



# Instituto Nacional de Estadística y Geografía (INEGI)

## 37<sup>th</sup> Meeting of the Voorburg Group on Service Statistics

### Session: Industry presentations – ISIC 85 Education

#### (Turnover/output statistics)

Prepared by:  
Ramón Bravo Zepeda  
Luis Centeno Martínez

The views expressed in this paper are responsibility of the author and do not necessarily represent the position of the INEGI.

Hosted by: Statistics Canada  
Ottawa, Canada  
virtual meeting  
September 13th, 15th, 20th and 22nd, 2022

<b>Content</b>	<b>Page</b>
<b>1. Descriptions and characteristics of the industry</b>	<b>2</b>
1.1 Definition of service	
1.2 Market conditions and constrains	
1.3 Specific characteristics of the industry	
<b>2. Turnover/output measurement</b>	<b>9</b>
2.1 General framework	
2.2 Measurement issues	
2.3 Description of methods for measurement	
<b>3. Evaluation of measurement</b>	<b>11</b>
3.1 Sample Scheme	
3.2 Statistical Precision Indicators	
<b>4. Conclusions</b>	<b>15</b>

**Education**  
**ISIC 85 Section P**  
**Sector 61 Educational Services, 2013 NAICS Mexico**

**1. Descriptions and characteristics of the industry**

1.1. Definition of service

The Educational Services comprises establishments that provide instruction and training in a wide variety of subjects. This instruction and training are provided by specialized establishments, such as schools, colleges, universities, and training centers. These establishments may be privately owned and operated for profit or not for profit, or they may be publicly owned and operated. They may also offer food and/or accommodation services to their students.

Educational services are usually delivered by teachers or instructors that explain, tell, demonstrate, supervise, and direct learning. Instruction is imparted in diverse settings, such as educational institutions, the workplace, or the home, and through diverse means, such as correspondence, television, the Internet, or other electronic and distance-learning methods. The training provided by these establishments may include the use of simulators and simulation methods. It can be adapted to the needs of the students, for example sign language can replace verbal language for teaching students with hearing impairments. All industries in the Sector share this commonality of process, namely, labor inputs of instructors with the requisite subject matter expertise and teaching ability.

According to the North American Industrial Classification System, NAICS Mexico 2013<sup>1</sup>, the Sector is structured according to level and type of educational services.

Educational Services coverage by NAICS code

NAICS Mexico 2013 Code	Description
61	Educational Services (the Sector as a Whole)
611111	Pre-primary Education Schools, private sector
611121	Primary Education Schools, private sector
611131	General Secondary Education Schools, private sector
611151	Terminal Technical Middle Education Schools, private sector
611161	Higher Middle Education Schools, private sector
611171	Schools that combine multiple education levels, private sector
611211	Higher Technical Education Schools, private sector
6113	Higher Education Schools
6114	Business, Computer and Management Training Schools
6115	Trade Schools
6116	Other Educational Services

<sup>1</sup> Source: <https://www.inegi.org.mx/app/biblioteca/ficha.html?upc=702825051693>

## Equivalence between NAICS Mexico 2013 and ISIC Rev. 4 for Educational Services

NAICS Mexico 2013		ISIC Rev. 4	
Code	Description	Code	Description
61	Educational Services (the Sector as a Whole)	85	Education
611111	Pre-primary Education Schools, private sector	8510	Pre-primary and primary education
611121	Primary Education Schools, private sector		
611131	General Secondary Education Schools, private sector	8521	General secondary education
611151	Terminal Technical Middle Education Schools, private sector	8522	Technical and vocational secondary education
611161	Higher Middle Education Schools, private sector		
611211	Higher Technical Education Schools, private sector	8530	Higher education
6113	Higher Education Schools		
6114	Business, Computer and Management Training Schools	8549	Other education n.e.c.
6115	Trade Schools		
611171	Schools that combine multiple education levels, private sector		
6116	Other Educational Services	8542	Cultural education

As noted, NAICS Mexico 2013 is a little more detailed at activity class level than the ISIC Rev. 4.

