance and efficiency.

Accepting all the reservations stated in this study about data weaknesses, it is generally true that data on the "inputs" side of productivity measures are more available than those related to output.

Problems of the definition of output aside, all prospective measures of transportation output require extensive and costly data development.

## F. TRANSPORTATION INDUSTRY-SPECIFIC FINDINGS AND RECOMMENDATIONS[3]

### 1. Major Group 40--Railroad Transportation

#### a. Findings

- Because all rail activity in the U.S. has been extensively regulated, regulatory reporting has not only been extensive but also comprehensive. Literally no rail systems were excluded. Regulatory changes now exclude all but the large railroads from any reporting.
- Small line-haul railroads, and switching and terminal railroads, together probably representing about 5% of industry, do not regularly report any operating or activity data to any public or private agency, since 1979. The AAR, the association of Class I railroads, does not acquire data on small railroads.
- The Short-Line Association representing approximately 260 of the 350-360 smaller railroads does not collect data from its members.
- The ICC/AAR arrangement on reporting is a unique institutional response to a challenging situation. It is perhaps too early to determine the long term viability of a voluntary association-based reporting system. Thus far it is working well.

#### b. Recommendations

- Rail passenger service, admittedly small, is lost in the present SIC structure. It should be identified separately to avoid confusing rail freight statistics; and to provide linkage to SIC code 41 statistics.
- Auxiliary accounts should be established in any reporting of Major Group 40 data for passenger activity. These should be separated into two groups: one for intercity travel; and one for commuting. This would assist BEA requirements and clarify tourism analyses also, of interest to the travel industry.
- A separate SIC category for non-commuting rail passenger activities should be considered. This would include Amtrak and scenic and recreation railroads.
- The complete lack of non-Class I railroad reporting leaves a gap in national statistics in the railroad industry. An annual survey of all railroads is necessary to sustain basic data on the size of the industry, i.e., number of establishments, employees, revenues, expenditures by type, and to provide a minimal check source on Class I rail reporting.

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[3] Recommendations are those of the author and do not necessarily represent the views of the Committee on National Statistics.

• Rail employment data is now obtained by BLS through ICC through AAR. Shifting employment reporting to the BLS survey, with detail data available through the Rail Retirement Board, should be considered. Reporting burdens would be reduced and more uniform data would result.

2. Major Group 41 - Local and Suburban Transit and Interurban Highway Passenger Transportation

2a. GROUP 411 Local and Suburban Passenger Transportation

a. Findings

• Continued federal, state, and local financial and policy involvement in mass transit will require information on transit expenditure, performance, and services.

• Reporting required under Section 15 of the Urban Mass Transportation Act provides extensive financial reporting on federal-aid recipients. It does not provide broad coverage of travel activity measures.

• Travel activity data remain weak. The intermittently performed NPTS, a small sample survey, is the only comprehensive source of trip characteristics data.

• Effort to end federal operating assistance to mass transit would endanger the national transit data set.

• Non-federal-aid recipients are not included in the present system.

• Those components of 4119 not covered under Section 15 represent many small special service establishments: limousines, ambulance services, sightseeing buses, etc.

• The Census of Governments provides a weak, probably mostly redundant, data set paralleling the Section 15 data format for publicly owned transit properties.

b. Recommendations

• Non-reporting transit properties, i.e., non-aid recipients, are an important, and likely increasingly important, segment of transit operations. Because they are predominantly private the Census of Governments is not a likely source of improved data on this part of the transit industry. Annual reporting of fundamental data: number of establishments; employees; revenues, and measures of operations; number of vehicles, annual seat-miles, passengers, and passenger-miles, is needed to complete the count of the transit universe for national accounts reporting and transit policy analysis.

• A joint analysis of UMTA-Census of Governments reporting might yield a more effective, more complementary overall reporting system.

• There does not seem to be a major need to obtain more extensive information on the establishments of 4119 other than to assure completeness in the universe.

## 2b. GROUP 412--Taxicabs

### a. Findings

- Taxicabs are an important transportation industry significantly affected by alternative mass transit policies.
- Taxicab information is limited in availability from both private and public sources. Assessment of transit policy impacts on this industry is not possible at present levels of data availability.
- No comprehensive count exists of taxicab operators.
- The new organizational formations of operators in the industry requires new thinking about statistical approaches.
- Both the Urban Mass Transportation Administration, the agency with greatest interest in taxicabs, and the industry association recognize the need for more comprehensive statistical treatment.

### b. Recommendations

- Serious consideration should be given to comprehensive annual identification of cab establishments and owner-operators including: employment, revenues, costs, and operating arrangements.
- Every five years would be sufficient for detailed operating characteristics and expenditures. The determination of the levels of service provided by taxicabs could be an important element in urban transport planning.
- SIC revision should include separate identification within SIC 412 of cab service companies.

## 2c. GROUP 413--Intercity and Rural Highway Passenger Transportation

### a. Findings

- An industry-wide basic data set for the intercity bus industry, including regulated and non-regulated sectors, is required to monitor the effects of deregulation and to maintain knowledge of the service levels provided for national, state, and local economic analyses.
- Cuts in reporting at ICC leave significant proportions of the intercity bus industry unreported. Private sources are unlikely to replace this reporting.
- Changes in industry structure mandate revision in the non-regulated motor carrier survey.
- Rural bus service that is provided by local agencies is a newly emerging activity.

b. Recommendations

- An annual reporting instrument is required to obtain fundamental identification and scale characteristics of the entire intercity passenger motor carrier industry. This should be coordinated with the ICC to assure effective bench-marking and to reduce unwarranted duplication.
- Local rural bus service establishments should be relocated to SIC 411, or at least be separately identified.
- The survey of nonregulated carriers should be considered as a possible vehicle for the new data collection process.
- SIC industry 4141-local services, needs clarification. It may be a non-industry, in that all of its parts appropriately belong elsewhere. Portions of it are, in fact, sightseeing operations and belong in SIC 4119. Other charter operations are in fact subscription-like services and should be in 4111. Remaining activities are typically auxiliary activities of transit operations listed elsewhere, particularly SIC 4111.
- SIC 4142 which covers non-local charter service is a distinct industry category, with some overlap with regular route services in SIC 4131. Consideration should be given to including it as a distinct category under Group 413, thus creating a true intercity highway passenger transportation category.
- Data collection requirements for SIC 4142 should be treated as identical to those of SIC 413.

2d. GROUP 415--School Buses

a. Findings

- School bus transportation is both a public and private activity paralleling local school systems in structure.
- Directors of pupil transportation in each state are the primary source of publicly provided school bus transportation. Data available varies from state to state. There is no national activity to assure uniformity or comparability.
- There is no comprehensive summary statistical picture of the school bus industry. This is required to meet policy requirements in both the education and transportation sectors.

b. Recommendations

- Statistical efforts should focus on identifying private operators in some detail, particularly to supplement annual state data on public systems. Operating characteristics, activity levels, and safety data all are of substantial value and should be included in an annual reporting system.

• The Census of Governments should undertake separate detailed reporting of school bus operations in conjunction with the U.S. Department of Education and the state authorities.

3. MAJOR GROUP 42--Motor Freight Transportation and Warehousing

a. Findings

• Present SIC treatment of trucking is inadequate given the size, importance, and disparate character of the elements of the trucking industry. Major public policy questions regarding taxation and operating procedures will continue for years to come. Better data on the trucking industry will be crucial to effective policy. There are several areas in which change is needed:

-- Trucking should have a separate SIC code at the two-digit level. It is a continuing source of confusion and frustration that at the two digit level, at which level most federal statistics are maintained, trucking is inseparable from a warehousing activity of unknown size.

-- The three and four digit structuring of the SIC for trucking is not straightforward. All of the former bases for delineation are becoming increasingly blurred. For instance the distinctions between specialized, general and household freight used in the 1981 proposed SIC revision are becoming ill-defined. In addition, other distinctions of importance, e.g., between firms and owner-operators are not industry based. The present local-non-local distinction should be retained as the basis for a full scale analysis of appropriate further delineation of industry categories.

-- The current need is for a comprehensive "count" of the entities engaged in trucking with accompanying basic economic statistics on an annual basis. The basic elements of the industry are: regulated intercity carriers; non-regulated intercity carriers (exempt); local trucking; owner-operators; trucking as a part of other transport; and private trucking.

These categories are not mutually exclusive. All data collection efforts miss one more more of these groupings.

b. Recommendations

• SIC coding for the trucking industry should be refined as discussed in the findings above.

• The present survey of non-regulated motor carriers should be considered as the basis for the design of an annual survey of the industry, in terms of data content.

• Specific design efforts are required, either to establish a complementary data structure in the sectors not covered now by the survey, or to include them in the survey. These include: regulated carriers; owner-operators; and trucking as an auxiliary activity.

• Overlaps with the regulated set of carriers will require coordination with the ICC and direct consideration of section 131 of Title 13.

• Access to owner-operators, typically zero employee entities, must be established.

• Access to trucking as an auxiliary activity of other industries must be established. This includes trucking by other transportation firms, and trucking as an own-account and common-carrier activity by non-transportation firms.

• The Truck Inventory and Use Survey and its follow-on, now in design, should be investigated as potential alternative sources of establishment and owner-operator data on a sample basis.

• The focus of truck related data is on the vehicle. This specifically means the tractor in combination vehicles. Little is known about trailers. This topic is further clouded by recent trends, particularly: the growth in container traffic; trailer-on-flat-car (TOFC) service; and changes in permissible trailer sizes. Data sources are required to trace trailer and container production and use, particularly in intermodal service, and to cover service industries renting and using containers. Container rental, or leasing, could be covered in 4212; or under truck rental, without drivers (SIC 7513); or in transportation services (SIC 417) in a parallel to railroad car rental, (SCI 4742).

• The question of how to measure truck-based commodity flows remains a major statistical issue. The CTS and TIUS follow-on represent limited attempts to respond to this need. The CTS has failed in terms of respondent burden, cost, data quality and coverage to meet trucking data needs. A full scale effort focused on all industries, not just manufacturing, is required, structured for minimum respondent burden and maximum efficiency.

## 4. MAJOR GROUP 44--Water Transportation

### a. Findings

• Fundamentally, data sources in Major Group 44 are reflective of government involvement and interest in the industry. Areas of federal government involvement, e.g., provision of channels, harbors and infrastructure, safety regulation, construction and operating subsidy are reported. Operations of a local, or private nature are not.

• The very competitive nature of the industry, particularly between operators on the river systems, and between ports competing for domestic and foreign cargoes has led to a lack of public information. The absence of federal regulation, or involvement, particularly in port activities, where it is constitutionally foreclosed, has contributed to the absence of data on firms engaged in transport or services to transport.

• Financial data on the carriers operating on the river systems and in the coastal trades appears to be totally lacking. Given continuing policy concerns regarding private contributions to public

infrastructure costs in the form of user charges, this gap is dangerous and emotionally charged.

b. Recommendations

• A system of annual financial reporting for waterborne carriers is required, identifying types and functions of firms and incorporating full revenue and expenditure detail. Basic operating data also should be provided annually. On a five year Census basis complete reporting should be established parallel in structure to other quinquennial service industry reporting. The BEA has identified this industry as one of its highest priorities for filling gaps in the national accounts.

• Port financial data, like carrier financial data is inadequate. In the port area, however, the situation is more complex. Ports are a conglomeration of public facilities, private firms, and auxiliary activities of non-transportation and transportation companies. Establishing a comprehensive financial reporting system will require:

-- Analysis of the comprehensiveness and scope of Census of Governments reporting
-- State, local, and Special District reporting
-- Clear identification and reporting of waterborne related auxiliary activities of firms in other industries
-- Expanded reporting of local port establishments, particularly terminals

• The rapid growth of industries in the area of water transportation services, NEC (SIC 4469), particularly in those ports associated with recreational boating, rather than commercial shipping, suggests an SIC division between these areas. Preliminary to more extensive reporting, limited reporting on an annual basis should be begun in this sector identifying the universe of establishments with accompanying measures of size.

5. MAJOR GROUP 45--Transportation by Air

a. Findings

• The CAB reporting system has been among the most effective and extensive federal reporting systems producing comprehensive data of high quality. The process of recision has been handled carefully over a number of years.

• Despite that, many "eleventh-hour" decisions remain--rule-making, and "clean-up" legislation--the outcomes of which will determine a large part of the structure and utility of the aviation statistical system. DOT has been actively engaged for many years in cooperative planning with the CAB for transfer of data programs.

• Controversy exists over necessary levels of reporting in the new regulatory environment, both in and out of government. Data are required for monitoring of the effects of deregulation for transportation services analysis, and public infrastructure planning.

• Important elements of the aviation industry are not included in even the broadest-scale reporting system alternatives now under consideration. These include: air taxi operations, small, non-federal-aid airports, and airport service establishments.

Modifications in reporting plans toward further reductions would add elements to this list, particularly small scheduled carriers.

b. Recommendations

• The Census Bureau has capabilities that generally would suit it for a role in completing the picture of aviation industry activity. These include:

-- Census confidentiality provisions, which would be a very positive attribute in terms of gaining industry acceptance.
-- The data required, i.e., basic annual "universe" counts of existing establishments, with very fundamental characteristics data such as employment, revenues, and basic activity measures are well suited to the census role and capabilities.
-- Other facets of the system are less clear. Were the origin-destination data system to be dropped, it is unclear that Census could appropriately undertake the activity.

6. MAJOR GROUP 46--Pipelines

a. Findings

• The critical question regarding future regulation of the pipeline industry is unresolved. Deregulation will clearly further erode information availability.

• Establishments not covered by FERC reporting are likely covered by state Public Service or Public Utility Commissions. This reporting, although not investigated, can be expected to vary in content and quality from state to state. A Census investigation of this area to further qualify reporting activities and needs would be desirable.

b. Recommendations

• Publication of regulatory data has suffered from regulatory changes. A more extensive program of publication, given the costs of collection and processing already incurred, is recommended. The reports identified earlier could be reinstated with great benefit at little public cost.

• Restructuring of the gas pipelines SIC to include gas transmissions under SIC-46 pipelines, as originally suggested in the 1980 SIC review, is recommended.

## 7. MAJOR GROUP 47--Transportation Services

### 7a. 4712-Freight Forwarding

a. Finding

All public data collection on freight forwarders ceased in 1980. This is an area of significant change and growth since deregulation.

b. Recommendations

• SIC 4712 Freight Forwarding and SIC 4723 - Arrangement of Transportation of Freight and Cargo should be linked in SIC coding. Data collection efforts should consider both elements simultaneously.

• The cessation of all reporting on freight forwarders strongly suggests this is an important area for data development by the Census Bureau. Key data would be annual counts of establishments, kind-of-business identification, and measures of establishment size and activity.

### 7b. 4722--Arrangement of Passenger Transportation

a. Findings

• SIC 4722 is an important transport area, growing and changing rapidly as a direct result of deregulation.

• Existing sources of data are very limited.

• Legislative and regulatory changes could cause dramatic changes in industry structure, while simultaneously further reducing available information.

b. Recommendations

• Expansion of data on an annual basis should be considered to maintain review of the evolution of this industry. Annual data should include payroll, revenue data and employment for sole proprietorships and partnerships as well as corporations.

• The five year services census data set for this industry should be expanded. Recognition should be given to the changing structure of the industry in the design of new data requirements. Particularly, the separate treatment of tour operators and travel agents now provided should also separately report tour wholesalers. Data collected should include revenue statistics by source, operational details, and expenditure patterns.

## 7c. 4784--Fixed Facilities

### a. Finding

- An industry of this size and importance in the national economy requires complete coverage. As interest in tolls as a system finance mechanism continues to increase, refined data on toll system financial operations will be very valuable.

### b. Recommendations

- Reporting, paralleling that in the current quinquennial series covered industries, is required.
- The joint public/private nature of the industry makes comprehensive statistics difficult. Public agencies should be treated like private establishments for purposes of data collection.
- A joint effort to bridge Census of Governments and Services Census capabilities would be effective. It is conceivable that Census of Governments efforts could be expanded to provide more substantive information, but given the public/private nature of the industry a services industry approach is likely to prove superior.

## SECTION III. COMMUNICATION--AN INDUSTRY IN TRANSITION

### A. ORGANIZATION AND SCOPE

#### 1. Organization

The first part of this section lists the SIC coverage for the communication industry, limitations of scope, and weaknesses of the current SIC system. The second part describes industry trends and developments, including the role of the Federal Communications Commission, the affect of deregulation, and the impact of technology. Statistical coverage is in two parts: aggregate industry statistics, limitations, and needs; and sub-industry statistics. The final parts of this section include a summary of findings and detailed recommendations.

#### 2. Current SIC Coverage of the Communication Industry

SIC Major Group 48, Communication, includes establishments furnishing point-to-point communication services, whether by wire or radio, and whether intended to be received aurally or visually; and radio and television broadcasting. This Major Group includes five 4-digit SIC codes:

| Industry No. | Description |
|---|---|
| 4811 | Telephone Communication (Wire or Radio) |
| 4821 | Telegraph Communication (Wire or Radio) |
| 4832 | Radio Broadcasting |
| 4833 | Television Broadcasting |
| 4899 | Communication Services, Not Elsewhere Classified |

Neither postal services (SIC 4311) nor messenger service (SIC 7399) are part of the communication industry coverage. Individuals operating personal citizen band (CB) radios or amateur (ham) radios would of course be out-of-scope. Organizations providing their own communication services are also outside the scope of these industries if their primary activity is other than point-to-point communication.

These include aviation (aircraft and ground); marine (ship and coastal); public safety (police, fire, forestry, highway maintenance, special emergency and State guard); industrial (manufacturing, trade and services); and land transportation (railroad, passenger and truck, taxicab and automobile emergency). The SIC Manual lists "Radio broadcasting operated by cab companies" under SIC code 4899. This is correct only if the establishment is primarily engaged in providing point-to-point communication services. If the establishment is primarily engaged in furnishing passenger transportation, it should be classified under SIC code 4121, Taxicabs.

### 3. SIC Weaknesses

There are two major weaknesses in using the current SIC system to measure data for communications. First, the SIC fails to separately classify emerging and rapidly growing segments of the industry. Many of the emerging "growth" segments, such as cable TV and satellite transmission, are included under the basket category, "Communication Services, n.e.c." Second, the system makes it difficult to measure communication activities of firms whose primary activity is not communications. The findings and recommendations shown later in this section attempt to overcome these weaknesses and focus on specific industry segments.

## B. INDUSTRY TRENDS AND DEVELOPMENTS

### 1. The Role of the FCC

The communication industry has been and will continue to be regulated by the Federal Communications Commission (FCC). The FCC is an independent United States government agency, responsible directly to Congress. Established by the Communications Act of 1934, it is charged with regulating interstate and international communications. The Commission's areas of regulatory concern include broadcasting, cable television, common carrier communications (including satellites), private radio services, spectrum management, and frequency allocations.

For broadcast services the FCC is empowered to license and regulate stations to serve "the public interest, convenience, and necessity." The Communications Act requires FCC to assign a frequency(wavelength) and a set of call letters to each station, and to specify operating power and hours of operation. Since broadcasting stations are not common carriers, the FCC does not regulate rates, profits, accounting methods or other financial aspects of station operations. FCC is following the trend in broadcast deregulation toward elimination of unnecessary rules in favor of market-place control and competition.

## 2. Deregulation and Competition

Technological and structural changes in the communication industry as well as public policy favoring deregulation have changed the industry from a highly monopolized and regulated structure to a more competitive one. Reacting to these changes, FCC, supported by the courts, has issued a series of decisions allowing competition.

A decision by FCC in May 1984 permitted a joint venture by a satellite company and a data processing firm. The FCC decision reflects the belief that, with new technologies and deregulation, both markets have grown more competitive, eliminating the need for regulation. Prior to the FCC ruling, the joint venture would have been illegal.

Other recent decisions by FCC have affected satellite services, the operation of earth stations, long-distance charges by AT&T, broadcast licensing, and the imposition of an "access charge."

