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Chapter

First Draft

ECONOMIC DEVELOPMENT PLAN FOR PUERTO RICO 2015 EDUCATIONAL SERVICES SECTOR

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EDUCATIONAL SERVICES SECTOR DEVELOPMENT PLAN (FINAL DRAFT OF SECTION 1)

I. INTRODUCTION

Through its Economic and Social Planning Program (ESPP) the Puerto Rico Planning Board (PRPB) has prepared a Strategic Plan for the Educational Services Sector in Puerto Rico. PRPB focuses its efforts on preparing a multi-sector strategic plan and intends to establish courses of action in different sectors in order to improve economic activity in Puerto Rico. The approach of this section will be the educational services sector. This sector has the code 61 in the North American Industrial Classification System (NAICS 61).

For the educational services sector the PRPB proposes the following vision and mission:

Vision: Guide the development of Puerto Rico, establishing a rational, balanced and sensitive plan to promote a process of sustainable economic and social development through improvements in the educational services sector.

Mission: Prepare an educational services sector development plan which is realistic and executable, and which allows monitor the sector and its contribution to the economy of Puerto Rico.

Goal: Achieve an increase in terms of the Gross Domestic Product (GDP) in current dollars and employment for the educational services sector.

Objective: For this educational services sector development plan the objectives are proposed in short (0-3 years), medium (3-7 years) and long terms (7-20 years). For the GDP in current dollars, the objective is to maintain a stable rate of growth in the short and medium terms. In the long term, the objective is to improve the rate of growth at 3 percent. In terms of employees, the objective is to achieve an average rate of growth of 2 to 3 percent for the sector. It is important to mention that it is expected a reduction in the elementary and secondary schools subsector as a consequence of demographic changes. Other subsectors are expected to compensate this employment reduction.

A. Goal of this Plan

The goal of the Plan for the Educational Services Sector in Puerto Rico is to evaluate and describe the historical development of the sector. Analyze the key variables of the sector, and conduct an analysis of strengths, weaknesses, opportunities, and threats (SWOT). This will allow stakeholders (i.e., government, private sector, investors, among others) to have a guide for setting customized policies and procedures for educational services sector.

B. Sources of Information

The ESPP uses multiple information sources, among them, official statistics published by government agencies as such, the Planning Board (Governor Economic Report and other publications). In addition, statistics of number of paid employees, annual payroll, and total establishment statistics from the County Business Patterns of the US Census Bureau (Puerto Rico, United States and selected states),¹ student statistics from the Department of Education, and international statistics for comparison from the Organisation for Economic Co-operation, and Development (OECD), and International Labor Organization (ILO) for comparison purposes. Other sources of information are the previous Development Plans for Puerto Rico and the studies of children and teenagers of the Demographic Challenge Law of Puerto Rico.

¹ The selection of the states it's arbitrary.

C. Organization

The Economic Development Plan for the Educational Services Sector consists of five sections. These five sections focus on identifying the state of the sector, the development of strategies to boost the sector, and creation of mechanisms to implement changes effectively and efficiently. The five sections are detailed below:

- Section 1: Diagnostic Assessment.
- Section 2: SWOT Analysis
- Section 3: Mission, Goals and Objectives.
- Section 4: Specific Strategies.
- Section 5: Assessment Mechanisms.

Section 1 of the Economic Development Plan consists of a diagnostic assessment of the industry or sector. The Scriven's Logic was used for this diagnostic assessment. The steps for this diagnostic are: (1) select the performance criteria, (2) establish expected standards of performance, (3) identify and report the tools or metrics of measurement for each criteria, (4) compare the performance, based on the instrument or metric standards, and (5) synthesize the results and make judgment.

In Section 2 a SWOT analysis of the sector was conducted. The SWOT analysis identifies four components: (1) strengths, (2) opportunities, (3) weaknesses, and (4) threats. For these components, a matrix will be developed in order to present a macro view of the status of this sector.

In Section 3, the mission, goals and objectives for the sector are defined. The mission presents a statement that provides a philosophical perspective that makes explicit the contribution of this component to the economy. The goal or goals are the expected results in the sector or subsector according to the mission. The objectives are more specific and measurable results that must be achieved in the different terms (i.e., short, medium, and long). The objectives will adhere to the SMART properties (Specific, Measurable, Attainable, Relevant, and Timely).

In Section 4 the specific strategies or necessary activities are specified in order to achieve the objectives for this sector. The strategies for the sector are designed for short term (0-3 years), medium term (3 to 7 years) and long term (7 to 20 years). These strategies must have the input of different stakeholders. For each strategy the related costs and expected benefits are evaluated. These strategies must be supported by theory and empirical evidence.

Section 5 contains specific metrics for formative and summative assessment of each of the specific strategies proposed through the three periods (i.e., short term, medium term, and long term). This section identifies a specific government agency responsible for this assessment.

II. Puerto Rico Diagnosis

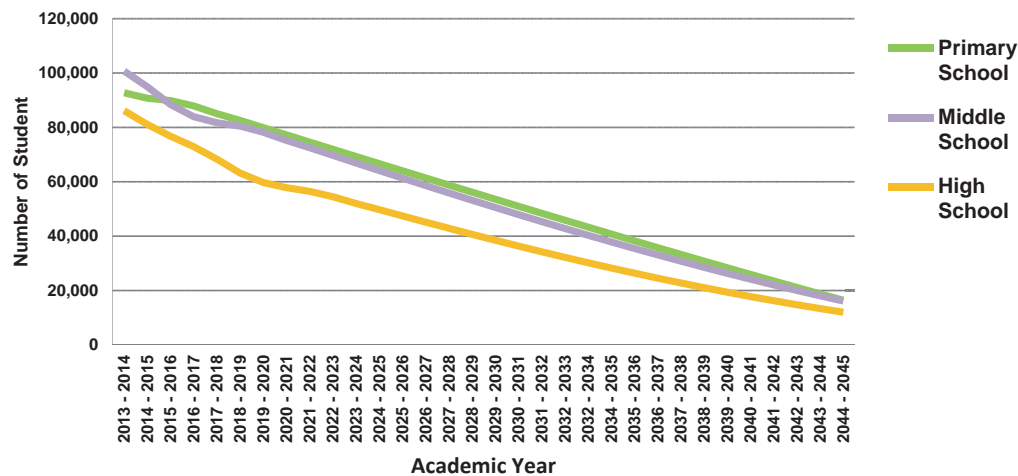
A. Overview of the Educational Services Sector in the Economy of Puerto Rico

The data of the educational services sector for the years 2006 and 2011 reflects an increase in the number of paid employees in the annual payroll, annual payroll per employee, and the number of establishments in the year 2011. However, the Gross Domestic Product (GDP) shows a decrease in this period. The subsector with the highest share in the GDP of the educational services sector for the year 2012 was the junior colleges subsector, representing a 45.4 percent of the total sector. For the year 2012, the elementary and secondary school was the sub-sector with more establishments, representing 40.5 percentage of total education sector. The second

sub-sector with more establishments was other schools and instructions representing 16 percent followed by educational support services. The sub-sectors with highest number of employees and annual payroll were the colleges, universities, and professional schools; and elementary and secondary schools. From 2005 to 2012 the colleges, universities, and professional services sub-sector have an annual payroll per employees slightly above the average. In 2012, the Business Schools and Computer and Management Training subsector had the highest annual payroll per employee according to the historical data from 2005 to 2012.

A recent study part of the Demographic Challenge Law forecasted a reduction in enrollment of students in elementary and secondary schools in Puerto Rico for the next 25 years (Figure 1 -Quintana 2014). This decline is mostly attributed to population changes, such as reduction in fertility and increases in emigration. According to the Department of Education of Puerto Rico (DEPR), students enrolled in the public system have been descending since the past decade (Table 1).

**Figure 1: Primary, Middle, and High School Enrollment Forecast
Puerto Rico, 2014 to 2045**



Source: Department of Education and analysis by Economic and Social Planning Program of Puerto Rico Planning Board

In turn, the number of teachers in public schools has showed similar reduction. In the academic year 1999-2000 the number of teachers were 41,349, while in the academic year 2012-2013 the number lowered to 40,004 teachers. The ratio of students per teacher in the academic year 2012-2013 was 9:1, while in the academic year 1999-2000 was 13:1 (see Table 1).

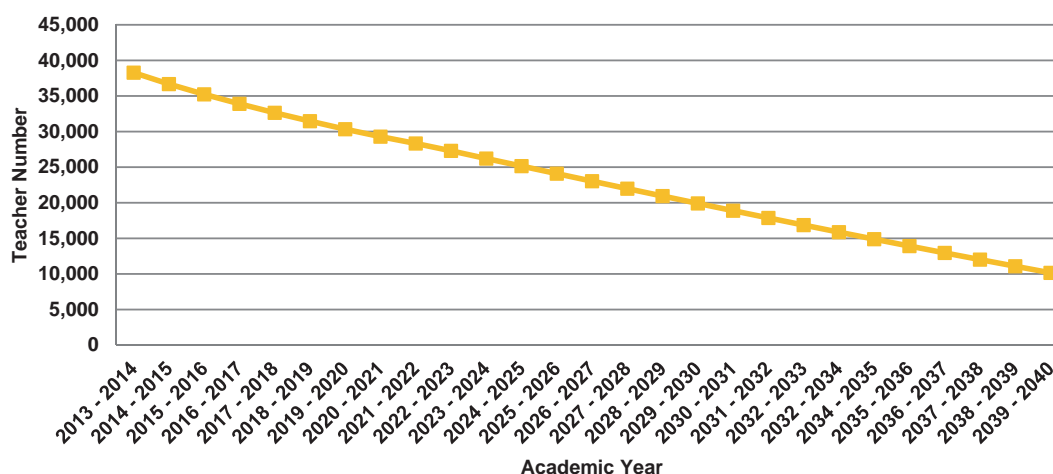
**Table 1: Student per teacher ratio
Puerto Rico, 2000 to 2013**

| Academic year | Total Enrollment by grade | | | | Total Teacher | Student per Teacher ratio |
|---------------|---------------------------|---------------|-------------|---------|---------------|---------------------------|
| | Primary school | Middle School | High School | Total | | |
| 1999 - 2000 | 294,258 | 139,069 | 115,652 | 548,979 | 41,349 | 13.3 |
| 2000 - 2001 | 291,119 | 141,305 | 115,459 | 547,883 | 42,047 | 13.0 |
| 2001 - 2002 | 284,893 | 142,234 | 114,835 | 541,962 | 42,547 | 12.7 |
| 2002 - 2003 | 277,982 | 142,288 | 116,245 | 536,515 | 42,369 | 12.7 |
| 2003 - 2004 | 272,512 | 137,874 | 114,598 | 524,984 | 43,016 | 12.2 |
| 2004 - 2005 | 267,195 | 134,598 | 115,288 | 517,081 | 43,085 | 12.0 |
| 2005 - 2006 | 259,059 | 130,978 | 115,724 | 505,761 | 43,531 | 11.6 |
| 2006 - 2007 | 249,339 | 129,210 | 115,107 | 493,656 | 43,531 | 11.3 |
| 2007 - 2008 | 243,380 | 128,641 | 108,028 | 480,049 | 42,452 | 11.3 |
| 2008 - 2009 | 231,160 | 124,977 | 103,879 | 460,016 | 41,260 | 11.1 |
| 2009 - 2010 | 224,537 | 119,747 | 107,080 | 451,364 | 41,528 | 10.9 |
| 2010 - 2011 | 214,936 | 114,658 | 97,203 | 426,797 | 44,574 | 9.6 |
| 2011 - 2012 | 204,104 | 109,949 | 93,344 | 407,397 | 41,764 | 9.8 |
| 2012 - 2013 | 194,744 | 105,440 | 90,224 | 390,408 | 40,004 | 9.8 |

Source: Puerto Rico Education Department and analysis by Economic and Social Planning Program of Puerto Rico Planning Board

The forecast of the number of teachers also show a decreasing tendency. Hernández and Cardona (2014) estimated the number of teacher for the DEPR for the next 25 years. The number of teacher estimated for the year 2020 is 30,340; 19,914 teachers by the year 2030, and 10,165 teachers by the year 2040 (see Figure 2 and Table 2). This estimate represents a decrease in the number of teachers of 73 percent for the period 2014 to 2040. There are no empirical studies that show the fixed decreasing trend in student enrollment and teacher number.

**Figure 2: Forecast of the Number of Teachers
Puerto Rico, 2014 to 2040**



Source: Puerto Rico Education Department and analysis by Economic and Social Planning Program of Puerto Rico Planning Board

**Table 2: Teacher and Student Enrollment Forecast
Puerto Rico, 2014 to 2040**

| Academic Year | Total Enrollment by Grade | | | | Teacher Forecast |
|---------------|---------------------------|---------|--------|---------|------------------|
| | Primary | Middle | High | Total | |
| 2013 - 2014 | 188,294 | 100,729 | 86,181 | 375,204 | 38,286 |
| 2014 - 2015 | 183,400 | 94,983 | 81,123 | 359,506 | 36,684 |
| 2015 - 2016 | 180,068 | 88,449 | 76,796 | 345,313 | 35,236 |
| 2016 - 2017 | 175,405 | 83,962 | 72,953 | 332,320 | 33,910 |
| 2017 - 2018 | 169,860 | 81,752 | 68,350 | 319,962 | 32,649 |
| 2018 - 2019 | 164,700 | 80,490 | 63,218 | 308,408 | 31,470 |
| 2019 - 2020 | 159,345 | 78,234 | 59,750 | 297,329 | 30,340 |
| 2020 - 2021 | 153,995 | 75,220 | 57,844 | 287,059 | 29,292 |
| 2021 - 2022 | 148,648 | 72,549 | 56,496 | 277,693 | 28,336 |
| 2022 - 2023 | 143,306 | 69,721 | 54,508 | 267,535 | 27,299 |
| 2023 - 2024 | 137,967 | 66,913 | 52,023 | 256,903 | 26,215 |
| 2024 - 2025 | 132,633 | 64,126 | 49,779 | 246,538 | 25,157 |
| 2025 - 2026 | 127,306 | 61,362 | 47,453 | 236,121 | 24,094 |
| 2026 - 2027 | 121,987 | 58,621 | 45,159 | 225,767 | 23,037 |
| 2027 - 2028 | 116,678 | 55,907 | 42,903 | 215,488 | 21,989 |
| 2028 - 2029 | 111,376 | 53,224 | 40,684 | 205,284 | 20,947 |
| 2029 - 2030 | 106,084 | 50,574 | 38,504 | 195,162 | 19,914 |
| 2030 - 2031 | 100,803 | 47,960 | 36,366 | 185,129 | 18,891 |
| 2031 - 2032 | 95,533 | 45,380 | 34,274 | 175,187 | 17,876 |
| 2032 - 2033 | 90,275 | 42,840 | 32,230 | 165,345 | 16,872 |
| 2032 - 2034 | 85,030 | 40,340 | 30,236 | 155,606 | 15,878 |
| 2034 - 2035 | 79,799 | 37,885 | 28,292 | 145,976 | 14,896 |
| 2035 - 2036 | 74,584 | 35,475 | 26,402 | 136,461 | 13,925 |
| 2036 - 2037 | 69,383 | 33,114 | 24,565 | 127,062 | 12,966 |
| 2037 - 2038 | 64,198 | 30,801 | 22,787 | 117,786 | 12,019 |
| 2038 - 2039 | 59,029 | 28,539 | 21,066 | 108,634 | 11,085 |
| 2039 - 2040 | 53,880 | 26,328 | 19,406 | 99,614 | 10,165 |

Source: Quintana, 2014, and analysis by Economic and Social Planning Program of Puerto Rico Planning Board.

Despite these declines, the budget of the DEPR has continually increased as also the budget per student. The budget per student for the year 2000 was \$4,062 per student; while for the year 2013 this increased to \$8,642 (see Table 3). For the mentioned period, the Budget of the DEPR increased by 51.3 percent.

**Table 3: Budget of Puerto Rico Education Department
Fiscal Years 2000 to 2011**

| Fiscal Year | Budget of Department Education of Puerto Rico | Student Enrollment Education Public System | Teachers in the Education Public System | Budget per Student in the Education Public System |
|-------------|---|--|---|---|
| 2000 | \$ 2,229,679,000 | 548,979 | 41,349 | \$ 4,062 |
| 2001 | \$ 2,275,908,000 | 547,883 | 42,047 | \$ 4,154 |
| 2002 | \$ 2,241,902,000 | 541,962 | 42,547 | \$ 4,137 |
| 2003 | \$ 2,661,520,000 | 536,515 | 42,369 | \$ 4,961 |
| 2004 | \$ 2,524,739,000 | 524,984 | 43,016 | \$ 4,809 |
| 2005 | \$ 3,114,508,000 | 517,081 | 43,085 | \$ 6,023 |
| 2006 | \$ 3,603,985,000 | 505,761 | 43,531 | \$ 7,126 |
| 2007 | \$ 3,427,734,000 | 493,656 | 43,531 | \$ 6,944 |
| 2008 | \$ 3,546,655,000 | 480,049 | 42,452 | \$ 7,388 |
| 2009 | \$ 3,563,416,000 | 460,016 | 41,260 | \$ 7,746 |
| 2010 | \$ 3,822,139,000 | 451,364 | 41,528 | \$ 8,468 |
| 2011 | \$ 3,571,978,000 | 426,797 | 44,574 | \$ 8,369 |
| 2012 | \$ 3,503,075,000 | 407,397 | 41,764 | \$ 8,599 |
| 2013 | \$ 3,374,077,000 | 390,408 | 40,004 | \$ 8,642 |

Source: Puerto Rico Education Department, Management and Budget Office of Puerto Rico, and analysis by Economic and Social Planning Program of Puerto Rico Planning Board

B. Historical Review

Since the decade of 1940 “Puerto Rico has moved from education for some to some education for all” (United States Department of Commerce [USDC] 1979). For example, in 1940 only half the eligible school-age children were in school (USDC 1979). From 1940 to 1976 total enrollment has a significant rise more than three times from 303,000 to 914,000 students respectively. Thus, the high rates of increase for all types of educational enrollment paralleled increase in population itself (USDC 1979). The Economic Study of Puerto Rico of 1979 exposed that the declining and leveling of the birthrates began to reduce the historical demographic pressure on enrollment. This phenomenon reduced the enrollments at lower grades levels during the 1970. In 1977 there was a change in this trend, as a result of increases in students transferring from mainland schools. In this period the Department of Education also experienced: (1) heavy increases in pupil per teacher and pupil per classroom; (2) a decline in cumulative retention rates; (3) a decrease in teacher training and experience; (4) a increase in the duration of employment in the public school teachers; and, (5) use of double and interlocking sessions (USDC 1979).

Recently, public and private school and higher education institutions have reported a decrease in the total enrollment of students. In recent decades, the dynamics of the Puerto Rican population has experienced significant changes. The trend recorded in the population reflects a demographic decline, both in relative and absolute terms (García 2004). The enrollment of public education system of Puerto Rico is affected by several important factors, which include: (1) reduction in the size of population; (2) decrease in the number of births; (3) decline in the average number of children; (4) increase in migration patterns; and (5) enlargement of the size of the education private system (Quintana 2014).

Recently the elementary grades enrollments had continued with a descending trend. In the other hand, the intermediate grades enrollments initially registered an increasing trend until reach a peak, and then decrease. The maximum enrollment from the 1st, 2nd and 3rd grades occurred almost at the beginning of their historical series, in 1967, 1968 and 1969, respectively. The maximum of 4th grade occurs in 1971; and the 5th and 6th grades in 1973. The maximum of the 7th, 8th, and 9th grades occur in the 1978, 1979 and 1980 respectively. The maximum of the 10th and 11th grades occur in the 1982, and the 12th in the 1983. The sequence of the years in the maximum points or peaks locations demonstrates that retention rate plays an important role in the enrollments in every grade levels (Quintana 2014).