### 1.2 Market conditions and constrains

Based on the 2019 Economic Census<sup>2</sup> showed a considerable increase for Educational Services in Establishments with 14%, Personnel 8% and a growth of 44% of Income compared to the 2013 Economic Census, in contrast, at a more disaggregated level by class of activity, we can observe a significant decrease within 5 years for Primary Education Schools, Higher Middle Education Schools, and Business Schools in number of Establishment, Personnel and amount of Income for Business, Computer and Management Training Schools (6114).

<sup>2</sup> Source: <https://www.inegi.org.mx/app/saic/default.html>

At national level, Educational Services represent only 1.1% of the Establishment total, employing 817,536 people equivalent to 3% of the total of personnel of the country.

### Key indicators of Educational Services

NAICS Mexico 2013 code	Description	Establishments		Personnel		Income (Millions of Mx pesos)	
		2013	2018	2013	2018	2013	2018
61	Educational Services (the Sector as a Whole)	46,882	53,524	759,871	817,536	139,973	201,443
611111	Pre-primary Education Schools, private sector	10,415	10,877	81,611	92,238	6,929	10,994
611121	Primary Education Schools, private sector	3,190	2,939	58,130	47,571	6,996	8,215
611131	General Secondary Education Schools, private sector	896	793	17,779	16,119	2,459	3,273
611151	Terminal Technical Middle Education Schools, private sector	175	330	2,483	2,851	265	427
611161	Higher Middle Education Schools, private sector	2,551	2,304	52,694	42,797	7,774	9,420
611171	Schools that combine multiple education levels, private sector	5,548	6,983	204,788	249,021	34,478	56,070
611211	Higher Technical Education Schools, private sector	250	313	3,068	4,702	449	1,065
6113	Higher Education Schools	3,174	4,104	237,628	252,108	68,304	94,963
6114	Business, Computer and Management Training Schools	1,440	1,017	11,718	8,447	2,560	1,939
6115	Trade Schools	2,818	2,978	13,232	13,225	1,282	1,945
6116	Other Educational Services	15,611	20,219	67,178	80,394	7,277	11,864