Competition is occurring in television, where cable TV, subscription TV, and direct satellite-to-home transmission are offering a wide range of services for a fee. Not all the competing companies are successful, and the large investment in plant and equipment is a gamble that may not pay off. In the long run, competition and costs of development and operation may limit the number of companies providing communication services. This should be particularly true in the areas of satellite transmission and long-distance telephones. Although the rates of long-distance service are expected to decline, local service charges will increase because of deregulation and inflation.

## 3. Divestiture and the Access Charge

Divestiture of the Bell System operating companies (BOC's) from the American Telephone and Telegraph Co. (AT&T) in January 1984 adds another major dimension of change.

The struggle for a share of the communication market that may exceed $200 billion by 1990 is intense, and is expected to reshape the structure and number of competitors in the industry. Long-distance rates approved by FCC have created fierce competition, and revenues for long-distance charges are projected to exceed $100 billion by 1990. Several factors will influence the future of the long-distance market, including competition between AT&T and its competitors, the fate of the "access" charges, and new technology.

The rates that are charged for long-distance calls and for local telephone service are set by the FCC and by regulatory agencies of the state governments. Until recently, regulators have kept the rates for basic local telephone service below cost, so everyone could afford phone service. Long-distance rates deliberately were set above cost to subsidize local service, including access to the long-distance network.

Starting January 1984, telephone charges were supposed to include a new item mandated by FCC, called an "access charge." This was to represent the cost for access to long-distance telephone service. The

FCC was planning to gradually rearrange interstate telephone rates to base them on the actual cost of each type of service.

The proposed access charges created a great deal of controversy, and the start-up date was postponed. The access charges for large businesses and long-distance companies were delayed until June 1984 and the access charges on residential customers and small business were postponed until June 1985.

### 4. Telephone "Bypass"

There is a growing trend among large organizations to "bypass" the traditional carriers. Some major companies are finding it more efficient to run their own private-line systems and offer excess capacity from their dedicated communications facilities during nights or other low-use periods to other companies, their employees, and even local residents. Barriers to entry in the telecommunications market have almost disappeared. Several ways of bypassing local phone companies have been developed. Cable TV lines have been used to link facilities in the area covered by the cable system. New radio technology is being used to carry telephone calls and computer data. Within an office building, office networks supplied by computer vendors are providing an economic alternative to the phone lines currently installed.

### 5. Technology and Other Changes

The 1983 annual report of GTE, one of the leading communication firms, described the revolutionary changes taking place in telecommunications as follows:

> "Following nearly a century of orderly growth and technological development, the industry has been passing through a period of dramatic, frequently turbulent change during the last decade. Today a 'new' telecommunications industry is being created through the changes wrought by several powerful trends:
>
> - Rapid development of communications and computer technologies
> - Emergence of promising new markets for products and services employing these technologies
> - Increased competition in the telecommunications market stimulated by decisions from government and the courts
> - Deregulation of key elements of the nation's telephone business beginning in January of 1983
>
> In addition, an event that is making an impact of comparable magnitude was AT&T's divestiture of its 22 local Bell telephone companies on January 1, 1984."

For some segments of the communication industry, new technology has the potential to create explosive growth. Among the promising services are: radiotelephone and paging services; electronic mail and other message services; satellite services including direct broadcast satellite (DBS); pay television; and videotex and teletext.

a. Radiotelephone and Paging Services

Paging devices have been in use for many years but technology is expected to create substantial growth in this market. Industry forecasts predict that as prices come down the number of subscribers will exceed 20 million by 1990 with revenues of more than $2 billion.

Initially pagers were restricted to tone only -- a beep to indicate that the pager customer had a message waiting at his main telephone number. In local and wide-area services, other forms of paging are now available. Some beepers receive voice messages, some have silent vibrating signals and new models offer digitally displayed and even printed messages. Improved technology has made pagers smaller, lighter, easier to use and less costly. Users of paging services will include service technicians, construction workers, security and disaster crews, sales people, farmers and ranchers, transportation workers, and the sick and elderly.

In 1982 the FCC provided substantial spectrum relief for the users of paging services, thus increasing dramatically the number of radio paging frequencies throughout the United States. It also authorized additional frequencies for nationwide paging and approved the use of a portion of the FM radio frequency for paging. A nationwide paging system should be operational during the 1980's and will require the transmission of signals via satellite and local radio systems to the end users.

Mobile telephones consist of wireless radiotelephones operating on a signaling system transmitted partly through landline telephone systems. This industry does not include the inexpensive cordless telephones operating in or near the home, but covers mobile telephones used primarily in cars. A major technological breakthrough was the development of cellular technology, providing vast improvements in both the quality and availability of two-way voice communications. An industry analyst reports that cellular systems have the potential to put a mobile telephone in every car, a portable telephone in every brief case or purse, and someday, on every wrist a la Dick Tracy.

b. Electronic Mail and Other Message Communication

The Market Data Book of the Electronic Industries Association (EIA) describes the application of new technology to facsimile systems and electronic mail (EIA, 1983). Although facsimile technology has been available for more than 100 years, only during the past 10 years has facsimile, or "fax" gained acceptance in the business world as a convenient means of rapid, reliable, and cost-effective communication.

Facsimile systems allow data, graphics, and other hard-copy material to be scanned, converted into signal waves, and transmitted by wire or radio to a remote receiver, where a hard-copy duplicate is produced.

EIA notes that with rising postage rates, increasing mail volume and delays or disruptions of mail delivery, corporations are seeking more efficient, reliable, and cost-effective means of communication. Electronic mail, a hybrid of computer and communications technologies, offers a viable alternative. Although facsimile is currently the most prevalent form of electronic mail, industry analysts believe that it will eventually be displaced by computer-based message systems (CBMS), communicating word processors (CWPs), and integrated communication systems.

### c. Satellite Services

Satellites underscore the impact of technology on the communication industry. It is now possible to link not only all sections of the United States but all countries in the world under one satellite system. Satellite delivery allows the transmission of voice, video, and data over thousands of miles.

A communication satellite is basically a sun-powered, microwave radio receiver and broadcast unit placed in orbit, which receives carefully aimed radio signals from an earth station and transmits them back to earth, where a receiving dish collects and concentrates the signal. The signals are then amplified to the required power levels. The earth stations communicate with each other via the satellite and are used to transmit telephone, television, and data signals originated by common carriers, broadcasters, and distributors of cable TV material.

Satellites use transponders which represent the antenna-like part of the equipment. The transponder receives signals from the earth, translates and amplifies them, and retransmits. The satellite terminal system is a complex of communication equipment located on the earth's surface, operationally connected with one or more terrestrial communication systems, and capable of transmitting telecommunications both to and from a communications satellite system.

NASA has played a major role in the application of satellites to the communication industry. The NASA space shuttle has successfully placed communications satellites in orbit, and future plans include space platforms that will generate hundreds of millions of dollars in service revenues and equipment sales.

### d. Cable and Other Pay Television

The growth of cable TV occurred in concert with the development of satellite technology. Satellites made it possible to distribute premium programming such as HBO to independent cable systems nationwide.

Cable television (also called CATV or Community Antenna Television) was developed in the late 1940's in communities unable to receive TV signals because of terrain or distance from TV stations. Cable systems

located their antennas in areas having good reception, picked up broadcast station signals, and then distributed them by cable to subscribers for a fee.

In 1950 cable systems were operating in only 70 communities in the United States and served 14,000 homes. Later, cable service was introduced in suburban areas and a few cities, where it added the programs of one or two distant stations to those available from the local stations. The higher cost of installing cable in large cities, and the availability of multiple local programs, initially kept cable out of most large urban markets.

The Electronic Market Data Book (EIA, 1983) describes how, in 1975, satellite communications expanded the programming capacities of cable systems, encouraging a new facet of the industry--pay cable. Satellite transmission services have become crucial to the development of the pay cable industry. Most subscribers to the three largest pay cable programmers are serviced by satellite.

The EIA reports that in 1966 there were 1,770 cable systems in the United States serving 2.1 million subscribers. By 1973, these numbers had grown to about 3,000 systems and 7.3 million subscribers. Several private organizations have developed current estimates and projections. Their estimates for early 1984 range from 5,600 to more than 8,000 systems and from 29 to 35 million subscribers.

Most cable systems have a rate for basic subscriber service and charges for installation and additional hook-up. In some cases installation charges have been waived. Cable systems usually offer pay cable services, on a per-program or per-channel basis, to supplement the basic retransmission service. About 60 percent of basic subscribers take one or more pay services, but many homes are dropping their pay programs. An increasing number of systems have several tiers of programming, each with separate charges. Included are feature films, sports contests of regional or national interest, cultural events, educational shows, and other entertainment programs specifically produced for the cable audience. Cable operators are hoping to increase revenue by selling time to local, regional, and national advertisers.

The channel capacity of cable systems makes it possible for them to provide many services. In addition to both television and radio broadcast signals, many systems are also offering wire services such as news, weather and stock market reports, and cable network program services providing, for example, movies, sports, special entertainment features and programming designed for specific audiences such as children, women, and ethnic minorities.

Some cable operators also originate their own local programming and provide access channels and leased channels for public and institutional uses. Electronic banking, shopping, utility meter reading, home security, and facsimile newspaper and mail are some of the home services made feasible by the two-way transmission capabilities of cable television systems.

In addition to Cable TV (CATV) which has multiple-channel capacity, there is subscription television (STV) which involves transmitting "scrambled" signals over the air to subscribers who pay a fee for the

service. An STV subscriber who tunes his television set to the broadcast channel on which the STV station operates will see a scrambled picture and hear garbled sound. To receive the program in proper form, the viewers activate the decoder attached to their TV set.

Each STV operation has three main ingredients: first, the television station licensed to provide STV service; second, the franchise holder/operator who installs and maintains the decoders, sends out program guides and collects the fees charged, and third, the program supplier. All three facets may be under common ownership or may be separately owned. STV represents a small percentage of total revenue for pay TV with about 2 million subscribers.

The second alternative to cable TV is MDS, a Multipoint Distribution System using microwave transmission. The bulk of MDS's subscribers are generally in hotels and apartment houses. Growth has been slow due to the high cost of MDS antennas, line-of-sight interference problems, and a limited geographic reach. Industry analysts show estimates of about 500,000 MDS subscribers.

The third alternative, SMATV, represents a Satellite Master Antenna System. This facility consists of a master antenna system with an earth station added to bring in satellite-delivered as well as local stations. With the earth station, an SMATV operator can provide as many channels as a cable operator. SMATV operates primarily in multi-unit structures.

A fourth alternative system, DBS, is being developed using new technologies. DBS, direct broadcast satellite, allows private homes to receive satellite signals directly via rooftop dish antennas. Since starting operation in late 1975, satellite delivery of pay cable programming has proved popular. DBS provides multiple channels of video programming, usually on a subscription basis. DBS growth is in two segments of the population: rural areas where household density is too sparse to attract cable operators; and urban areas, such as Washington, D.C., where cable TV hookup has been delayed.

The marketplace will determine the relative growth of these alternative means for the distribution of TV programming in the future. It would appear that cable TV, with its large number of channels, cost structure, lack of interference, and capability for two-way interactive communication will continue to lead the way.

In addition to the five methods of distributing TV programming by subscription or fee, ABC launched a pilot service in Chicago in mid-January 1984. This service is a blend of broadcast and video-cassette technology. Broadcasting during early-morning hours, video programming is delivered in scrambled form for automatic recording and playback in subscribers' homes.

### e. Radio Technology

Technology has improved the fidelity of radio broadcasting. FM systems and stereophonic are common. Quadrophonic broadcasts are being transmitted by FM stations using "matrix" systems. Technological advances are being made in the science of radio astronomy, by which

many parts of the universe are being studied and new discoveries are being made at a rapid rate. Some potential areas in which major advances are taking place at present using radio-astronomical techniques and methods include: the detection of breast cancer; the development of radio segments for marine navigation; the detection of forest fires by their microwave radiation; the forecasting of earthquakes; and experimental verification of Einstein's general theory of relativity.

f. Microwave Technology and Multipoint Distribution Service

Microwave technology is not new but recent developments have expanded the application of services. Microwave transmission is an economical means of moving large numbers of voice, video, and data signals from point-to-point, either terrestrially or via satellites. First used commercially in the United Sates in 1945, microwave transmission now provides a wide range of communication services, including television, telephone, telegraph, facsimile, and data transmission. Its popularity is based largely on the ability to span long distances less expensively than wires or cables. Major users of microwave equipment include specialized common carriers, the satellite common carrier market, off-shore oil companies and railroads.

Multipoint Distribution Service (MDS) is a common carrier service licensed by the FCC. A local MDS station transmits information or entertainment programming over the air on microwave frequencies from a fixed point (the transmitter) to multiple receiving locations, the special receiving antennas located on the subscriber's roof. Unlike conventional broadcast stations whose transmissions are received universally, MDS programming is designed to reach only a pre-selected audience consisting of the general public who subscribe to the service.

An MDS licensee leases transmission time to programmers who, in turn, are responsible for designing and selling their programs to the subscriber. Since the MDS licensee is a common carrier, the FCC requires that the licensee and the programmer not be related or affiliated. While originally intended for use by businesses, MDS has been employed primarily by pay TV programmers who lease time from the carrier.

In addition to entertainment, MDS can provide specialized data. For example, within a hotel a programmer may wish to communicate special interest or educational films to convention delegates, airline schedules, convention activities, weather, time, as well as full-length movies and sporting events.

g. New Technology--Videotex and Teletext

Some of the most recent developments in communications have included fiber optics, lasers, videotex and teletext. Fiber optic systems are a new and entirely different means of communications. These systems operate by beams of light transmitted through hair-thin

glass or plastic fibers. A multi-mode optical fiber cable can carry as much information as a copper cable 27 times greater in diameter. The telephone industry is using glass fibers to carry laser beams that each transmit hundreds of phone calls. Single mode optical fiber cables, a recent development, are capable of very high performance.

Videotex and teletext are major worldwide information services linking businesses and homes to computer centers. Both services originated in Europe during the mid 1970's. Both are being developed and expanded within existing and new computing and communications technologies and products, to provide consumers and businesses with a variety of text and graphic services. Videotex and teletext services are expected to change the way people shop, bank, work, entertain and educate themselves, and communicate.

Videotex is generally defined as a two-way interactive service using telephone lines or a two-way cable system that can retrieve information stored in a remote computer and display it on a television screen or monitor in color or black and white as words, numbers, graphs, or pictures, with limited animation. By means of the telephone, a keyboard, and a microprocessor, the subscriber can select pages of information, send and receive electronic mail, play games, use educational services, and transact such business as ordering goods, banking or brokerage services.

Teletext, as contrasted to videotex, broadcasts directly to television receivers pages or "frames" of information on the unused portion of a standard TV broadcast channel. Cable television systems can also be used for teletext. Subscribers select information to be displayed by using a special decoder and key pad. By following the instructions on the teletext frames, one can select merchandise, make reservations, or carry out other transactions by telephone or mail.

## C. AGGREGATE INDUSTRY STATISTICS, LIMITATIONS AND NEEDS

### 1. Data Supply and Limitations

The communication industry is one of the fastest growing and most volatile sectors of the U.S. economy but statistics for this sector of the economy are being short-changed. There are a few excellent sources of communication statistics, including the FCC's annual Statistics of Communications Common Carriers, the U.S. Industrial Outlook issued by the Department of Commerce, the annual Electronic Market Data Book prepared by the Marketing Services Department of the Electronic Industries Association (EIA), and the annual Independent Telephone Statistics issued by the U.S. Telephone Association (USTA). The Bureau of the Census has some communication statistics including the annual series County Business Patterns and periodic data from the programs of Enterprise Statistics, Minority-Owned Businesses, and Women-Owned Businesses. Revenue and other financial data are shown in the Statistics of Income (SOI) annual series compiled by the Internal Revenue Service. Monthly estimates and annual averages of employment and earnings by industry are published by the Bureau of Labor

Statistics (BLS). FCC used to publish financial and operating statistics on radio, television, and cable TV, but has discontinued each of these series.

Additional data are available from other sources: company annual and other periodic reports; articles researched and published in books, newspapers, and magazines; other government publications; and surveys taken by private organizations and trade associations. Often this information is of dubious quality, based on low response rates, incomplete, and out-of-date. For some industries, such as cable TV, several sets of data exist and the information is contradictory.

Aggregate information for the communication industry is scarce. The only source of receipts data is the IRS annual series Statistics of Income (SOI) which is based on tax returns for a sample of taxpayers. Communication statistics for 1980 are the most recent for all legal forms of organization. Corporations provide more than 99 percent of receipts for this industry. SOI shows that 1980 receipts from businesses engaged in communications amounted to $104 billion. This represented 1.5 percent of total U.S. nonfarm business receipts. Telephone, telegraph, and other communication services had receipts of $90 billion, and radio and television broadcasting receipts were $14 billion.

These estimates may not reflect an accurate measure of revenues for communication services. Data on corporations were based on consolidated returns which were assigned a single SOI industry code based on the corporations' principal business activity. IRS permits single returns presenting the combined financial data of an entire "affiliated group" to be filed by parent corporations. Many large communication corporations, such as AT&T and GTE, have substantial revenues from product sales and other services. Conversely, many corporations are primarily engaged in other activities but have interests in, and generate revenue from, communications. In addition, some consolidated (and nonconsolidated) corporations are engaged in many types of business activities, so some of the data in the SOI report are not really related to the industrial activity under which they are shown.

Employment data from BLS show that there were 1,368,800 people employed in the communication industries in January 1984. This represented 1.8 percent of total employees on nonagricultural payrolls in the private sector.

Employment and payroll data from the 1981 County Business Patterns published by the Bureau of the Census are shown in Table III.1.

Table III.2 shows that a relatively small number of companies dominate the communication industry.

Telephone communication and radio and television broadcasting have dominated the communication industry, and a few firms have provided the preponderance of revenues. 1982 revenues for some of the largest companies are shown in Table III.3.

Table III.1. Employment and Payroll in the Communication Industry: 1981

| SIC Code | Industry | Number of Establishments | Employees (000) | Annual Payroll ($million) |
|---|---|---|---|---|
| 48 | Communication | 24640 | 1348 | 30223 |
| 481 | Telephone Communication | 13218 | 1054 | 24845 |
| 482 | Telegraph Communication | 769 | 13 | 277 |
| 483 | Radio and television broadcasting | 6508 | 194 | 3624 |
| 489 | Communication Services, NEC | 3758 | 83 | 1434 |

Source: Bureau of the Census (1983). P. 58 in 1981 County Business Patterns. Washington, D.C.: U.S. Department of Commerce.
NOTE: Details do not add to the total because some establishment records are not classified to the most detailed kind-of-business level.

2. Data Needs

The general need for service statistics to measure this growing sector of the economy is shown in section I of this report. The specific need for communication statistics was stressed in a congressional report, Telecommunications in Transition (U.S. Congress, House, 1981). The report noted the following:

> "The single greatest problem we faced in preparing this report was obtaining data... The data we did obtain was often not comparable due to different bases of measurement."

Section I of this report includes a list in priority sequence of SIC industries where the Bureau of Economic Analysis (BEA) has a need for expanded data coverage. SIC major group 48, Communication, was third on the list.

The need for communication statistics was also spelled out in a report to Congress by the Comptroller General of the United States (1981):

> "FCC must be in a position to analyze information regarding structure, barriers to entry, and other aspects of an analysis of the domestic common carrier industry. Such analysis, we believe, represents an important input into the establishment of appropriate regulatory policies and programs and initiating legislative change....
> The Economics Division in the Common Carrier Bureau is responsible for conducting and coordinating economic research required for the development of common carrier regulatory policies including such subjects as industry structure and competition. The division is also responsible for developing

Table III.2 Communication Company Statistics, by Employment-Size Class: 1977

| SIC Code | Major-group category and employment-size class of company | Companies (number) | Owned establish-ments (number) | Company employees (number) | Company annual payroll ($ million) |
|---|---|---|---|---|---|
| 48 | Communication total | 8,058 | 24,261 | 1,349,168 | 21,533 |
| | Companies with-- | | | | |
| | Less than 99 employees | 7,834 | 8,155 | 105,307 | 1,090 |
| | 100 or more employees | 224 | 16,106 | 1,243,861 | 20,443 |

Source: Bureau of Census (1979). 1977 County Business Patterns; Enterprise Statistics. Washington, D.C.: U.S. Department of Commerce.

guidelines for evaluating the economic performance of the industry. These responsibilities, however, are not being carried out...Beyond the collection of basic data, we found no group of individuals is engaged in analyzing the industry."