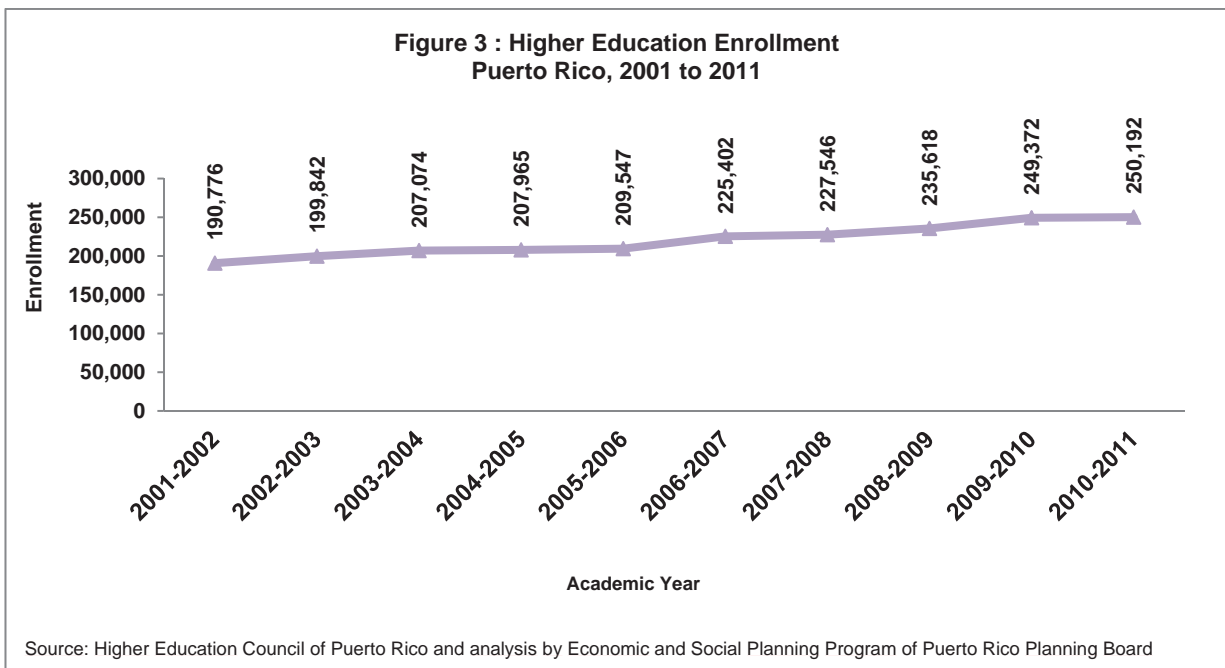
Calderón (2014) said that “the decline in student enrollment will impact in the short, medium and long term the economic, scientific and cultural development of Puerto Rico. It is not only a demographic and migratory phenomenon. Requires the coordinated effort and vision of the future of all social sectors to redesign and adapt the educational system of Puerto Rico at all levels to meet the local and global challenges”. He also argues that Puerto Rico counts with an education infrastructure that has been built over several decades. That infrastructure includes 1,461 public schools, 764 private schools, 413 non university postsecondary institutions, 118 church-school and 51 institutions of superior education with 141 units or campuses. In the academic year 2011-2012 the system had a little more than 922 thousand students and mobilized nearly \$6 billion dollars. This entire infrastructure will be the first victim of the reduction in the education demand. (Calderón 2014)

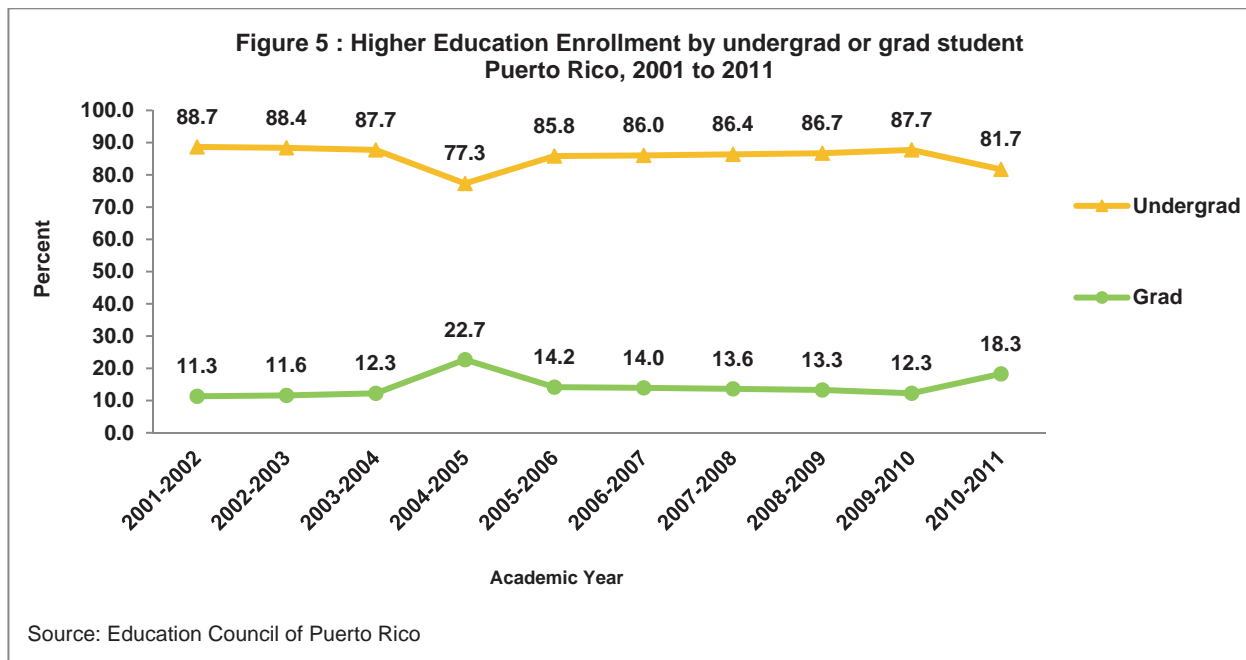
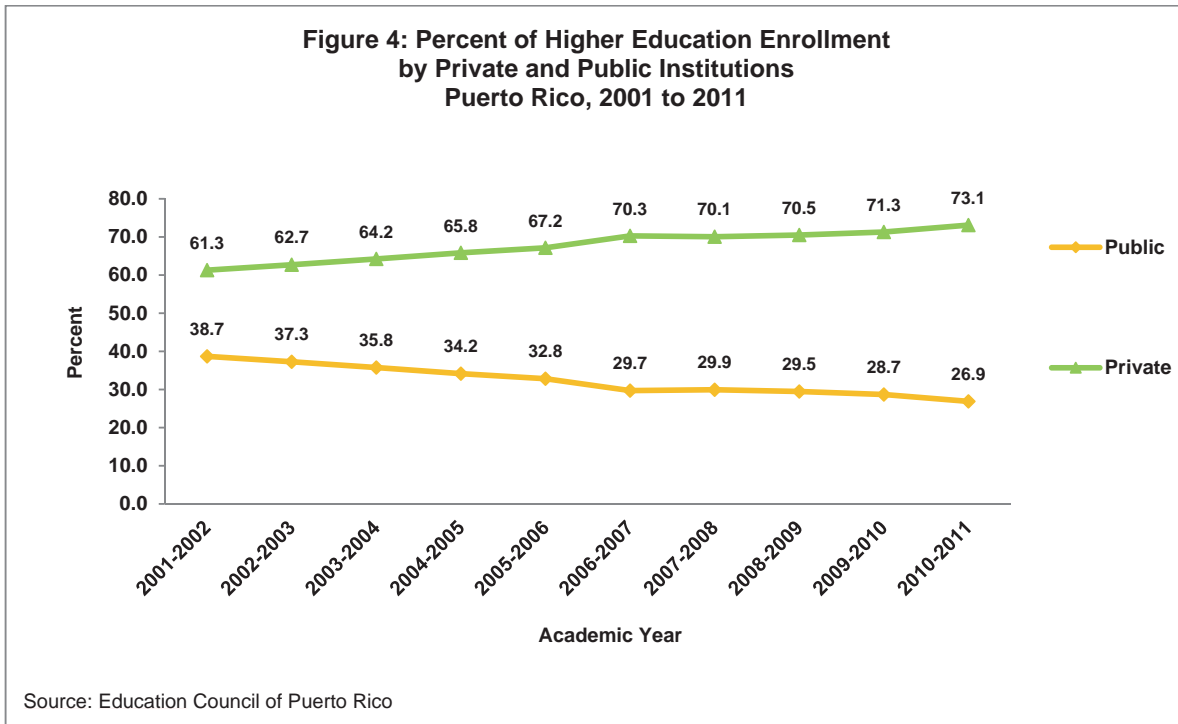
Some of the factors that impact the demand and offer of the higher educations are: Pell Grants, student loans accessibility, other grants, etc. “In the mid-sixties, subsidies for tuition costs and Pell Grant stipends enabled private universities to expand and surpass the University of Puerto Rico in student enrollment” (Quintero 2009) . Some of the principal universities in Puerto Rico are: University of Puerto Rico, Interamerican University of Puerto Rico, University of Sacred Heart, Ana G. Méndez University System, Pontifical Catholic University of Puerto Rico, and Polytechnic University of Puerto Rico. According with Quintero (2009):

The University of Puerto Rico was founded in 1903, when the teachers college that had been founded in 1900 in the town of Fajardo was relocated in Río Piedras. In 1903, legislation was enacted to convert the school into a university. Shortly thereafter, other colleges were created, such as the College of Agriculture, which was founded in 1905 and moved to Mayaguez in 1911, an institution that was to become the University of Puerto Rico at Mayagüez. Five more decades were to elapse before the regional colleges and the School of Medicine were created, under a public law enacted in 1966.

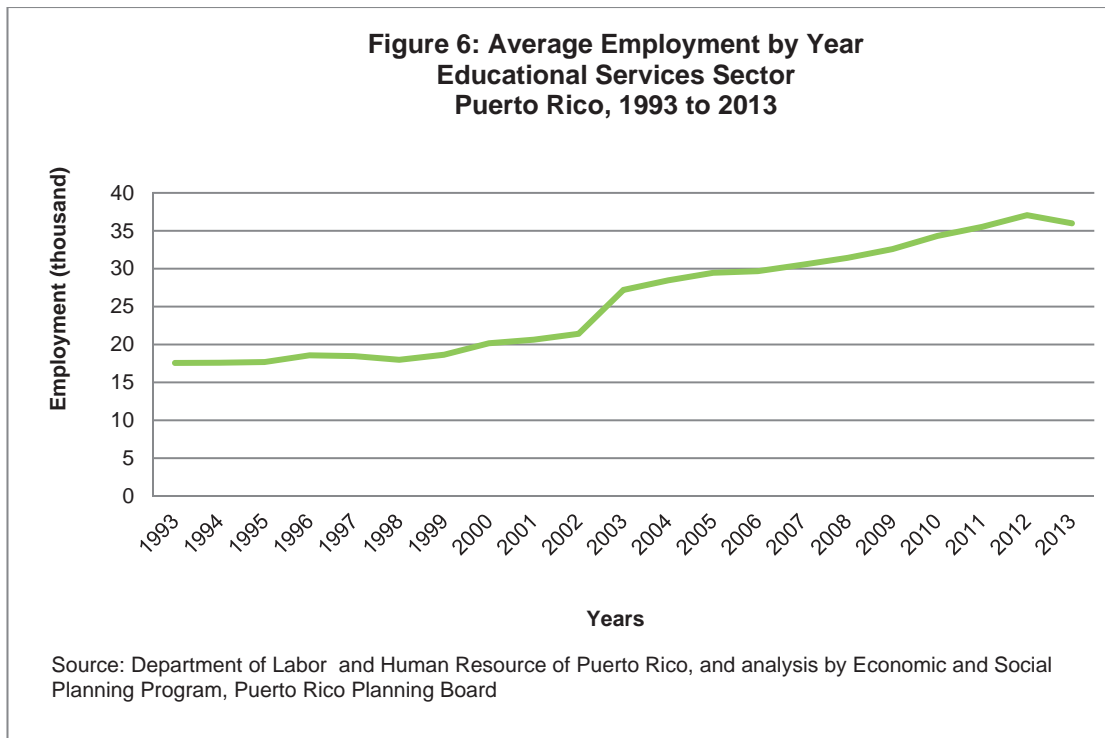
The first private institution to offer post-secondary education during this period was founded in 1912. The Arts and Crafts School, which had been founded in Lajas six years earlier, was moved to San Germán and became the Polytechnic Institute of Puerto Rico. In 1921, this institute began to offer college-level courses and today it is known as Inter American University. The development of private universities came about much later, after World War II.

The higher education institution contributes to the professional development of the people (Cardona de Jesús 2014). Higher education in Puerto Rico count with a broad academic offer and degrees. Some of the higher education institution of Puerto Rico have nurtured collaboration with educational institutions in other countries to strength their academic offers. The enrollment of higher education has also change as a consequence of the tendency in the education market. In the later years of the 2000 decade the enrollment of higher education increased (see Figure 3). As show in Figure 4 the enrollments in public higher institutions has decreased with time, while the private institutions show an increase. In the period of 2001 to 2011 the enrollments in undergraduate prevailed, meanwhile the enrollments in graduate programs presents a little increase in this period (see Figure 5).





The average employment in the Educational Services Sector since 1993 to 2013 fluctuated in 17.6 to 36 thousand. The maximum increase in the time series is reflected in year 2003 with a 27 percent of change. This historical employment series had a growth tendency, except for the years 1997, 1998, and 2013, which decreased slightly at 0.58 percent, 2.6 percent, and 2.9 percent respectively.



Puerto Rico's educational system, at the pre-college and college levels, has evolved over the years. This changes had been influenced by internal forces, such as changes in educational philosophy, and external forces such as the changing social, financial, and cultural needs of the island" (Quintero 2009) .

In terms of operational funds, the budget of the Department of Education of Puerto Rico (DEPR) has increased over the years. These increases were a result of modification of different laws, regulations, programs and requirements of the public policy of the Government of Puerto Rico, as well as those of the Federal Department of Education. The operational resources of the DEPR come from different sources such as: joint resolutions of the general budget, special allocations, special funds, loans, bond issues, and federal funds. The federal resources are the main source of non-State funds. During the fiscal year 2013, Puerto Rico received the amount of \$2.23 billion from the United States Department of Education under the programs of the Funds for State Formula - Allocated and Selected Student Aid. For the fiscal year 2014 it is estimated that these contributions will approximately reach \$2.22 billion. These funds are allocated to DEPR, universities, institutions of higher education, colleges and non-profit entities (González 2014).

C. Recommendations from previous plans

Many strategic plans have been developed over the decades which included strategies for the educational service sector in order to improve it and the economy of the island. The strategies and recommendations of those plans concurred in many ways. Many plans focus on improves educations programs as a solution for the diverse social and economic issues. In general terms, all the previous recommendations in the strategic plans agree on the improvement of the educational systems quality. In general, the main areas to be examined are the physical infrastructure, educational programs including the design of courses that meet the market demand, distribution of funding, competence of human resources, application of technology in classrooms, implementation of research and development, enhance access to education for the disadvantaged population, among others.

The integration of the education sector and collaboration with other sectors is a way to improve the human resources, task forces, economics of knowledge, competence, and increase funds and resources. This strategy of integration and collaboration was mentioned repeatedly in different strategic plans that the government promoted. In 2003, the

strategic plan titled “Hacia la economía posible” (Towards the possible economy) suggest improvement of human resources with an integration of education policy and creation of collaborative networks inside and outside of Puerto Rico. Puerto Rico 2025 (strategic plan developed in 2004) also proposed to define and implement a coordinated action among government, business, and academia. Similarly, in 2005 “Globalización y Desarrollo” (Globalization and Development) proposed the collaboration of government, private sector, and the academia to encouraged research and development. In addition, the collaboration between industries and higher education could help to promote innovation, entrepreneurship, and ultimately, economic growth (Federal Reserve Bank of New York 2012). Table 4 presents a summary of strategies or recommendation of the different development plans that were proposed over the years. Every strategy or recommendation was identified with the name of the plan and the page (or slide) which appeared in the plan.

| Table 4: Recommendations from Previous Development Plans | | |
|--|--|-------------------|
| Educational Services Sector (NAICS - 61) | | |
| Development Plan | Strategy or Recommendation | Page/Slide |
| Comité Interagencial de la Estrategia de Puerto Rico 1975, El Desarrollo Económico de Puerto Rico: Una Estrategia para la Próxima Década (a.k.a. Echenique Report) | Establish cooperatives in rural areas with training programs and productive economic activities focused on agriculture and manufacturing. | 125 y 127 |
| | Evaluate education facilities, specifically for chemical engineering, industrial engineering, metalworking, mining, and others. | 78 |
| United States Department of Commerce 1979, Economic Study of Puerto Rico, Vol. 1, 2-A, and 2-B (a.k.a. Kreps Report) | Policy Options - Increase spending for adult education. | 733 |
| | Policy Options - Greater use of the Right to Read Program. | 733 |
| | Policy Options - Bilingual education. | 733 |
| Consejo de Productividad Económica – Oficina del Gobernador 1994, Nuevo Modelo de Desarrollo Económico | Improving the Product - Endow Puerto Rico with the best physical, technological, and human capital that will provide a competitive advantage in the global economy. | 24-25 |
| | Promoting our people - Transform how education and vocational training is perceived. | 26 |
| | Promoting our people - Promote economic sectors with a trained work force and the ability of adapting to frequent changes in technology and other occupational requirements. | 26 |
| New Economic Strategies 2005, The Puerto Rico Life Sciences Road Map | Design a future workforce learning resource center. | 9, 109 |
| Comisión sobre Futuro Económico de Puerto Rico 2003, Hacia la Economía Posible | Focus on the development of new knowledge technologies and the capacity to innovate. | 46 |
| | Count on an integrated education policy and create collaborative networks inside and outside of Puerto Rico. | 47 |
| Comité Timón de Puerto Rico 2025, 2004, Puerto Rico 2025: Una Nueva Visión para el Futuro de Puerto Rico | Improve teaching of entrepreneurial and business skills in the education system. | 27 |

| | |
|--|----|
| Reform University budget and incentive structure to promote research and development and technology transfer. | 28 |
| Attract more global talent to conduct research and development at universities. | 28 |
| Increase funding for laboratories, research centers and other research and development infrastructure at universities. | 28 |
| Achieve universal primary education | 44 |
| Improve financial management of the education system. | 45 |
| Introduce metrics and incentives to improve performance in the education system. | 45 |
| Improve the quality of resources for primary and secondary education. | 46 |
| Improve the quality of resources for post-secondary education. | 46 |
| Promote total quality in the operation of the public and private education system. | 47 |
| Optimize academic results and promote the search for excellence. | 47 |
| Information Technology-enable the education system and promote extensive use of the Internet. | 48 |
| Promote ethical and civic content in curricula and education professionals. | 48 |
| Develop research and development at universities in collaboration with industry. | 49 |
| Promote community and family participation in the pre-K-to-12 learning process. | 49 |
| Optimize retention and graduation rates in schools and universities. | 50 |
| Guarantee education for disadvantaged groups. | 50 |
| Guarantee education for the disabled. | 50 |
| Promote adult education. | 50 |
| Foster reading habits. | 67 |
| Invest in education to foster consciousness of | 71 |

| | | |
|--|---|-----|
| | environmental responsibility. | |
| | Promote recreation and sport among children and youth in schools and universities. | 65 |
| | Facilitate access to schools specializing in art and culture. | 66 |
| | Define and implement a coordinated Innovation Agenda to prioritize action and policy across government, business and academia. | 23 |
| | Increase the productivity of local human capital through training and skills programs. | 33 |
| | Promote multilingual abilities in all sectors of the economy. | 36 |
| | Ensure that all have access to the education and skills needed to compete in the labor market. | 38 |
| | Promote security and the battle against drug use in schools. | 44 |
| Comisión Económica para América Latina y el Caribe – CEPAL 2004, Globalización y Desarrollo: Desafíos de Puerto Rico Frente al Siglo XXI | Correct the lack of integral documentation about national innovation systems whose structure and function has only been studied partially, with the collaboration of government agencies and academic entities. | 231 |
| | Improve the education system for productive transformation and better social welfare. | 232 |
| Collins, SM, Bostworth, BP & Soto-Class, MA 2006, The Economy of Puerto Rico: Restoring Growth, Center for the New Economy & The Brookings Institution, San Juan, PR | Educational programs in the area of business and entrepreneurial skills. | 577 |
| | Education management changes. | 579 |
| | Develop network of training and education. | 575 |
| | Public funds to provide financial assistance directly to students. | 580 |
| Estado Libre Asociado de Puerto Rico 2006, Plan de Desarrollo Económico y Transformación de Gobierno para Puerto Rico | Move Puerto Rico towards an economy of knowledge with excellence in Biotechnology, Engineering, and Informatics. | 8 |
| Federal Reserve Bank of New York 2012, Report on the Competitiveness of Puerto Rico's Economy | Developing Human Capital. | 20 |
| | Foster Partnerships between Industry and Higher Education. | 22 |
| Departamento de Desarrollo Económico y Comercio 2013, Un Nuevo Puerto Rico: Con Mejores Oportunidades de Negocio | Position Puerto Rico into the economy of knowledge through the Science and Technology Trust. | 26 |
| | | |