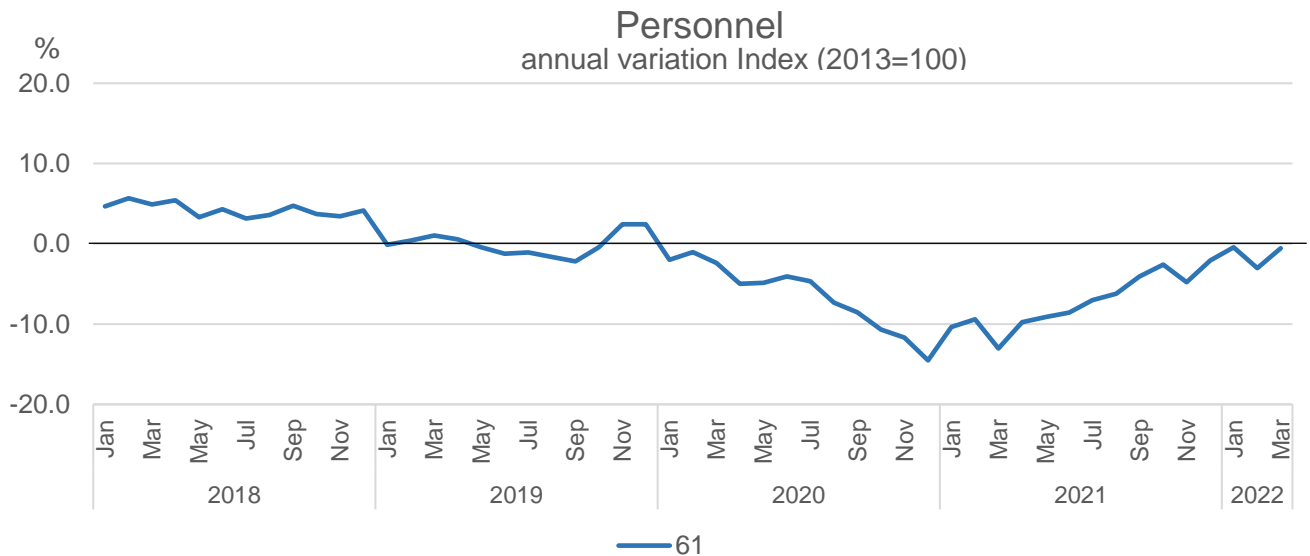
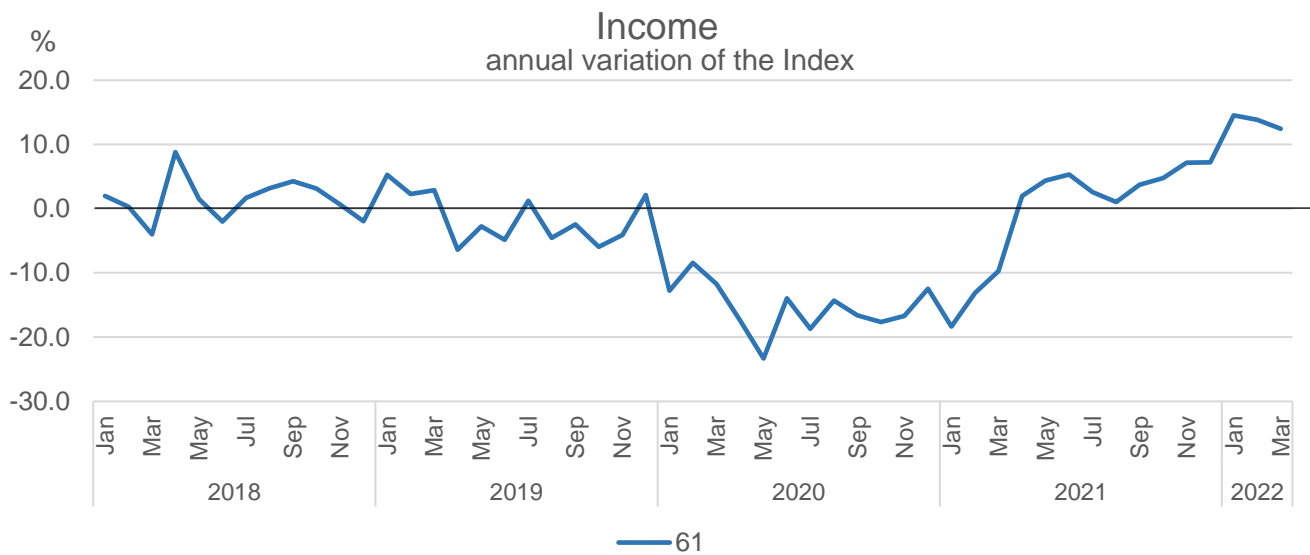
### Five-year variation in key indicators of Educational Services (%)

NAICS Mexico 2013 code	Description	Establishments	Personnel	Income
		2013/2018		
61	Educational Services (the Sector as a Whole)	14.2	7.6	43.9
611111	Pre-primary Education Schools, private sector	4.4	13.0	58.7
611121	Primary Education Schools, private sector	-7.9	-18.2	17.4
611131	General Secondary Education Schools, private sector	-11.5	-9.3	33.1
611151	Terminal Technical Middle Education Schools, private sector	88.6	14.8	61.0
611161	Higher Middle Education Schools, private sector	-9.7	-18.8	21.2
611171	Schools that combine multiple education levels, private sector	25.9	21.6	62.6
611211	Higher Technical Education Schools, private sector	25.2	53.3	137.2
6113	Higher Education Schools	29.3	6.1	39.0
6114	Business, Computer and Management Training Schools	-29.4	-27.9	-24.3
6115	Trade Schools	5.7	-0.1	51.7
6116	Other Educational Services	29.5	19.7	63.0

As mentioned previously, within the classes, there is a significant change in structure, for example in Higher Technical Education Schools (High Schools), the Income showed an 137.2% increase, while the number of companies for the same activity grew by 25%.

## Monthly Services Survey (MSS)

For more recent indicators that measure the evolution of activity in the short term, through the Monthly Services Survey<sup>3</sup>, show the following trend, both for Income and Personnel for Educational Services as a whole.