The U.S. House of Representatives Subcommittee on Telecommunications, Consumer Protection, and Finance continues to monitor the activities of FCC. In a recent letter, the Subcommittee asked FCC a number of questions, including two relating to data needs for "bypass" and common carrier statistics:

Question 3. "Recent developments in communications technology have given large users of long-distance service the potential to 'bypass' the local telephone company and connect directly with a long-distance network--and thereby avoid paying anything for the costs of these jointly used facilities... The Commission will soon undertake a detailed study of bypass. As part of that study, I would like the Commission to ascertain (1) what proportions of local telephone companies' business revenues are derived from their private line services; (2) what proportion of bypass facilities are being used to bypass telco-supplied private lines; and (3) what proportion of bypass facilities are being used to bypass conventional message toll service. With answers to these questions, we will have a far better idea of the impact of bypass on local rates than we do today."

Table III.3 Revenues for Selected Communication Companies: 1982

| Company | Coverage | Revenues ($ million) |
|---|---|---|
| | Telecommunications: | |
| AT&T | Local and toll services | 62,243 |
| GTE | Telephone operations | 7,812 |
| United Telephone System | Telephone operations | 1,834 |
| Continental Telecom | U.S. telephone operations | 1,326 |
| MCI | Communications services | 1,073 |
| Western Union | Telecommunications systems and services | 1,025 |
| | Radio and Television: | |
| ABC | Broadcasting | 2,342 |
| CBS | Broadcasting | 2,158 |
| RCA (NBC) | Broadcasting | 1,787 |

Source: Data from annual reports of companies and the United States Telephone Association. MCI data for year ended March 31, 1983.

Question 19. "What capability does the FCC have in the Common Carrier Bureau for continuing the monitoring and analysis of the domestic and international marketplaces to determine if deregulation is having desired effects?

a. How many staff members are dedicated to this task in the current fiscal year?

b. Does the FCC plan to require regular reports from staff on the development of the competitive marketplace?"

Data needs for specific sub-industry segments are covered later in this section of the report. Recommendations are shown in part F of this section.

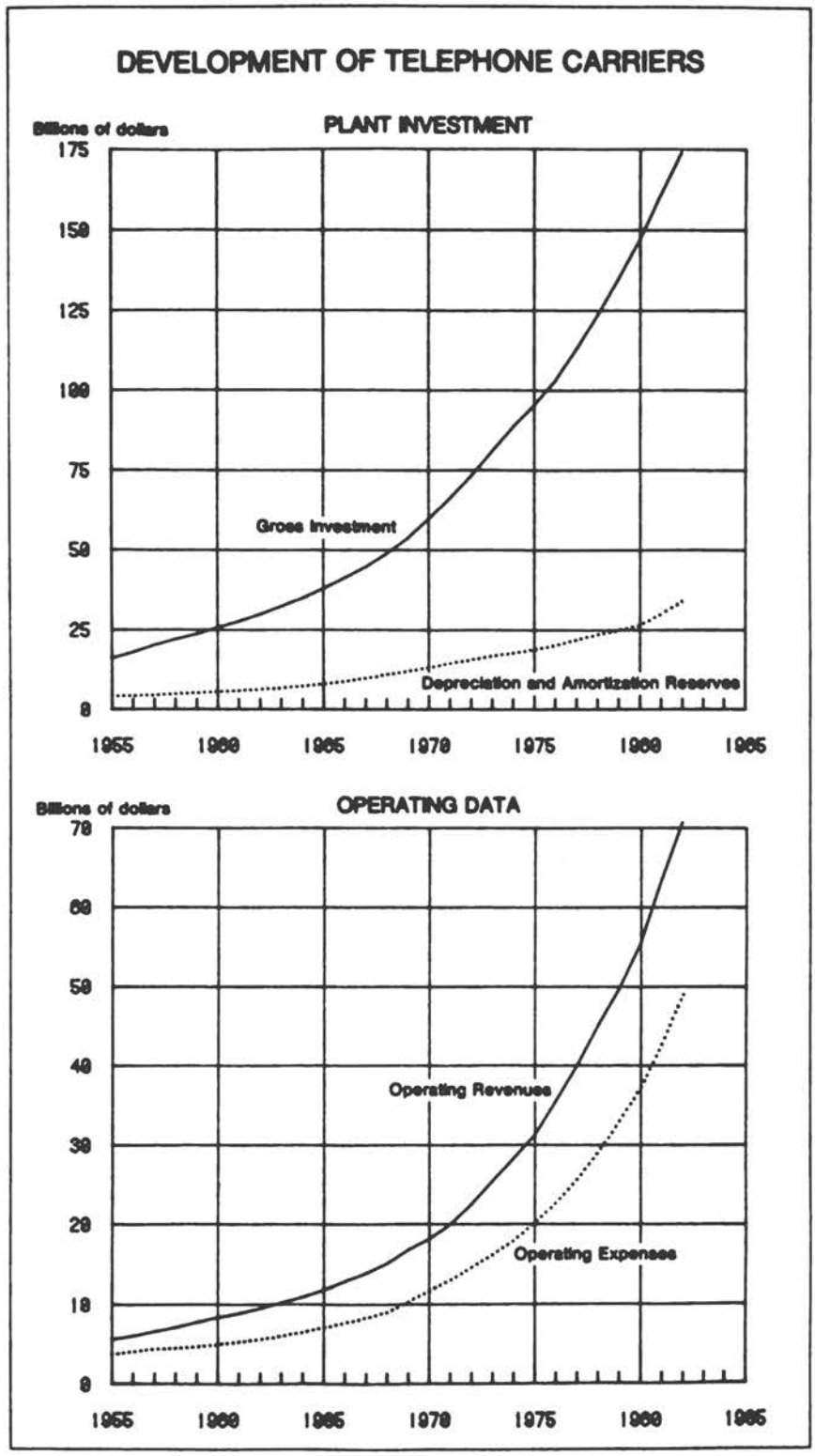
## D. SUB-INDUSTRY STATISTICS

### 1. The Telephone and Telegraph Industry

Telecommunications is by far the largest segment of the communications industry, and is one of the fastest growing economic activities in the world. (See Figure III.1)

Telephone services dominated the telecommunications industry and produced nearly $90 billion of operating revenue in 1983. Prior to 1984, AT&T accounted for more than 80 percent of telephone revenue,

FIGURE III.1 Development of Telephone Carriers




Source: Statistics of Communications Common Carriers, Federal Communications Commission, Year Ended December 31, 1981

with more than one-half of its revenues and the bulk of its profits coming from long-distance tolls. There were about 182 million telephones in the United States on December 31, 1981. 134 million phones were residential and 48 million were for business use. About 96 percent of all households have telephone service.

The Federal Communications Commission is the major supplier of the financial and operating statistics on telecommunications. They will continue to collect and publish annual and quarterly data for large telephone and telegraph carriers. Telephone statistics are also available from various trade associations and from the Rural Electrification Administration of the U.S. Department of Agriculture. FCC quarterly telephone data are compiled from monthly reports filed by 68 telephone carriers having operating revenues in excess of $1,000,000. The operating revenues of these carriers accounted for over 90 percent of the total gross operating revenues of the telephone industry. FCC quarterly reports include 43 line items covering revenues, expenses, selected balance sheet items, and related operating data. Carriers covered by FCC are required to complete a very detailed annual report providing financial, accounting, plant, operating, and employment data. The annual report of common carriers includes more than 50 tables.

Quarterly operating data of telegraph carriers are compiled from monthly reports filed by these carriers, each having operating revenues in excess of $250,000. The quarterly report covers Western Union, the only domestic carrier, and five overseas carriers, and includes 27 line items covering revenues, expenses, and other operating data. Monthly data on telephone and telegraph carriers arrive about 40 days after the subject month and are entered for use in quarterly tabulations. The quarterly report is published 2 to 3 months after the close of the quarter. Annual data are summarized about August but publication is delayed until late Winter of the following year.

The 1982 Statistics of Communications Common Carriers, published by the FCC in March 1984, provides data for sixty-one telephone carriers and shows that total operating revenues in 1982 amounted to $70.7 billion, an 11 percent increase over 1981 (FCC, 1984). For telegraph messages, Western Union handled most of the domestic traffic. It had total operating revenues of $809 million in 1982, 3.9 percent higher than in 1981. The seven carriers that handle most of the overseas U.S. telegraph traffic had total operating revenues in 1982 of $613 million, a 6.1 percent increase.

Comprehensive data on the telephone industry are also published by the United States Telephone Association (USTA). They show statistics for the Bell System, independents, and totals. Their report for 1982 was published July 1983 and is based on information submitted by 754 companies. Although they report that there are 1,432 independent companies not part of the Bell System, coverage of revenue estimates by USTA is shown as 97 percent. Their 1982 report of operating revenues is shown in Table III.4.

USTA also publishes an annual holding company report. The twelve holding companies that reported to USTA control 243 companies, decreasing the 1,432 independent operating companies to 1,189 operating

Table III.4 Telephone Operating Revenues: 1982
(Billions of dollars)

| | U.S. Independents | Bell | Total |
|---|---|---|---|
| Local | 5.2 | 29.6 | 34.8 |
| Toll | 8.4 | 33.9 | 42.3 |
| Other | .4 | 2.2 | 2.6 |
| Total | 14.0 | 65.7 | 79.7 |

Source: United States Independent Telephone Association (1983) Statistics of the Independent Telephone Industry. Washington, D.C.: United States Independent Telephone Association.

units. These holding companies had 1982 operating revenues of $11.4 billion and controlled 80% of the independent access lines.

The USTA is expanding as a result of the AT&T divestiture. On January 1, 1984, AT&T divested itself of its 22 wholly owned Bell Operating Companies (BOC's). Seven regional companies were formed to assume ownership of the 22 divested companies. The regional companies are: Ameritech, Bell Atlantic, Bell South, NYNEX, Pacific Telesis, Southwestern Bell and U.S. West. Early in 1984 the seven regional telephone companies joined USTA, ending a ban on membership by Bell affiliated companies. The USTA reports that the effect of the new memberships will be to create for the first time an umbrella trade association for all firms providing publicly regulated local telephone services and related activities. They claim that USTA now represents local wire - line exchange carriers which are responsible for nearly 100 percent of all business and private telephone connections.

In addition to the USTA, there are other trade associations providing information about the telephone industry. The National Telephone Cooperative Association (NTCA) is a nonprofit trade association that represents small, locally owned and controlled telephone cooperatives and companies throughout the United States. About half the NTCA members are small commercial companies -- many of them family - run operations -- and the rest are telephone cooperatives that are owned and controlled by their subscribers. Another association is the North American Telecommunications Association. Their major concern is providing information on the business telephone equipment market in the U.S. They publish statistics on the interconnect industry which includes about 2,300 non-telephone company suppliers of business telephone instruments. Total revenues for the interconnect industry were about $2.5 billion in 1983.

Data on rural telephones are collected and published by the U.S. Rural Electrification Administration (REA). REA is a credit agency of the U.S. Department of Agriculture which assists rural electric and telephone utilities to obtain financing. In 1982, 950 telephone systems were financed by REA; 696 of the systems were commercial companies, and 254 were subscriber-owned cooperatives.

REA publishes an annual statistical report "Statistical Report - Rural Telephone Borrowers, Annual." Data for 1982 are available and the 1983 report will be available about August 1984. Total operating

revenue for 1982 were $2,389 million and there were 28,800 employees in the system. Many of the commercial companies reporting to REA are members of the U.S. Telephone Association and report data to them.

Telegraphy messages represent a declining portion of nonvocal record communication. Of Western Union's 1982 revenues of $809 million, $481 million represented revenues from messages and other transmissions. Only $37 million represented revenues from telegrams. Most of the transmission revenues came from mailgrams--$80 million; teleprinter exchange service revenues (Telex)--$178 million; TWX service--$120 million; and telephone service--$30 million. Nontransmission revenues included $96 million from money-order charges.

The recommendations at the end of this section include a proposal to expand SIC 4821, Telegraph Communication, to include other forms of message communication: mailgram and cablegram services; telex services; money transfer services; reservation and ticketing services; and electronic mail services.

Some of the services in the recommended SIC expansion are covered elsewhere in the 1972 SIC Manual. Florist telegraph services and hotel reservation service are listed under SIC 7399, Business Services, Not Elsewhere Classified. Since the revenues generated by the establishments providing the service are primarily from communication activities, these services should be classified in Major Group 48, Communication. The same holds true for the money transfer service which provided Western Union with $96 million in revenues during 1982. Money order issuance is classified under SIC 6059, Establishments Performing Functions Closely Related to Deposit Banking, Not Elsewhere Classified. It would appear that Western Union provides a communication service rather than a banking service in its money order activities. 1983 revenues for these services were $111,227,000 and represented an increase of 16 percent over 1982.

## 2. Radiotelephone and Paging Services

Although aggregate estimates are scarce, new technology in the radio common carrier (RCC) industry covering mobile radiotelephones and paging devices should create explosive growth in these segments of communications. Market analysts estimate that about 3 million pagers were in use early in 1984 with 1983 revenues exceeding $500 million. Conflicting estimates project growth at from 20 to 30 percent a year. Currently about 750 RCC's provide more than 85% of all paging services for hire.

Current data on mobile phones are limited but several sets of contradictory projections have been made. There are about 200,000 mobile phones currently in use with revenues of approximately $300 million. Industry projections of the cellular radiotelephone market by industry analysts predict that there will be from 1.0 to 2.5 million subscribers in 1990 generating revenues of from $1 billion to $3.6 billion.

Most industry observers predict that cellular service will soon outdistance the traditional mobile telephone service (MTS) and that the

cellular market will have between 400,000 and 500,000 users in its first full year of activity. MTS has several disadvantages, including limited distance and poor quality transmission. WIth MTS the car phone user had to operate channel selector buttons manually to find an open frequency. The cellular approach utilizes low-power transmitters which allow uninterrupted communications through sophisticated switching equipment linking the "cells." Most of the new cellular subscribers will be those shifting from the older mobile telephone service. It appears that the older mobile service may suffer drastic losses to the newcomer.

The number of companies providing cellular services will be limited. The FCC plan for awarding cellular franchises calls for two systems in each city -- one reserved for the wireline common carrier (WCC), usually the local telephone company -- and the other license available to radio common carriers (RCC's). The proliferation of requests by the RCC's may require an FCC lottery to award the franchise. By March 1984 three cities were operating cellular radiotelephone systems -- Chicago, Washington, D.C., and Indianapolis. Filing for applications will be in 4 parts: The top 30 markets; markets 31-60; 61-90; then the remainder. In addition to the franchise holders in this industry, there are resellers and agents who offer the equipment and service to the public.

Much of the background information in this section of the report was provided by the Telocator Network of America, a national trade association representing about half of the 750 radio common carriers in the United States.

### 3. Satellite Services

Aggregate revenue estimates for satellite services are sparse, but a number of projections have been made. EIA (1983) reports that the U.S. domestic satellite market is experiencing a compound annual growth rate of about 35%. It predicts that launching 200 satellites into orbit between 1983 and 1992 will establish a market worth over $6 billion. The entire value of the satellite communications business -- including the ground segment, the earth stations with the required transmitting and receiving equipment -- could amount to well over $30 billion. Revenues of satellite common carriers are expected to exceed $1 billion by 1988.

EIA reports that entering the satellite market is increasingly costly for common carriers, requiring initial investments of at least one billion dollars. The COMSAT annual report lists the 1983 value of its satellites as more than 600 million dollars. EIA indicates that satellites range from 50 to 100 million dollars per unit. In addition, there is a cost of about $50 million to launch a satellite, and there is no guarantee that it will be successful. On February 3, 1984, the Western Union Westar VI satellite was launched but failed to achieve proper operating orbit and cannot be used as a communicating satellite. The company was insured for the loss, including amounts refundable to customers who had agreed to purchase transponders on Westar VI.

According to a report by the Motion Picture Export Association (1984) of America, the annual cost to lease a transponder for point-to-point television transmissions in 1983 was between 1.6 and 2.5 million dollars. Today's satellites generally have 24 transponders. The costs to uplink--the transmission from an earth station to a satellite--depend on the satellite to which the information is being transmitted and the technical requirements of the uplink. Annual costs have been reported to be between 3 and 5 million dollars.

Data on some satellite systems and services are shown in company annual reports, although discrete revenues and earnings from satellite services are not available for all companies. For four of the major systems, annual reports provide the following information:

| | Operating Revenues ($1,000) | | Y/Y Trend |
|---|---|---|---|
| | 1983 | 1982 | |
| COMSAT: | | | |
| Rate-Regulated Satellite Services | $291,056 | 250,281 | |
| Total Satellite Systems and Services | 93,746 | 100,743 | |
| Telecommunications Equipment | 49,854 | 36,048 | |
| Information Services | 32,111 | 38,402 | |
| Eliminations and Other | (26,349) | (15,967) | |
| Total Operating Revenues | $440,418 | 409,507 | +7.5% |
| Satellite Business Systems | 141,841 | 39,057 | +263.2% |
| RCA: Communications | 377,000 | 319,100 | +18.1% |
| Western Union: Private wire, satellite, and related services | 310,264 | 309,022 | +0.4% |

COMSAT, through its World Systems Division, provides virtually all international commercial satellite communication services to and from the United States. COMSAT uses the satellite system of INTELSAT (the International Telecommunications Satellite Organization) and INMARSAT (the International Maritime Satellite Organization). COMSAT's charges for these services are regulated by the FCC. COMSAT is the U.S. participant in INTELSAT and INMARSAT and holds ownership interests in each of these organizations of about 23 percent.

INTELSAT owns and operates the international satellites used by most of the world for international communications. Its prime objective is to provide, on a commercial non-discriminatory basis, the space segments required for international communications for the lowest possible cost. Its two main functions are to act as a financial cooperative and to manage satellites and earth stations.

The INTELSAT system as a whole registered slower growth in 1983 than previously. Its traffic grew about 10 percent for 1983, compared with the 1982 growth of 18 percent. Compounding this impact on traffic growth was the installation at mid-year 1983 of a new undersea cable in the North Atlantic. Some of the overseas communications traffic that otherwise would have been routed through COMSAT and the INTELSAT system was diverted onto that transatlantic cable. Increased competition from more advanced undersea cables, including fiber-optic cables capable of carrying high volumes of communications traffic, will continue to challenge satellites for traffic throughout the decade and beyond.

Other commercial satellites in operation include RCA Americom's Satcom, Western Union's Westar, AT&T/GTE's Comstar, Hughes Galaxy, and the services of Satellite Business Systems (SBS). GTE is planning to launch a series of Spacenet satellites. Other large companies planning to enter the satellite business include Ford, General Electric, TRW, and Rockwell International. The cable TV industry is one of the major users of satellites. Dozens of program services are transmitted via satellite, including HBO, the Movie Channel, Dow Jones, C-SPAN, and Turner Broadcasting.

It is possible that the growth some analysts project for satellite services may fail to materialize. An article in the New York Times (April 10, 1984:D-1) reports that cable television, long-distance telephone service, video teleconferencing and other forms of sophisticated electronic communications have not produced the bonanza of customers that was predicted by the satellite industry.

The article goes on to say that there is now too little demand for too much satellite transmission capacity. Welcome to the "transponder glut" as the industry calls it. The oversupply, analysts say, is likely to continue for the next two or three years because demand is expected to continue to lag as more satellites are fired into space. A December 1983 study by FCC reported that only 54 percent of capacity on communications satellites was in use. Of the 14 satellites studied, 143 of 312 transponders were idle.