Source: Puerto Rico Planning Board

D. Sector Characteristics

This subsection discusses the characteristics of the Educational Services Sector (NAICS 61) and its respective sub-sectors. This discussion will be supported with data from County Business Patterns of the United States Census Bureau and the Puerto Rico Planning Board. According to the Census, the NAICS 61 definition for the sector is the following:

“The Educational Services sector comprises establishments that provide instruction and training in a wide variety of subjects. This instruction and training is 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 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 through correspondence, television, or other means. It can be adapted to the particular 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 with the County Business Patterns of the United States Census, the Educational Services Sector in Puerto Rico is organized into 7 sub-sectors. The subsectors and their definitions are explained below:

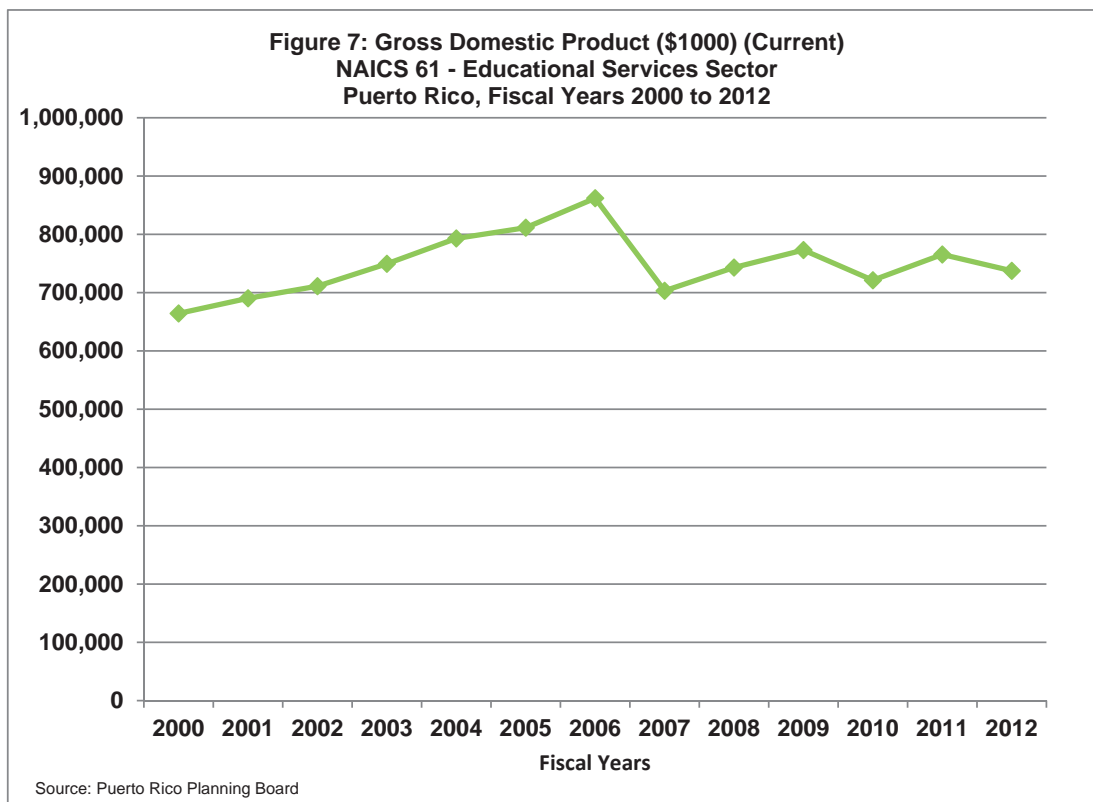
1. Elementary and Secondary Schools (NAICS 6111) - This industry comprises establishments primarily engaged in furnishing academic courses and associated course work that comprise a basic preparatory education. A basic preparatory education ordinarily constitutes kindergarten through 12th grade. This industry includes school boards and school districts.
2. Junior Colleges (NAICS 6112) - This industry comprises establishments primarily engaged in furnishing academic, or academic and technical, courses and granting associate degrees, certificates, or diplomas below the baccalaureate level. The requirement for admission to an associate or equivalent degree program is at least a high school diploma or equivalent general academic training. Instruction may be provided in diverse settings, such as the establishment's or client's training facilities, educational institutions, the workplace, or the home, and through correspondence, television, Internet, or other means.
3. Colleges, Universities, and Professional Schools (NAICS 6113) - This industry comprises establishments primarily engaged in furnishing academic courses and granting degrees at baccalaureate or graduate levels. The requirement for admission is at least a high school diploma or equivalent general academic training. Instruction may be provided in diverse settings, such as the establishment's or client's training facilities, educational institutions, the workplace, or the home, and through correspondence, television, Internet, or other means.
4. Business Schools and Computer and Management Training (NAICS 6114) - This industry comprises establishments primarily engaged in offering courses in office procedures and secretarial and stenographic skills and may offer courses in basic office skills, such as word processing. In addition, these establishments may offer such classes as office machine operation, reception, communications, and other skills designed for individuals pursuing a clerical or secretarial career. Instruction may be provided in diverse settings, such as the establishment's or client's training facilities, educational institutions, the workplace, or the home, and through correspondence, television, Internet, or other means.
5. Technical and Trade Schools (NAICS 6115) - This industry comprises establishments primarily engaged in offering vocational and technical training in a variety of technical subjects and trades. The training often leads to job-specific certification. Instruction may be provided in diverse settings, such as the establishment's or client's training facilities, educational institutions, the workplace, or the home, and through correspondence, television, Internet, or other means.

6. Other Schools and Instruction (NAICS 6116) - This industry group comprises establishments primarily engaged in offering or providing instruction (except academic schools, colleges, and universities; and business, computer, management, technical, or trade instruction). Instruction may be provided in diverse settings, such as the establishment's or client's training facilities, educational institutions, the workplace, or the home, and through correspondence, television, Internet, or other means.
7. Educational Support Services (NAICS 6117) - This industry comprises establishments primarily engaged in providing non-instructional services that support educational processes or systems.

The analysis includes a comparison of fiscal years 2006 and 2011 for the gross domestic product, number of employees, annual payroll, annual payroll per employee and the number of establishments. The analysis for the sector and subsectors is as follows:

Educational Services Sector - NAICS 61

The Educational Services Sector in Puerto Rico amounted \$737,464 thousand or 0.73% of the Gross Domestic Product (GDP) for the fiscal year 2012. Figure 7 shows the evolution of the GDP of the sector for the period 2000 to 2012. It is important to mention that the figures of the GDP are presented in current dollars. Another important fact is that the average rate of inflation for the period 2000 to 2012 was 2.71 percent.



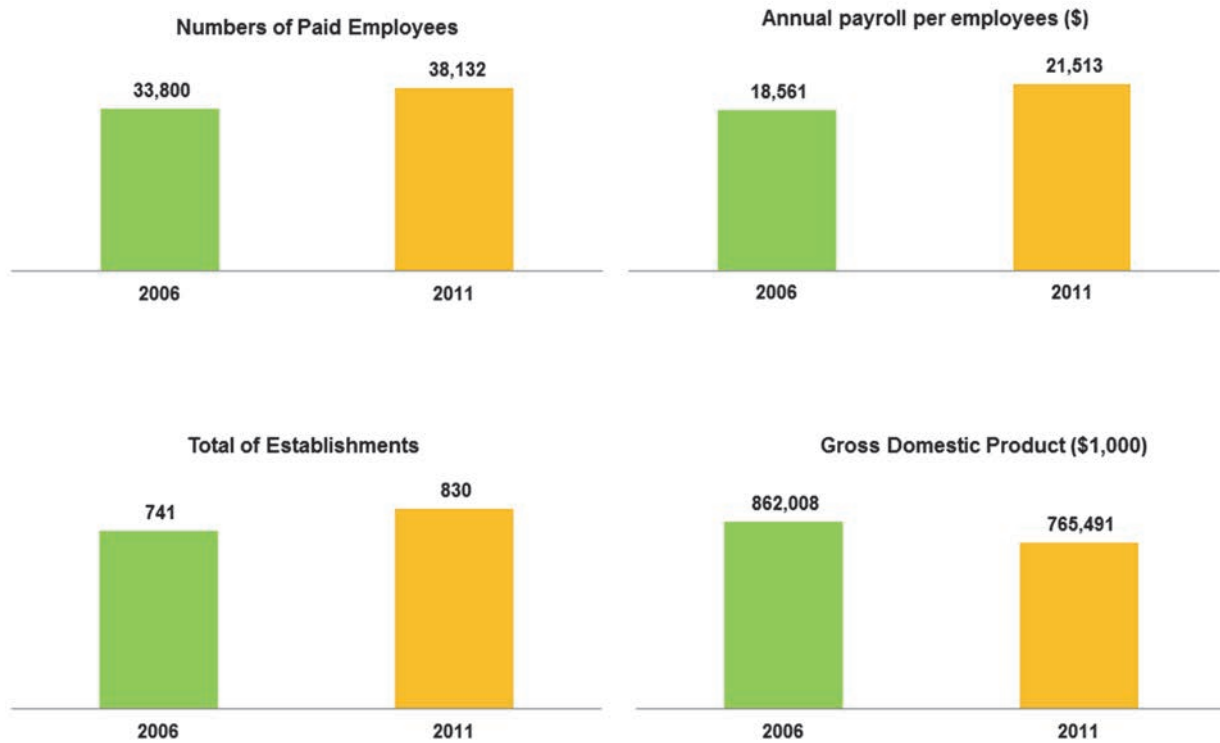
The GDP for the sector shows an increasing trend for the fiscal years 2000 to 2006 and after then the trend shows increases at a lower rate of growth. For example, the GDP for the sector in the fiscal year 2006 was \$862,008 thousand and \$765,491 thousand for the fiscal year 2011. This represents a decrease of \$96,517 thousand or 11.20 percent (on average, 2.24 percent per year for the 5 years). Other variables were studied for the sector. Those variables were the number of paid employees in the sector, total establishments, annual payroll, and annual payroll per employee. Data of annual payroll and annual per employee are presented in current dollars. A time series of the variables were showed in Figure 8:

Figure 8: Selected Variables
NAICS 61 – Educational Services Sector
Puerto Rico 2003 to 2011



Source: U.S. Census Bureau, County Business Patterns

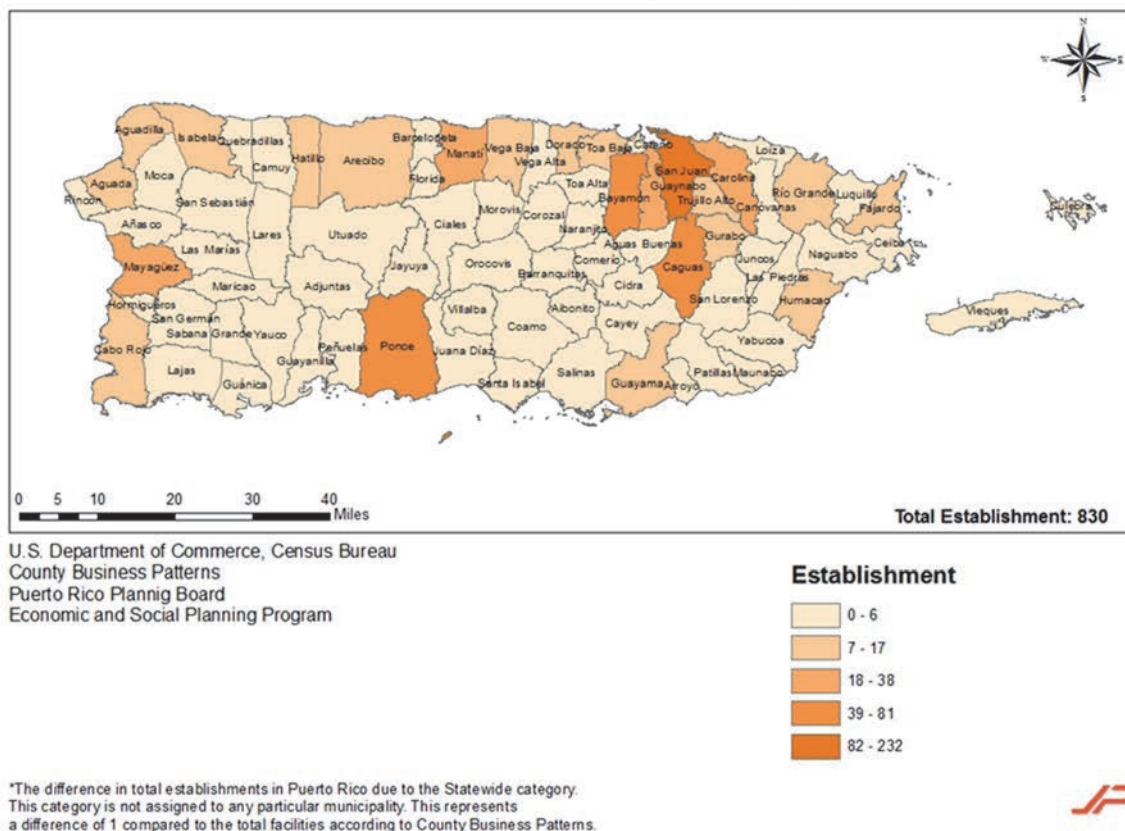
Figure 9 shows a comparison of the variables for the years 2006 and 2011. As the figure presents, the number of paid employees for this sector in the year 2006 was 33,800 and 38,132 for the year 2011. This represents an increase of 4,332 paid employees or 12.82 percent (on average, 2.56 per year for the 5 years). Additionally, the annual payroll per employee for the sector in the year 2006 was \$18,561 and \$21,513 for the year 2011. This represents an increase of \$2,953 on annual payroll per employee or 15.91 percent (on average, 3.18 percent per year for the 5 years). The number of establishments for the Educational Service Sector in the year 2006 was 741 and 830 for the year 2011. This represents an increase of 89 establishments or 12 percent (on average, 2.40 percent per year for the 5 years).

Figure 9: Comparison of Selected Variables**NAICS 61 – Educational Services Sector
Puerto Rico, 2006 & 2011**

Source: U.S. Census Bureau, County Business Patterns and Puerto Rico Planning Board

In terms of the number of establishments, Figure 10 presents a choropleth map of the distribution of establishments in Puerto Rico. A choropleth map is a thematic map in which regions are colored for the purpose of showing a statistical measure, such as population density or per capita income. This choropleth maps highlight the number of establishments for the Educational Services Sector (NAICS 61) in Puerto Rico for the year 2011. The data was divided into categories calculated by the “Natural Breaks Method”, which is a classification method that seeks to partition data into classes based on natural groups. The categories in the map represent a range of establishments within the municipality, and the frequency refers to the number of municipalities within that category.

Figure 10: Choropleth Map
Total Establishments in Puerto Rico, 2011
Educational Services, (NAICS 61)



For the year 2011, the spatial analysis performed for the Educational Services Sector showed 830 establishments divided into 5 categories. According with the CBP in the year 2011 the metropolitan areas of San Juan, Bayamón, Ponce, Caguas, Guaynabo, Carolina, Humacao and Mayagüez had more than 20 establishments of educational services. It could be observed, also, that there is a corridor from Toa Baja to Aguada in terms of high density of establishments.

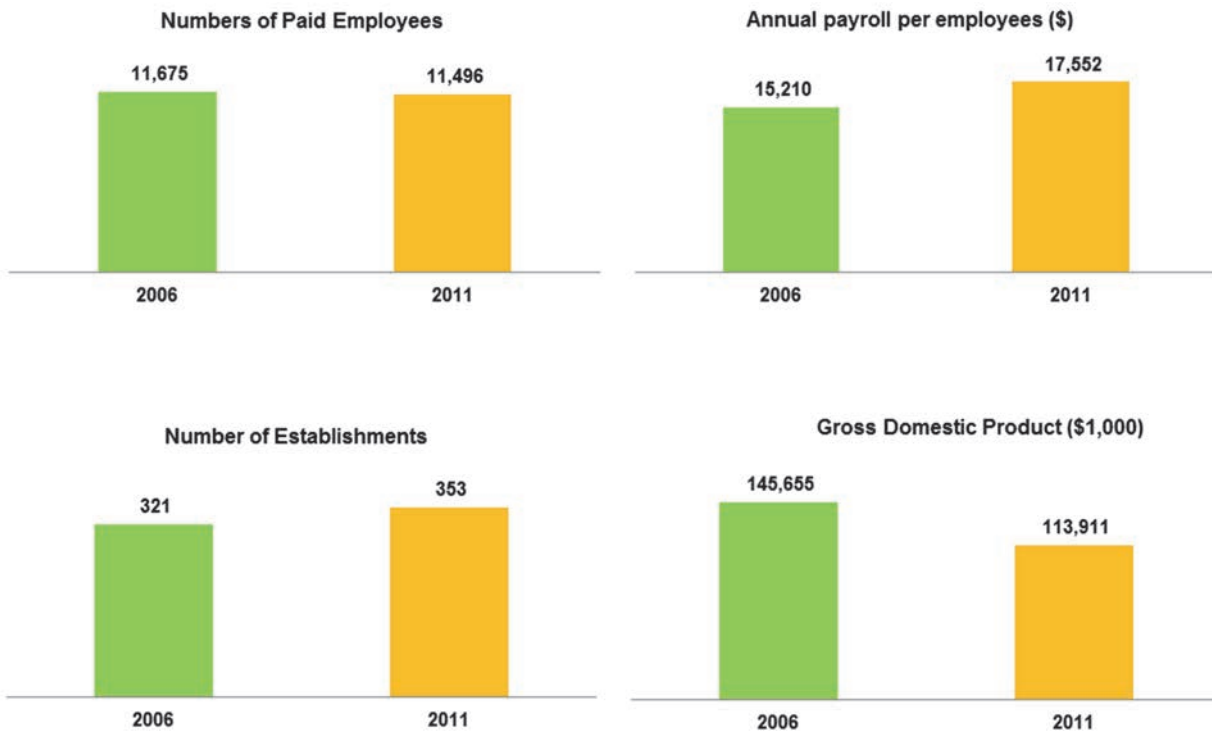
The subsections below discuss the different subsectors in the Educational Services Sector. All the subsectors are described in terms of the GDP, number of paid employees, annual payroll, annual payroll per employee, and total establishments. Despite the figures in the subsection below, in appendixes contain a time series table and graphs by variable with full disclosure of the data and analysis of the sector and subsectors (Tables 15 to 19 and Figures 26 to 30).

