Introducing the North American Industry Classification System

John B. Murphy

In 1997, the Office of Management and Budget (OMB) announced the adoption of a new standardized system for classifying industries—the North American Industry Classification System (NAICS).[1] NAICS will replace the Standard Industrial Classification (SIC) system and thus represents one of the most profound changes for government statistical programs since the 1930s.[2] Although the current system has been revised and updated periodically, the basic structure has remained intact since its inception. The NAICS revision is much broader—many more industries are identified under the new system, and they are organized on the basis of their production activities (supply) alone, as opposed to the mixture of supply and demand characteristics used to classify industries under the SIC. NAICS also seeks to standardize the classification systems of the three partners to the North American Free Trade Agreement (NAFTA), the United States, Canada, and Mexico.

Industrial classification systems provide the structure for collecting and aggregating economic data, as well as for analyzing, presenting, and disseminating such data. Economic changes that have taken place in the last several decades—such as the movement toward a more services-oriented economy, the increased use of computers and other new technology, and globalization—have precipitated the need for a new system of industrial classification. Twenty years ago, for example, there was no need for statistics

John Murphy is a supervisory economist in the Division of Occupational and Administrative Statistics, Bureau of Labor Statistics.

on communications resellers, database publishers, Internet service providers, or electronic publishers. NAICS identifies these and other emerging economic activities that do not easily fit into the current SIC structure.

Although converting to NAICS will provide many advantages, the transition to the new system also will create some difficulties for data collectors and users. Breaks will occur, for example, in many time series that are based on the SIC system. This report provides a brief overview of NAICS—covering its background, development, principles, structure, and implementation—and also discusses some of the issues that data collectors and users must face as more and more government and private statistical programs convert to the new system.

Background

Over the course of its economic history, the United States has gone from a largely agrarian economy in its earliest period, to one based more on manufacturing following the Industrial Revolution, to the current, more services-oriented economy of the late 20th century. To better accommodate the many new manufacturing industries and other changes that had occurred in the early 1900s, the Standard Industrial Classification (SIC) system was developed in the 1930s. The SIC system provided a consistent framework for assigning descriptive industry codes to each establishment, as well as for the subsequent collection, tabulation, and analysis of economic statistics by government agencies and private research firms.

Since its inception, the SIC system has been revised and updated periodically, about every 10 or 15 years. The most recent revision took place in 1987, when a number of new high technology industries were identified, especially within computer-related services. Categories for computer and software stores, video tape

rental stores, and plastic bottle manufacturers, for example, were introduced for the first time in 1987.

The 1987 revision left 75 percent of the industries unchanged, however, and the basic structure of the system was left largely intact. Also, while the SIC system adequately reflects the manufacturing sector of the economy, it provides insufficient detail for the services sector. Newly developed industries in information services, health care provision, and even high-tech manufacturing cannot be adequately studied under the current SIC system because they are not separately identified at the most basic level of aggregation, the industry level.

Another shortcoming of the U.S. SIC system was that it was not strictly comparable with its counterparts in Canada and Mexico. To address this problem, representatives from all three Nations worked cooperatively to develop NAICS. The new system makes it possible to create comparable economic statistics from the three NAFTA trading partners.

NAICS development

The development of NAICS began at the International Conference on the Classification of Economic Activities held in Williamsburg, Virginia, in 1991. In 1992, OMB established the Economic Classification Policy Committee (ECPC)—chaired by the Bureau of Economic Analysis, and with representatives from the Bureau of Labor Statistics and the Bureau of the Census—to study alternate economic concepts (supply versus demand) by which to categorize industries and to recommend changes to the SIC system. In 1994, the ECPC chartered six subject-matter subcommittees and a Coordinating Committee to propose the structure of NAICS. The subject-matter subcommittees were charged with reviewing current industries and evaluating proposals for new NAICS industries

Exhibit 1.	NAICS structure and SIC structure compared	

NAICS	SIC
Sector *(two-digit)*	Division *(letter)*
Subsector *(three-digit)*	Major group *(two-digit)*
Industry group *(four-digit)*	Industry group *(three-digit)*
NAICS international industry *(five-digit)*	Industry *(four-digit)*
National industry *(six-digit)*	

NAICS sectors		SIC divisions	
11	Agriculture, forestry, fishing and hunting	A.	Agriculture, forestry, and fishing
21	Mining	B.	Mining
22	Utilities	C.	Construction
23	Construction	D.	Manufacturing
31-33	Manufacturing	E.	Transportation, communications, electric, gas, and sanitary services
42	Wholesale trade	F.	Wholesale trade
44-45	Retail trade	G.	Retail trade
48-49	Transportation and warehousing	H.	Finance, insurance, and real estate
51	Information	I.	Services
52	Finance and insurance	J.	Public administration
53	Real estate and rental and leasing	K.	Nonclassifiable establishments
54	Professional, scientific and technical services		
55	Management of companies and enterprises		
56	Administrative and support, waste management and remediation services		
61	Educational services		
62	Health care and social assistance		
71	Arts, entertainment, and recreation		
72	Accommodations and food services		
81	Other services (except public administration)		
92	Public administration		
99	Unclassified establishments		

similar in the eyes of customers or users of the product or service. Others, however, were based more on supply groupings. NAICS is the first industrial classification system used in the United States to employ a unified economic concept to define industries. Under the new system, industries are classified on the basis of their production or supply function—establishments using similar raw material inputs, capital equipment, and labor are classified in the same industry. This approach creates more homogeneous categories that are better suited for economic analysis.

Four primary concepts were used in the development of NAICS. First, a production-oriented conceptual framework was used—as described earlier, establishments engaged in similar production activities are classified together. Second, new categories in NAICS focus on emerging industries, services in general, and industries that produce advanced technology. Third, as much as possible, continuity with the former system was maintained to avoid breaks in time series. However, because of differences in the classification systems formerly used by the United States, Canada, and Mexico, many changes were needed to make them comparable. Thus, some breaks in time series were unavoidable. Finally, the developers of NAICS strove for compatibility with the two-digit level of the International Standard Industrial Classification of All Economic Activities.[4]

on the basis of production or supply-based activities, as opposed to the former system that used a mixture of production and marketing (demand-based) activities as criteria for categorization.

To notify the public and evaluate their response, the proposed changes were published in a series of *Federal Register* notices from 1994 through 1996. In these notices, the ECPC solicited the help and advice of U.S. Government agencies, trade associations, data producers and users, researchers, academics, and the general public. The subject-matter sub-

committees negotiated the structure of NAICS with their counterparts in Canada and Mexico during 1995 and 1996. The adoption of the new classification system was announced by OMB in a notice published in the *Federal Register* of April 9, 1997.[3]

Principles of NAICS

The former SIC system used a mixture of concepts to categorize economic activity. Some categories were based on demand groupings, activities that were

Structure of NAICS

While NAICS uses a hierarchical structure much like the existing SIC, there are a number of important structural differences. For example, NAICS uses a six-digit classification code which allows greater flexibility in the coding structure. The SIC system was limited to only four digits. Another important difference is that NAICS uses the first two digits of the six-digit code to designate the highest level of aggregation, with 21 such two-digit industry sectors under the new system. Under the SIC system, by contrast,

there were only 11 divisions, designated by letters of the alphabet. (A tabular comparison of terminology and a full list of NAICS sectors and SIC divisions are shown in exhibit 1.)

The third digit of a NAICS code represents the subsector. Using the information sector (sector 51) as an example, there are four separate subsectors contained in the sector: publishing industries, motion picture and sound recording industries, broadcasting and telecommunications, and information and data processing services. The forth digit of the NAICS code represents the industry group level. Under the publishing industries subsector, for example, there are two industry groups: newspaper, periodical, book, and database publishing; and software publishing.

The fifth digit in the NAICS code represents the international industry level. Continuing with the same example, there are 28 international-level industries in the information sector. In most cases, there will be comparability between the classifications of the United States, Canada, and Mexico at the five-digit level. The sixth digit in the NAICS code designates national detail. This allows the flexibility to create more detailed statistics for the industries that hold particular importance in each country. Of the 28 international industries within the information sector, 6 have been broken out to create important national detail for the United States. (Exhibit 2 shows the entire NAICS structure for the information sector.)

When the national detail is the same in more than one country, the same six-digit code is used in each country's national version of NAICS. The six-digit system allows for greater data comparability between the three countries than a four- or five-digit system. There had been significant differences in the former classification systems used by the United States, Canada, and Mexico. NAICS creates a standard system to be used by each of the NAFTA trading partners.

As shown in exhibit 3, there is no relationship between the numeric industry

Exhibit 2.	**Complete NAICS structure for information sector**
NAICS code	**Industry**
51	Information
511	Publishing industries
5111	Newspaper, periodical, book and database publishers
51111	Newspaper publishers
51112	Periodical publishers
51113	Book publishers
51114	Database and directory publishers
51119	Other publishers
511191	Greeting card publishers
511192	All other publishers
5112	Software publishers
51121	Software publishers
512	Motion picture and sound recording industries
5121	Motion picture and video industries
51211	Motion picture and video production
51212	Motion picture and video distribution
51213	Motion picture and video exhibition
512131	Motion picture theaters, except drive-Ins
512319	Drive-in motion picture theaters
51219	Post production and other motion picture and video industries
512191	Teleproduction and other post-production services
512199	Other motion picture industries
5122	Sound recording industries
51221	Record production
51222	Integrated record production/distribution
51223	Music publishers
51224	Sound recording studios
51229	Other sound recording industries
513	Broadcasting and telecommunications
5131	Radio and television broadcasting
51311	Radio broadcasting
513111	Radio networks
513112	Radio stations
51312	Television broadcasting
5132	Cable networks and program distribution
51321	Cable networks
51322	Cable and other program distribution
5133	Telecommunications
51331	Wired telecommunications carriers
51332	Wireless telecommunications carriers (except satellite)
513321	Paging
513322	Cellular and other wireless telecommunications
51333	Telecommunications resellers
51334	Satellite telecommunications
51339	Other telecommunications
514	Information services and data processing services
5141	Information services
51411	News syndicates
51412	Libraries and archives
51419	Other information services
514191	Online information services
514199	All other information services
5142	Data processing services
51421	Data processing services

NAICS code	Industry	SIC code	Industry
	Exhibit 3. Comparison of the information industry under NAICS and SIC		
51	Information		No comparable grouping
511	Publishing industries		No comparable grouping
5111	Newspaper, book, periodical, and database publishers		No comparable grouping
51111	Newspaper publishers	2711	Newspapers: publishing, or publishing and printing
51112	Periodical publishers	2721	Periodicals: publishing, or publishing and printing
51113	Book publishers	2731	Books: publishing, or publishing and printing (part)
51114	Database and directory publishers	2741	Miscellaneous publishing (part)
51119	Other publishers		
511191	Greeting card publishers	2771	Greeting cards (part)
511199	All other publishers	2741	Miscellaneous publishing (part)
5112	Software publishers		
51121	Software publishers	7372	Prepackaged software (part)

codes used in the SIC and those used in NAICS. Also, the increase to a six-digit code does not necessarily mean that there is a corresponding increase in the level of detail for national industries. Under the SIC system, for example, there were 1,004 detailed industries, while under NAICS there are 1,170. In the exhibit, NAICS industries 51111 and 51112 match one-to-one with 1987 SIC industries 2711 and 2721, respectively. All other publishing industries were broken out of larger industries in the SIC, creating more industry-level detail. In some cases, however, two or more SIC industries were combined to form one NAICS industry, reducing the number of detailed industries in that category.

The NAICS manual form at

The U.S. NAICS manual, *North American Industry Classification System— United States, 1997*, scheduled to be released in late July 1998, will differ substantially from its predecessor, *The Standard Industrial Classification Manual,* *1987*. The new manual, for example, includes a narrative definition of each industry, a list of illustrative economic activities used as criteria for classification (index items), and a bulleted list of cross references for similar activities classified under other industry categories. Industries will only include illustrative examples and cross references when necessary. Another useful change from the SIC system is that users will now be able to search for cross references in the same place for each definition. (See Exhibit 4 for an illustration of the new format, using NAICS industry 511210, Software publishers, as an example.)

NAICS implementation

NAICS will require a significant effort to implement. Large universe surveys such as the BLS Covered Employment and Wages (ES-202) program[5] and the Census Bureau's Economic Census[6] will have to assign new industry codes to the more than 7 million business establishments in the United States. In addition,

during the transition period, SIC codes also will need to be assigned to create linkages between statistics classified under the two classification systems.

The ES-202 program will implement NAICS over a 3-year period. Beginning in 1998, establishments classified in SIC industries that were not altered by the revision will be assigned NAICS codes by computer. In 1999, establishments with 50 or more employees will be assigned NAICS codes during the annual refile survey. (Currently assigned SIC codes for these establishments will be verified at that time as well.) In addition, one-half of all establishments with fewer than 50 employees that are currently classified in SIC industries that were split into two or more parts will be surveyed and assigned NAICS codes. This phased-in approach will allow BLS to calculate estimates of the effects of NAICS by as early as the end of fiscal year 1999. In 2000, all remaining uncoded establishments will be assigned NAICS codes.

The timing of implementation for surveys such as the ES-202 and the Economic Census is critical to many other statistical programs that draw their samples from the universe files maintained for these comprehensive surveys. Sample-based programs cannot convert to NAICS until the universe frames on which they are based have been revised. Programs that use data from the universe and from sample programs will be the last to implement NAICS. The Producer Price Index (PPI), for example, uses BLS universe data for its sampling frame, data from the Economic Census for its structure weights, and other data produced by the Department of Commerce for its net output calculations. As a result, the conversion of the PPI to NAICS cannot be fully implemented until these programs have converted to the new system.

BLS currently is training staff persons at the regional offices and cooperating State agencies—those who will actually assign NAICS codes to establishments for the ES-202 program. Training for the regional office staff began in June 1998,

511210 Software Publishers

This industry comprises establishments primarily engaged in computer software publishing or publishing and reproduction. Establishments in this industry carry out operations necessary for producing and distributing computer software, such as designing, providing documentation, assisting in installation, and providing support services to software purchasers. These establishments may design and publish or publish only.

Illustrative examples:

> Applications software publishing
> Database software publishing
> Game software publishing
> Spreadsheet software publishing
> Utility software publishing

Cross references.   Establishments primarily engaged in—

- Reselling packaged software—are classified in Sector 42, Wholesale Trade or Sector 44-45, Retail Trade;

- Designing software to meet the needs of specific users—are classified in U.S. Industry 541511, Custom Computer Programming Services; and

- Mass duplication of software—are classified in U.S. Industry 334611, Software Reproducing.

and the regional office personnel will train the State coders within their regions throughout the summer and early fall. The training materials for BLS staff were jointly developed by the Office of Employment and Unemployment Statistics and the Office of Field Operations.

NAICS and data users

Although the implementation of NAICS undoubtedly will benefit most data users, the transition period may be difficult. There will be breaks in many time series, for example, that are based on the SIC system. The availability of time series data is essential for trend analysis, economic forecasting, and seasonal adjustment. In many cases, however, the NAICS changes are so significant that reconstructing historical data based on the

new system will be difficult. For example, the old SIC system had no category for telecommunications resellers, and hence very little data were available for this industry. Similarly, at the higher levels of aggregation—such as the manufacturing or services divisions—many economic activities formerly classified in one division are now classified in another.

Another issue for data users involves the transition period, when some data will be based on the SIC and other data will be based on NAICS. As previously noted, most government and other statistical organizations will implement NAICS over a multiyear period. The resulting lack of comparability will create challenges for economic analysis. In sum, the NAICS revision presents a tradeoff between a new and improved classification system, which will help provide data

for many new industries that formerly were not classified separately, and the inevitable time series breaks that occur whenever major revisions to classification systems or statistical programs are implemented.

THE LONG TERM BENEFITS OF NAICS will far outweigh the costs of implementing the new system. Specific economic data for many emerging industries soon will be available. Ultimately, NAICS will help researchers, policymakers, and other analysts to better understand the U.S. and global economies and the activities that generate economic growth.   □

Footnotes

[1] See *Administration introduces new industry classification system* (Executive Office of the President, Office of Management and Budget), April 8, 1997. For more detailed information, see the NAICS page (http://www.census.gov/epcd/www/naics.html) at the official Bureau of the Census website (http://www.census.gov/), accessed May 15, 1998. The new manual, *North American Industry Classification System—United States, 1997*, is currently scheduled to be released in late July 1998 and may be ordered from the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161.

[2] From 1938 to 1945, classification was based on the *Social Security Board Classification Manual*. In 1945, the basis was changed to the *Standard Industrial Classification Manual*, which has been used, with several revisions, ever since. See BLS *Handbook of Methods*, Bulletin 2490 (Bureau of Labor Statistics, April 1997), p. 44, for a brief explanation and history of the current classification system.

[3] See the NAICS page at the Bureau of the Census website for copies of the *Federal Register* notices and other background on the new classification system.

[4] See *International Standard Industrial Classification of All Economic Activities*, 3rd rev. ed. (New York, United Nations Publications, 1990).

[5] For more information on the Covered Employment and Wages program, see BLS *Handbook of Methods*, Bulletin 2490 (Bureau of Labor Statistics, April 1997), pp. 42–47.

[6] For more information on this survey, see the Economic Census page (http://www.census.gov/epcd/www/econ97.html) within the Bureau of the Census website.