As noted earlier, overseas communications traffic is being diverted from satellites to transatlantic cable, including the new fiber-optic system. Further loss of satellite revenues occurred when a leading communications company linked its microwave transmission network with a similar network owned and operated by another company. The company spokesman stated that the agreement will reduce the company's reliance on more expensive satellite circuitry.

Industry analysts believe that the slump in demand for satellite services will be short-lived, and predict growth rates of 30 to 50 percent in coming years. It is likely that market forces including price and competition from alternative communication carriers will shape the future of satellite services.

## 4. Earth Stations

Earth stations include the equipment on the earth which can transmit or receive satellite communications. Most earth stations are

receive-only devices. With the expanded use of satellite communications, the operation and maintenance of earth stations is another service on the way to becoming a multi-billion dollar industry.

As with several other segments of the communication industry, there is not a clear distinction as to whether this activity should be classified as construction, manufacturing or communication. In the SIC system, an establishment is assigned an industry code on the basis of its principal activity. Value of production is used to measure construction and manufacturing and value of receipts or revenues is used for communication services. According to the SIC Manual, the construction of TV and radio towers falls in construction under SIC code 1623; TV antenna construction and rental to private households falls in communication under SIC code 4899; and the manufacture of antennas and satellites is listed in manufacturing under SIC code 3662. SIC major group 48, Communication, includes establishments primarily engaged in furnishing point-to-point communication services.

The 1984 U.S. Industrial Outlook (BIE, 1984) reports that the sales of earth stations reached almost $500 million in 1983 and are expected to be $1.3 billion annually by 1988. According to the FCC, there are more than 6,500 licensed earth stations. The Society for Private and Commercial Earth Stations reports that there are more than 100,000 commercial and private earth stations. The vast majority of these are "receive-only" stations not requiring a license.

The TV cable industry has been the largest single user of satellite receive - only earth stations. Television receive - only earth stations (TVRO's) consist of earth station equipment which receives video signals from satellites. TVRO stations have only receiving capability and need not be licensed by the FCC unless the owner wants protection from interference. Authority for reception and use of material transmitted must be given by the sender. Satellite -to-viewer TV technology provides a potential multi-million dollar industry.

EIA (1983) reports that the largest market for the smaller, less expensive ground station equipment is in telephone services such as WATS and toll private line services. Another application may consist of a receiver-only antenna for teleconferencing. The more expensive systems are used in data processing, telephone, electronic mail, telex, and teleconferencing services.

Several factors will influence the structure of the earth station market: technology; cost; future growth of direct broadcast satellite services and home satellite earth stations; and ownership of the international earth stations.

EIA (1983) reports that sales of earth stations are taking off as a result of developments in microelectronics which have reduced the size and price of stations. Moreover, earth stations no longer need the expensive tracking equipment required for the nonysnchronous satellites orbiting the earth.

Direct broadcast satellites (DBS), covered in an earlier section of this report, would allow private homes to receive satellite signals directly via rooftop dish antennas. Industry analysts estimate that more than 15 million small-aperture earth stations for DBS reception will be installed on U.S. homes by 1990.

Home satellite earth stations represent a small market of homeowners since they cost several thousand dollars to install. In general, the market has been limited to multiple dwellings, such as condominiums, trailer parks, and motels. It would appear that the expansion of cable TV and DBS would limit the size of this market segment.

5. Other Common Carriers

A common carrier is a telecommunications company that holds itself out to the public for hire to provide communication transmission services. The FCC regulates interstate and foreign communications that are provided for hire by communications common carriers. These services include telephone, telegraph, facsimile, data, telephoto, audio and video broadcast program transmission, satellite transmission and other electronic communication services. Intrastate common carrier communications come under the authority of local state utility commissions.

The largest segment of the common carrier industry consists of the traditional wireline telephone companies, dominated by the Bell System. Other common carriers (OCC's) include Specialized Common Carriers, Domestic Satellite Carriers, Resale (including value added) Carriers, and Miscellaneous Carriers. These carriers have developed in response to FCC and court decisions allowing entry into the common carrier industry.

Specialized Common Carriers provide terrestrial point-to-point private line voice and data communications primarily via their own intercity microwave transmission facilities. The largest specialized common carriers -- MCI, GTE/Sprint, Western Union, and U.S. Transmission systems -- have built national microwave networks to offer both public and private long distance voice and data transmission services. The 1984 U.S. Industrial Outlook (BIE, 1984) reports that the 1983 revenues of these firms reached approximately $2.1 billion, representing a compound annual growth rate of 72 percent since 1979. Detailed financial information is available for the specialized common carriers from their annual reports.

OCC's include resale and value added carriers. Resale carriers include companies that offer services ranging from reduced rate voice communications to data communications to video services. Resale carriers do not own transmission facilities, but obtain communications services from another carrier for resale to the public for profit. FCC has determined it should forbear from regulating resellers because of their number and because their underlying carriers are subject to regulation. Since resale was allowed, beginning in June 1981, the number of resale carriers has increased dramatically. The cellular radiotelephone market is attracting resellers.

Value-added carriers provide enhanced services where some change is made by adding specialized applications to existing services. The companies providing these services are largely deregulated. The 1984 U.S. Industrial Outlook (BIE, 1984) reports that five value - added

carriers -- Tymnet, GTE Telenet, Graphnet, ITT/Domestic Transmission Systems and Uninet -- offering packet-switched data communications systems, were expected to generate revenues exceeding $320 million in 1983. The services are expected to become more and more available to the general public in the form of shopping by phone, paying bills, and similar uses of the home communications center.

Miscellaneous Common Carriers primarily provide, through the use of microwave facilities, TV signals to cable television firms and broadcast stations. Revenue estimates for this industry segment were approximately $150 million in 1983.

Microwave applications apply to private line telephone and rural networks, data and facsimile transmission, and video. Microwave carriers are concentrated in long-haul intercity facilities. Cable TV systems obtain signals, sometimes from hundreds of miles away, through microwave relay stations. Cable TV operators may purchase microwave relay service from companies providing such common carrier services, or they may operate their own relay stations licensed by the FCC as Cable Television Relay Service (CARS) stations. The advent of satellite-earth stations transmission capability adds another dimension to microwave communications. The interface between a receive-only earth station and a CARS network now offers greater flexibility in the distribution of programming to cable systems and a relatively inexpensive means of providing a long-haul transmission capability.

### 6. Videotex and Teletext

Current data are almost nil, but projections and predictions of a bonanza are commonplace. Videotex and teletext are industry segments in an embryonic state. When fully developed they are capable of producing tens of billions of dollars in revenues. Industry surveys indicate that by 1995 videotex and teletext services and equipment could have a value of $30 billion annually. In addition, 67 percent of the people surveyed in 16 major U.S. cities would be willing to buy some videotex services.

One of the issues delaying the expansion of videotex has been the lack of standardization in this industry segment. A representative of the U.S. Department of Commerce has participated in international meetings of the International Telegraph and Telephone Consultive Committee (CCITT) that is trying to develop a single worldwide unified videotex system.

The potential home applications of teletext and videotex are impressive: shopping; information retrieval from newspapers, magazines and encyclopedias; access to libraries and other research centers; community services, including transit and travel information, emergency information, housing and job opportunities, electronic hotlines and captioning for the hearing-impaired; education and training; health and first aid information; entertainment; advertising; transactions, including bill payments, funds transfer, and credit card purchases and payment; messages and conferences; monitoring for fire, security, health and energy management; and additional computing applications.

Data for videotex and teletext systems are scarce. One of the leading companies, Comp-u-Card, had revenue growth from $4.2 million in fiscal year 1982 to $9.5 million in fiscal year 1983 which ended January 31, 1984. A few other companies have systems in some markets and a number of tests have been run. Dow Jones News/Retrieval Service and CompuServe of Columbus, Ohio each have over 100,000 subscribers. Two Washington, D.C. area companies are planning marketing tests.

## 7. Broadcast Services

Broadcast services include AM, FM, commercial and noncommercial educational, including stereophonic radio; commercial and noncommercial educational, pay and low-power television; international (except stations operated by the government); supplemental services such as FM functional music, TV translators, remote pickup and studio-transmitter link; and experimental and developmental services. Cable TV and other pay TV services are covered in a later section of this report.

FCC announced the following totals for broadcast stations licensed as of January 31, 1984:

| | |
|---|---|
| AM Radio | 4,736 |
| FM Radio | 3,540 |
| FM Educational Radio | 1,131 |
| UHF Commercial TV | 334 |
| VHF Commercial TV | 535 |
| UHF Educational TV | 173 |
| VHF Educational TV | 110 |
| UHF Low Power | 72 |
| VHF Low Power | 190 |
| Total Radio | 9,407 |
| Total TV | 1,414 |

FCC limits the numbers of stations a person or company may own to seven AM, seven FM and seven TV (only five of which may be VHF). It also bans the common ownership of the only newspaper and broadcasting station in an area. As the Commission continues to deregulate, rules such as these will be closely analyzed to determine their continued viability.

FCC was the major supplier of aggregate financial and operating statistics on broadcast services. On March 11, 1982, the Commission deleted the rule requiring licensees to file annual financial report form 324. The last series on television broadcast financial data was issued August 10, 1981 and covered data for 1980. The last series on AM/FM financial data also covered data for 1980 and was issued March 15, 1982.

An analysis of broadcast statistics is complicated by the way revenue is estimated. Revenue is generated from the sale of station time to networks, to national, regional, or local advertisers, and to political candidates. Broadcast revenues other than time sales include production costs charged to advertisers or sponsors for programs,

TABLE III.5 Estimated Annual U.S. Advertising Expenditures, 1980-1984 (in millions of dollars)

| | 1980 | 1981 | 1982 | 1983 (Prelim) | 1984 (Forecast) |
|---|---|---|---|---|---|
| TV, total | 11,366 | 12,650 | 14,329 | 16,090 | 18,205 |
| Network | 5,130 | 5,575 | 6,210 | 6,985 | 7,880 |
| Spot | 3,269 | 3,730 | 4,360 | 4,820 | 5,440 |
| Local | 2,967 | 3,345 | 3,759 | 4,285 | 4,885 |
| Radio, total | 3,702 | 4,230 | 4,670 | 5,230 | 5,905 |
| Network | 183 | 230 | 255 | 305 | 350 |
| Spot | 779 | 879 | 923 | 1,015 | 1,135 |
| Local | 2,740 | 3,121 | 3,492 | 3,910 | 4,420 |

Source: Data from a report prepared for Advertising Age by Robert J. Coen, McCann-Erickson, Inc., New York.

materials, facilities or services, plus any donations, rental of studio facilities and any fees received from others for the use of talent on the station's payroll. Total net revenues represent the total of time sales plus revenues other than time sales minus agency and representation commissions. Commissions by advertising agencies are about 15 percent of billings.

Since FCC dropped its series on financial data for radio and TV stations, aggregate broadcast statistics are not available. Information on the large networks is available from company annual and quarterly reports. The National Association of Broadcasters (NAB) conducts financial surveys for radio and television and publishes data for selected large markets. Proxy measures are available from the advertising industry which publishes detailed television and radio ad expenditures. Advertising represents by far the largest percentage of revenues for radio and TV stations. Revenue estimates are shown in Table III.5.

The 1983 annual report for CBS, one of the leading networks, showed total revenues of $4,540 million. Its broadcast group had revenues of $2,389 million and included the radio and television division as well as a cable system and a worldwide marketing unit. In addition to its broadcast operations, CBS has revenues from records, publishing, toys, and musical instruments.

RCA had total 1983 revenues of $8,977 million. The broadcasting (NBC) segment had revenues of $2,094 million. NBC furnishes network television and radio services to affiliated stations in the United States and produces live and recorded television and radio programs. NBC also owns and operates television and radio broadcasting stations. At the end of 1983 there were five TV stations and nine radio stations owned and operated by NBC.

ABC had total 1983 revenues of $2,949 million, with the broadcasting segment accounting for $2,614 million. The ABC annual report for 1983 listed the three-network television revenues and industry-wide radio station revenues as follows:

| | $ Billions | |
|---|---|---|
| Year | 3-Network TV | Industry-wide Radio Stations |
| 1979 | 4.7 | 3.2 |
| 1980 | 5.2 | 3.5 |
| 1981 | 5.6 | 4.0 |
| 1982 | 6.2 | 4.4 |
| 1983 | 7.0 | 4.9 |

ABC owns and operates VHF television stations in five of the seven largest U.S. markets. They also own and operate six AM and six FM stations in seven of the top 10 U.S. markets. The ABC Radio Networks operate seven satellite-delivered networks serving more than 1740 affiliates.

8. Television Broadcasting

Commercial TV stations, although relatively few in number, represent the largest segment of the broadcast economy. More than two thirds of total revenue for the broadcast industry comes from national, regional, and local TV advertising expenditures.

The FCC annual report (FCC, 1982) for fiscal year 1982 reported that the television broadcast bands consisted of 68 channels in four bands--VHF, 2 through 13 and UHF, 14 through 69. Channels 70 through 86, previously in the broadcast band, have been reallocated for land mobile radio use.

The term "Educational Television" is used by FCC to include all television stations licensed for noncommercial operation, whether the programming is cultural, instructional, public affairs or otherwise. The Instructional Television Fixed Service (ITFS) provides multiple channels primarily for in-school use. In addition to its educational purposes, ITFS is used for professional applications and safety and health services. It has two-way communication capabilities and, in schools, provides instantaneous feedback from students to instructors.

One of the groups representing educational television is the Public Broadcasting Service (PBS) which is the member organization of the nation's public television stations. Although it is not a television network in the usual sense, PBS manages and schedules the interconnection system which provides weekly programming to public TV stations. PBS is funded through annual member service fees from the stations, with its technical distribution facilities financed by the Corporation for Public Broadcasting. Funds are supplemented by grants and private donations.

The last report of television financial data issued by the FCC showed that advertising expenditures for television broadcasting were $10.28 billion in 1980, up 11.9 percent from 1979. This figure included $1.67 billion in advertising commissions but did not include the costs of commercials or programs supplied by advertisers. Of the $10.28 billion of advertising expenditures, $4.81 billion were for

network advertising, $2.93 billion for national and regional advertising, and $2.54 billion for local advertising. Net revenues were $8.81 billion and represented gross advertising revenues plus all other broadcast revenues less commissions. The report also provided data on expenses and profits.

Annual financial surveys of commercial television stations are conducted by the National Association of Broadcasters (NAB). Their reports include information on revenues, expenses and profits. Aggregate data are not available but statistics are shown for selected markets. The March 5, 1984 edition of Broadcasting magazine published 1981 information for 82 out of approximately 140 TV markets with three or more stations; the 1982 report shows totals from 67 markets. Data for some of the largest markets, including New York, Los Angeles, and Chicago are not shown.

The NAB data shown for 1982 is based on a 57.8 percent response -- 447 out of 774 licensed TV facilities. The NAB report states that among the deficiencies of the statistical data shown as financial yardsticks are (1) the lack of control over eligible participants and therefore a different mix in each station grouping from year to year, and (2) a lack of consistent placement of requested operating revenues and expenses.

Broadcast services include low-power television, a service that permits program origination or subscription service or both via low powered translators. Television translators are repeater broadcast stations that generally operate unattended. They receive off-the-air signals from a regular TV station, amplify the signals and retransmit them on a different channel. Low-power television stations may operate on any available VHF or UHF channel, provided that they do not cause objectionable interference to full service stations, other translators or low-power stations or to land mobile stations that share broadcast frequencies. At the end of 1982, FCC had a backlog of over 7,000 applications for this service, but only 262 low-power stations were licensed as of January 31, 1984.

## 9. Radio Broadcasting

Radio is primarily a local advertising medium, with approximately 75 percent of its revenue coming from local advertisers. Congress has eased the regulatory impact on radio broadcasters by extending license terms from 3 to 7 years. So far, deregulation of radio has progressed much more rapidly than deregulation of commercial television.

Commercial radio includes AM and FM broadcast services. AM, amplitude modulation, is a type of transmission used in the standard radio broadcast band, in shortwave broadcasting, and in some private radio services such as CB and aviation. FM, frequency modulation, covers radio transmission at 88-108 megahertz on the broadcast band. FM is less susceptible to interference than AM broadcasting. Both AM and FM stations are permitted to transmit stereophonic programs. Radio broadcast services include noncommercial, educational FM stations.

Master lists of radio stations, radio frequencies, construction permits and applicants are available for public reference at the FCC Broadcast License Division office in Washington. Much of this information is published by companies serving specialized audiences. Directories of television stations and cable television systems are available. Some of the yearbooks and directories include marketing and financial data.

A number of radio frequency devices do not require an FCC license or are subject to only limited regulation. These include door opener transmitters and other low-power communications devices. Such transmitters are used in household burglar and fire alarm systems, medical emergency alert systems and for a variety of other radio control applications. Auditory training systems that transmit via radio an amplified sound signal to the hearing impaired are being used in theaters, churches, auditoriums and other gathering places. Cordless telephones have become an extremely popular and marketable product. A number of such systems are subject to FCC regulation as a carrier. However, FCC has granted waivers to manufacturers of cordless phones and is considering petitions for new cordless phone frequencies.

Shortwave radio stations in the United States or its possessions that broadcast to foreign countries make up the International Broadcast Service. Seven frequency bands are used in this service, with the frequency authorization changing four times a year because of variations in propagation conditions. These bands also are used by the Voice of America and other countries for international broadcasting.

Aggregate data for radio stations are no longer available. The final FCC financial report of the commercial radio broadcasting industry provided data for 1980. It showed that advertisers spent $3,547 million on radio in 1980, up 11.8 percent from 1979. Of this amount $157.9 million was for network advertising, $746.2 million for national and spot advertising, and $2,642.9 million for local advertising. Net revenues for 1980 were $3,206.1 million and represented gross revenues less commissions to station representatives and advertising agencies.

In addition to TV surveys, the NAB conducts annual financial surveys of commercial radio stations. It reports "typical" figures on revenues, expenses and profits, and its primary purpose s to provide financial yardsticks. The radio survey has the same deficiencies as the TV survey as well as a very low response rate for the 1982 report -- 20.3 percent (1,618 out of 7,983 stations).

## 10. Cable and Other Pay Television

Since FCC dropped its series after publishing data for 1981, aggregate estimates of revenues are scarce. FCC reported that operating revenues totaled over $3.5 billion in 1981, a 60 percent increase over 1980. Industry estimates show revenues of $6 billion in 1983 and a projection of $10 billion for 1985.

FCC continues to collect and compile information from cable companies on Form 325, Annual Report of Cable Television Systems, but

no financial data are required. An update of system community statistics is requested, including community population, current subscribers, and potential subscribers. Other information requested includes: the channel capacity and use; number of advertisers; existence of services such as alarm and utility meter; local program hours; and the manner in which the signal is received at the input to the system. Copies of the completed reports and the summary printouts are available for review at FCC.

The research and policy analysis department of the National Cable Television Association (NCTA) publishes estimates from several private sources, including A.C. Nielsen, Arbitron Ratings, ICR/Titsch Communications, and Paul Kagan Associates. Kagan collects data based on a census of all cable systems in the United States and publishes a semi-annual compilation of basic cable and TV subscribers. A.C. Nielsen has more than 7,000 cable systems in their data base with information such as number of subscribers and monthly fees. The NCTA summary lists the 50 largest cable companies compiled by ICR/Titsch. The top 50 companies had 23.3 million subscribers; the top 25 -- 19.8 million.

In addition to this information, the NCTA report shows the number of TV households, percent of cable penetration, homes passed by cable, pay cable subscribers and units, pay penetration, and number of systems. Despite the proliferation of information, aggregate revenue estimates are the weakest.

## E. SUMMARY OF FINDINGS

1. There are no adequate aggregate benchmark estimates for the communication industry. The only revenue estimates are from the IRS series Statistics of Income (SOI) that has two deficiencies:

a. The SOI series is out-of-date. Data for 1980 are the latest for all legal forms of organization.

b. The estimates may not reflect an accurate measure of revenues for communication services since data on corporations are based on consolidated returns which were assigned a single SOI industry code based on the corporations' principal business activity.

2. Sub-industry statistics have a number of deficiencies, including the following:

a. Aggregate data about radio and television stations and cable TV systems were collected and published by FCC but have been discontinued. Statistics by FCC for telephone companies cover only the 65-70 largest organizations, and information on satellites includes only Comsat.

b. The National Association of Broadcasters (NAB) conducts surveys of radio and television stations but does not publish aggregates. Information is available only for selected markets. Response to the NAB surveys is about 58 percent for TV surveys and about 20 percent for radio surveys.

c. Current estimates of cable TV and other pay TV services are developed by several private organizations, but revenue estimates are weak. The most recent estimates of subscribers range from 29 to 35 million homes.

d. None of the private series based on samples examined in this study have specified measures of sampling variability in their estimates.

3. The need for communication statistics has been documented by the Bureau of Economic Analysis and the General Accounting Office. The U.S. House of Representatives Subcommittee on Telecommunications, Consumer Protection, and Finance continues to monitor the activities of the FCC and has expressed the need for data. The general need for service statistics is shown in Section I of this report.

One of the major issues in examining data needs is the ability to determine if deregulation of the communication industry is having desired effects. The U.S. House of Representatives Subcommittee on Telecommunications, Consumer Protection, and Finance asked whether the FCC has the capability for continuing the monitoring and analysis of the domestic and international marketplaces to evaluate the effectiveness of deregulation. The GAO report recommended that FCC establish an industry analysis group to monitor and report on developments in the industry and the growth of competition. This group's analysis would serve as a basis for measuring the effectiveness of FCC's policies designed to foster and encourage competition. In response to the recommendation, FCC is forming an Industry Analysis Division. As of May 25, 1984, the chief of this Division had not been named.

4. Traditionally, market research departments of most major companies have developed share-of-market estimates to use as a marketing tool. It is reasonable to assume that aggregate measures for the communication industry would be welcomed by market researchers who would develop similar measures for their industry.

5. The next SIC update should consider the separate classification of emerging "growth" segments and a redefinition of other segments:

a. Telephone services. Competition to the traditional wireline telephone companies is coming from the radiotelephone and paging services. The latter services include the radio common carriers (RCC's) and are discrete activities. The newer industry segments are expected to generate billions of dollars in revenues within a few years. Cellular technology is almost certain to create a nationwide demand for millions of portable and auto telephones. The RCC trade association, Telocator Network of America, supports the recommendation for a separate classification covering radio-telephone and paging services.

b. Telegraph services. Telegraph messages represent a declining portion of nonvocal record communication. This SIC should be expanded to include other forms of message communication, including telex services and electronic mail transmission.

c. Satellite services. Satellite communication represent a unique, discrete and significant component of the industry. Communication satellites will continue to be launched as demand for nationwide and worldwide links by voice, data, and video continue to expand. Revenues for satellite services will soon reach billions of dollars.

d. Cable and other pay TV services. Recent years have seen explosive growth in cable TV and other pay TV services. About 34 million homes currently subscribe and revenues for 1983 were about $6 billion. A separate SIC code for this industry was recommended during the aborted 1982 SIC update. The National Cable Television Association (NCTA) supports this recommendation.

6. If communication statistics are to be collected by a general purpose statistical agency of the Federal government, the Bureau of the Census would be an excellent choice for a number of reasons:

a. The economic censuses and annual surveys conducted by the Bureau of the Census are mandatory and response generally is very high.

b. The Census Bureau can use its Standard Industrial Establishment List (SSEL) to identify establishments in the industry and select samples.

c. The sample technology of the Census Bureau is excellent and provides unbiased estimates with measures of sampling variability.

d. Census maintains a high degree of integrity in maintaining the confidentiality of the reports.

e. For annual surveys, collecting a single statistic, revenue, would not create an undue burden on the sampled establishments. Substantial benefits would be provided at reasonable costs. The non-employer component of communication firms is not significant and can be ignored.

7. Productivity in the communication industry is extremely difficult to measure and has been give only cursory attention in this study. Estimates of employment can be used as an input and are available, but the selection and gauge of output measures have not been considered. It is obvious that new technologies have increased the speed, quality and quantity of communication services. Often this has been accomplished without adding to -- and in some cases, reducing -- personnel requirements. The vast strides in communication hardware and software have contributed to a breakthrough that is transforming the industry. Huge reductions in costs and energy consumption have resulted from the introduction of new components and technology, including the introduction of the silicon chip, integrated circuits, electronic switches, fiber optics, and digital networks. Productivity will continue to be shaped by future advances in technology and by events in the marketplace created by competition, price and deregulation.

## F. RECOMMENDATIONS[1]

Four groups of specific recommendations have been developed: SIC revisions; benchmark data; current surveys; and coordination.

### 1. SIC Revisions

The following classifications are recommended under SIC major group 48, Communication:

| Group No. | Industry No. | Industry Description |
|---|---|---|
| 481 | | Telephone And Radio Communication |
| | 4811 | Telephone Communication Other Than Mobile Radiotelephone<br>Establishments primarily engaged in furnishing telephone communication service by providing voice or data communications. Transmission can be via wireline, optical fiber, coaxial or television cable, microwave or satellite. This industry includes common carriers furnishing domestic local and long distance service and international service, specialized long distance carriers, and resellers of these services. |
| | 4812 | Radiotelephone And Paging Services<br>Establishments, including radio common carriers, satellite common carriers and wireline companies, primarily engaged in providing two-way radiotelephone communications, including cellular service, and establishments primarily engaged in providing paging or beeper service -- a one-way transmission of a tone or a short voice or data message. This industry includes resellers and agents providing radio-telephone and paging services. |

[1] Recommendations are those of the author and do not necessarily represent the views of the Committee on National Statistics.

482 Telegraph And Other Message Communication

4821 Telegraph And Other Message Communication

Establishments primarily engaged in furnishing message communication service by transmitting domestic and international nonvocal record communications intended for receipt by designated persons or organizations. This industry includes telegram, mailgram, and cablegram messages; telex services; money transfer services; reservation and ticketing services; and electronic mail services via facsimile, computer-based message systems (CBMS), or communicating word processors (CWP).

483 Radio And Television Broadcasting Stations

4832 Radio Broadcasting Stations
(Same description as in 1977 SIC manual)

4833 Television Broadcasting Stations
(Same description as in 1977 SIC manual)

484 Satellite Communication Services

4841 Satellite Communication Services

Systems primarily engaged in providing voice, data and video transmission via satellite. This industry includes the basic communication plant of a satellite common carrier consisting of one or more communication satellites and associated earth stations. Systems primarily engaged in DBS, direct broadcast satellite by subscription or fee, are classified in Industry 4851.

485 Cable Television And Other Pay Television Services

4851 Cable Television And Other Pay Television Services

Establishments primarily engaged in providing television service by subscription or fee. This industry includes cable TV (CATV), subscription television (STV), and systems providing TV services via multipoint distribution services (MDS), direct broadcast satellite (DBS), or a satellite master antenna system (SMATV).

489 Communication Services, Not Elsewhere Classified

4899 Communication Services, Not Elsewhere Classified

Additional considerations in evaluating the recommendations follow.

a. The term "point-to-point communication" used to describe SIC Major Group 48 is no longer applicable to some activities in the industry. A better term might be "end-to-end" for selected activities.

b. Manufacturing activities are not within the scope of this study. However, the SIC coverage of the manufacture of communication equipment is badly out-of-date. Several multi-billion dollar activities are hidden under a "basket" category and should be assigned a unique 4-digit SIC code.

c. Separate measures of voice, data and message transmission are difficult, if not impossible, to isolate for some carriers. It may not be feasible to classify firms based on their "primary" activity.

d. Rapid changes in technology make it difficult to develop a precise and discrete SIC definition for the services provided by communication satellites and associated earth stations. It is necessary to determine the extent to which the ground segment is part of the satellite system. There is also the problem of classifying a DBS system which serves as a common carrier (SIC 4841) vs. DBS which provides TV service by subscription or fee (SIC 4851).

e. Some industry segments have the potential to become multi-billion dollar activities in a few years. Examples include teletext and videotex. Since the activities are relatively small at this time, they should remain under the "basket" classification.

2. Benchmark Data

a. It is recommended that aggregate benchmark data for establishments primarily engaged in providing communication services be collected as part of or coordinated with the 5-year economic censuses. Revenue, employment and payroll information should be requested as well as measures appropriate to each of the industry segments, including the following:

- For telephone companies in SIC 4811: local and long-distance revenues; commercial and residential revenues; and measures of services provided such as number of lines or homes having service.
- For radiotelephone and paging services: Separate data for pagers, cellular and non-cellular telephones; receipts for equipment and monthly service charges; and information on number of subscribers.
- For radio and television stations: station revenue and advertising expenditures by network, spot and local.
- For satellite services: revenue by voice, data and video services; and measures of services provided.
- For cable and other pay TV: revenue and number of basic subscribers by industry segment -- CATV, STV, MDS, SMATV and DBS; revenue and number of subscribers to additional pay services; and basic and pay penetration.
- For the "basket" category, SIC 4899: develop separate data for selected industry segments, including videotex and teletext.

According to industry analysts, these services will be generating billions of dollars in revenues by 1987. Estimates should be developed for residential, business, and private applications, and on number of subscribers.

- For SIC major group 48: purchased good and services, wage supplements, depreciation, inventories and capital expenditures. These items were recommended by Daniel Creamer and staff as part of the 1977 Gross National Product Data Improvement Project Report. Their report recommended annual coverage but budgetary and paperwork constraints suggest a 5-year benchmark program as part of the economic censuses.

b. It is further recommended that consideration be given to developing periodic benchmark data to measure total economic activity for the communication industry whether or not the firm's primary activity is in communications. As noted in Section I, this can be done in four ways:

- By measuring the in-house communication facilities owned by the firms and operated as administrative and auxiliary activities.
- By measuring the sales of communication services by establishments whose primary activity is outside the scope of SIC major group 48. For example, measures could be developed for paging services offered through retail department stores.
- By measuring the sales of these services by establishments whose secondary activity is in another segment of the same industry. For example, measures could be developed for the cable TV activities of CBS, a leading broadcast firm.
- By measuring the sales of these activities by firms having excess capacity of systems installed for their own use. For example, some non-telephone companies are "bypassing" the traditional carriers by developing their own private-line telephone systems and offering excess capacity to other companies, employees, and local residents.

3. Current Statistics

For selected segments of the communication industry, current statistics should be collected by way of annual sample surveys. Data on revenues, the most significant statistic, could be collected by the Bureau of the Census as part of its Services Annual Survey. Annual revenue data for selected service industries are presently collected as part of this survey. If the SIC recommendations are approved, the Bureau of Labor Statistics should collect employment and wage information as part of its series showing data by SIC industry.

The industry segments for which revenue data should be collected are as follows and are listed in priority sequence:

a. Cable TV and other pay TV services. Aggregate revenue estimates are the weakest of the data sets for this industry segment. Current revenues are about $6 billion annually and growth is expected to continue as more and more homes have access to cable or other forms of pay TV. Revenues are predominantly a personal-consumption expenditure (PCE), a major component of the gross national product (GNP).

b. Telephone communication (SIC 4811). A considerable amount of current information exists for traditional telephone carriers. However, revenues are approaching $100 billion annually and official government estimates would be valuable. Revenue estimates should be requested for (1) residential services and (2) non-residential services. Data on residential telephone expenditures have been requested by the Bureau of Economic Analysis to assist in developing estimates of PCE and GNP.

c. Radiotelephone and paging services. The development of cellular technology has created the potential for a multi-billion dollar industry. Ninety cities will soon have competing systems and thereafter the service will be available nationwide. Revenue estimates to measure the size and growth of vehicular and portable radiotelephone and paging services are certain to be welcomed by industry analysts.

d. Satellite communication services. Only a few companies are providing satellite services and the development of aggregate revenue estimates should not be difficult or costly to collect.

e. Radio and television stations. Although advertising expenditure data are readily available for radio and TV stations and provide an acceptable proxy measure, official government estimates of station revenue would be useful to broadcasters, advertisers, and industry analysts. Since FCC dropped its series, aggregate revenue estimates are no longer available.

## 4. Coordination

If implementation of the recommendations is considered, the proposals should be examined by an interagency committee. There should be representatives from OMB, the Bureau of the Census, Bureau of Economic Analysis, Bureau of Labor Statistics, and the FCC. Additional representation could come from the applicable trade associations and industry segments.

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# SECTION IV. FINANCE AND INSURANCE

## A. INTRODUCTION

### 1. Organization

The finance and insurance section of this report is organized into an introduction and four basic parts. In addition to organization the Introduction deals with the overall industry background and scope and discusses some of its characteristics.

Part B, Industry Trends and Developments, presents an overall view of the various factors which have influenced the industry. These include technological changes which have made possible the current operations of a modern financial industry. Also discussed is the evolution of the regulatory framework reflecting more liberal interpretations of old laws and the passage of new, more flexible legislation. It also discusses the development of new financial products to satisfy the needs of consumers in a new financial market.

Part C, Statistical Coverage, discusses and describes the statistical data currently available for each sub-industry group in this sector. Data collected and published by both government agencies and trade associations were examined and evaluated. Findings are presented at the end of this discussion for each major industry group.

Part D summarizes the findings for this area and points up the significant ones leading to recommendations in the next part.

Recommendations for statistics in the financial and insurance section are presented in part E. These are divided into three types: those affecting the Standard Industrial Classification system; those related to benchmark data in the 5 year Economic Census; and those concerned with annual or more frequent statistics. Many of the recommendations for current statistics involve the use of administrative data now being collected by regulatory agencies.

### 2. Background and Scope

This section is concerned with data for firms included in Division H of the Standard Industrial Classification excluding real estate. Broadly speaking this covers banking and credit institutions (major

groups 60 and 61), the securities and commodity brokerage industry (major group 62) the insurance industry (major groups 63 and 64), and the holding and investment company industry (major group 67). These account for almost ten percent of receipts for all non-agricultural industries reported on almost five percent of non-agricultural tax returns filed for 1980. They also account for almost six percent of non-agricultural employment.

While overall, non-corporate business accounts for only five percent of total receipts in the finance and insurance industries, it amounted to almost 35 percent for securities and commodity brokers, 40 percent for insurance agents and brokers, and over 25 percent of the holding and investment company group. Sole proprietors and partnerships constitute a significant segment of these groups as compared to banks and insurance companies which are almost entirely corporate.

Data collection in finance and insurance differs somewhat from the situation in other industries. By far the largest part of these industries in terms of revenues report information either to federal or state regulatory agencies. Some industry groups report to what are called self-regulatory organizations. Data for many scattered parts of the industry come only from trade associations or private publishers. In addition the statistical agencies collect data for these industries, while administrative agencies publish statistics based on data received in the course of their operations.

## B. INDUSTRY TRENDS AND DEVELOPMENTS

### 1. Technology

As much as any other area, the finance and insurance industry has been subject to changes reflecting technological advances of the post-war period. These industries have been extraordinarily susceptible to developments in the fields of computers, communications, electronics and transportation. It is to the credit of the industry that it has adapted very well to new demands and conditions.

The effects of technology on the industry have been many. It has been said that the advent of the "800" telephone number was a major technological breakthrough (National Association of Securities Dealers, 1982:23). A source of amazement has been the ability of the industry to handle a staggering volume of transactions, expeditiously, accurately, and economically. The National Association of Securities Dealers, (NASD) shuddered "....at the thought of what 140+ million share days on the NYSE and 50 + million share days on NASDAQ would have meant only a few short years ago" (NASD, 1982:29).

Banks and thrifts have developed systems using automatic teller machines (ATM), electronic transfer of funds and automated clearing houses (ACH). We are on the brink of developing point-of-sale systems (POS) in which a customer can effect a purchase by an electronic transfer from his bank account to the merchant's. Automation in the insurance industry, a mass employer of clerical personnel in the past, has changed both the size and character of its work force.

Developments in finance and insurance have been necessary in response to the sharp increase in the demand for capital needed to finance the unprecedented post-war economic expansion. Financial intermediaries, acting as expediters of investment and conduits and reservoirs of saving, have had to adopt all the technology available to make their operations efficient and effective.

## 2. Product Development

To meet the needs of the consumer, both actual and perceived, the industry has been extremely prolific in devising and developing new approaches to marketing financial services and new products to sell. Financial institutions have taken to the principle of "one-stop shopping." In addition to processing his securities transactions, securities firms have introduced the concept of providing a customer with insurance, real estate, banking and credit card services and more. They will also watch his bank account and "sweep" excess balances into higher yielding money market funds. It is appropriate that Merrill Lynch calls this combined service its Cash Management Account (CMA). Commercial banks and thrift associations have met the challenge by themselves or a holding company going into the securities and insurance businesses.

New products and new versions of old products have been developed in the finance and insurance industries in great numbers to meet particular needs or competitive situations. The banking and thrift industries, with help from the law makers, have introduced high interest certificates of deposit in small denominations, variable and fixed rate IRA accounts, and market rate insured savings accounts. The securities industry has developed an almost infinite variety of mutual funds such as money market, short, intermediate, or long term tax-exempt government bond, growth and income funds, and special industry funds. There has been renewed activity by brokerage houses in the establishment of unit trusts. Mortgage bankers have developed adjustable rate mortgages (ARM) of great variety. The sharpest growth in the life insurance industry is currently in term and group policies and variable life insurance and annuities have been introduced.

## 3. Changing Government Policies and Deregulation

Regulation in the finance industry has been characterized by disorder and split responsibility. Banks and thrifts have had to contend with duplication, conflicts and disparate regulation. Multiple regulatory authority has been responsible for what has been called "competition in laxity." Andrew S. Carron in his Brookings Review article (1984:17) states "It is not uncommon for institutions to attempt to structure transactions so that they come under the jurisdiction of regulators most likely to approve of them." Banks have been known to change their charters in order to come under the Comptroller of Currency, perceived to be more lenient.

Rapid changes in the finance industry as well as in the administration's attitudes favoring deregulation are having considerable influence on legislation. It has been said that the marketplace is outpacing the regulatory framework which is much the same as it was when it was created in the 1930's in reaction to the financial crisis of the time. Secretary Regan said that the legislation governing the new finance industry was"... designed for a world that no longer exists" (NASD, 1982:25). Carron (1984:12) called attention to the present state of regulation by noting "The aggressive, automated, diversified multibillion dollar companies that compete in today's financial services industry are regulated by agencies designed for the Great Depression, the Panic of 1907, and the Civil War."

As a result new legislation has been passed and existing legislation is being reeaxamined in order to permit greater flexibility to financial institutions. The Depository Institutions Deregulation and Monetary Control Act of 1980 and the Depository Insitutitions Act of 1982 (Garn-St. Germain Act) permitted thrifts to expand the services they could provide and phase out unrealistic interest rate ceilings. The Banking Act of 1933 (Glass - Steagal Act) which provided for the separation of the functions of "commercial" banking and "investment" banking is being considered for extensive revision.

Meanwhile, significant developments have been taking place in recent years. Laws and regulations have been pushed almost to the breaking point. It has been said that recent and proposed law changes will simply be catching up with what has already happened. Often regulations are relaxed and made flexible pending law changes.

Gradually over the last three decades there has been a movement for banks to reorganize into holding companies in order to lay the groundwork for extending their activites both geographically and functionally. In order to control this trend the Bank Holding Company Act of 1960 limited bank activites to those closely related to commercial banking. However, the evolutionary process of the last twenty years led to the Financial Institutions Restructuring and Services Act of 1981 which expanded the range of bank services even to permitting them to underwrite revenue bonds and organize and sponsor mutual funds. The Securities and Exchange Commission adopted Rule 415 permitting financial institutions to deal directly with the issuer of registered securities. Instead of being a customer of the broker-dealer, a financial institution could take the role of competitor.