Elementary and Secondary Schools - NAICS 6111

The first subsector in the Educational Services Sector is the Elementary and Secondary Schools. This subsector experienced a decrease in terms of the GDP. The total GDP for this sector in the year 2006 was \$145,655 thousand and \$113,911 thousand for the fiscal year 2011. This represents a decrease of \$31,744 thousand in total GDP or 21.79 percent (on average, 4.36 percent per year for the 5 years).

In terms of the number of paid employees, the subsector has remained fairly stable. For the purpose of analysis, years 2006 and 2011 were selected. The data show that the number of paid employees for this sub-sector in the year 2006 was 11,675 and 11,496 for the year 2011. This shows a decrease of 179 paid employees or 1.53 percent (on average, 0.31 percent per year for the 5 years). See Figure 11 for more information.

Figure 11: Comparison of Selected Variables
NAICS 6111 – Elementary and Secondary Schools
Puerto Rico, 2006 & 2011



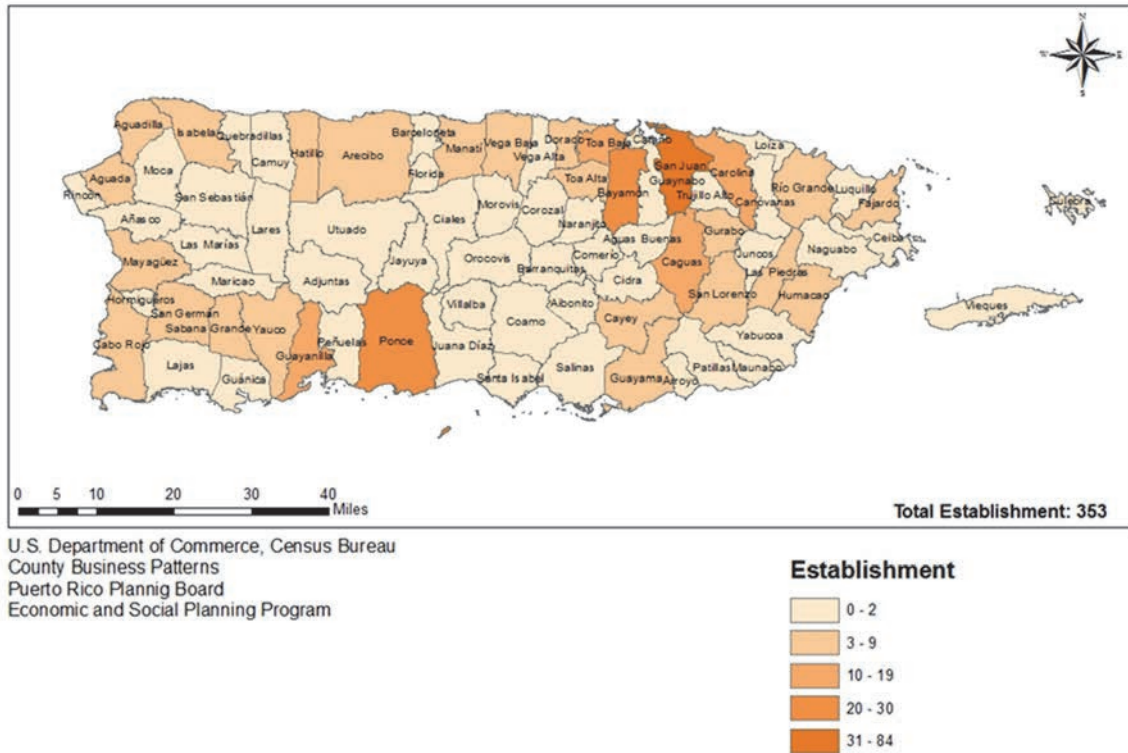
Source: U.S. Census Bureau, County Business Patterns and Puerto Rico Planning Board

The annual payroll of this subsector fluctuated between \$170,331 thousand and \$204,162 thousand for the period 2006 to 2011 according with data of the CBP. On the other hand, the annual payroll per employee averaged \$16,325 for the 2006 to 2011 period. For the analysis the years 2006 and 2011 were selected. Data show that the payroll per employee for this sector in the year 2006 was \$15,210 and \$17,552 for the year 2011. This represents a growth of \$2,342 on payroll per employee or 15.40 percent (on average, 3.08 percent per year for the 5 years).

The number of establishments for this subsector in the year 2006 was 321 and 353 for the year 2011. This represents an increase of 32 establishments or 9.97 percent (on average, 1.99 percent per year for 5 years). For the year 2011, the spatial analysis performed for the Elementary and Secondary Schools subsector shows 353 establishments divided into 5 categories. According with the CBP in the year 2011 the metropolitan areas of: San Juan, Bayamón, and Ponce had more than 20 establishments of elementary and secondary schools (see Figure 12).

Figure 12: Choropleth Map

**Total Establishments in Puerto Rico, 2011
Elementary and Secondary Schools, (NAICS 6111)**

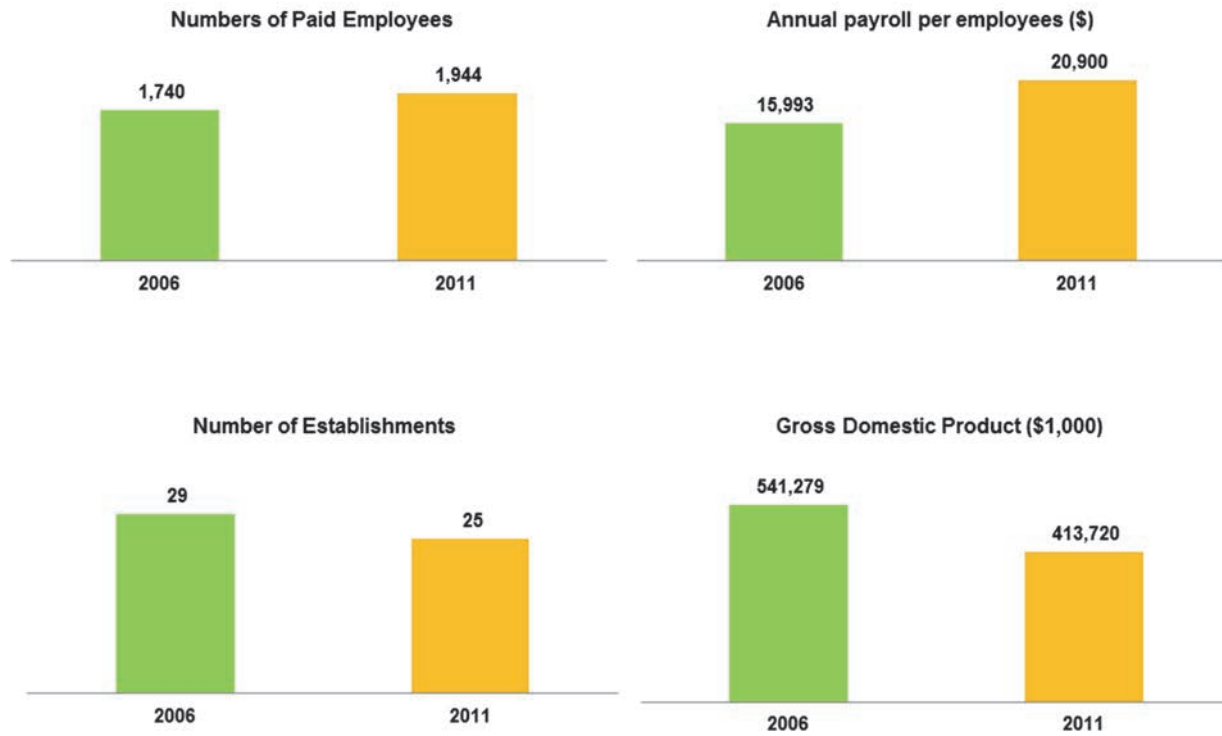


Junior Colleges - NAICS 6112

The Junior Colleges subsector is the subsector with more shares in the GDP for the period 2000 to 2012. In those years the GDP experienced decrease around 17 percent. The total gross domestic product for this sector in the year 2006 was \$541,279 thousand and \$413,720 thousand for the year 2011. This represents a decrease of \$127,559 thousand in total gross product or 23.57 percent (on average, 4.71 percent per year for the 5 years).

In terms of the number of paid employees, data show that the subsector grew some years and other years had a reduction in this variable. For the purpose of the analysis, years 2006 and 2011 were selected (Figure 13). The data presented that the number of paid employees for this sub-sector in the year 2006 was 1,740 and 1,944 for the year 2011. This represents a rise of 204 paid employees or 11.72 percent (on average, 2.34 percent per year for the 5 years).

Figure 13: Comparison of Selected Variables
NAICS 6112 – Junior Colleges
Puerto Rico, 2006 & 2011

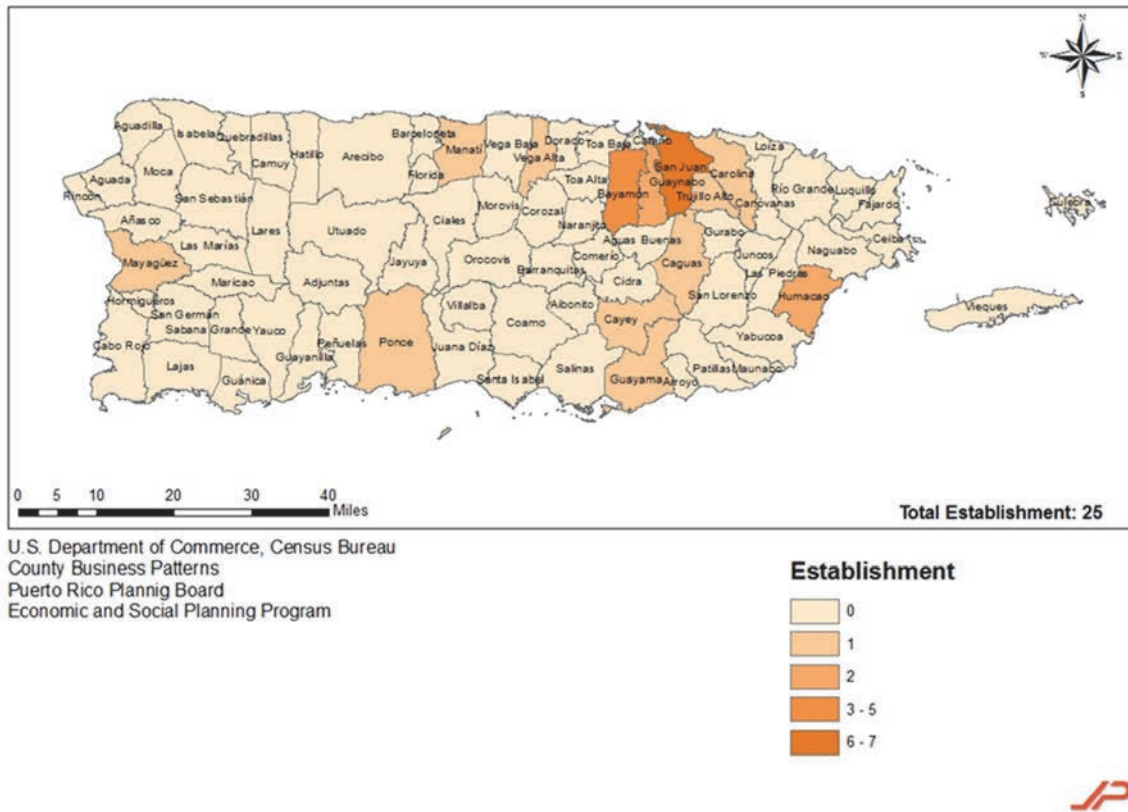


Source: U.S. Census Bureau, County Business Patterns and Puerto Rico Planning Board

The annual payroll of this subsector fluctuated between \$26,501 thousand and \$41,914 thousand for the period 2006 to 2011. On the other hand, the annual payroll per employee averaged \$18,529 for the 2006 to 2011 period. Data showed that the payroll per employee for this sector in the year 2006 was \$15,993 and \$20,900 for the year 2011. This means an increase of \$4,907 on payroll per employee or 30.68 percent (on average, 6.14 percent per year for the 5 years).

The number of establishments for this subsector in the year 2006 was 29 and 25 for the year 2011 representing a decrease of 4 establishments or 13.79 percent (on average, 2.76 percent per year for the 5 years). For the year 2011, the spatial analysis performed for the Junior Colleges subsector shows 25 establishments divided into 5 categories (Figure 14). According with the CBP in the year 2011 the metropolitan area of San Juan had more than 6 establishments of junior colleges.

Figure 14: Choropleth Map
Total Establishments in Puerto Rico, 2011
Junior Colleges, (NAICS 6112)

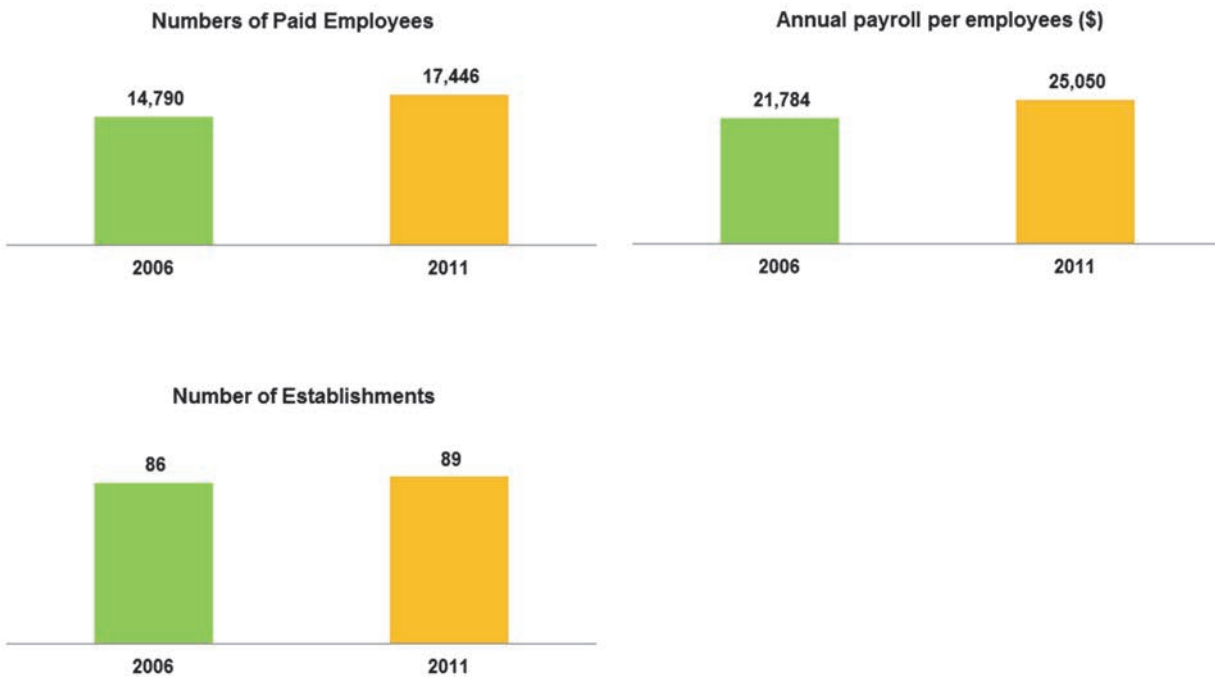


Colleges, Universities, and Professional Schools - NAICS 6113¹

The Colleges, Universities and Professional Schools subsector is one of the more stables of the Educational Services Sector. In terms of the number of paid employees, the analysis for the years 2006 and 2011 indicates that the number of paid employees was 14,790 and 17,446 respectively (Figure 15). This represents an increase of 2,656 paid employees or 17.96 percent (on average, 3.59 percent per year for the 5 years).

¹ The Puerto Rico Planning Board has no data related for the sub-sector of NAICS 6113 – Colleges, Universities, and Professional Schools.

Figure 15: Comparison of Selected Variables
NAICS 6113 - Colleges, Universities, and Professional Schools
Puerto Rico, 2006 & 2011



Source: U.S. Census Bureau, County Business Patterns and Puerto Rico Planning Board

The annual payroll of this subsector fluctuated between \$322,191 thousand and \$437,022 thousand for the period 2006 to 2011 according with data of the CBP. On the other hand, the annual payroll per employee averaged \$23,283 for the 2005 to 2012 period. For the analysis years 2006 and 2011 were selected. Data shows that the payroll per employee for this sector in the year 2006 was \$21,784 and \$25,050 for the year 2011. This shows a rise of \$3,266 on payroll per employee or 15 percent (on average, 3 percent per year for the 5 years).

The number of establishments for this sector in the year 2006 was 86 and 89 for the year 2011. This represents an increase of 3 establishments or 3.49 percent (on average, 0.70 percent per year for the 5 years). For the year 2011, the spatial analysis performed for the Colleges, Universities and Professional Schools subsector shows 89 establishments divided into 5 categories (Figure 16). According with the CBP in the year 2011 the metropolitan areas of San Juan and Bayamón had more than 8 establishments of colleges, universities and professional schools.

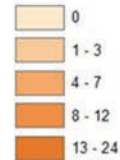
Figure 16: Choropleth Map

Total Establishments in Puerto Rico, 2011
Colleges, Universities, and Professional Schools, (NAICS 6113)



U.S. Department of Commerce, Census Bureau
County Business Patterns
Puerto Rico Planning Board
Economic and Social Planning Program

Establishment



Business Schools and Computer and Management Training – NAICS 6114

The subsector of Business Schools and Computer and Management Training increased overall in the years 2006 and 2011, except for the number of establishment that declined very slightly. The GDP for this sub-sector in the year 2006 was \$24,732 thousand and \$36,144 thousand for the year 2011. This represents an increase of \$11,412 thousand in total GDP or 46.1 percent (on average, 9.2 percent per year for the 5 years). The GDP during 2000s presented an increasing trend, except in 2007 when the GDP decreased by 23.1 percent. The GDP increased in the year 2012 reaching \$35,392 thousand.

The number of paid employees for this sub-sector in the year 2006 was 1,649 and 2,520 for the year 2011, representing an increase of 871 paid employees or 52.8 percent; on average, 10.56 percent per year for the 5 years (Figure 17). The number of employees of this subsector from the years of 2005 to 2012 grew, except in 2007 when it declined slightly by 0.49 percent.

Figure 17: Comparison of Selected Variables
NAICS 6114 - Business Schools and Computer and Management Training
Puerto Rico, 2006 & 2011



Source: U.S. Census Bureau, County Business Patterns and Puerto Rico Planning Board

The annual payroll of this subsector reached \$28,778 thousand in 2006 and \$49,344 thousand in 2011. The annual payroll increased during the years 2006 through 2011. The total annual payroll in the year 2012 increased by 103.4 percent. Despite the increasing tendency of the total annual payroll, the annual payroll per employee decreased in the year 2011. However, during the period of 2006 through 2011 it also had a growing trend. The annual payroll per employee for this subsector in the year 2006 was \$17,452 and \$19,581 for the year 2011. This represents a rise of \$2,129 on annual payroll per employee or 12.2 percent; on average, 2.44 percent per year for the 5 years. The Business Schools and Computer and Management Training sub-sector in the year 2012 had the highest annual payroll per employee according to the historical data from 2005 to 2012.