<sup>3</sup> Source: <https://www.inegi.org.mx/programas/ems/2013/>



Income and Personnel for Educational Services show a sharp drop due to SARS-COV2 virus pandemic in the first quarter of 2020, which continues throughout the rest of the year and the beginning of 2021, however, we continue to see a negative annual variation in Personnel until now.

### 1.3 Specific characteristics of the industry

The Educational Services industry have a strong bond between higher education and economic growth, however, according to the National Association of Universities and Professional Schools (ANUIES by its acronym in Spanish) the impact of higher education in economic growth has not managed to have the expected positive effects on Mexico's economic growth, because the productivity structure has been concentrated in service Sectors, which do not generate economic push forces.

To increase the quantity and quality of human capital is necessary but not enough for achieving economic growth, since other socioeconomic and institutional aspects are involved.

Public institutions of higher education and research must be strengthened as a strategy to increase the competitiveness of productivity structure and achieve a bigger economic expansion in the long term, as long as it has the support of a productive Sector that not only uses capital created, but what it does with efficiency wages and other incentives so that continues to increase and reproduce in a virtuous spiral.

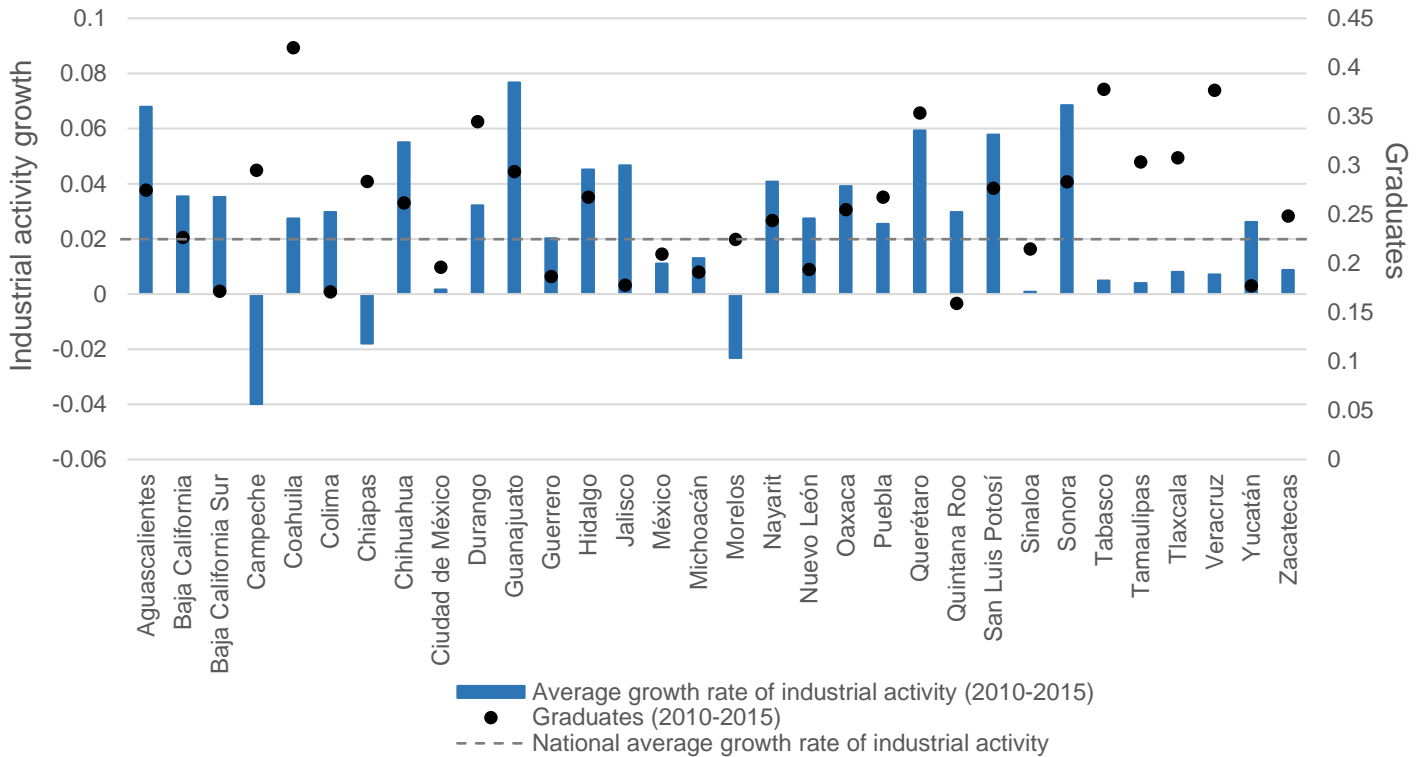
If higher education is to be related to economic growth, a great number of graduates in areas like Science, Technology, Engineering, and Mathematics (STEM careers) should be promoted to generate a job offer with higher levels of technological and scientific specialization that positively impacts the country's industrial Sectors.