The merger and acquisition movement has been accelerating rapidly in recent years, both across and within particular financial industries. The lures have been many but the two main areas have been to expand the types of services forming financial conglomerates and to extend the geographical coverage of the firm or institution into a statewide or national organization in order to expand its capitalization. The NASD has called the acquisiton by Prudential of Bache Halsey Stuart Shields in March 1981 the "single most important event of recent vintage which turned the evolutionary change going on in our business to what seemingly amounts to a revolution" (NASD, 1982:8) Certainly after that there was a rush of mergers involving

financial institutions, Sears Roebuck, already having developed Allstate Insurance, acquired a real estate broker Coldwell Banker, Allstate Savings and Loan, a securities broker Dean Witter Reynolds, among others. Bank of America has acquired Charles Schwab and Co., a discount broker, while American Express has merged with Shearson. Regional brokerage firms have not been immune from acquisition by large insurance companies, Kemper, John Hancock, Penn Mutual, Travelers, Phoenix, and Hartford to name a few. While these are not all expected to become financial conglomerates comparable to Prudential - Bache, they do represent a further step in the development and extension of the concept of the financial supermarket.

Banks, generally, are very much involved in the movement towards the expansion of services and consolidation. A recent law passed in South Dakota permitting banks to go into the insurance business has resulted in a rush of large bank holding companies to acquire local banks. Banks in many places through holding companies have succeeded in crossing state lines as for instance in the Washington metropolitan area. Banks which have become associated with discount brokers in addition to Bank of America, include Security Pacific, Union Planters National, Citicorp, Chemical Bank, Wells Fargo and Midlantic National. Many large city and international banks have recently announced their intentions to establish so-called non-bank banks or consumer banks in various cities around the country including 14 in the Washington area. A freeze by the Comptroller of Currency on such activity expired on March 31 of this year but was reinstated May 9 pending Congressional action.

Savings and loan associations have not been inactive in this revolution. Many mutual associations are incorporating and converting into federally chartered savings banks. Three savings and loan associations in California have organized a financial services company to act as broker and to sponsor and control an investment company. The financial services company, named the Savings Association Investment Securities (SAIS) has been permitted by the Securities and Exchange Commission to do business in the quarters of participating associations without requiring broker dealer registration under Section 15 of the Securities Exchange Act of 1934 for each association. This is still under litigation against the SEC by the Securities Industry Association.

All of these developments, both legal and technological, are leading to greater consolidation of the financial services industry. Walter Wriston, Chairman of Citicorp, has put it this way. ". . . the financial marketplace today is everywhere, any time. The parties to the transactions could be anyone with the ability to punch the right number anywhere. What will be the value of a seat on the New York Stock Exchange or a brick and mortar bank branch in an environment where every home has access to the Dow Jones and its bank accounts instantaneously?" (NASD, 1982:35). It has also been pointed out that with all our bank holding company and merger activity, we have 15,000 banks while the United Kingdom has ten.

## C. STATISTICAL COVERAGE

The explosive developments in new products, new arrangements, consolidations and reorganizations in the finance group reflect the increase in economic activity of the last two and one-half decades and the more recent movement towards deregulation and changing government policy. This, together with increasingly stringent budgetary restraints, have, in some cases, resulted in a reduction and simplification of statistical reporting and publications. At a time of such radical change in the industry, we face the prospect of fewer statistical series, less data and a lowering of quality and reliability. Regulatory and administrative government agencies, when allocating budget cuts, generally take the approach that statistical services are peripheral to their primary functions and therefore expendable. However, as will be discussed later, there is considerable variation from group to group in the amount of statistical deterioration.

Sources of data for each industry subgroup will be discussed in the following sections. However, all groups are covered in Statistics of Income (SOI) published by IRS. Tax returns are required of all corporations and partnerships whether or not the business shows a profit so that the data published represent the full populations. The data are based on tax returns for a sample of taxpayers stratified, for the most part, by asset and/or profit size across all industries. Data items for corporations and partnerships include most balance sheet, income account, and tax items. Balance sheet data are not available for sole proprietors. This system provides an excellent source of universe data for finance and insurance firms broken down into 16 subgroups. Data in Section I, Table 1 come from Statistics of Income.

Although Statistics of Income presents annual universe estimates, covers practically all groups in the industry, and includes a full schedule of data items, it has certain deficiencies. Publication dates of SOI for corporations have been improved considerably in recent years. However, even for preliminary data, there is still a lag of about two years after the close of the designated year. In large part this reflects the fact that designated tax years are fiscal years whose close runs from July through the following June. Taking into account the three month filing period, and a six-month extension often granted the larger corporations, the return might not be filed until 15 months after the end of the SOI year. Although SOI data are of high quality and coverage when used in analysis and as definitive benchmarks, the lag makes them less useful in the measure of current economic conditions.

Another deficiency relates to the lack of employment data since this item does not appear on the tax return. Also tax returns are filed by companies, in many cases consolidated corporations, and industry classification is by major source of revenue. Industry for a consolidated conglomerate may not mean very much, particularly in view of the current trend.

The Bureau of Labor Statistics collects and publishes monthly data on number of employees for establishments in each of the two-digit

groups in finance and insurance as well as for major three digit groups. Average weekly earnings are shown for three two-digit groups, banking, other credit agencies and insurance carriers, and a few three-digit groups. These data are published monthly by the Labor Department in "Employment and Earnings." Employment and payroll figures shown for the finance and insurance group exclude non-office sales agents.

With the exception of some partial coverage in special 5-year programs, County Business Patterns represents the only significant Census involvement in publishing data on the finance and insurance industries. Data on employment and payrolls, for the most part, are obtained from the Annual Organizations Survey and Form 941 filed with the Internal Revenue Service. The data are limited to employment and payrolls and are essentially on an establishment basis. However, this is not always the case for large employers using an area basis or a functional basis for reporting FICA withholdings. It is difficult to relate data from the employers' tax return, Form 941, to financial data on the corporation income tax return, Form 1120.

1. Banking (SIC group 60)

The banking group is made up of five three-digit subgroups. By far the most important is group 602, commercial and stock savings banks, accounting for more than 90 percent of the banking group. (See Table IV.1.)

a. Federal Reserve Banks (SIC Group 601)

The twelve Federal Reserve Banks classified in SIC group 601 are owned by the member banks in each region and serve as reserve deposit and rediscount banks for their members. They report regularly to the Federal Reserve Board which publishes weekly (Wednesday) and monthly condition statements in the Federal Reserve Bulletin.

b. Commercial, Savings Banks and Trust Companies (SIC Groups 602, 603, 604)

While in commercial and savings banking there has been some deregulation resulting in cutbacks in examination, data collection has remained about the same. The banking industry ranks very high as one of the most regulated industries subject to multiple regulatory agencies and produces a substantial volume of data. The largest part of the industry is regulated by three federal agencies. These are the Comptroller of the Currency for national banks, the Federal Reserve for non-national member banks and the Federal Deposit Insurance Corporation for insured non-member banks including mutual savings banks. All bank holding companies are regulated by the Federal Reserve while non-FDIC insured banks report to state banking commissions. The latter account

Table IV.1 Banking - Major Group 60
Number of Establishments, Employment, Payroll: 1981

| SIC Group | Description | Number of Establishments (000) | Number of Employees (000) | Annual Payroll ($million) |
|---|---|---|---|---|
| 60 | Banking | 47.5 | 1550.8 | 22338 |
| 601 | Federal Reserve Banks | .1 | 21.5 | 366 |
| 602 | Commercial and stock savings | 43.2 | 1426.4 | 20376 |
| 603 | Mutual savings | 2.3 | 63.1 | 803 |
| 604 | Trust companies | .1 | 3.5 | 57 |
| 605 | Related functions | 1.7 | 34.6 | 711 |

Source: Data from Bureau of Census, County Business Patterns, 1981 (1983:72). Columns do not add to totals due to rounding and inclusion of firms not classified to detailed subgroup.

for approximately four percent of U. S. banks, but hold less than one-half of one percent of U. S. banking assets.

The three federal agencies cooperate fully in data collection and use a jointly developed form required of all insured banks on a quarterly basis. The Report of Condition and Income contains considerable detail, with some variation in schedules depending on size of bank and foreign operations. The FDIC centrally processes data for all insured banks, including mutual savings banks, and makes tapes available to the other agencies. In addition, FDIC receives condition reports from non-FDIC insured banks annually from the state banking commissioners or directly from the banks. These reports cover balance sheet data only. FDIC publishes aggregate data annually covering balance sheet and income accounts for all insured banks and balance sheet data for non-FDIC insured banks.

The Federal Reserve publishes aggregate quarterly data from the report on condition for insured commercial banks in the Federal Reserve Bulletin. In addition, the Federal Reserve collects complete detailed balance sheet data on a weekly basis (Wednesday) from large commercial banks. These are needed in the measurement of the money supply and for policy decision making. The aggregate balance sheet data for the weekly reporting commercial banks are published regularly in the Federal Reserve Bulletin. An abbreviated balance sheet for all commercial banks is also published for the last Wednesday of each month. This is estimated on the basis of data for the large weekly reporting banks and for a sample of small banks, benchmarked to the quarterly data.

Mutual savings banks, SIC group 603, are generally insured by FDIC and report quarterly on the same basis as commercial banks. In addition, the National Council of Savings Institutions publishes financial and other data on a regular basis. Non-deposit trust

companies, SIC group 604, are a small group accounting for less than two-tenths of one percent of employment in the banking industry. They are covered by FDIC as part of the non-FDIC insured segment of the commercial bank group. As with other non-insured banks, only balance sheet data are covered.

c. Findings

The only part of the banking industry not well covered is SIC group 605, miscellaneous banking related functions. These include foreign exchange firms, safe deposit companies, clearing house associations, and U. S. firms engaged solely in international banking. Overall, this group accounts for about two percent of employment in banking.

By and large, the banking industry, SIC major group 60, is very well covered, with extensive financial data as well as employment figures. The Federal Reserve Banks (SIC group 601) are completely covered. All insured commercial banks, mutual savings banks, and trust companies file detailed quarterly financial reports with the regulatory organizations and account for 99.5 percent of the industry assets (SIC groups 602-604). The only important non-FDIC insured segment is in mutual savings banks where it accounts for five percent of all mutual savings bank assets. This entirely reflects Massachusetts where both FDIC and the state insure mutual savings bank deposits. The FDIC collects annual balance sheet data for non-FDIC insured banks and trust companies either from the state banking commissioners or the banks themselves. Income account data for this segment are not presently available.

While the banking industry reports a substantial amount of high quality data on a regular and frequent schedule, some data have been identified for which there is an unsatisfied demand. A number of trade associations have expressed a need for knowledge of the banking share in non-banking activities such as brokerage, real estate, insurance, etc. By the same token, need was expressed for the measurement of banking business being conducted by companies in other industries, both financial and nonfinancial. To the extent that the activities are separately regulated and required to be segregated, proper inclusion is made. However, the relation to the banking industry is not brought out. Trade associations have indicated a desire for greater detail in income account aggregates. They would like to know what are the costs to banks of insurance, automation, and check processing. Also it has been noted that data on extensions and repayments of consumer and commercial credit on a regular basis have been discontinued as well as data on delinquencies.

2. Credit Agencies Other Than Banks (SIC group 61)

Savings and loan associations, in terms of employment, account for approximately 40 percent of major group 61. Personal credit institutions comprise another third with mortgage bankers and business credit firms around ten percent each. (See Table IV.2.)

Table IV.2 Credit Agencies Other Than Banks
Major Group 61
Number of Establishments, Employment, Payroll: 1981

| SIC Group | Description | Number of Establishments (000) | Number of Employees (000) | Annual Payroll ($million) |
|---|---|---|---|---|
| 61 | Credit agencies, o.t.b. | 57.5 | 602.4 | 8839 |
| 611 | Rediscount and financing | .1 | 1.3 | 25 |
| 612 | Savings and loan | 15.8 | 253.7 | 3468 |
| 613 | Agricultural credit | 1.3 | 17.1 | 314 |
| 614 | Personal credit | 32.7 | 213.4 | 2907 |
| 615 | Business credit | 2.4 | 51.6 | 970 |
| 616 | Mortgage bankers | 4.7 | 62.2 | 1103 |

Source: Data from Bureau of Census, County Business Patterns, 1981 (1983:72). Columns do not add to totals due to rounding and inclusion of firms not classified to detailed subgroup.

a. Rediscount and Financing Institutions (SIC group 611)

The 12 Federal Home Loan Banks have a rediscount and financing function similar to that of the Federal Reserve Banks. They are owned by their member organizations in each region with equal numbers of directors appointed by the members and the FHLB Board in Washington. The banks report financial data monthly and quarterly to the Board. Detailed balance sheet and income account data are published quarterly while selected balance sheet items are published monthly in the Federal Home Loan Bank Journal. Employment in SIC group 611 accounts for less than two-tenths of one percent of total employment in SIC 61, Credit Agencies other than Banks.

b. Savings and Loan Associations (SIC group 612)

Regulatory arrangements for savings and loan associations are similar to those in the banking field with some minor differences. Federally chartered associations are all insured by the Federal Savings and Loan Insurance Corporation. Together with state chartered FSLIC insured associations they accounted for 98 percent of the assets of all savings and loan associations in 1981. The non-FSLIC insured associations include a small number which are members of FHLB.

A detailed quarterly financial report is required of all insured associations including both a balance sheet and an income account. A sample of associations provides monthly data. Balance sheet data for non-SLIC insured associations are obtained annually from state commissioners. Maryland, Massachusetts, North Carolina and Ohio account for almost all the assets of non-FSLIC insured associations.

Detailed annual balance sheet and income account data are published for FSLIC insured associations in FHLBB publication Combined Financial Statements. Annual balance sheet data for all associations appear in Asset and Liability Trends. Monthly estimates for all associations covering selected balance sheet data are published in the Federal Home Loan Bank Board Journal and separate press releases. The monthly data are based on reported data for FSLIC insured associations and periodic benchmark data for others.

Since the beginning of 1983, savings and loan associations have been permitted to convert to federally chartered savings banks but remain insured with the FSLIC. Selected balance sheet data for these banks are published monthly by FHLBB. As of January 1984, 149 associations have converted with assets of $65.7 billion.

c. Agricultural Credit Institutions (SIC group 613)

This group includes a number of federal agencies, federally sponsored agencies and private organizations engaged in extending agricultural credit. The industry accounts for almost three percent of employment in SIC group 61. Most of the data for federally sponsored organizations come from the Farm Credit Administration. Data for others are obtained from individual annual reports.

d. Personal and Business Credit Institutions (SIC groups 614, 615)

Personal credit institutions (SIC 614) cover a great variety of organizations which extend credit to individuals. The only federally regulated segment of this industry group is credit unions. Federally insured credit unions report complete balance sheets, income accounts and employment semi-annually to the National Credit Union Administration. The call report is the same for both state chartered and federally chartered credit unions and is agreed to by both the National Association of State Credit Union Supervisors and the National Credit Union Administration. Data for non federally insured state chartered credit unions are received annually. Composite balance sheets and income accounts are published regularly based on data from semiannual call reports. Monthly estimates are based on a sample of credit unions benchmarked to the call reports.

Statistical data on the rest of SIC group 614, personal credit institutions other than credit unions, and SIC group 615, business credit institutions, are somewhat sketchy. These industry groups are combined by the Federal Reserve Board into a group called domestic finance companies. The Federal Reserve conducted a complete census of these companies every five years. In order to reduce the reporting burden, the census for mid 1980 used a stratified sample of about 500 firms out of a population of about 2800. Data collected covered assets and liabilities with detailed information on receivables.

The five-year census is used as a benchmark for a quarterly series on assets and liabilities and a monthly series on outstanding amounts

and extensions of consumer and business credit. These data are curently based on a sample of about 100 which is being increased to 200. Estimates are published in the Federal Reserve Bulletin and regular press releases. No income account data are collected.

In addition, the Federal Reserve collects monthly data on outstanding consumer installment loans. These are based on samples of retailers and various types of financial institutions.

e. Mortgage Bankers and Brokers (SIC group 616)

This industry accounted for about ten percent of 1981 employment in group 61, Credit Agencies other than Banks. A considerable amount of information on mortgage activity and interest rates is available from the Department of Housing and Urban Development. In contrast, very little data on the financial condition of the mortgage banking industry is available. The Mortgage Bankers Association collected 1982 balance sheet and income account data from its membership. Out of a total of about 800 firms, 160 financial statements were received. The data were presented in the form of percentages of total income and percentages of total assets. Dollar figures were shown for the average sample firm in various categories. It was not possible to derive universe estimates.

f. Findings

For the regulated segments of SIC group 61, Credit Agencies other than Banks, available statistics meet the needs for data reasonably well as to coverage, reliability and frequency. These groups are:

| | | |
|---|---|---|
| SIC group | 611 | Rediscount and financing institutions |
| | 612 | Savings and loan associations |
| | 613 | Agricultural credit institutions |
| | 6142-43 | Credit unions |

There appears to be some dissatisfaction with data currently available on consumer installment loans. Except for finance companies, information on extensions and repayments has been discontinued by the Federal Reserve. Trade associations such as the American Bankers Association and the American Financial Services Association have expressed strong feelings about the usefulness of these data. The trade associations have indicated that they would welcome the restoration and would cooperate.

In the mortgage banking field, while the Mortgage Bankers Association has not expressed dissatisfaction, it is apparent that considerable improvement would be desirable. Their current survey has a low response rate and can only be used in the form of ratios and averages.

Table IV. 3 Security and Commodity Brokers, Dealers, Exchanges
Major Group 62
Number of Establishments, Employment, Payrolls, 1981

| SIC Group | Description | Number of Establishments (000) | Number of Employees (000) | Annual Payroll ($million) |
|---|---|---|---|---|
| 62 | Security and commodity brokers | 12.4 | 251.0 | 8423 |
| 621 | Security brokers, dealers | 8.3 | 202.2 | 7081 |
| 622 | Commodity brokers, dealers | .9 | 11.8 | 347 |
| 623 | Security, commodity exchanges | .1 | 6.6 | 152 |
| 628 | Security, commodity services | 2.8 | 28.5 | 798 |

Source: Data from Bureau of Census, County Business Patterns, 1981 (1983:73). Columns do not add to totals due to rounding and inclusion of firms not classified to detailed subgroup.

3. Security and Commodity Brokers, Dealers, Exchanges (SIC group 62)

The most important component of this industry is the security broker and dealer group (SIC 621). This group accounted for about 85 percent of payrolls of major group 62. (See Table IV.3.)

a. Security, Brokers, Dealers (SIC group 621)

Regulation of security brokers and dealers lies with the Securities and Exchange Commission. The Financial and Operational Unified Single report, referred to as FOCUS Reports Form X-17A-5, are filed with designated self-regulatory organizations and have two parts. Part I is filed monthly and contains detailed data on the transactions and operations of a broker. Part II ordinarily is filed quarterly and contains a balance sheet and income account as well as data on employment. A shorter form IIA is used for small firms and certain special categories. In addition, an annual audit report is filed if its date does not coincide with a calendar quarter.

The New York Stock Exchange has been designated as the self-regulatory organization for member firms. The National Association of Securities Dealers is the self-regulatory organization which collects data for other firms. Firms which are not members of a registered stock exchange are required to become members of the NASD. The SROs prepare computer tapes of the individual firm data and send the tapes to the SEC.

Data from the FOCUS Reports for all firms are published annually by the Securities and Exchange Commission in the Monthly Statistical Review and the Annual Report. The New York Stock Exchange also

publishes member financial data in its annual Fact Book. The Securities Industry Association, in its Securities Industry Trends, publishes a detailed quarterly analysis as well as composite data. The SIA maintains the Securities Industry Data Base containing data from the FOCUS Reports in unidentifiable form.

The SEC becomes the repository for the FOCUS data tapes where they are the basis of regulatory action. The NASD uses the data in order to assess membership fees. Other SRO's, such as regional exchanges, also maintain tapes containing the reports for their members.

b. Commodity Contracts Brokers, Dealers (SIC group 622)

While this group covers firms primarily in the commodity contracts business, it should be noted that a large part of this type of brokerage is carried on by securities brokers. Only 5 percent of employment in major group 62 is in commodity brokers while 80 percent is in securities brokerage firms.