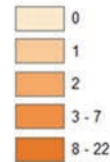
The number of establishments for this subsector in the year 2006 was 63 and 62 for the year 2011. This represents a decrease of 1 establishment or 1.6 percent; on average, 0.32 percent per year for the 5 years. The numbers of establishments in the period of 2005 to 2012 also has a decreasing trend. However, in the years 2006 and 2009 the number of establishments increased. For the year 2011, the spatial analysis performed for the Business Schools and Computer and Management Training subsector showed 62 establishments divided into 5 categories (Figure 18). According with the CBP in the year 2011 the metropolitan area of San Juan has more than 8 establishments of business schools and computer and management training.

Figure 18: Choropleth Map
Total Establishments in Puerto Rico, 2011
Business Schools and Computer and Management Training, (NAICS 6114)



U.S. Department of Commerce, Census Bureau
 County Business Patterns
 Puerto Rico Planning Board
 Economic and Social Planning Program

Establishment

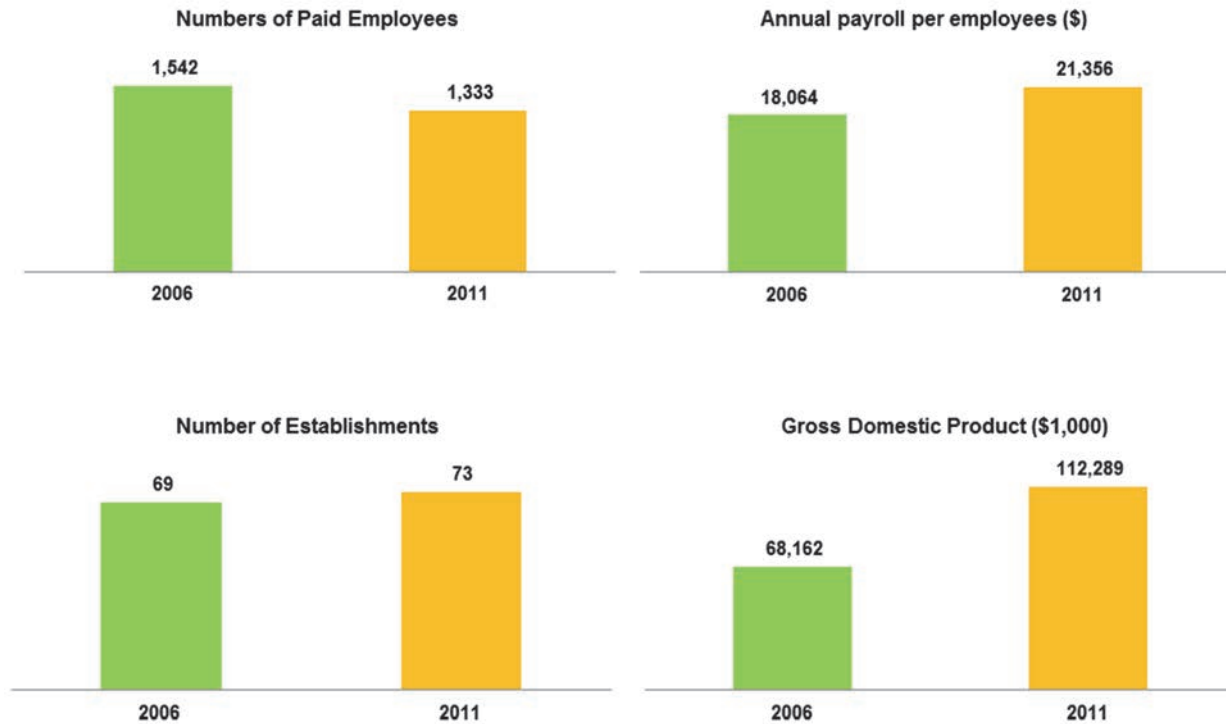


Technical and Trade Schools - NAICS 6115

During the decades of 2000 the GDP of this subsector had growing trends generally, but in the year 2007 the GDP decreased by 18 percent. In the last year of the decade, in 2010, the GDP increased by 35.8 percent. This is the highest percent of change in this decade. The GDP for this sector in the year 2006 was \$68,162 thousand and \$112,289 thousand for the year 2011. This represents an increase of \$44,127 thousand in GDP or 64.74 percent; on average, 12.95 percent per year for the 5 years. The GDP in 2012 reached \$134,334 thousand, representing a growth of 19.6 percent.

The number of paid employees for this sub-sector in the year 2006 was 1,542 and 1,333 for the year 2011 (Figure 19). This represents a decrease of 209 paid employees or 13.55 percent; on average, 2.71 percent per year for the 5 years. In the period of 2005 to 2012, the number of employees decreased consecutively during the year 2007 and 2008, registering a growth rate of changing 24.2 percent and 11.5 percent, respectively. In the remaining years the changes between years were positive. The number of paid employees in 2012 reached 1,447; this represents an increase of 114, but does not surpass the values of the year 2006.

Figure 19: Comparison of Selected Variables
NAICS 6115 – Technical and Trade Schools
Puerto Rico, 2006 & 2011

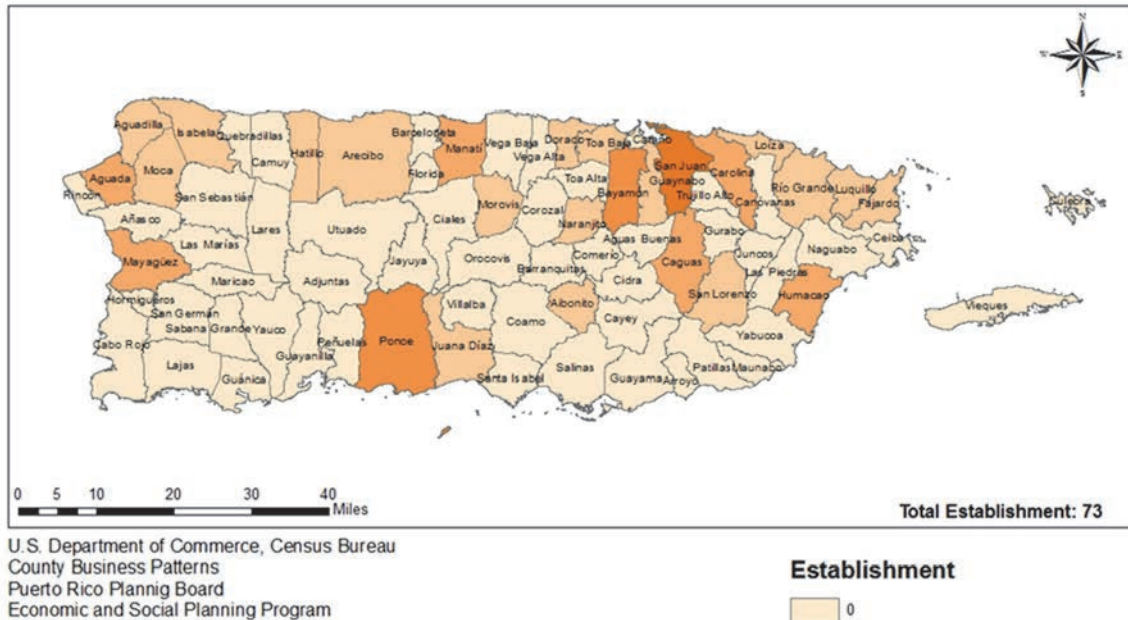


Source: U.S. Census Bureau, County Business Patterns and Puerto Rico Planning Board

The total annual payroll rose during 2006 to 2011. The behavior of the total annual payroll was similar to the number of employees. The total annual payroll in the year 2006 was \$27,855 thousand and in the year 2011 was \$28,468 thousand, representing an increase. The number of employees, the total annual payroll decreased consecutively in the years 2007 and 2008, and the percent of change was 23.6 percent and 4.5 percent respectively, representing an increment. On other hand, the annual payroll per employee for this sector in the year 2006 was \$18,064 and \$21,356 for the year 2011. This represents a rise of \$3,292 on annual payroll per employee or 18.22 percent; on average, 3.64 percent per year for the 5 years.

The number of establishments for this sector in the year 2006 was 69, and 73 for the year 2011. This represents an increase of 4 establishments or 5.80 percent, on average, 1.16 percent per year for the 5 years. In the historic series of 2005 to 2011 the total establishments decreased in the year 2009 and 2010. For the year 2011, the spatial analysis performed for the Technical and Trade Schools subsector showed 73 establishments divided into 5 categories (Figure 20). According with the CBP in the year 2011 the metropolitan area of San Juan had more than 10 establishments of technical and trade schools.

Figure 20: Choropleth Map
Total Establishments in Puerto Rico, 2011
Technical and Trade Schools, (NAICS 6115)



Other Schools and Instruction - NAICS 6116

During the first six years of the decade of 2000 the GDP of the other schools and instruction registered a growth, but in the later years showed fluctuations. The total GDP for this sector in the fiscal year 2006 was \$50,537 thousand and \$35,071 thousand for the fiscal year 2011 (Figure 21). This represents a decrease of \$15,467 thousand in GDP or 30.6 percent; on average, 6.12 percent per year for the 5 years. The GDP increased in the year 2012, reaching \$42,891 thousand.

During the last half of the decade of 2000 the number of employee fluctuated similar to that for the GDP. The percent of change of the number of employee in the year 2009 showed an increase of 46.2 percent. The number of paid employees for this sub-sector in the year 2006 was 1,167 and 1,827 for the year 2011. This represents a rise of 660 paid employees or 56.56 percent; on average, 11.31 percent per year for the 5 years. The number of the employee in the year 2012 reached 1,636; representing a decrease.

Figure 21: Comparison of Selected Variables
NAICS 6116 – Other Schools and Instruction
Puerto Rico, 2006 & 2011

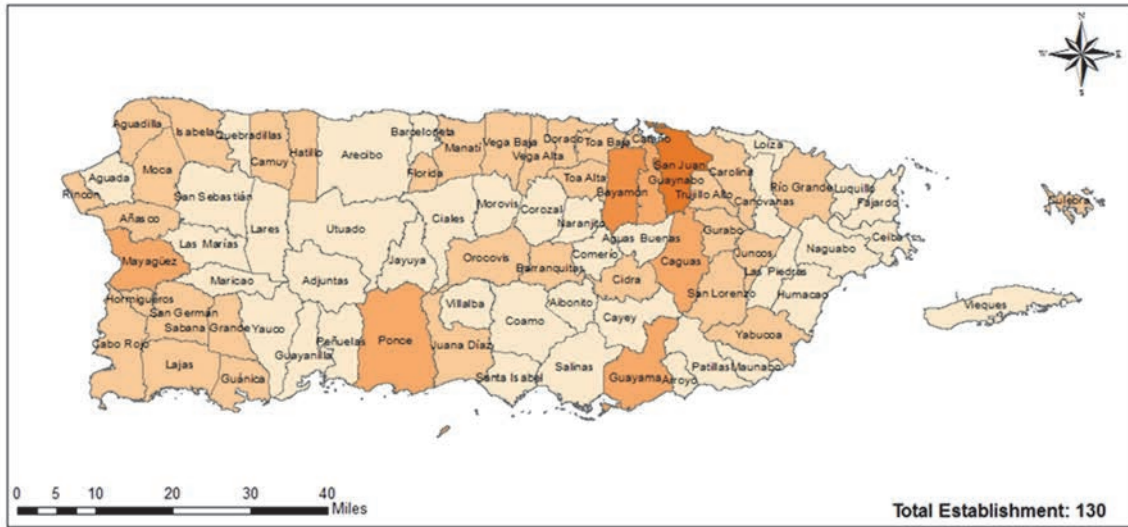


Source: U.S. Census Bureau, County Business Patterns and Puerto Rico Planning Board

In general terms, during the period of 2006 through 2011 the total annual payroll tended to grow consistently. The total annual payroll in the year 2012 was \$24,404 thousand, while the annual payroll per employee in the period evaluated of 2006 through 2011 has fluctuations. In years of 2008 to 2010 the annual payroll per employee decreased. The annual payroll per employee for this sector in the year 2006 was \$13,322 and \$13,149 for the year 2011. This represents a decrease of \$173 on annual payroll per employee or 1.30 percent; on average, 0.26 percent per year for the 5 years.

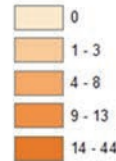
The number of establishments for this sector in the year 2006 was 120 and 130 for the year 2011. This represents an increase of 10 establishments or 8.33 percent; on average, 1.67 percent per year for the 5 years. In general terms, during the period of 2005 to 2012 the number of establishments of this subsector fluctuated with a growing trend. For the year 2011, the spatial analysis performed for other schools and instruction subsector showed 130 establishments divided into 5 categories (Figure 22). According with the CBP in the year 2011 the metropolitan area of San Juan had more than 11 establishments of other schools and instruction.

Figure 22: Choropleth Map
Total Establishments in Puerto Rico, 2011
Other Schools and Instruction, (NAICS 6116)



U.S. Department of Commerce, Census Bureau
 County Business Patterns
 Puerto Rico Planning Board
 Economic and Social Planning Program

Establishment

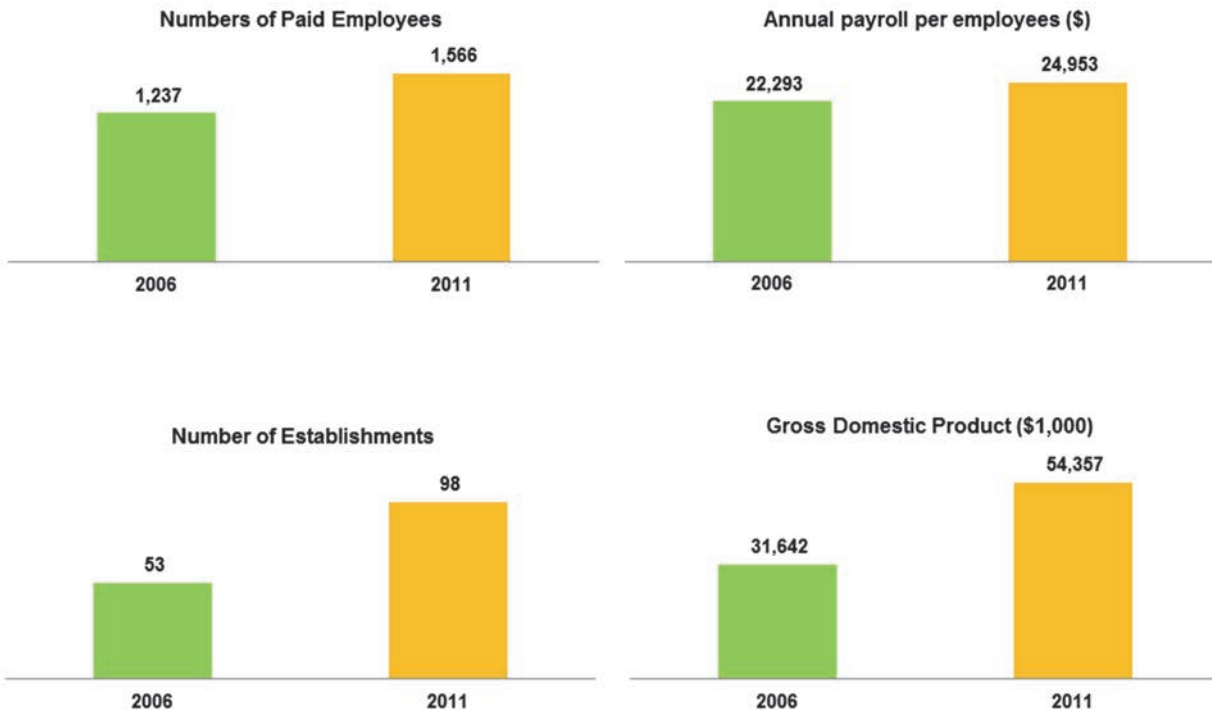


Educational Support Services - NAICS 6117

The GDP of the Educational Support Services for the decades of 2000s registered a trend of growth, except for the year 2007 when the GDP decreased by 22 percent. Since then, the GDP later made up for that decline. The GDP for this sector in the year 2006 was \$31,642 thousand and \$54,357 thousand for the year 2011. This represents an increase of \$22,715 thousand in total gross domestic product or 71.79 percent; on average, 14.36 percent per year for the 5 years. The GDP of the subsector in the year 2012 was \$56,747 thousand, which represents an increase.

The number of paid employees for this subsector in the year 2006 was 1,237 and 1,566 for the year 2011 (Figure 23). This represents an increase of 329 paid employees or 26.6 percent; on average, 5.32 percent per year for the 5 years. The tendency of the number of employee during the period 2006 to 2011 was an increase.

Figure 23: Comparison of Selected Variables
NAICS 6117 – Educational Support Services
Puerto Rico, 2006 & 2011

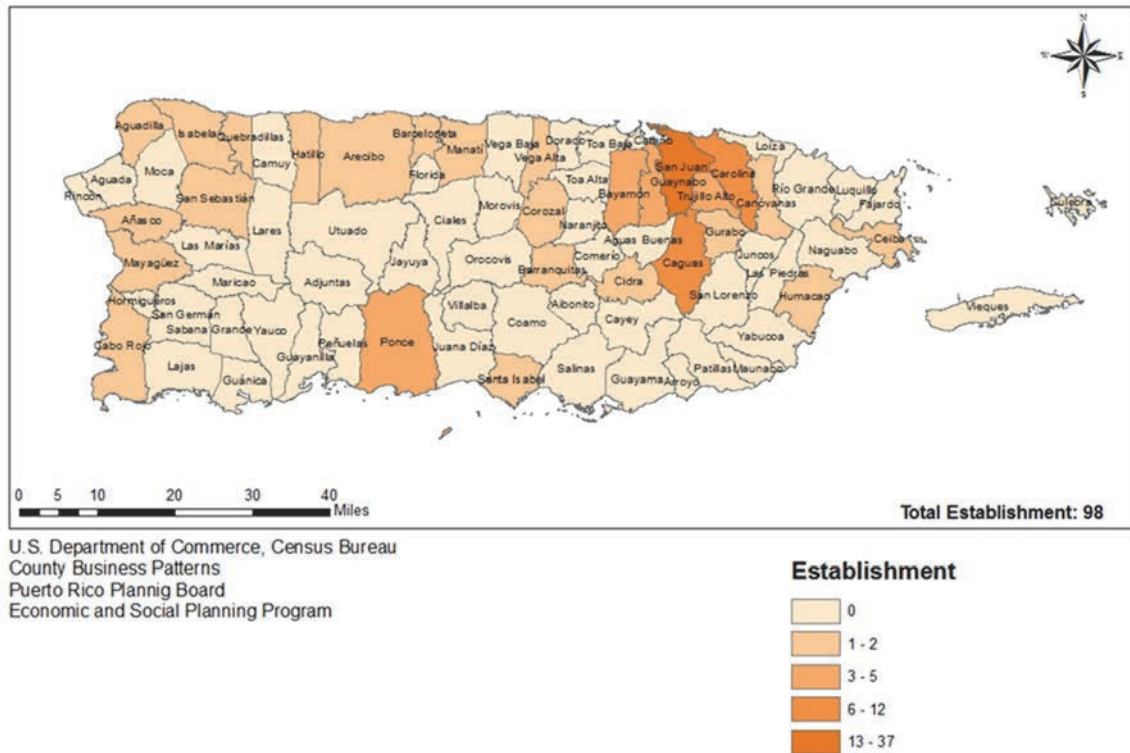


Source: U.S. Census Bureau, County Business Patterns and Puerto Rico Planning Board

Although, the total annual payroll of this subsector shows a growth trend that is not the case when we analyze the annual payroll per employee. The total annual payroll in the year 2006 was \$27,576 thousand, \$39,077 thousand for the year 2011. Meanwhile, the annual payroll per employee in the year 2006 was \$22,293 and \$24,953 for the year 2011. This represents an increase of \$2,661 on payroll per employee or 11.94 percent; on average, 2.39 percent per year for the 5 years.

The number of establishments during the period of 2005 to 2012 presented a rise, with some decreases in the years 2006 and 2009. The number of establishments for this sector in the year 2006 was 53 and 98 for the year 2011. This represents an increase of 45 establishments or 84.91 percent; on average, 16.98 percent per year for the 5 years. For the year 2011, the spatial analysis performed for the Educational Support Services subsector showed 98 establishments divided into 5 categories. According with the CBP in the year 2011 the metropolitan areas of San Juan, Caguas, and Carolina had more than 6 establishments of educational support services (Figure 24).

Figure 24: Choropleth Map
Total Establishments in Puerto Rico, 2011
Educational Support Services, (NAICS 6117)



E. Relevance of the Educational Services Sector in the economy activity

The education services industry impact different sectors of the economy of Puerto Rico. The education is a key to the performance, productivity and sustainability for businesses. According to Schweke (2004), “the research shows that high quality education increases the income of individuals and the economic health of their communities” and “the expenditures on education have a direct and positive impact on a country's business climate”. Ozturk (2001) mentions that education is one of the fundamental factors of development; no country can reach sustainable economic development without a substantial investment in human capital. He added that education increases the productivity and creativity of the people; promotes the technological advances and the development of enterprises and contributes to improving the distribution of the income of a society” (as cited in Quintana 2014).

F. Risks in the Educational Services Sector

The risk for Educational Services Sector was determined principally for the trends in population changes. According to Calderón (2014) the public school, private school and higher education institutions reported a decline in total student enrollment. Basic education in the public sector lost about 140,000 students from 2002 to 2012, while the private sector lost nearly 56,000 students at that level in the same period. This represents a decline of 23.0 percent for the public education and 27.0 percent for the private education. Moreover, the higher education group had shown a steady rise from 2002 to 2011. However, in 2012 this group lost 4,697 students.

“The decline in enrollment in basic education institutions and higher education reflects demographic, economic and migratory factors. Also, especially in the case of higher education, changes in the eligibility criteria for Pell grants (implemented in 2012) reduce to six years the time a student may receive this scholarship. Because of this, students who met that time without completing their bachelor’s degree were automatically excluded from this benefit. As time passes, it is likely that the number of students who go without this benefit increases (...)”

“On the other hand, the decline in student enrollment will have short, medium and long term impact on the economic, scientific and cultural development of Puerto Rico. It is not only a demographic and migration phenomenon. Coordinated effort and vision of all social sectors to redesign and adapt the educational system of Puerto Rico at all levels to address local and global challenges is required. We will have to bet on social capital to compensate for the loss of human capital that is coming” (Calderón 2014).²

Other of the risk for the Educational Services Sector that should be taken into account is the use of federal funds to cover the operational expenses. In addition the operational expenses increase in the latest years. During the years of 2000 to 2013 the federal funds represented between a 25 percent to a 43 percent of the operational budget (González 2014).

III. Regional Trends: Proportions, Location Quotient, and Benchmark Analysis

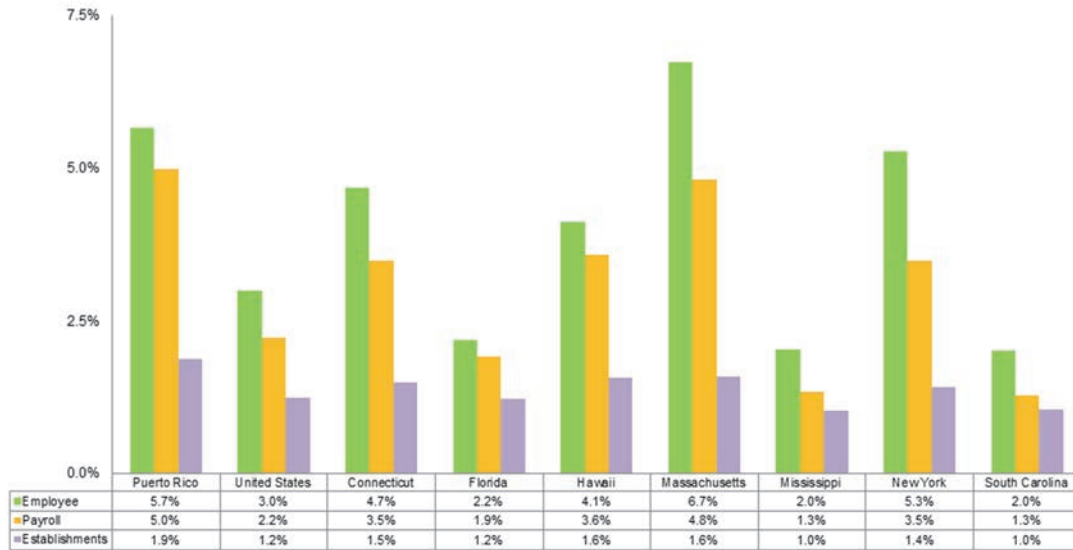
In order to analyze the regional trends and the performance of the economy sectors different calculations were prepared. Those analyses include proportions, location quotient (LQ), and benchmark. This facilitates the comparison between regions, in this case, Puerto Rico with United States and selected states (Connecticut, Florida, Hawaii, Massachusetts, Mississippi, New York, and South Carolina). The calculations were made for the number of employees, annual payroll, annual payroll per employee, and number of establishments based on Puerto Rico and United States data from the United States Census Bureau, CBP for the year 2011.

A. Proportions

The proportion analysis was calculated by dividing the amount of the sector or subsector between the total for all sector of the economy. These proportions of the Educational Services Sector showed that Puerto Rico surpass the United States and the selected states, except Massachusetts, in all the variables. For example, the proportions of employees were 5.66 percent in Puerto Rico versus 2.99 percent in the United States. For annual payroll the proportions were 4.98 percent versus 2.23 percent respectively. In the total establishments the proportion in Puerto Rico was 1.88 percent versus 1.24 in the United States. Figure 25 shows the proportion by state.

Figure 25: Comparison of Selected Variables

Selected Variables as a Proportion of the Total for all Sectors
NAICS 61 - Educational Services
Puerto Rico, United States, and Selected States, 2011



Calculated by PR Planning Board with data from the U.S. Census Bureau, County Business Patterns

The major proportion of employees and annual payroll in Puerto Rico, United States, and selected states were in Elementary and Secondary Schools; and Colleges, Universities, and Professional Schools sub-sectors. Tables 5 and 6 shows the data related with the proportions for the Educational Services Sector and its subsectors.

Table 5: Employees as a Proportion of the Total for all Sectors
NAICS 61 - Educational Services Sector and Sub-Sectors
Puerto Rico, USA, and Selected States, 2011

| Industrial Sector | Puerto Rico | United States | Connecticut | Florida | Hawaii | Massachusetts | Mississippi | New York | South Carolina |
|--|-------------|---------------|-------------|---------|--------|---------------|-------------|----------|----------------|
| 61 - Educational Services | 5.66% | 2.99% | 4.66% | 2.18% | 4.11% | 6.72% | 2.03% | 5.27% | 2.01% |
| 6111 - Elementary and Secondary Schools | 1.71% | 0.77% | 1.15% | 0.71% | 2.53% | 1.12% | 1.16% | 1.10% | 0.57% |
| 6112 - Junior Colleges | 0.29% | 0.08% | 0.03% | 0.05% | 0.07% | 0.12% | 0.02% | 0.17% | 0.04% |
| 6113 - Colleges, Universities, and Professional Schools | 2.59% | 1.56% | 2.79% | 0.82% | 1.00% | 4.67% | 0.62% | 3.14% | 1.12% |
| 6114 - Business Schools and Computer and Management Training | 0.37% | 0.06% | 0.06% | 0.07% | 0.03% | 0.05% | 0.02% | 0.07% | 0.02% |
| 6115 - Technical and Trade Schools | 0.20% | 0.12% | 0.13% | 0.19% | 0.07% | 0.18% | 0.05% | 0.14% | 0.05% |
| 6116 - Other Schools and Instruction | 0.27% | 0.32% | 0.46% | 0.30% | 0.38% | 0.41% | 0.11% | 0.48% | 0.19% |
| 6117 - Educational Support Services | 0.23% | 0.08% | 0.03% | 0.04% | 0.03% | 0.15% | 0.03% | 0.16% | 0.02% |

Calculated by Economic and Social Planning Program of the Puerto Rico Planning Board with data from the U.S. Census Bureau, County Business Patterns

Table 6: Total Annual Payroll as a Proportion of the Total for all Sectors
NAICS 61 - Educational Services Sector and Sub-Sectors
Puerto Rico, USA, and Selected States, 2011

| Industrial Sector | Puerto Rico | United States | Connecticut | Florida | Hawaii | Massachusetts | Mississippi | New York | South Carolina |
|--|-------------|---------------|-------------|---------|--------|---------------|-------------|----------|----------------|
| 61 - Educational Services | 4.98% | 2.23% | 3.48% | 1.91% | 3.58% | 4.80% | 1.33% | 3.47% | 1.29% |
| 6111 - Elementary and Secondary Schools | 1.22% | 0.55% | 0.90% | 0.53% | 2.54% | 0.80% | 0.77% | 0.71% | 0.40% |
| 6112 - Junior Colleges | 0.25% | 0.06% | 0.01% | 0.06% | 0.07% | 0.06% | 0.02% | 0.09% | 0.04% |
| 6113 - Colleges, Universities, and Professional Schools | 2.65% | 1.26% | 2.25% | 0.86% | 0.70% | 3.45% | 0.39% | 2.22% | 0.70% |
| 6114 - Business Schools and Computer and Management Training | 0.30% | 0.07% | 0.07% | 0.09% | 0.03% | 0.06% | 0.03% | 0.07% | 0.02% |
| 6115 - Technical and Trade Schools | 0.17% | 0.10% | 0.09% | 0.20% | 0.05% | 0.11% | 0.05% | 0.08% | 0.05% |
| 6116 - Other Schools and Instruction | 0.15% | 0.12% | 0.13% | 0.14% | 0.17% | 0.15% | 0.04% | 0.17% | 0.07% |
| 6117 - Educational Support Services | 0.24% | 0.07% | 0.03% | 0.03% | 0.03% | 0.17% | 0.04% | 0.12% | 0.01% |

Calculated by Economic and Social Planning Program of the Puerto Rico Planning Board with data from the U.S. Census Bureau, County Business Patterns

On the other hand, the major proportion of establishments in Puerto Rico, United States, and selected states, except Hawaii, were in the sub-sectors: elementary and secondary schools; and other schools and instruction. Table 7 describes the data.

**Table 7: Establishments as a Proportion of the Total for all Sectors
NAICS 61 - Educational Services Sector and Sub-Sectors
Puerto Rico, USA, and Selected States, 2011**

| Industrial Sector | Puerto Rico | United States | Connecticut | Florida | Hawaii | Massachusetts | Mississippi | New York | South Carolina |
|--|-------------|---------------|-------------|---------|--------|---------------|-------------|----------|----------------|
| 61 - Educational Services | 1.88% | 1.24% | 1.50% | 1.21% | 1.58% | 1.60% | 1.02% | 1.41% | 1.05% |
| 6111 - Elementary and Secondary Schools | 0.80% | 0.29% | 0.29% | 0.25% | 0.39% | 0.34% | 0.45% | 0.34% | 0.27% |
| 6112 - Junior Colleges | 0.06% | 0.01% | 0.01% | 0.01% | 0.39% | 0.01% | 0.01% | 0.01% | 0.01% |
| 6113 - Colleges, Universities, and Professional Schools | 0.20% | 0.06% | 0.03% | 0.05% | 0.39% | 0.06% | 0.04% | 0.05% | 0.07% |
| 6114 - Business Schools and Computer and Management Training | 0.14% | 0.10% | 0.12% | 0.12% | 0.01% | 0.13% | 0.05% | 0.09% | 0.08% |
| 6115 - Technical and Trade Schools | 0.17% | 0.11% | 0.12% | 0.12% | 0.01% | 0.12% | 0.09% | 0.07% | 0.09% |
| 6116 - Other Schools and Instruction | 0.30% | 0.57% | 0.83% | 0.56% | 0.01% | 0.80% | 0.28% | 0.71% | 0.47% |
| 6117 - Educational Support Services | 0.22% | 0.10% | 0.10% | 0.10% | 0.07% | 0.14% | 0.09% | 0.12% | 0.07% |

Calculated by Economic and Social Planning Program of the Puerto Rico Planning Board with data from the U.S. Census Bureau, County Business Patterns

B. Location Quotient (LQ)

The Location Quotient (LQ) is a way of quantify how concentrated an industry is in a region compared to another region. LQ is calculated as a percentage share of the total of the observed variable for the sector or sub-sector in Puerto Rico, divided by the percentage share of the total of the same observed variable for the same sector or sub-sector of another region. LQ was calculated for the variables: numbers of employees, total annual payroll, and number of establishments.

1. Number of Paid Employees

LQ with respect to the number of paid employees for the educational services sector in 2011 was 1.9 meaning that Puerto Rico had 1.9 paid employees for every 1 paid employee in the United States. The LQ comparisons of Puerto Rico with the selected states were: 1.21 for Connecticut; 2.60 for Florida; 1.38 for Hawaii; 0.84 for Massachusetts; 2.79 for Mississippi; 1.07 for New York; and 2.81 for South Carolina. Table 8 shows the LQ calculated for the Educational Services Sector and its subsectors with respect of the number of paid employees.

**Table 8: Location Quotient of Number of Employees
NAICS 61 - Educational Services Sector and Sub-Sectors
Puerto Rico, USA, and Selected States, 2011**

| Industrial Sector | United States | Connecticut | Florida | Hawaii | Massachusetts | Mississippi | New York | South Carolina |
|--|---------------|-------------|---------|--------|---------------|-------------|----------|----------------|
| 61 - Educational Services | 1.90 | 1.21 | 2.60 | 1.38 | 0.84 | 2.79 | 1.07 | 2.81 |
| 6111 - Elementary and Secondary Schools | 2.23 | 1.48 | 2.40 | 0.67 | 1.52 | 1.47 | 1.55 | 3.00 |
| 6112 - Junior Colleges | 3.58 | 10.28 | 5.31 | 4.25 | 2.37 | 11.64 | 1.67 | 6.49 |
| 6113 - Colleges, Universities, and Professional Schools | 1.66 | 0.93 | 3.17 | 2.59 | 0.55 | 4.18 | 0.83 | 2.32 |
| 6114 - Business Schools and Computer and Management Training | 6.35 | 5.76 | 5.56 | 13.55 | 6.91 | 15.89 | 5.01 | 22.23 |
| 6115 - Technical and Trade Schools | 1.63 | 1.52 | 1.03 | 2.70 | 1.08 | 3.70 | 1.41 | 3.68 |
| 6116 - Other Schools and Instruction | 0.85 | 0.59 | 0.91 | 0.71 | 0.66 | 2.38 | 0.57 | 1.41 |
| 6117 - Educational Support Services | 2.91 | 7.37 | 5.86 | 6.84 | 1.54 | 8.86 | 1.45 | 10.81 |

Calculated by Economic and Social Planning Program of the Puerto Rico Planning Board with data from the U.S. Census Bureau, County Business Patterns

In terms of the subsectors, Puerto Rico had the highest LQ (22.23) in the Business Schools and Computer and Management subsector compared with the state of South Carolina. The lowest LQ (0.57) was registered in the Other Schools and Instruction subsector compared with the state of New York. It could be observed that Puerto Rico has strengths in the Business Schools and Computer and Management subsector (NAICS 6114) and weakness in the Other Schools and Instruction subsector (NAICS 6116). These data serve to establish public policy about which sector could be promoted and which not.

2. Annual Payroll

LQ with respect to the annual payroll for the Educational Services Sector in 2011 was 2.23 meaning that Puerto Rico had \$2.23 in annual payroll for every \$1 in annual payroll in the United States. This analysis was made for other selected states. The LQ with respect to the annual payroll for the selected states were: 1.43 for Connecticut; 2.61 for Florida; 1.39 for Hawaii; 1.04 for Massachusetts; 3.73 for Mississippi; 1.43 for New York; and 3.87 for South Carolina. (see Table 9).

**Table 9: Location Quotient of Total Annual Payroll
NAICS 61 - Educational Services Sector and Sub-Sectors
Puerto Rico, USA, and Selected States, 2011**

| Industrial Sector | United States | Connecticut | Florida | Hawaii | Massachusetts | Mississippi | New York | South Carolina |
|--|---------------|-------------|---------|--------|---------------|-------------|----------|----------------|
| 61 - Educational Services | 2.23 | 1.43 | 2.61 | 1.39 | 1.04 | 3.73 | 1.43 | 3.87 |
| 6111 - Elementary and Secondary Schools | 2.25 | 1.37 | 2.30 | 0.48 | 1.54 | 1.59 | 1.72 | 3.08 |
| 6112 - Junior Colleges | 4.19 | 18.12 | 4.32 | 3.60 | 4.09 | 11.75 | 2.63 | 6.82 |
| 6113 - Colleges, Universities, and Professional Schools | 2.10 | 1.18 | 3.10 | 3.76 | 0.77 | 6.78 | 1.19 | 3.78 |
| 6114 - Business Schools and Computer and Management Training | 4.39 | 4.24 | 3.30 | 11.84 | 4.75 | 11.76 | 4.45 | 15.15 |
| 6115 - Technical and Trade Schools | 1.74 | 1.96 | 0.88 | 3.48 | 1.56 | 3.42 | 2.12 | 3.32 |
| 6116 - Other Schools and Instruction | 1.19 | 1.13 | 1.01 | 0.88 | 0.99 | 3.98 | 0.87 | 2.22 |
| 6117 - Educational Support Services | 3.17 | 7.82 | 7.39 | 8.10 | 1.36 | 6.04 | 1.96 | 16.48 |

Calculated by Economic and Social Planning Program of the Puerto Rico Planning Board with data from the U.S. Census Bureau, County Business Patterns

In terms of the subsectors, Puerto Rico has the highest LQ (18.12) in the Junior Colleges subsector compared with the state of Connecticut. The lowest LQ (0.48) was registered in the Elementary and secondary subsector compared with the state of Hawaii.

3. Number of Establishments

LQ with respect to the number of establishments for the Educational Services Sector in 2011 was 1.51 meaning that Puerto Rico had 1.51 establishments for every 1 paid employee in the United States. The LQ with respect to the number of establishments for the selected states were 1.26 for Connecticut; 1.55 for Florida; 1.20 for Hawaii; 1.18 for Massachusetts; 1.84 for Mississippi; 1.34 for New York; and 1.79 for South Carolina. (See Table 10)

**Table 10: Location Quotient of Number of Establishments
NAICS 61 - Educational Services Sector and Sub-Sectors
Puerto Rico, USA, and Selected States, 2011**

| Industrial Sector | United States | Connecticut | Florida | Hawaii | Massachusetts | Mississippi | New York | South Carolina |
|--|---------------|-------------|---------|--------|---------------|-------------|----------|----------------|
| 61 - Educational Services | 1.51 | 1.26 | 1.55 | 1.20 | 1.18 | 1.84 | 1.34 | 1.79 |
| 6111 - Elementary and Secondary Schools | 2.79 | 2.79 | 3.19 | 2.05 | 2.39 | 1.77 | 2.32 | 2.97 |
| 6112 - Junior Colleges | 4.36 | 7.14 | 5.36 | 0.15 | 4.00 | 5.54 | 4.48 | 4.07 |
| 6113 - Colleges, Universities, and Professional Schools | 3.55 | 6.13 | 3.74 | 0.52 | 3.42 | 4.55 | 3.85 | 2.94 |
| 6114 - Business Schools and Computer and Management Training | 1.35 | 1.14 | 1.18 | 11.07 | 1.09 | 2.66 | 1.54 | 1.86 |
| 6115 - Technical and Trade Schools | 1.53 | 1.42 | 1.39 | 13.04 | 1.44 | 1.83 | 2.32 | 1.85 |
| 6116 - Other Schools and Instruction | 0.52 | 0.36 | 0.53 | 23.22 | 0.37 | 1.05 | 0.41 | 0.63 |
| 6117 - Educational Support Services | 2.17 | 2.30 | 2.26 | 3.04 | 1.61 | 2.41 | 1.83 | 3.39 |

Calculated by Economic and Social Planning Program of the Puerto Rico Planning Board with data from the U.S. Census Bureau, County Business Patterns

In terms of the subsectors, Puerto Rico has the highest LQ (23.22) in the Other Schools and Instruction subsector compared with the state of Hawaii. The lowest LQ (0.15) was registered in the Junior Colleges subsector compared with the state of Hawaii.

C. Benchmark

1. Annual payroll per employee (Benchmark)

The annual payroll per employee for the Educational Services Sector was analyzed comparing the data of Puerto Rico with the United States. and selected states as a benchmark. Annual payroll per employee in Puerto Rico is presented as a proportion of the annual payroll per employee for the sector and its sub-sectors. The proportion was calculated by dividing the annual payroll per employee for Puerto Rico by the annual payroll per employee for the observed state.

For the year 2011 the annual payroll per employee in Puerto Rico was \$21,513 and in the United States \$34,013. This means that, on average, the annual payroll per employee in Puerto Rico is 63 percent of what it is in the United States which represents a difference of \$12,500. The comparison of annual payroll per employee of Puerto Rico with the states results in 51 percent of Connecticut; 62 percent of Florida; 65 percent of Hawaii; 54 percent of Massachusetts; 98 percent of Mississippi; 55 percent of New York, and 94 percent of South Carolina (Table 12).

**Table 12: Benchmark Analysis of Annual Payroll per Employee
NAICS 61 - Educational Services Sector and Sub-Sectors
Puerto Rico, USA, and Selected States, 2011**

| Industrial Sector | United States | Connecticut | Florida | Hawaii | Massachusetts | Mississippi | New York | South Carolina |
|--|---------------|-------------|---------|--------|---------------|-------------|----------|----------------|
| 61 - Educational Services | 63% | 51% | 62% | 65% | 54% | 98% | 55% | 94% |
| 6111 - Elementary and Secondary Schools | 54% | 40% | 59% | 46% | 44% | 80% | 46% | 70% |
| 6112 - Junior Colleges | 63% | 76% | 51% | 55% | 76% | 74% | 65% | 72% |
| 6113 - Colleges, Universities, and Professional Schools | 68% | 55% | 61% | 94% | 61% | 119% | 60% | 111% |
| 6114 - Business Schools and Computer and Management Training | 37% | 32% | 37% | 56% | 30% | 54% | 37% | 47% |
| 6115 - Technical and Trade Schools | 57% | 56% | 53% | 84% | 63% | 68% | 62% | 62% |
| 6116 - Other Schools and Instruction | 76% | 82% | 69% | 80% | 66% | 123% | 63% | 107% |
| 6117 - Educational Support Services | 59% | 46% | 78% | 77% | 39% | 50% | 56% | 104% |

Calculated by Economic and Social Planning Program of the Puerto Rico Planning Board with data from the U.S. Census Bureau, County Business Patterns

In terms of the subsectors, the highest percent (123 percent) of annual payroll per employee as a benchmark were registered in the other schools and instruction subsector compared with the state of Mississippi. The lowest percent (30 percent) of annual payroll per employee as a benchmark were registered in the business schools and computer and management subsector compared with the state of Massachusetts.

D. Future Regional Perspective of the Educational Services Sector

The Educational Services Sector in Puerto Rico faces major challenges to the current situation. Some of these challenges are the recent changes in public policy about federal funds assignation, demographical changes and the changes in the overall economy. This development plan proposes to examine two strategies in the field of Educational Services that have potential for regional and international development.

The first strategy proposed increases in the number of courses and online degrees. Currently, the range of courses and online degrees is limited. For example, the offer of online courses in the University of Puerto Rico is not substantial. Furthermore, this offer has to be bilingual to guarantee a broader market in the United States and other english language speaking countries.

The second strategy proposes the development of the sector through better Educational Services Sector for United States residents and international students. Puerto Rico may represent an attractive platform for United States residents and international students. This may represent a significant impact to the economy. In the report The Economic Benefits of International Students to the United States Economy (NAFSA, Association of Internal Educators, 2013) it was estimated that in Puerto Rico there are 943 students and that the impact of them on the economy is about \$14 million a year, about \$19,000 per student. These statistics can increase and have a greater economic impact if a public policy is created to develop this niche. Certainly, Puerto Rico has comparative advantages with respect to the rest of the Caribbean in that our system of higher education is accredited by the same agencies that regulate universities in United States. Also our educational institutions offer academic degrees both in English and Spanish and this represents an advantage for students from Hispanic countries. Finally, it may be mentioned that the cost study in Puerto Rico is lower than universities in the United States and that represents an economic advantage.

IV. Global Trends

A. Comparison of Characteristics

This section presents a comparison of some characteristics of the Educational Services Sector in an international framework. Table 13 shows statistical information of the number of employees in the Educational Services Sector as a proportion of total of all sectors of the economy. Data shows that the number of employees as a proportion of the whole economy in Puerto Rico averaged 4.8 percent for the period 2003 to 2011. For United States this percentage is 9.4 for the mentioned period. Other countries were selected for comparison purposes.

Table 13: Number of Employees of Education Sector as a Proportion of Total of all Sectors (%)
International Comparison
Years 2003 to 2011

| | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
|----------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Austria | 6.79 | 6.74 | 6.78 | 6.90 | 6.90 | 6.99 | 7.18 | 7.19 | 7.1 |
| Belgium | 9.4 | 9.45 | 9.49 | 9.47 | 9.37 | 9.38 | 9.73 | 9.79 | 9.71 |
| Czech Republic | 6.9 | 6.77 | 6.58 | 6.62 | 6.58 | 6.42 | 6.56 | 6.59 | 6.53 |
| Denmark | 7.78 | 7.82 | 7.83 | 7.61 | 7.19 | 7.18 | 7.53 | 8.47 | 8.63 |
| Finland | 7.65 | 7.71 | 7.56 | 7.45 | 7.29 | 7.21 | 7.45 | 7.6 | 7.62 |
| France* | 7.57 | 7.46 | 7.30 | 7.26 | 7.19 | 7.16 | 7.16 | 7.08 | N/D |
| Germany* | 6.17 | 6.18 | 6.23 | 6.27 | 6.24 | 6.25 | 6.41 | 6.48 | 6.43 |
| Hungary | 9.22 | 9.37 | 9.03 | 8.86 | 8.71 | 8.83 | 9.16 | 9.19 | N/D |
| Iceland** | 8.91 | 8.82 | 8.47 | 8.6 | 8.71 | 9.15 | N/D | N/D | N/D |
| Ireland | 7.55 | 7.49 | 7.37 | 7.60 | 7.69 | 7.80 | N/D | N/D | N/D |
| Israel | 14.0 | 13.9 | 13.9 | 14.0 | 14.0 | 13.7 | N/D | N/D | N/D |
| Italy | 8.08 | 7.98 | 7.91 | 7.79 | 7.65 | 7.54 | 7.45 | 7.31 | 7.16 |
| Japan | 4.70 | 4.74 | 4.80 | 4.75 | 4.69 | 4.76 | N/D | N/D | N/D |
| Netherlands | 6.14 | 6.18 | 6.16 | 6.07 | 6.06 | 6.11 | 6.24 | 6.28 | 6.21 |
| Norway | 8.38 | 8.26 | 8.16 | 7.96 | 7.75 | 7.58 | 7.78 | 7.95 | 7.93 |
| Slovenia | 7.31 | 7.41 | 7.54 | 7.53 | 7.31 | 7.21 | 7.59 | 8.03 | N/D |
| United States | 9.16 | 9.17 | 9.14 | 9.1 | 9.14 | 9.33 | 9.84 | 9.91 | 9.77 |
| Puerto Rico* | 4.14 | 4.67 | 4.36 | 4.43 | 4.54 | 4.71 | 5.32 | 5.53 | 5.66 |

*Source: Organization for Economic Co-operation and Development (OECD), STAN Database for Structural Analysis, ISIC Rev. 4

*Puerto Rico data information Sources: U.S. Census, County Business Patterns

Analysis by Economic and social Planning Program of the Puerto Rico Planning Board

N/D No Data

In terms of the Annual Payroll, the Table 14 shows the proportion of this payroll compared with all sectors of the economy. It could be observed that the annual payroll fluctuated between 3.7 percent to almost 5 percent as a proportion of the total annual payroll for all sectors in the economy for the period 2003 to 2011. For United States this percentage fluctuated between 7 and 8 percent for the period 2003 to 2011. Other countries were selected for comparison purposes.

Table 14: Total Annual Payroll of Education Sector as a Proportion of Total of all Sectors (%)
International Comparison
Years 2003 – 2011

| | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
|----------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Austria | 7.92 | 8.00 | 8.09 | 8.04 | 7.99 | 8.03 | 8.38 | 8.45 | 8.26 |
| Belgium | 9.83 | 9.66 | 9.79 | 9.66 | 9.64 | 9.81 | 10.1 | 10.2 | 10.2 |
| Czech Republic | 6.74 | 6.56 | 6.61 | 6.59 | 6.55 | 6.25 | 6.77 | 6.63 | 6.75 |
| Denmark | 8.02 | 8.01 | 7.89 | 7.74 | 7.29 | 7.38 | 7.86 | 8.89 | 8.89 |
| Finland | 7.85 | 7.90 | 7.80 | 7.65 | 7.5 | 7.48 | 7.82 | 7.93 | N/D |
| France | 7.74 | 7.39 | 7.26 | 7.06 | 7.12 | 7.08 | 7.21 | 7.17 | N/D |
| Germany | 7.20 | 7.23 | 7.16 | 7.07 | 6.92 | 6.80 | 7.19 | 7.16 | 7.03 |
| Hungary | 8.76 | 8.21 | 8.21 | 7.97 | 7.29 | 7.15 | 6.99 | 6.96 | N/D |
| Italy | 8.93 | 8.43 | 8.61 | 8.47 | 8.47 | 8.01 | 8.33 | 8.09 | 7.68 |
| Netherlands | 6.84 | 6.84 | 6.81 | 6.77 | 6.71 | 6.79 | 7.13 | 7.19 | 7.05 |
| Norway | 8.44 | 8.31 | 8.16 | 7.86 | 7.60 | 7.5 | 7.75 | 7.94 | 7.89 |
| Slovenia | 8.49 | 8.56 | 8.62 | 8.57 | 8.16 | 8.03 | 8.65 | 8.84 | N/D |
| Sweden | 7.94 | 7.95 | 7.88 | 7.79 | 7.5 | 7.45 | 7.71 | 7.66 | 7.54 |
| United States | 8.05 | 7.96 | 7.85 | 7.79 | 7.79 | 8.04 | 8.61 | 8.53 | N/D |
| Puerto Rico* | 3.76 | 3.81 | 3.80 | 3.82 | 3.93 | 4.11 | 4.46 | 4.76 | 4.98 |

Source: Organization for Economic Co-operation and Development (OECD), STAN Database for Structural Analysis, ISIC Rev. 4

*Puerto Rico data information Sources: U.S. Census, County Business Patterns

Analysis by Puerto Rico Planning Board

N/D No Data

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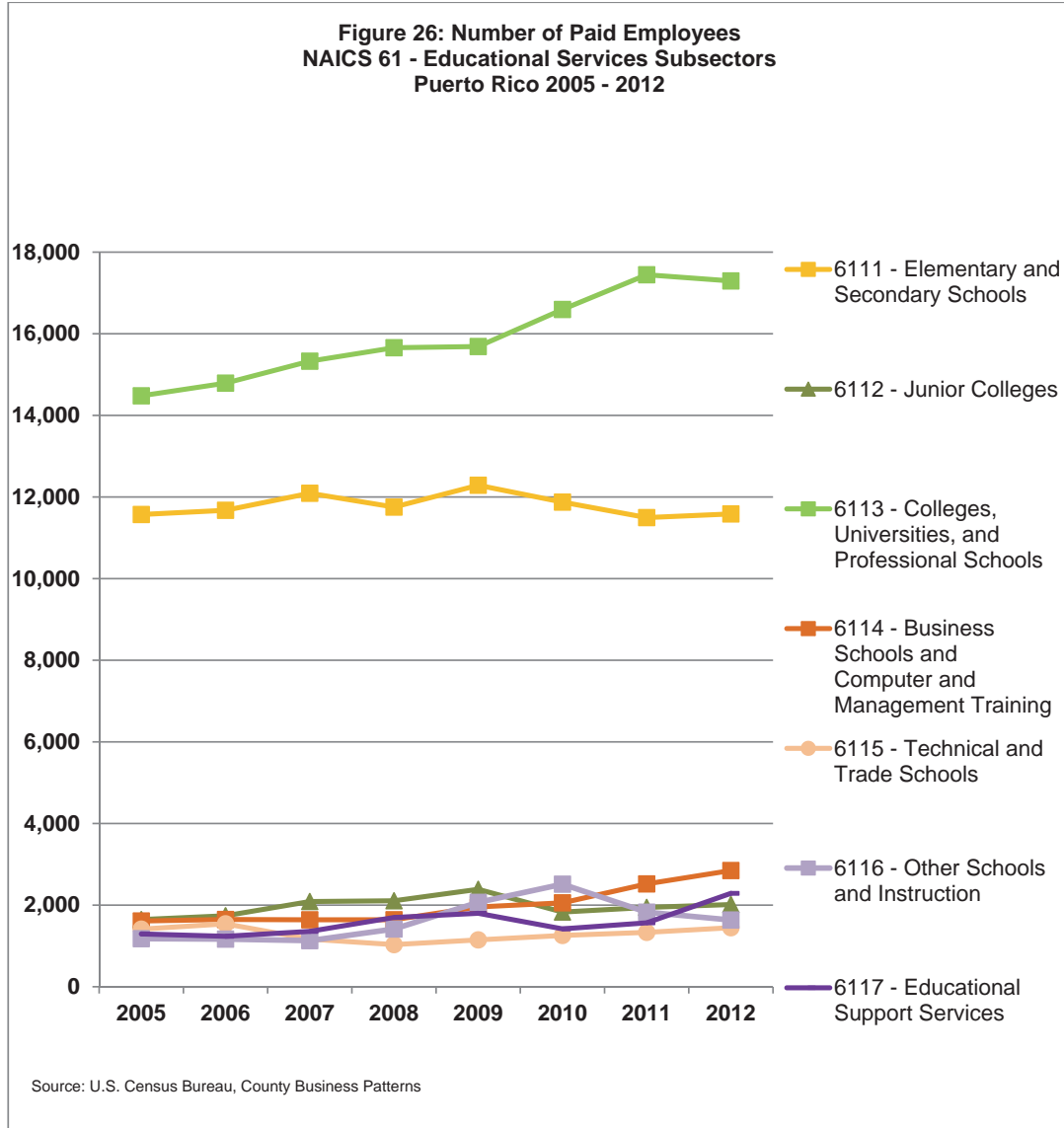
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Appendixes

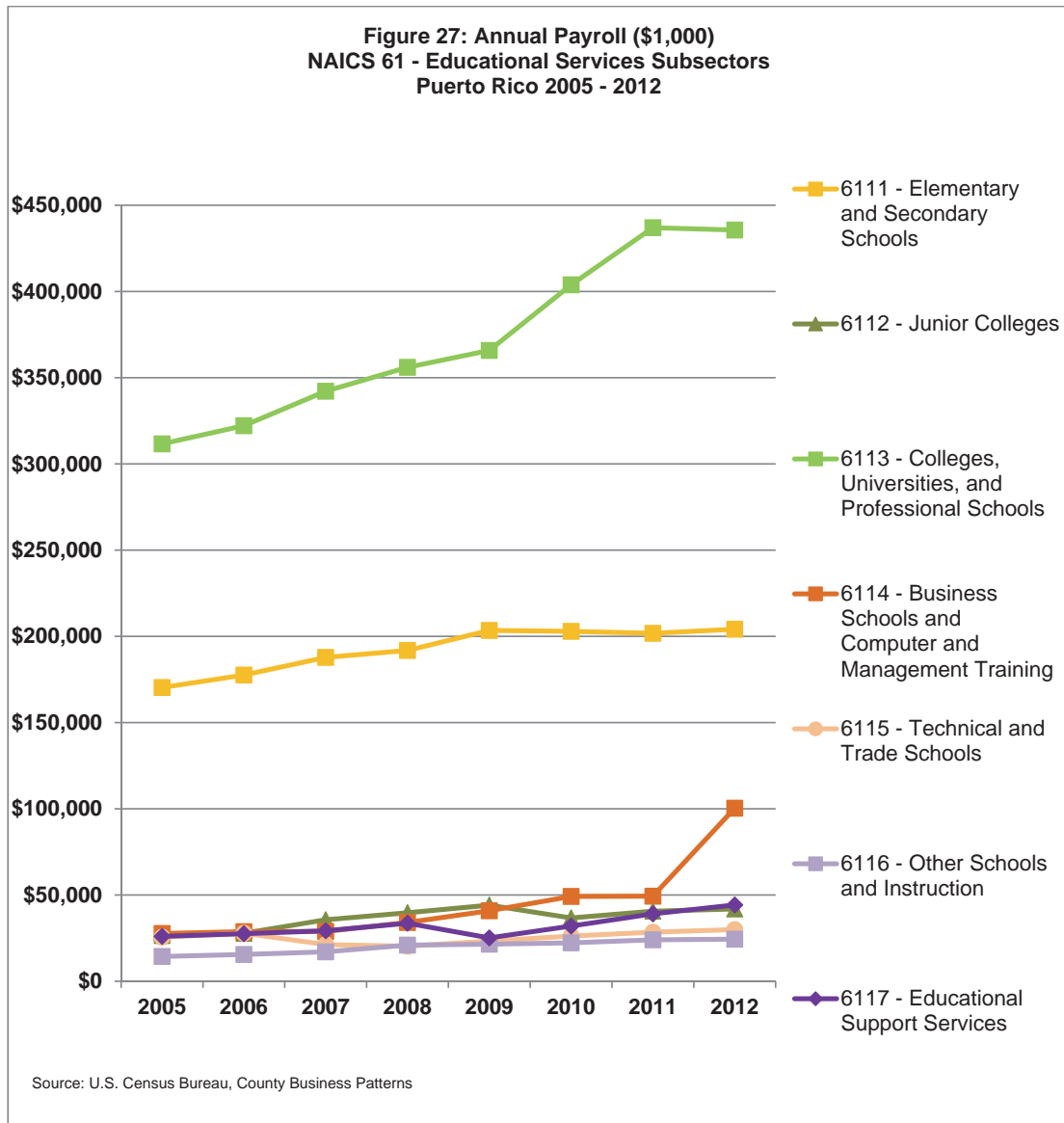
| Table 15: Number of Employees NAICS 61 - Education Sector and Sub-Sectors Puerto Rico, 2005 - 2012 | | | | | | | | |
|---|--------|--------|---------|---------|--------|---------|---------|---------|
| | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
| 61 - Educational Services | | | | | | | | |
| Number of Employees | 33,194 | 33,800 | 34,804 | 35,306 | 37,338 | 37,548 | 38,132 | 39,116 |
| Absolute Change | | 606 | 1,004 | 502 | 2,032 | 210 | 584 | 984 |
| Percent Change | | 1.83% | 2.97% | 1.44% | 5.76% | 0.56% | 1.56% | 2.58% |
| Proportion of the Total for all Sectors | 4.36% | 4.43% | 4.54% | 4.71% | 5.32% | 5.53% | 5.66% | 5.66% |
| 6111 - Elementary and Secondary Schools | | | | | | | | |
| Number of Employees | 11,571 | 11,675 | 12,092 | 11,753 | 12,288 | 11,875 | 11,496 | 11,586 |
| Absolute Change | | 104 | 417 | -339 | 535 | -413 | -379 | 90 |
| Percent Change | | 0.90% | 3.57% | -2.80% | 4.55% | -3.36% | -3.19% | 0.78% |
| Proportion of the Total for all Sectors | 1.52% | 1.53% | 1.58% | 1.57% | 1.75% | 1.75% | 1.71% | 1.68% |
| 6112 - Junior Colleges | | | | | | | | |
| Number of Employees | 1,647 | 1,740 | 2,088 | 2,107 | 2,388 | 1,831 | 1,944 | 2,015 |
| Absolute Change | | 93 | 348 | 19 | 281 | -557 | 113 | 71 |
| Percent Change | | 5.65% | 20.00% | 0.91% | 13.34% | -23.32% | 6.17% | 3.65% |
| Proportion of the Total for all Sectors | 0.22% | 0.23% | 0.27% | 0.28% | 0.34% | 0.27% | 0.29% | 0.29% |
| 6113 - Colleges, Universities, and Professional Schools | | | | | | | | |
| Number of Employees | 14,480 | 14,790 | 15,328 | 15,658 | 15,688 | 16,595 | 17,446 | 17,295 |
| Absolute Change | | 310 | 538 | 330 | 30 | 907 | 851 | -151 |
| Percent Change | | 2.14% | 3.64% | 2.15% | 0.19% | 5.78% | 5.13% | -0.87% |
| Proportion of the Total for all Sectors | 1.90% | 1.94% | 2.00% | 2.09% | 2.23% | 2.45% | 2.59% | 2.50% |
| 6114 - Business Schools and Computer and Management Training | | | | | | | | |
| Number of Employees | 1,611 | 1,649 | 1,641 | 1,642 | 1,956 | 2,057 | 2,520 | 2,848 |
| Absolute Change | | 38 | -8 | 1 | 314 | 101 | 463 | 328 |
| Percent Change | | 2.36% | -0.49% | 0.06% | 19.12% | 5.16% | 22.51% | 13.02% |
| Proportion of the Total for all Sectors | 0.21% | 0.22% | 0.21% | 0.22% | 0.28% | 0.30% | 0.37% | 0.41% |
| 6115 - Technical and Trade Schools | | | | | | | | |
| Number of Employees | 1,412 | 1,542 | 1,168 | 1,033 | 1,149 | 1,257 | 1,333 | 1,447 |
| Absolute Change | | 130 | -374 | -135 | 116 | 108 | 76 | 114 |
| Percent Change | | 9.21% | -24.25% | -11.56% | 11.23% | 9.40% | 6.05% | 8.55% |
| Proportion of the Total for all Sectors | 0.19% | 0.20% | 0.15% | 0.14% | 0.16% | 0.19% | 0.20% | 0.21% |
| 6116 - Other Schools and Instruction | | | | | | | | |
| Number of Employees | 1,178 | 1,167 | 1,130 | 1,415 | 2,069 | 2,514 | 1,827 | 1,636 |
| Absolute Change | | -11 | -37 | 285 | 654 | 445 | -687 | -191 |
| Percent Change | | -0.93% | -3.17% | 25.22% | 46.22% | 21.51% | -27.33% | -10.45% |
| Proportion of the Total for all Sectors | 0.15% | 0.15% | 0.15% | 0.19% | 0.29% | 0.37% | 0.27% | 0.24% |
| 6117 - Educational Support Services | | | | | | | | |
| Number of Employees | 1,295 | 1,237 | 1,357 | 1,698 | 1,800 | 1,419 | 1,566 | 2,289 |
| Absolute Change | | -58 | 120 | 341 | 102 | -381 | 147 | 723 |
| Percent Change | | -4.48% | 9.70% | 25.13% | 6.01% | -21.17% | 10.36% | 46.17% |
| Proportion of the Total for all Sectors | 0.17% | 0.16% | 0.18% | 0.23% | 0.26% | 0.21% | 0.23% | 0.33% |

Source: U.S. Census Bureau, County Business Patterns; Analysis made by the Economic and Social Planning Program of the Puerto Rico Planning Board



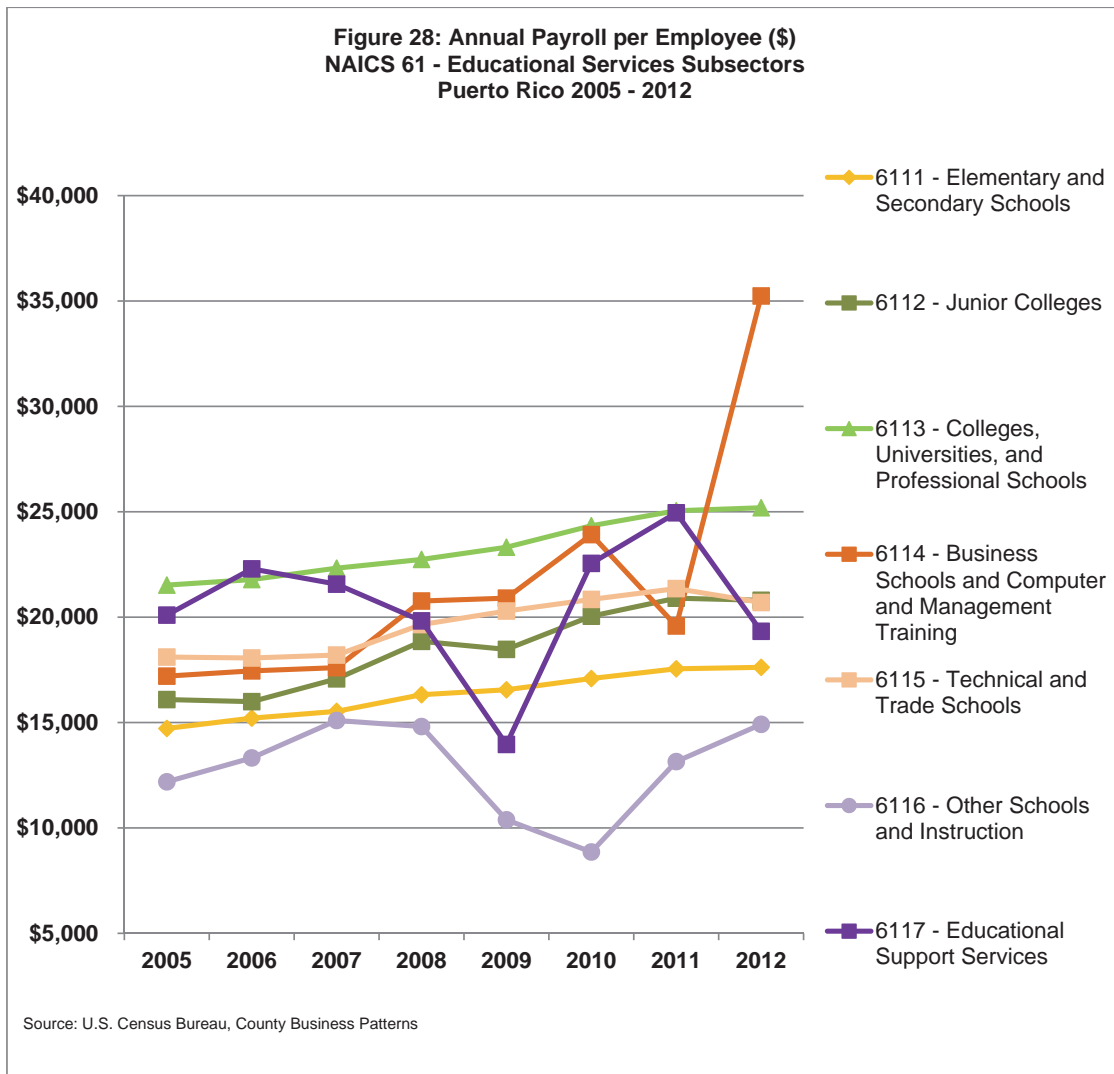
| Table 16: Annual Payroll (\$1000) NAICS 61 - Education Sector and Sub-Sectors Puerto Rico, 2005 - 2012 | | | | | | | | |
|---|---------|---------|---------|---------|---------|---------|---------|---------|
| | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
| 61 - Educational Services | | | | | | | | |
| Annual Payroll (\$1000) | 602,140 | 627,355 | 662,119 | 696,622 | 724,200 | 773,181 | 820,348 | 836,464 |
| Absolute Change | | 25,215 | 34,764 | 34,503 | 27,578 | 48,981 | 47,167 | 16,116 |
| Percent Change | | 4.19% | 5.54% | 5.21% | 3.96% | 6.76% | 6.10% | 1.96% |
| Proportion of the Total for all Sectors | 3.80% | 3.82% | 3.93% | 4.11% | 4.46% | 4.76% | 4.98% | 4.96% |
| 6111 - Elementary and Secondary Schools | | | | | | | | |
| Annual Payroll (\$1000) | 170,331 | 177,580 | 187,811 | 191,834 | 203,445 | 202,921 | 201,783 | 204,162 |
| Absolute Change | | 7,249 | 10,231 | 4,023 | 11,611 | -524 | -1,138 | 2,379 |
| Percent Change | | 4.26% | 5.76% | 2.14% | 6.05% | -0.26% | -0.56% | 1.18% |
| Proportion of the Total for all Sectors | 1.07% | 1.08% | 1.11% | 1.13% | 1.25% | 1.25% | 1.22% | 1.21% |
| 6112 - Junior Colleges | | | | | | | | |
| Number of Employees | 26,501 | 27,828 | 35,649 | 39,725 | 44,112 | 36,704 | 40,630 | 41,914 |
| Absolute Change | | 1,327 | 7,821 | 4,076 | 4,387 | -7,408 | 3,926 | 1,284 |
| Percent Change | | 5.01% | 28.10% | 11.43% | 11.04% | -16.79% | 10.70% | 3.16% |
| Proportion of the Total for all Sectors | 0.17% | 0.17% | 0.21% | 0.23% | 0.27% | 0.23% | 0.25% | 0.25% |
| 6113 - Colleges, Universities, and Professional Schools | | | | | | | | |
| Annual Payroll (\$1000) | 311,641 | 322,191 | 342,177 | 356,048 | 365,814 | 403,880 | 437,022 | 435,673 |
| Absolute Change | | 10,550 | 19,986 | 13,871 | 9,766 | 38,066 | 33,142 | -1,349 |
| Percent Change | | 3.39% | 6.20% | 4.05% | 2.74% | 10.41% | 8.21% | -0.31% |
| Proportion of the Total for all Sectors | 1.96% | 1.96% | 2.03% | 2.10% | 2.25% | 2.49% | 2.65% | 2.58% |
| 6114 - Business Schools and Computer and Management Training | | | | | | | | |
| Number of Employees | 27,713 | 28,778 | 28,891 | 34,098 | 40,887 | 49,198 | 49,344 | 100,365 |
| Absolute Change | | 1,065 | 113 | 5,207 | 6,789 | 8,311 | 146 | 51,021 |
| Percent Change | | 3.84% | 0.39% | 18.02% | 19.91% | 20.33% | 0.30% | 103.40% |
| Proportion of the Total for all Sectors | 0.17% | 0.18% | 0.17% | 0.20% | 0.25% | 0.30% | 0.30% | 0.59% |
| 6115 - Technical and Trade Schools | | | | | | | | |
| Annual Payroll (\$1000) | 25,568 | 27,855 | 21,261 | 20,297 | 23,316 | 26,200 | 28,468 | 29,946 |
| Absolute Change | | 2,287 | -6,594 | -964 | 3,019 | 2,884 | 2,268 | 1,478 |
| Percent Change | | 8.94% | -23.67% | -4.53% | 14.87% | 12.37% | 8.66% | 5.19% |
| Proportion of the Total for all Sectors | 0.16% | 0.17% | 0.13% | 0.12% | 0.14% | 0.16% | 0.17% | 0.18% |
| 6116 - Other Schools and Instruction | | | | | | | | |
| Annual Payroll (\$1000) | 14,360 | 15,547 | 17,063 | 20,957 | 21,493 | 22,276 | 24,024 | 24,404 |
| Absolute Change | | 1,187 | 1,516 | 3,894 | 536 | 783 | 1,748 | 380 |
| Percent Change | | 8.27% | 9.75% | 22.82% | 2.56% | 3.64% | 7.85% | 1.58% |
| Proportion of the Total for all Sectors | 0.09% | 0.09% | 0.10% | 0.12% | 0.13% | 0.14% | 0.15% | 0.14% |
| 6117 - Educational Support Services | | | | | | | | |
| Annual Payroll (\$1000) | 26,026 | 27,576 | 29,267 | 33,663 | 25,133 | 32,002 | 39,077 | 44,245 |
| Absolute Change | | 1,550 | 1,691 | 4,396 | -8,530 | 6,869 | 7,075 | 5,168 |
| Percent Change | | 5.96% | 6.13% | 15.02% | -25.34% | 27.33% | 22.11% | 13.23% |
| Proportion of the Total for all Sectors | 0.16% | 0.17% | 0.17% | 0.20% | 0.15% | 0.20% | 0.24% | 0.26% |

Source: U.S. Census Bureau, County Business Patterns; Analysis made by the Economic and Social Planning Program of the Puerto Rico Planning Board



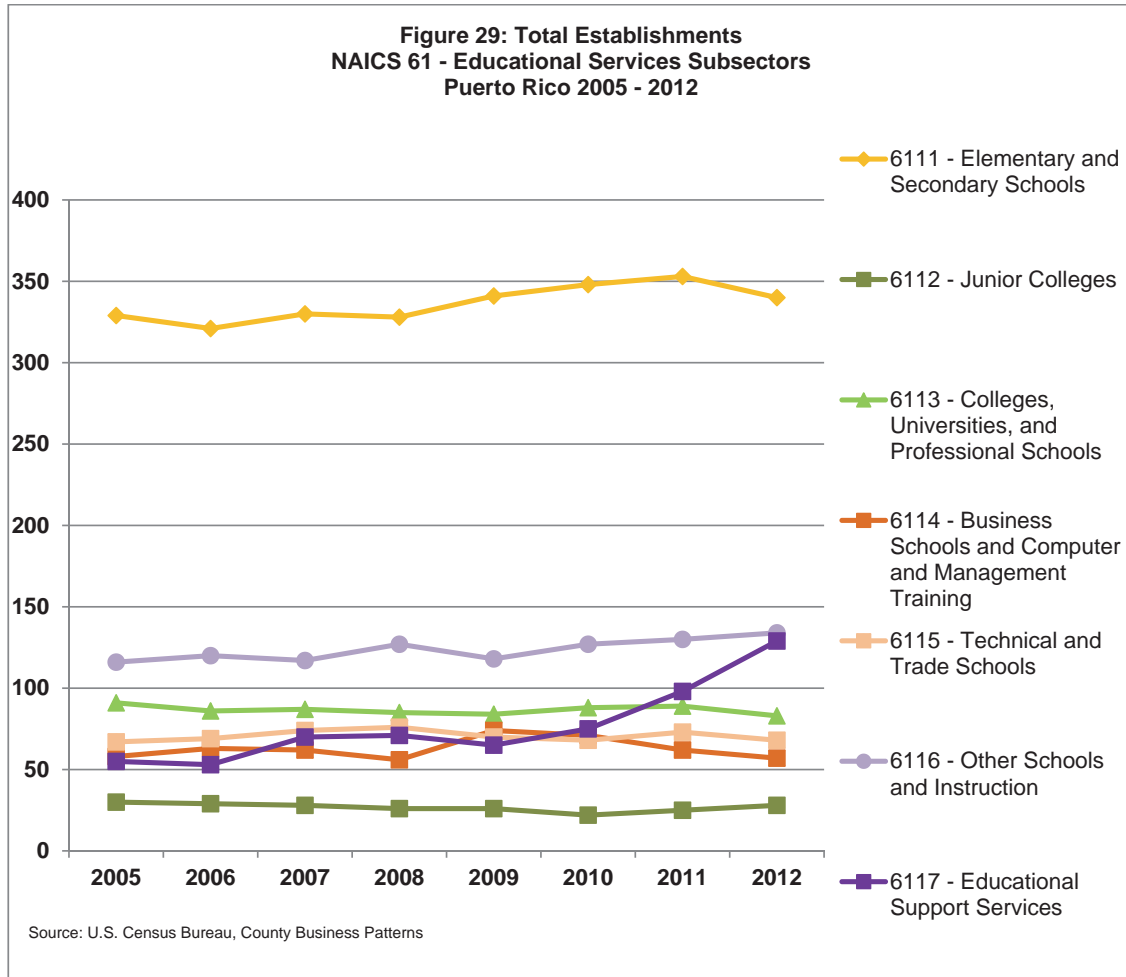
| Table 17: Annual Payroll per Employee (\$) NAICS 61 - Education Sector and Sub-Sectors Puerto Rico, 2005 - 2012 | | | | | | | | |
|--|---------|---------|---------|---------|---------|---------|---------|---------|
| | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
| 61 - Educational Services | | | | | | | | |
| Payroll per Employee (\$) | 18,140 | 18,561 | 19,024 | 19,731 | 19,396 | 20,592 | 21,513 | 21,384 |
| Absolute Change | | 421 | 463 | 707 | -335 | 1,196 | 922 | -129 |
| Percent Change | | 2.32% | 2.50% | 3.72% | -1.70% | 6.17% | 4.48% | -0.60% |
| Benchmark Analysis - Sector vs. Total Average of Puerto Rico | 87.10% | 86.11% | 86.63% | 87.07% | 83.84% | 86.00% | 87.92% | 87.50% |
| 6111 - Elementary and Secondary Schools | | | | | | | | |
| Payroll per Employee (\$) | 14,721 | 15,210 | 15,532 | 16,322 | 16,556 | 17,088 | 17,552 | 17,621 |
| Absolute Change | | 490 | 322 | 790 | 234 | 532 | 464 | 69 |
| Percent Change | | 3.33% | 2.11% | 5.09% | 1.44% | 3.21% | 2.72% | 0.39% |
| Benchmark Analysis - Sub-Sector vs. Total Average of Puerto Rico | 70.68% | 70.57% | 70.73% | 72.03% | 71.57% | 71.37% | 71.73% | 72.10% |
| 6112 - Junior Colleges | | | | | | | | |
| Payroll per Employee (\$) | 16,090 | 15,993 | 17,073 | 18,854 | 18,472 | 20,046 | 20,900 | 20,801 |
| Absolute Change | | -97 | 1,080 | 1,781 | -381 | 1,574 | 854 | -99 |
| Percent Change | | -0.61% | 6.75% | 10.43% | -2.02% | 8.52% | 4.26% | -0.47% |
| Benchmark Analysis - Sub-Sector vs. Total Average of Puerto Rico | 77.26% | 74.20% | 77.74% | 83.20% | 79.85% | 83.72% | 85.41% | 85.11% |
| 6113 - Colleges, Universities, and Professional Schools | | | | | | | | |
| Payroll per Employee (\$) | 21,522 | 21,784 | 22,324 | 22,739 | 23,318 | 24,337 | 25,050 | 25,191 |
| Absolute Change | | 262 | 539 | 415 | 579 | 1,019 | 713 | 141 |
| Percent Change | | 1.22% | 2.48% | 1.86% | 2.55% | 4.37% | 2.93% | 0.56% |
| Benchmark Analysis - Sub-Sector vs. Total Average of Puerto Rico | 103.34% | 101.07% | 101.65% | 100.34% | 100.80% | 101.64% | 102.37% | 103.08% |
| 6114 - Business Schools and Computer and Management Training | | | | | | | | |
| