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NAICS: Canada's New Industry Coding System

Introduction

All statistics are the result of combining micro level information to produce summary measures. The summaries sacrifice some of the detail, but almost always leave a clearer picture of trends and relationships than is possible from the raw data alone. Classification systems are among the most basic and also among the most important tools for handling detailed information.

Like yardsticks, classification systems should be stable over time. However, classifications must eventually be changed to account for changes in the real world. A revised classification system can improve our understanding in the present and into the future, but to the extent that it breaks with the past, it can lead to difficulty in analyzing trends over time.

This note discusses the North American Industry Classification System (NAICS), which will replace the 1980 Standard Industrial Classification (SIC80) for reporting industry statistics in Canada. The structure of the old and new systems is explained and compared, and some industries that are completely new are revealed. The impact of NAICS on the special industry definitions for emerging industries is explored, and the schedule for production of NAICS based statistics is considered. Finally, sources of concordances and further information are identified.

The Basic Structure of SIC80 and NAICS

Both SIC80 and NAICS use hierarchical numbering systems. That is, the first digits refer to a high level of aggregation, and subsequent digits add more and more detail. For example, the SIC80 code "27" refers to Paper and Allied Products Industries, while "271" is Pulp and Paper, "272" is Asphalt Roofing (much of which is paper based), "273" is Paper Box and Bag Industries, etc.

Comparison of the SIC80 and NAICS Hierarchy and Coding System

Level	Hierarchy		Coding Structure	
	SIC80	NAICS	NAICS	SIC80
1	Division	Sector	2 digits*	Letter**
2	Major Group	Subsector	3 digits	2 digits
3	Industry Group	Industry Group	4 digits	3 digits
4	Industry Class	Industry	5 digits	4 digits
5	N/A	National Industry	6 digits	N/A

(*) Usually a 2-digit number defines a NAICS sector. However, a set of 2-digit numbers was needed to define Manufacturing (31-33), Retail Trade (44-45), and Transportation and Warehousing (48-49)

(**) In the 1980 SIC, alphabetical characters are used to identify Divisions. All of the levels below the division level are represented by numerical characters, where the number of digits in the SIC code equals the level of the hierarchy (for example, a two-digit code equals the second level of the 1980 SIC hierarchy). However, in NAICS, the level of the hierarchy does not reflect the number of digits in the numeric code. For example, the second level of the NAICS hierarchy is represented by a three-digit numeric code.

Source: Statistics Canada,
www.statcan.ca/english/Subjects/Standard/new1.htm

SIC80 is nominally a four-digit code, while NAICS uses six digits. While NAICS does provide for more detail, the number of digits

is not a strict indication of this. This is because the first "level" in NAICS uses up two digits, while SIC80 has an implicit letter code (not one of the four digits) that helps to describe its first level. It's not as complicated as it might sound. The preceding chart shows the levels of both coding systems, and the corresponding digits that define them.

The chart shows that NAICS supports five levels, as opposed to four for SIC80. NAICS was developed in conjunction with the United States and Mexico (NAFTA partners), and is partly consistent in its use in these countries. The original intention was for the code to be identical in each country for the first four levels. The fifth level, the "National Industry" was to be a detail level that would be used differently in each jurisdiction. In practice, however, complete agreement could only be reached at the Sector level. Consequently, the common coding system (known as NAICS, whereas the Canadian version is technically NAICS-Canada) shares only 461 of the 734 classes at the Industry level. In fact, only 70 of 99 Subsectors in NAICS-Canada can be found in the common version of NAICS.

A Closer Look at NAICS

NAICS is based on a production oriented, or supply based conceptual framework. Establishments are grouped into industries according to similarity in processes used to produce goods and services. Other industry classification systems, including SIC80, used a mixture of similarity of outputs, inputs, processes, skills, and technology in defining industries. NAICS, on the other hand, is said to be based on a pure production process concept. Notwithstanding this, the NAICS categories most often contain the name of an output commodity, such as "31181 – Bread and Bakery Product Manufacturing". This is to be expected, since of course outputs and production processes are closely linked. NAICS, however, must never be confused with a commodity classification system, where groupings are more

likely to be based on detailed characteristics of the products, such as would distinguish "breads" from "rolls".