At the national level, the proportion of graduates of these careers regarding to the total, does not reach 25%. In China, nearly 50% of higher education enrollment is concentrated in these study disciplines.

According to the ANUIES, the proportion of graduates of these careers in Mexico is still low to aspire to achieve the expected impacts on labor productivity, wages, and economic growth<sup>4</sup>.

---

<sup>4</sup> Source: ANUIES, 2022. <http://resu.anuies.mx/ojs/index.php/resu/article/view/2024>



## 2. – Turnover/output measurement

### 2.1 General framework

The general framework is integrated by the Statistical Business Register of Mexico (RENEM by its acronym in Spanish).

### 2.2 Measurement issues

In terms of basic statistics for production, the backbone of the Mexico’s statistical system, are the Economic Census, the richest and most complete statistical acquis that gives account of the Mexican economy at a given time; they take place every five years and generate very detailed information with various economic and geographical cuts.

On the other hand, the National Economic Surveys measure for monthly and annually, the evolution and economic structure of the main activities of construction, manufacturing, trade, and private non-financial services. This system of surveys, has high standards of statistical design and sampling methods.

And finally, there are the statistics from the administrative records, mainly from taxes revenues.

### 2.3 Description of methods for measurement

The main concept for measure output is the **Income**, however the questionnaires applied monthly and annual bases, contain other variables related, as number of people employed, according to the work-contract and sex, salaries, and operating expenses, among others.

Data on Income are collected in a monthly and annual basis; output data are used by the SNA for calculations of GDP and other short-term macroeconomic indicators.

Additionally, based on the basic statistics, monthly weighted indexes (base 2013=100) are calculated for Income, personnel employed, expenses and salaries, as well as a quarterly productivity index at Sector level.

Indexes reflect growth in real terms, by which monetary values are deflated with SPPI at Sector level. The measurement of production in the short term and annual bases, is generated from a survey system, the sampling framework of which is the Statistical Business Register of Mexico, and sampling methods are selected based on economic activity, number of companies, and value added, among others. Sampling scheme can be probabilistic or non-probabilistic.

Surveys have monthly and annual base; the design variable is total revenues (Income), and the collection method can be online, by direct interview (face to face) or electronic questionnaire.

Particularly for *Educational Services* activities:

Sample framework: integrated by **50 803 Establishments**

Sample size: **4 279 Establishments.**

Sample design: **Probabilistic and Non-probabilistic.**

Coverage for non-probabilistic design: **Design variable (Income).**

### 3. Evaluation of the measurement

#### 3.1 Sample scheme

Due to the very particular characteristics of each domain, there are different criteria for defining the sampling scheme, forming 5 groups, 3 of them with a non-Probabilistic design and 2 with a Probabilistic design<sup>5</sup>.

The Non-Probabilistic design procedure consists in ordering all the units from the highest to lowest of the total income variable, within each domain and then, those with the highest percentage participation were selected up to reach the coverage established for each domain.

A domain is understood to be the levels within the SCIAN classifier, which can be the Sector, sub-sector, branch (industry groups), sub-branch (industries) and class of activity (detail industries).

Two groups with a non-Probabilistic design have been formed, which are defined below:

1. Group 1. High coverage. Corresponding to domains with a coverage higher or equal to 80%.
2. Group 2. Moderate coverage. Corresponding to domains with a coverage between 60% and 80%.