Commodity brokers are regulated by the Commodity Futures Trading Commission and are required to file quarterly statements of financial condition, Form 1-FR. Quarterly audits of member firms are conducted by the commodity exchanges. While Form 1-FR contains both balance sheet and income account data, CFTC does not have a statistical program to tabulate aggregates. Data are not available on tape.

c. Security and Commodities Exchanges (SIC group 623)

Data on the financial operations of the securities exchanges and SRO's are filed with the SEC and published annually. Commodity exchanges report their financial condition with the CFTC.

d. Findings

It appears that the main concern of users of statistics in this field is over the restoration of certain series previously issued by the SEC. These series were discontinued mainly for economy purposes, but it also appears some policy issues were involved. These revolved around where the research emphasis should be. Organizations which felt strongly about the restoration of SEC statistical programs were the New York Stock Exchange, the Securities Industry Association and the National Association of Securities Dealers. While these organizations were concerned about information about their industry, some government agencies were also concerned about data which fit into their programs. These include the Bureau of Economic Analysis' National Economic Accounts, and the Federal Reserve's Flow of Funds.

Among series discontinued by SEC for which a demand was expressed were:

- Net new securities issues. At the present time only data on securities registered with SEC are compiled. Private placements and securities retired are no longer available satisfactorily. These data are needed in any analysis of the flow of funds through the corporate security market.
- Quarterly series on transactions and holdings of corporate stock by financial institutions.
- Member trading on stock exchanges other than NYSE. This is reported on form R-31, but no longer tabulated and published by SEC.
- Deterioration and eventual discontinuance of series on pension fund finances needed as a component of individuals saving as well as for the series on securities transactions of financial institutions.

In addition, there appears to be a substantial demand for government collection of new statistical data. The NYSE is interested in regional employment in financial services, and demographic characteristics of share ownership. The NASD has expressed interest in tabulation of broker dealer financial data at one place so as to achieve consistency and comparability. Little data are published regularly on firms primarily classified as commodity contract brokers and dealers although statements of financial condition are filed regularly.

## 4. Insurance (SIC group 63)

Next to the banking industry insurance carriers constitute the largest repository of wealth in the United States. At the end of 1982 insurance companies controlled assets of over $800 billion. This figure would be well over $1 trillion with the inclusion of non-insured pension funds. Life insurance companies account for almost half of industry employees and payrolls, about 45 percent, with fire, marine and casualty next with about 40 percent. (See Table IV.4.)

Regulation of the insurance industry is the responsibility of each of the states. The National Association of Insurance Commissioners develops a uniform set of forms to be filed in each state in which the company does business. These forms are public documents and are the basis for a large part of the statistical data available about the insurance industry, both life and property.

### a. Life Insurance (SIC group 631)

The American Council on Life Insurance receives copies of the Commissioner's forms from all life insurance companies doing business in the United States. The ACLI tabulates a considerable amount of data from these reports and publishes them annually in the Life Insurance Fact Book. The data published cover most areas of life insurance such as policy holders, types of policies and coverage. In addition it

Table IV.4 Insurance Carriers and Agents
Major Group 63, 64
Number of Establishments, Employment, Payrolls: 1981

| SIC Group | Description | Number of Establishments (000) | Number of Employees (000) | Annual Payroll ($million) |
|---|---|---|---|---|
| 63 | Insurance carriers | 32.9 | 1229.4 | 21125 |
| 631 | Life | 15.7 | 566.0 | 9584 |
| 632 | Medical and health | 1.5 | 117.0 | 1862 |
| 633 | Fire, marine and casualty | 9.2 | 457.9 | 8256 |
| 635 | Surety | .5 | 8.3 | 163 |
| 636 | Title | 2.7 | 48.3 | 757 |
| 637 | Pension, health, welfare | 2.9 | 25.8 | 388 |
| 639 | Insurance, nec | .2 | 3.8 | 71 |
| 64 | Insurance agents, brokers | 80.8 | 473.1 | 7933 |

Source: Data from Bureau of Census, County Business Patterns, 1981 (1983:73). Columns do not add to totals due to rounding and inclusion of firms not classified to detailed subgroup.

includes composite balance sheet and income account data. ACLI also conducts surveys for special data not included in the Commissioner's form. Employment data are published based on BLS data adjusted by ACLI for some undercount.

Another publisher of life insurance data is A. M. Best Co., Oldwick, New Jersey. Best also receives copies of the company annual reports and publishes condensed individual reports from balance sheets and income accounts.

b. Accident and Health Insurance and Medical Service Plans (SIC group 632)

Accident and health benefits are provided in three different ways, through insurance carriers, through hospital and medical service plans such as Blue Cross, Blue Shield and through self insurance and independent health care. Health insurance through insurance carriers would be covered by the large life insurance companies (SIC 631), large casualty insurance companies (SIC 633) or insurance companies which are primarily in health insurance. These would come under the state insurance commissioners and be covered by Best's Insurance Reports. Health insurance through independent health care plans, self insurance and HMOs, is not classified as insurance by SIC but is included with medical services (Major group 80).

Medical service plans such as Blue Cross/Blue Shield are included in SIC group 6324. Statistical data for this group are rather

sketchy. The association discontinued publication of its Fact Book and currently prepares statistics for internal use only. Some data are collected from the Plans on a voluntary basis by the National Underwriter Company of Cincinnati, Ohio, which are distributed to the industry. However this primarily covers information on premiums and benefits and includes only plans that agree to cooperate.

c. Insurance other than Life and Health (SIC groups 633-636)

The National Association of Insurance Commissioners also prescribes the annual report forms to be used by insurance companies other than life. The A. M. Best Co. publishes individual company balance sheet and income account data for property/casualty insurance companies. The Insurance Information Institute publishes data on the property, liability, marine and surety insurance companies in its publication, Insurance Facts. For the most part, these are obtained from the Best compilations or from ACLI.

d. Pension, Health and Welfare Funds (SIC group 637)

SIC group 637 is titled "Pension, Health and Welfare Funds." The group is further described as "Establishments primarily engaged in managing pension, retirement, health and welfare funds." There are some problems with this description in defining what is to be included. Private funds are managed by a variety of financial institutions or arrangements. In 1978, life insurance companies administered $119 billion of assets in what are called insured pension funds. These funds can be set up as separate accounts for investment purposes. In any case, they would be included in company assets and would not be included in SIC group 637 unless the insurance company set up a separate and distinct establishment for their management. Generally, this is not the case and data are covered in SIC group 635, life insurance.

In addition to insured funds, there are private non-insured funds. These are usually administered by banks or trust companies although the fund could be self-administered or managed by a third party such as an investment advisor. The relationship is one of fiduciary so that assets of the pension fund are not commingled with those of the trustee who receives a fee for his services. To complicate matters further, there seems to be a dispute as to the amount of these funds. The ACLI used a figure of $202 billion for 1978 ascribed to the SEC. The Labor Department, a co-partner with the IRS under the Employees Retirement Income Security Act (ERISA), has estimated 1978 assets of private non-insured funds at $324 billion. This estimate, released in 1983, was prepared by Labor on the basis of a sample of Forms 5500 required to be filed by pension funds with IRS. The IRS released 1977 estimates in 1982 and is not planning to prepare data for other years.

The SEC originally entered the field of estimating non-insured pension fund finances in 1955 as a matter of necessity. There existed

at that time glaring gaps in the estimates of institutional influence in the securities markets and in the ongoing study of the volume and composition of individuals' saving. Quarterly estimates were based on a survey of corporations registered with the SEC and benchmarked to pension fund contributions by business as shown on income tax returns. Until 1982 the SEC series provided the only continuous reasonably available statistics in this field and was generally accepted as the measure of non-insured pension fund operations.

The SEC estimate for 1978 is considered to be too low, partly due to the deteriorating sample and partly to the fact that the series had not been benchmarked since 1967 thus omitting any growth in the number of plans. On the other hand, the Labor estimate may be too high because of errors in the way Form 5500 is filled out by the trustees or interpreted by data editors and the possible inclusion of out-of-scope funds. The SEC withdrew from the field in 1981 since it could not devote the necessary resources to rehabilitate the program. The IRS, after preparing estimates for 1977, also has withdrawn because of financing problems resulting from an interagency diagreement. Currently, the Labor Department, which published data for 1978 last year based on the Forms 5500 it receives from IRS, has indicated it will continue to do so although there is a considerable lag in publication which it hopes to reduce substantially.

e. Findings

Except for Hospital and Medical Service Plans (SIC 6324) and Pension Funds (SIC 637) insurance carriers annual data appear adequate for most needs. The basic data consist of the uniform reports filed with state insurance commissioners and published in A. M. Best Co. Insurance Reports. ACLI also receives all forms for life insurance companies and edits the basic data for comparability and consistency. The Council publishes annual aggregates in the Life Insurance Fact Book. There do not appear to be equally reliable figures on employment in the industry because of some duplication problems. Although individual company data are published by Best, aggregate financial data for non-life insurance companies are not available.

The casualty surety insurance carriers (Groups 633-636) are concerned about the current trend in industry to use other than regular insurance companies. Large corporations with extensive operations are turning to self-insurance in order to cut the costs. For tax purposes deductions are made as costs are incurred. In order to stabilize tax charges some large corporations have established captive insurance companies in Bermuda and other Caribbean islands. These companies are thus not subject to regulation by the state commissioners. U.S. carriers and their trade associations would very much like to know the extent of their practices.

BEA has indicated that there are improvements needed in health insurance data in connection with use in the National Economic Accounts. As described above some data on premium income and benefits are collected from an indeterminate sample of Blue Cross/Blue Shield

plans by the National Underwriter Company. Balance sheet and income account data are not available publicly on a systematic basis.

Operations of insured pension funds are included in data for life insurance companies. These data are presented satisfactorily by ACLI in their publications Life Insurance Fact Book and Pension Facts. As regards non-insured funds, however, there appears to be a rather unhappy situation in spite of the current availability of an excellent souce of data, the IRS Form 5500. There are problems reflecting item definitions and reporting but there is no reason to think these cannot be solved.

There are many users who have expressed considerable dissatisfaction with the estimates now available, the latest being for 1978 by the Labor Department. These users are quite diverse ranging from the New York Stock Exchange interested in impact on the securities markets to the Bureau of Economic Analysis and the Federal Reserve, inheritors of the SEC's saving study. Others who have expressed strong feelings on the subject are the Employee Benefit Research Institute, the American Council of Life Insurance, and the staff of the House Subcommittee on Telecommunications, Consumer Protection and Finance. Also, the Gross National Product Data Improvement Project Report and the GAO report The Bureau of Economic Analysis Should Lead Efforts to Improve GNP Estimates include strong recommendations in this field.

While Form 5500 should provide good and complete data on pension funds it has the inherent timing problems of tax returns. At the very best data could be available about eighteen months after the close of the tax year. Current quarterly data will still be needed to meet the demands of the National Economic Accounts.

### 5. Insurance Agents, Brokers, and Service (SIC group 64)

Regularly published financial data for this industry are available from Statistics of Income published annually by the Internal Revenue Service. Sole proprietors constitute over 80 percent of the firms and more than two-thirds of the establishments have less than five employees. Statistics on employment and payrolls are published annually by the Census in County Business Patterns and monthly by the Labor Department in Employment and Earnings. This comprises the extent of regular data for Insurance Agents and Brokers. (See Table IV.4.)

There have been some special studies based on small samples by the Life Insurance Managment Research Association for the National Association of Life Underwriters and by Arthur D. Little for the National Assocation of Casualty and Surety Agents. Since these studies were based on small samples most results are presented in terms of percent distributions, ratios and averages. The studies were generally for the purpose of making available profiles of agents and brokers.

a. Findings

The latest SOI data are for tax year 1980 for corporations and 1981 for unincorporated business. While this will meet benchmark needs more current data are required to fill the requirements of the National Economic Accounts.

Agents and brokers are also concerned with changes in the insurance business involving the trend for businesses to self-insure or to use captive carriers not subject to regulation. Another development is the entry into insurance of thrift associations and other companies using direct sales methods instead of agents or brokers. .

6. Holding and Other Investment Offices (SIC group 67)

Statistics of Income provides annual financial data for Major group 67. SOI has re-organized this group to exclude bank holding companies. These are included as a subgroup of banking, for SOI purposes. For corporations, composite balance sheets and income accounts are also shown for regulated investment companies, real estate investment trusts, small business investment companies and other. For partnerships, selected items are shown for investment clubs, common trust funds and other. The latest data available are for 1981 for partnerships and 1980 for corporations.

County Business Patterns for 1981 contains employment and payroll data for Major group 67 as well as for subgroups covering holding companies, investment companies and trusts. (See Table IV.5.) Labor's Employment and Earnings shows data for Major group 67 only but is much more current presenting data for January 1984 in the latest publication.

Table IV. 5 Holding and Other Investment Offices
Major Group 67
Number of Establishments, Employments, Payrolls: 1981

| SIC Group | Description | Number of Establishments (000) | Number of Employees (000) | Annual Payroll ($million) |
|---|---|---|---|---|
| 67 | Holding and investment | 13.2 | 142.6 | 3033 |
| 671 | Holding offices | 3.9 | 69.0 | 1807 |
| 672 | Investment offices | .8 | 7.5 | 164 |
| 673 | Trusts | 4.2 | 38.3 | 534 |
| 679 | Miscellaneous | 4.1 | 26.2 | 505 |

Source: Data from Bureau of Census, County Business Patterns, 1981 (1983:74). Columns do not add to totals due to rounding and inclusion of firms not classified to detailed subgroup.

The greatest amount of data currently available is for mutual funds or open-end management investment companies (SIC group 6722). The Investment Company Institute collects monthly and quarterly data on their assets, sales and redemptions and portfolio transactions. Data are published by ICI in the form of releases with classifications for money market funds, limited-term municipal funds and mutual funds other than short-term. The annual Mutual Fund Fact Book includes additional details on transactions, methods of distribution and institutional purchases. The Institute also conducts weekly telephone surveys on key transaction items.

a. Findings

Except for mutual funds little financial data are available for this group on a current basis. Data published for mutual funds are geared to investors and the specialized financial community. These data are available monthly but may need to be rearranged for comparison with other industry areas.

All management investment companies, both open-end and closed-end, file Form NIR annually with the SEC. This form is essentially a disclosure and information document about the relationships of the company. It contains some financial data but nothing adequate for a statistical study. Annual stockholder reports containing financial data are also filed with SEC but these are not always consistent as to items and definitions.

## D. SUMMARY OF FINDINGS

A number of organizations have expressed concern with the recent trend for companies in finance and insurance to expand into other business activities by means of mergers, acquisitions and diversification. By the same token there are companies outside of finance and insurance which have entered various aspects of the industry. Organizations interested in the impact of operations in secondary and tertiary financial activities include the American Bankers Association, Dun and Bradstreet, the Securities Industry Association, the Federal Reserve and the Bureau of Economic Analysis.

Particularly within the financial services industry we have seen the blurring of lines of demarcation. The concept of this "financial supermarket" encompasses operations in banking, securities and commodity brokerage, insurance of different kinds and real estate. This situation creates difficulties and compromises in any attempt to measure statistically the volume of particular activities.

The finance and insurance area varies widely as to statistical coverage. Some parts are highly regulated and the regulatory agencies produce detailed statistics on a current basis. Banks, savings and loan associations and credit unions fall into this category. The Federal Deposit Insurance Corporation and Federal Reserve Board publish statistics in great detail on a regular schedule of adequate

frequency. This includes coverage of the non-FDIC insured state regulated segment for which reports are received annually from the state commisioners. A similar situation exists for statistical data published by the Federal Home Loan Bank Board for savings and loan associations and for credit unions by the National Credit Union Administration. Although only about two-thirds of non-federally-insured state credit unions are included in the statistics, the NCUA is working on better cooperation with state supvervisors so as to improve coverage.

There are some other areas which, though relatively small, are covered by regulatory agencies. These include organizations of a quasi-governmental nature which are the reserve, rediscount or financing organizations for member financial insitutions. The areas covered comprise the Federal Reserve Banks, the Federal Home Loan Banks, to some extent the so-called corporate credit unions and the Self Regulatory Organizations in the securities industry.

Security brokers and dealers are well regulated and adequate statistics are published. Financial reports are specified and required by the Securities and Exchange Commission. However, the required forms are sent to self-regulatory organizations, the securities exchanges and the National Association of Securities Dealers. Brokers and dealers who are not members of a registered securities exchange must join the NASD. Statistics for the industry are published by the SEC, the NYSE, and the NASD. A serious problem with the security broker dealer information is that of lateness. The self-regulatory organizations file financial reports with the SEC which publishes the data.

Commodity contracts brokers and dealers file quarterly financial statements with the CFTC. However, these data are not tabulated for statistical use. It should be noted that to the extent such brokers are also in the securities business, regular reports are required by SEC regulation.

The insurance industry, both life and non-life carriers, is also highly regulated. However, the regulation and statistical reporting does not involve the federal government. The regulatory agencies are the insurance commissions of the 50 states and the District of Columbia. Standardized reporting forms for the industry are determined by the National Association of Insurance Commissioners. Publication of statistical data is by trade associations and private publishers. A serious data gap exists in the areas of medical service plans and pension funds.

As for other groups in the finance and insurance sector, coverage by trade associations is fairly complete in some areas such as open-end investment companies. By and large the remaining groups are subject to sporadic or incomplete coverage by government agencies or trade associations.

However highly regulated or little regulated, all business organizations are required to file tax returns or financial statements with the Internal Revenue Service. These reports range from tax returns such as 1040, 1120 or 941 to information returns such as 1065 or 5500. The data from these forms are tabulated to greater or lesser degree by the Internal Revenue Service and by some other agencies such

as Census or Labor. There generally is a time lag of two or three years before publication although data are made available to BEA somewhat earlier.

## E. RECOMMENDATIONS[5]

### 1. SIC Revisions

The Office of Managment and Budget is currently with the help of an interagency committee, engaged in developing revisions of the SIC for implementation in 1987. Proposals were developed for a 1982 revision but were not implemented (U.S. Department of Commerce, 1981). This review and evaluation of statistics in finance and insurance reinforces some of those proposals and has indicated the need for some additional recommendations.

a. All of group 611, Rediscounting and Financing Institutions for Credit Agencies other than Banks, should be moved into major group 60, Banking, as an additional four digit group under group 601. (not just FHLB as in the 1982 proposal)

b. Savings and loan associations, group 612, and credit unions, groups 6142, 6143, should be moved from major group 61, Credit Agencies other than Banks to major group 60, Banking. (in 1982 proposals)

c. Separate four-digit groups within major group 63, Insurance, should be set up for reinsurance companies. Currently they are included within the primary insurance groups. (in 1982 proposals)

d. Bank holding companies should be set up as a separate four-digit group within group 671, Holding Offices. The designations "offices of bank holding companies" is preferable to "bank holding offices" (in 1982 proposals).

e. Management Investment Offices - Open-end, group 6722 should be retained as a separate group and perhaps elevated to a three-digit group giving recognition to the growth and development of the mutual fund industry. The remaining components of current group 672, Investment Offices, could be set up as a three-digit group Other Investment Offices. The term "investment offices" should be changed to the more conventional "offices of investment companies" in line with the 1982 proposal on holding companies.

f. Consideration should be given to changing the designation "finance" to "financial services". This has been suggested by trade associations.

### 2. Benchmark Data

a. The five year Economic Census should be extended to include finance and insurance. Basic data items would be revenue, employment

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[5]Recommendations are those of the author and do not necessarily represent the views of the Committee on National Statistics.

and payrolls. While a considerable amount of data are available from adminstrative sources, users have indicated that they would like to have benchmark data such as revenue and employment on a comparable, consistent and independent basis.

b. Users have indicated that in addition to total revenue it is desirable to obtain data on major sources of revenue. This is particularly necessary in finance and insurance where there has been an explosion of activity beyond the primary source of revenue. Users have indicated a need to known the extent of incursions into the various finance areas by firms primarily in other areas. Concern is not only for activity within finance and insurance but also for non-financial companies engaging in financial activities.

3. Current Statistics

a. The Services Annual Survey of the Bureau of the Census should be expanded to include finance and insurance. However, statistics already collected by administrative agencies should be used in certain industries so as to reduce costs and reporting burden.

b. Annual survey data should not be collected anew in the following areas where it appears that currently available administrative data are adequate for the most part:

- Banking (SIC 60)
- Rediscount and Financing Institutions for Credit Agencies other than Banks (SIC 611)
- Savings and Loan Associations (SIC 612)
- Credit Unions (SIC 6142, 6143)
- Security and Commodity Brokers, Dealers, Exchanges, and Services (SIC 62)
- Insurance carriers (SIC 631, 6321, 633-639)
- Management Investment Offices, Open-end (SIC 6722)

c. In the case of the Commodity Contracts Brokers and Dealers (SIC 622) included above, reports are filed with the Commodity Futures Trading Commission but are not aggregated. A statistical agency such as Census, with the support of OMB, should explore with CFTC the possibility of tabulating data from the report forms.

d. While data are collected and published by the Securities and Exchange Commission for Security Brokers and Dealers (SIC 621) and for Management Investment Offices, Open-end (SIC 6722) they have several deficiencies. Only certain data are made available for specialized securities industry purposes and data that are published are usually late. Census and OMB should explore with SEC the possibility of having tabulations made of key data on a more current basis.

e. The Office of Management and Budget should take the initiative to assure that data for noninsured pension funds from tax Form 5500 are tabulated regularly, accurately and expedituously so that the demand for these data can be met. An interagency committee should be set up for this purpose and should include representatives of Labor, IRS, and

Census. If it is not possible for Labor and IRS to agree on implementation of a regular program then it might be up to Census to be an active participant in any working arrangement.

f. In order to meet demands for data that are more current than is possible with Form 5500, information from a small stratified sample of non-insured pension funds using an abbreviated questionnaire should be collected quarterly by Census. Estimates should be benchmarked annually to data based on Form 5500 tabulations.

g. Annual survey data should be collected from all other industry groups in finance and insurance. There is particular need for the following:

- (1) Personal and business credit institutions (614, 615) excluding Credit Unions (6142-6143). Federal Reserve has found it necessary to reduce data collection in this field.
- (2) Mortgage Bankers and Brokers (616) Only trade association data showing percent distributions and averages for a small sample are available.
- (3) Hospital and Medical Service Plans (6324)

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## APPENDIX A

## SIC CODES FOR TRANSPORTATION, COMMUNICATION, AND FINANCE AND INSURANCE

**40 RAILROAD TRANSPORTATION**
- **401 Railroads**
  - 4011 Railroads, line-haul operating
  - 4013 Switching and terminal establishments
- **404 Railway Express Service**
  - 4041 Railway express service

**41 LOCAL AND SUBURBAN TRANSIT AND INTERURBAN HIGHWAY PASSENGER TRANSPORTATION**
- **411 Local and Suburban Passenger Transportation**
  - 4111 Local and suburban transit
  - 4119 Local passenger transportation, not elsewhere classified
- **412 Taxicabs**
  - 4121 Taxicabs
- **413 Intercity and Rural Highway Passenger Transportation**
  - 4131 Intercity and rural highway passenger transportation
- **414 Passenger Transportation Charter Service**
  - 4141 Local passenger transportation charter service
  - 4142 Passenger transportation charter service, except local
- **415 School Buses**
  - 4151 School buses
- **417 Terminal and Service Facilities for Motor Vehicle Passenger Transportation**
  - 4171 Terminal and joint terminal maintenance facilities for motor vehicle passenger transportation
  - 4172 Maintenance and service facilities for motor vehicle passenger transportation

**42 MOTOR FREIGHT TRANSPORTATION AND WAREHOUSING**
- **421 Trucking, Local and Long Distance**
  - 4212 Local trucking without storage
  - 4213 Trucking, except local
  - 4214 Local trucking with storage
- **422 Public Warehousing**
  - 4221 Farm product warehousing and storage
  - 4222 Refrigerated warehousing
  - 4224 Household goods warehousing and storage
  - 4225 General warehousing and storage
  - 4226 Special warehousing and storage, not elsewhere classified
- **423 Terminal and Joint Terminal Maintenance Facilities for Motor Freight Transportation**
  - 4231 Terminal and joint terminal maintenance facilities for motor freight transportation

**44 WATER TRANSPORTATION**
- **441 Deep Sea Foreign Transportation**
  - 4411 Deep sea foreign transportation
- **442 Deep Sea Domestic Transportation**
  - 4421 Transportation to and between noncontiguous territories
  - 4422 Coastwise transportation
  - 4423 Intercoastal transportation
- **443 Great Lakes-St. Lawrence Seaway Transportation**
  - 4431 Great Lakes-St. Lawrence Seaway Transportation
- **444 Transportation on Rivers and Canals**
  - 4441 Transportation on rivers and canals
- **445 Local Water Transportation**
  - 4452 Ferries
  - 4453 Lighterage
  - 4454 Towing and tugboat service
  - 4459 Local water transportation, not elsewhere classified
- **446 Services Incidental to Water Transportation**
  - 4463 Marine cargo handling
  - 4464 Canal operation
  - 4469 Water transportation services, not elsewhere classified

**45 TRANSPORTATION BY AIR**

**451 Air Transportation, Certificated Carriers**

4511 Air transportation, certificated carriers

**452 Air Transportation, Noncertificated Carriers**

4521 Air transportation, noncertificated carriers

**458 Fixed Facilities and Services Related to Air Transportation**

4582 Airports and flying fields

4583 Airport terminal services

**46 PIPE LINES, EXCEPT NATURAL GAS**

**461 Pipe Lines, Except Natural Gas**

4612 Crude petroleum pipe lines

4613 Refined petroleum pipe lines

4619 Pipe lines, not elsewhere classified

**47 TRANSPORTATION SERVICES**

**471 Freight Forwarding**

4712 Freight forwarding

**472 Arrangement of Transportation**

4722 Arrangement of passenger transportation

4723 Arrangement of transportation of freight and cargo

**474 Rental of Railroad Cars**

4742 Rental of railroad cars with care of lading

4743 Rental of railroad cars without care of lading

**478 Miscellaneous Services Incidental to Transportation**

4782 Inspection and weighing services connected with transportation

4783 Packing and crating

4784 Fixed facilities for handling motor vehicle transportation, not elsewhere classified

4789 Services incidental to transportation, not elsewhere classified

**48 COMMUNICATION**

**481 Telephone Communication (Wire or Radio)**

4811 Telephone communication (wire or radio)

**482 Telegraph Communication (Wire or Radio)**

4821 Telegraph communication (wire or radio)

**483 Radio and Television Broadcasting**

4832 Radio broadcasting

4833 Television broadcasting

**489 Communication Services, Not Elsewhere Classified**

4899 Communication services, not elsewhere classified

**60 BANKING**

**601 Federal Reserve Banks**

6011 Federal Reserve banks

**602 Commercial and Stock Savings Banks**

6022 State banks, members of the Federal Reserve System

6023 State banks, not members of the Federal Reserve System, insured by the Federal Deposit Insurance Corporation

6024 State banks, not members of the Federal Reserve System, not insured by the Federal Deposit Insurance Corporation

6025 National banks, members of the Federal Reserve System

6026 National banks, not members of the Federal Reserve System, insured by the Federal Deposit Insurance Corporation

6027 National banks, not insured by the Federal Deposit Insurance Corporation

6028 Unincorporated private banks, not insured by the Federal Deposit Insurance Corporation

**603 Mutual Savings Banks**

6032 Mutual savings banks, members of the Federal Reserve System

6033 Mutual savings banks, not members of the Federal Reserve System, insured by the Federal Deposit Insurance Corporation

6034 Mutual savings banks, not insured by the Federal Deposit Insurance Corporation

**604 Trust Companies Not Engaged in Deposit Banking**

6042 State nondeposit trust companies, members of the Federal Reserve System, insured and not insured

6044 State nondeposit trust companies, not insured by the Federal Deposit Insurance Corporation

**605 Establishments Performing Functions Closely Related to Banking**

6052 Foreign exchange establishments

6054 Safe deposit companies

6055 Clearinghouse associations

6056 Corporations for banking abroad

6059 Establishments not elsewhere classified

**61 CREDIT AGENCIES OTHER THAN BANKS**

**611 Rediscount and Financing Institutions for Credit Agencies Other Than Banks**

6112 Rediscount and financing institutions for credit agencies (other than banks) not primarily associated with agricultural credit

6113 Rediscount and financing institutions for credit agencies (other than banks) primarily associated with agricultural credit

**612 Savings and Loan Associations**

6122 Federal savings and loan associations

6123 State savings and loan associations, insured by the Federal Savings and Loan Insurance Corporation

6124 State savings and loan associations, not insured, members of the Federal Home Loan Bank System

6125 State savings and loan associations, not insured, not members of the Federal Home Loan Bank System

**613 Agricultural Credit Institutions**

6131 Agricultural credit institutions

**614 Personal Credit Institutions**

6142 Federal credit unions

6143 State credit unions

6144 Industrial loan companies not engaged in deposit banking

6145 Licensed small loan lenders

6146 Installment sales finance companies

6149 Miscellaneous personal credit institutions

**615 Business Credit Institutions**

6153 Short-term business credit institutions

6159 Miscellaneous business credit institutions

**616 Mortgage Bankers and Brokers**

6162 Mortgage bankers and loan correspondents

6163 Loan brokers

**62 SECURITY AND COMMODITY BROKERS, DEALERS, EXCHANGES, AND SERVICES**

**621 Security Brokers, Dealers, and Flotation Companies**

6211 Security brokers, dealers, and flotation companies

**622 Commodity Contracts Brokers and Dealers**

6221 Commodity contracts brokers and dealers

**623 Security and Commodity Exchanges**

6231 Security and commodity exchanges

**628 Services Allied With the Exchange of Securities or Commodities**

6281 Services allied with the exchange of securities or commodities

**63 INSURANCE**

**631 Life Insurance**

6311 Life insurance

**632 Accident and Health Insurance and Medical Service Plans**

6321 Accident and health insurance

6324 Hospital and medical service plans

**633 Fire, Marine, and Casualty Insurance**

6331 Fire, marine, and casualty insurance

**635 Surety Insurance**

6351 Surety insurance

**636 Title Insurance**

6361 Title insurance

**637 Pension, Health, and Welfare Funds**

6371 Pension, health, and welfare funds

**639 Insurance Carriers, Not Elsewhere Classified**

6399 Insurance carriers, not elsewhere classified

**64 INSURANCE AGENTS, BROKERS, AND SERVICE**

**641 Insurance Agents, Brokers, and Service**

6411 Insurance agents, brokers, and service

**67 HOLDING AND OTHER INVESTMENT OFFICES**

**671 Holding Offices**

6711 Holding offices

**672 Investment Offices**

6722 Management investment offices, open-end

6723 Management investment offices, closed-end

6724 Unit investment trusts

6725 Face-amount certificate offices

**673 Trusts**

6732 Educational, religious, and charitable trusts

6733 Trusts, except educational, religious, and charitable

**679 Miscellaneous Investing**

6792 Oil royalty traders

6793 Commodity traders

6794 Patent owners and lessors

6799 Investors, not elsewhere classified

## APPENDIX B

## OFFICIALS AND ORGANIZATIONS CONSULTED

During the study the authors visited and called a considerable number of orgnizations, both private and public, to identify data supply and needs. This appendix lists the organizations and people they dealt with and is in four parts: Section I applies generally to all three industry sectors; Section II covers transportation; Section III, communication; and Section IV, finance and insurance. The list includes government organizations, trade associations, and others.

### SECTION I. GENERAL

| Organization | Official or Group |
|---|---|
| U.S. Department of Commerce: | |
| Bureau of the Census, | Associate Director, Charles Waite |
| Office of the Associate | James Aanestad |
| Director for Economic Fields | Roger Bugenhagen |
| | John Fowler |
| | Howard Hamilton |
| Bureau of Economic Analysis, | Associate Director, Robert Parker |
| Office of the Associate | Gerald Donahoe |
| Director for National | Eugene Roberts |
| Economic Accounts | Obie Whichard |
| | Paula Young |
| Bureau of Industrial Economics | John Cremeans |
| International Trade Administration | David McMeans |
| U.S. Department of Labor: | John Tucker |
| Bureau of Labor Statistics, | Carol Utter |
| Office of Employment and | |
| Unemployment Statistics | |

| | |
|---|---|
| Federal Reserve Board | Stanley Sigel<br>Stephen Taylor<br>Staff members |
| Office of Management and Budget | Norman Frumkin<br>Pamela Powell-Hill |
| Office of Senator Daniel K. Inouye | Eric Lee, Legislative Assistant |
| Coalition of Service Industries | Data Collection and Statistical Improvement Task Force |
| Office of Technology Assessment | Henry Kelley |
| Federal Statistics Users Conference | John Aiken |

SECTION II. TRANSPORTATION

| Government Agency | Official or Group |
|---|---|
| Federal Energy Regulatory Agency | Tariffs office |
| Interstate Commerce Commission | Director, Bureau of Accounts<br>Chief, Accounting and Reporting |
| Civil Aeronautics Board | Chief, Information Management Division |
| U.S. Department of Agriculture | Chief, Transportation Director |
| U.S. Army Corps of Engineers | Institute for Water Resources<br>Waterborne Commerce Statistics Center |
| Maritime Administration | Office of Port and Intermodal Development<br>Office of Domestic Shipping<br>Office of Market Development |
| Urban Mass Transit Administration | Office of Budget and Policy<br>Office of Methods and Support |
| St. Laurence Seaway Development Corporation | Office of Plans and Policy Development |
| U.S. Department of Transportation: Office of the Secretary | Office of Industry Policy<br>Office of Economics |

| Research and Special Projects Administration | Center for Transportation Information |
|---|---|
| Federal Rail Administration | Office of Policy |
| National Highway Safety Administration | Office of Research and Development |
| Federal Highway Administration | Office of Highway Planning<br>Office of Program and Policy Planning |

| Trade Association | Official or Group |
|---|---|
| Air Transport Association | Sr. Vice President, Economic and Finance |
| American Trucking Association | Executive Director<br>Director of Reseach and Policy Analysis<br>Director of Economics and Tax |
| American Automobile Association | C. Brady |
| American Association of State Highway and Transportation Officials | Executive Director |
| American Business Associatin | President<br>Vice President, Research |
| American Public Transportation Association | President<br>L. Pham |
| American Society of Travel Agents | President<br>Vice President, Government Affairs<br>Vice President, Industrial Affairs |
| American Waterway Operators | E. Green |
| American Association of Port Authorities | President<br>Director, Planning Commission |
| American Short Line Association | President<br>T. Dorsey |
| Association of American Railroads | Vice President Economics and Finance<br>Director, Economics<br>J. Dale |

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|---|---|
| Association of Oil Pipelines | Executive Director<br>Director of Research |
| Motor Vehicle Manufacturers Association | President<br>Policy Affairs Division |
| International Bridge Tunnel and and Turnpike Association | Executive Director |
| Highway Users Federation | Executive Director<br>M. Reed |
| National School Transport Association | President |
| National Association of State Directors of Pupil Transportation | President |
| National Waterways Conference | President |
| International Taxicab Association | President |
| U.S. Travel Data Center | Director |
| Travel and Tourism Government Affairs Policy Council | Executive Director |
| Transportation Policy Associates | President |

SECTION III. COMMUNICATION

| Government Agency | Official or Group |
|---|---|
| Federal Communications Commission | Steve Duffy<br>Alan Feldman<br>Lou Feldner<br>Ronald Lepkowski<br>Pat Shipley<br>Stephen Whitehill<br>Library Staff |
| U.S. Department of Commerce:<br>Bureau of Economic Analysis<br>International Trade Administration | Clinton McCully<br>Thomas Corless<br>Theodore Nelson<br>E. Macdonald Nyhen<br>William Sullivan |
| U.S. Department of Agriculture:<br>Rural Electrification Administration | Iris Adams |

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|---|---|
| U.S. House of Representatives<br>Subcommittee on Telecommunications, Consumer Protection, and Finance | Howard Symons |

| Trade Associations | Official or Group |
|---|---|
| Electronic Industries Association, Marketing Services Department | Horace Johnson |
| Motion Picture Export Association of America | Steven Madoff |
| National Association of Broadcasters, Broadcast Management Department | Janice Orman |
| National Cable TV Association | Donald Koran<br>Ann Pagano |
| National Telephone Cooperative Association | Andrea Blake |
| North American Telecommunications Association | David Keeler |
| Telocater Network of America | Ann Director |
| United States Telephone Association | Courtney Snyder |
| Other | |
| Advertising Council | Staff |
| Arbitron Ratings Co. | James Alvey |
| Arlen Communications | Gary Arlen |
| Broadcasting Publications | Circulation Department |
| Federal Communications Commission | Richard Gabel (Retired) |
| George Washington University, Center for Telecommunications Study | Christopher Sterling |
| International Resources Development | Kenneth Bosomworth |
| Paul Kagan & Associates | Staff |
| National Research Council, Board on Telecommunications and Computer Applications | Richard Marsten |
| A.C. Nielsen | Kit Vanderbilt |
| Television Digest | James Vandepatte |
| Titsch Communications | Brian Finch |

SECTION IV: FINANCE AND INSURANCE

| Government Agency | Official or Group |
|---|---|
| Commodity Futures Trading Commission | Paula Tissoni<br>Monte Reese<br>Kate Hathaway |

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|---|---|
| U.S. Department of Commerce | |
| Bureau of Census | James Lowerre |
| International Trade Administration | Wray Candilis |
| | Thomas Fenwick |
| U.S. Department of Health and Human Services | |
| Health Care Financing Administration | Ross Arnett |
| U.S. Department of Housing and Urban Development | Robert Van Order |
| | Ernest Wilcox |
| U.S. Department of Labor | |
| Labor Management Services Administration | Walter Kolodrubetz |
| Federal Deposit Insurance Corporation | P. Konstas |
| | John Wilhere |
| Federal Home Loan Bank Board | Richard Pickering |
| Federal Reserve Board | Evelyn Hurley |
| Internal Revenue Service | Fritz Scheuren |
| | Robert Wilson |
| | Dan Rosa |
| | Nicholas Greenia |
| | Arthur Gianelos |
| National Credit Union Administration | Jerry Courson |
| | Vincent Olive |
| | Richard Galik |
| Securities and Exchange Commission | Terry M. Chuppe |
| | Charles W. Bryson |
| Small Business Administration | David Hirschberg |
| | John Werner |
| U.S. House of Representatives | Jane D'Arista |
| Subcommittee on Telecommunications, Consumer Protection and Finance | Marty Cochran |

Trade Associations

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|---|---|
| American Bankers Association | P. Michael Laub |
| | Charles Hoffman |
| | Per Lange |
| American Council of Life Insurance | Robert Chiappetta |
| | Sue Stemnock |
| American Financial Services Association | Thomas A. Durkin |
| Blue Cross/Blue Shield Association | Arlene Flamb |
| | Stanley Koziol |
| Employee Benefit Research Institute | Emily Andrews |
| Investment Company Institute | Alfred P. Johnson |
| | Anne Anderson |
| Insurance Information Institute | Sean F. Mooney |
| Life Insurance Marketing and Research Association | Elizabeth J. O'Connor |
| Mortgage Bankers Association | Warren Matthews |

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|---|---|
| National Association of Casualty and Surety Agents | Bruce Wallace |
| National Association of Life Underwriters | Staff |
| National Association of Real Estate Investment Trusts | Staff |
| National Association of Securities Dealers | Gene L. Finn |
| National Association of Small Business Investment Companies | Staff |
| National Council of Savings Institutions | John A. Tucillo<br>Shirley West |
| New York Stock Exchange | Stan West<br>Thomas Murphy |
| Securities Industry Association | Jeffrey M. Schaefer |

Other

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|---|---|
| Dun and Bradstreet | Joseph Duncan |
| Federal National Mortage Association | Arnold Diamond |