The twenty two-digit NAICS "sectors" range from "11" Agriculture, Forestry, Fishing, and Hunting, to "91", Public Administration. Looking back at the "bread" example, sectors "31" through "33" refer to Manufacturing. (This is one of the cases where more than one two-digit code is needed to describe a sector.) Below this is the subsector "311" Food Manufacturing, and the Industry Group "3118" Bakeries and Tortilla Manufacturing. "3118" has four Industries in it, including "31181" – Bread and Bakery Product Manufacturing as mentioned above.

NAICS also provides for a further level of detail, the "National Industry". In the case of 31181 Bread and Bakery Product Manufacturing, there are the further industries "311811" and "311814", which are *Retail Bakeries and Commercial Bakeries and Frozen Bakery Product Manufacturing*, respectively.

NAICS Increases Services Detail

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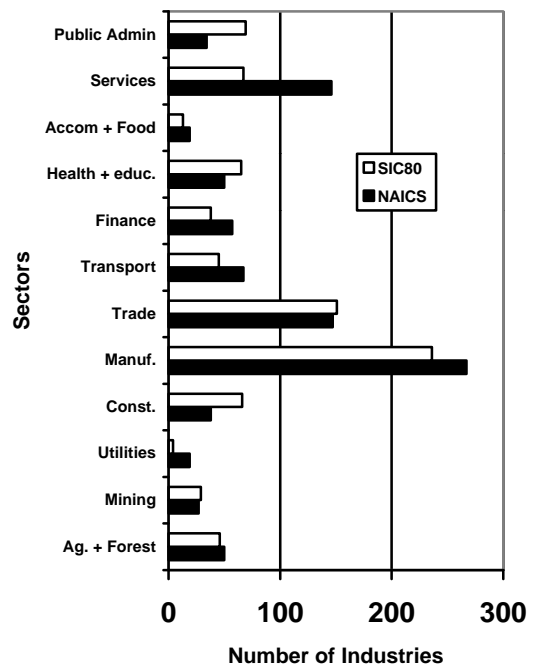
More Detail from NAICS

At its finest level of detail NAICS has 921 Industries or National Industries. This compares to the 860 Industry Classes that were found in SIC80. The additional detail can easily be seen where "other" categories in SIC80 have received specific National Industries in NAICS. For example, the SIC80 Industry "2819" Other Commercial Printing Industries includes under NAICS separate categories for Commercial Screen Printing, Quick Printing, Digital Printing, and finally Other Printing. The breakdown is not completely straightforward, however, as Commercial Screen Printing also includes elements from various SIC80 clothing industries that employ screen printing. This is a concordance problem. More information on concordances is provided below.

The increased detail in NAICS is distributed throughout the economy, with certain sectors receiving more attention than others. The greatest increases have come in the Services sector, including both business and personal services. Despite these increases, it remains the case that the greatest number of industries (267) is found in the manufacturing sector.

Defining Emerging Industries with NAICS

Industries such as Tourism, High Technology, the Environmental Industries, Value-Added, etc. do not figure directly in basic industry classifications. In some cases this may be because the industries refer to clusters of firms that are only now emerging as cohesive groups with well recognized policy and economic importance. In general, however, the clusters are seen as natural groupings of standard industries. For example, tourists may use the products and services of accommodation and food establishments, transportation, entertainment, etc., but these components retain their status as independent industries.

The result is that special or emerging industries receive definitions that are framed in terms of the standard industry classifica-

tions. These definitions are subject to debate, and can vary depending on the purposes of particular studies.

BC Stats, for example, has operational definitions of Tourism, High Technology, and Value-Added, and produces sectoral statistics on this basis. While the definitions are careful selections of SIC's framed at the four-digit level when possible, they may still not be as precise as desired. The problem arises because the finest (four-digit) level of the SIC still groups firms with differing characteristics. Using an example from High Technology, we find the inclusion of SIC 3994, Musical Instruments and Sound Recording. While this SIC may include firms involved in sophisticated electronics, it can also include traditional makers of wooden instruments.