Educational Service non-Probabilistic domains	Coverage (Group 1. High coverage)
Higher Education Schools 6113	85.4% (Income design variable. Mar-2022)

As for the Probabilistic design the sampling units with this design have a known probability and they group together to form strata; ten probabilistic domains are under this design.

<sup>5</sup> Source: <https://www.inegi.org.mx/app/biblioteca/ficha.html?upc=702825198398>

## 3.2 Statistical Precision Indicators

The broadcasting of statistical products is always complemented by statistical precision indicators.

Statistical precision indicators are statistics instruments that allows to determine the levels of reliability of statistics generated from surveys with a **probabilistic design**.

Among the statistical precision indicators for the estimates obtained from surveys with a probabilistic design the following are calculated:

- Standard error
- Confidence interval
- Coefficient of variation
  - If the coefficient of variation is between 0% and 20% the estimate is considered high, that is, it has a high degree of reliability.
  - If the coefficient of variation is higher or equal than 20% but lower than 30% the estimate is considered moderate, that is, it has a reasonable degree of reliability.
  - If the coefficient of variation is higher or equal than 30% such estimate shall be considered low. A low precision requires a cautious use of the estimate in which the causes of high variability must be analyzed, and other indicators of precision and reliability should be considered, such as the confidence interval.

Statistical Precision Indicators. National data. Monthly Services Survey

Educational Service Probabilistic design	Statistical Precision Indicators	As March 2022
Pre-primary Education Schools, private sector 611111	Estimate	70.9
	Coefficient of Variation (%)	10.7
	Standard Error	7.6
	Lower range limit	56.1
	Upper range limit	85.8
Primary Education Schools, private sector 611121	Estimate	64.8
	Coefficient of Variation (%)	8.6
	Standard Error	5.6
	Lower range limit	53.9
	Upper range limit	75.7
General Secondary Education Schools, private sector 611131	Estimate	95.9
	Coefficient of Variation (%)	7.1
	Standard Error	6.8
	Lower range limit	82.6
	Upper range limit	109.1
Terminal Technical Middle Education Schools, private sector 611151	Estimate	47.8
	Coefficient of Variation (%)	10.2
	Standard Error	4.9
	Lower range limit	38.3
	Upper range limit	57.3
Higher Middle Education Schools, private sector 611161	Estimate	67.4
	Coefficient of Variation (%)	10.1
	Standard Error	6.8
	Lower range limit	54.1
	Upper range limit	80.7
Schools that combine multiple education levels, public sector 611171	Estimate	87.9
	Coefficient of Variation (%)	5.5
	Standard Error	4.8
	Lower range limit	78.5
	Upper range limit	97.4

Educational Service Probabilistic design	Statistical Precision Indicators	As March 2022
Higher Technical Education Schools, private sector 611211	Estimate	72.1
	Coefficient of Variation (%)	9.0
	Standard Error	6.5
	Lower range limit	59.4
	Upper range limit	84.9
Business, Computer and Management Training Schools 6114	Estimate	175.1
	Coefficient of Variation (%)	8.9
	Standard Error	15.5
	Lower range limit	144.6
	Upper range limit	205.5
Trade Schools 6115	Estimate	65.6
	Coefficient of Variation (%)	10.6
	Standard Error	7.0
	Lower range limit	52.0
	Upper range limit	79.2
Other Educational Services 6116	Estimate	55.6
	Coefficient of Variation (%)	12.1
	Standard Error	6.7
	Lower range limit	42.5
	Upper range limit	68.8

## 4. - Conclusions

With data from the Ministry of Public Education, 88.6% of the school population attends public schools, while 11.4% corresponds to the private sector.

Private institutions of basic to higher education reported that derived from the COVID-19 pandemic and online courses, just over 10 percent of enrollment, equivalent to 398 thousand students, left their studies unfinished or did not enroll.

The above is just one example of the importance of having statistical information that allows for a correct decision-making in terms of evaluation or implementation of public policies, in that sense, it is relevant to integrate into the design of surveys new methods for the compilation of data, such as the exploitation of administrative records and / or agreements with associations of educational institutions, likewise, continue updating the frameworks and samples, since the private education sector in Mexico is very dynamic.

For more information about Educational Services in Mexico please visit:

<https://www.inegi.org.mx/programas/ems/2013/>