With the advent of NAICS, the precision of the special sector definitions can be affected in a number of ways. In the simplest case, increased detail will allow undesired portions of an SIC to be removed from a sector definition. Similarly, portions of SICs that formerly could not be included because they shared a classification with many firms that were not relevant might now be separately covered, and therefore available for inclusion. On the other hand, new NAICS codes might include new combinations of firms that are mixed in terms of their relevance to a particular sector definition. In these cases, new decisions are required as to whether the NAICS code will be in or out of a sector definition.

Looking again at the High Technology example, we find that the current sector definition involves some thirty, four-digit SIC80 Industry Classes. These classes point towards seventy-nine NAICS six-digit Industries. That is, it is possible that the firms covered by the thirty classes could be coded to any of seventy-nine classes under the new system. A preliminary assessment of the seventy-nine classes shows that some appear to be fairly obvious High Technology industries Others are mixed, and will require further research to make an "in" or "out" decision. The remainder are

clearly not High Technology industries, and represent the industries that NAICS is permitting us to discard from the definition. The breakdown of these "good", "mixed", and "discarded" NAICS codes is shown in the following table:

Counts of NAICS codes suitable for defining the High Technology Sector

	Good	Mixed	Discard	Total
Manufacturing	11	11	37	**59**
Service	11	7	2	**20**
Total	**22**	**18**	**39**	**79**

The forty "good" and "mixed" NAICS codes are an increase over the thirty used under SIC80. Together with the large number (39) of "discards", there is preliminary reason to believe that the High Technology definition will be significantly strengthened under NAICS.

Much of the additional detail was deliberate on the part of the classification designers. NAICS industries such as 33411 Computer and Peripheral Equipment Manufacturing, 514191 On-Line Information Services, and many others, are specific responses to changes in the industrial landscape since the development of SIC80.

Concordances

SIC80 and NAICS are sufficiently different that there is no simple way to convert one to the other. Only 220 classes at the lowest level of detail remain the same in the two classifications. Though some SIC80 classed were simply split or combined, very often particular activities from different SIC80 industries were removed and recombined into new NAICS industries.

Concordance is difficult even at the Sector level. Here NAICS contains six sectors with no direct equivalent in SIC80. These include Sector 51 Information and Cultural Industries, and Sector 54 Professional, Scientific and Technical Services, as well as 55 Management of Companies and Enterprises.

Concordance tables for SIC80 to NAICS, are available from Statistics Canada. Text versions of these can be found in the Statistics Canada NAICS manual, Catalogue No. 12-501-XPE and on the web, at www.statcan.ca/english/Subjects/Standards/index.htm. A CD-ROM version, offering the concordance in database format, is also available.

NAICS-based Statistics

With the publication of the NAICS manual in March of this year, many businesses and other organizations have begun the conversion process for their internal operations. Others have written NAICS into database systems currently under development.

Classification conversion is never an easy process, and this is definitely the case with converting statistical systems. For Statistics Canada, this involves recoding all the establishments on the Business Register, which is the basis for sample surveys. Survey methodologies must also be revamped to provide reliable estimates for the new industries. Finally, historical estimates must be developed for the new industries, to put the new figures in context. Production on the SIC80 basis must also continue for a while to provide overlap.

Early plans called for much of the new data to be available for 1998, but this target has been slipping. Dates as late as 2002 are now being discussed, although implementation schedules differ for various surveys.

The staggered introduction of NAICS based statistics will cause difficulties for those who rely on a range of information about industry sectors. For example, employment information for a new NAICS sector may become available before revenue or GDP information. As a result, each user may need to make a decision as to when enough NAICS based statistics are being produced to warrant a switch to the new system.

More Information

The NAICS Association, at www.naics.com styles itself the most complete source of NAICS and SIC information and products. However, the information is based on NAICS-US. The Statistics Canada web site mentioned above contains a wealth of NAICS information, as does the CD-ROM. Statistics Canada plans to release a "coding assistant" program shortly, that will facilitate the coding of business establishments to NAICS, given a description of their activities.

Information on the schedule for release of NAICS based statistics will be available from BC Stats over the coming months.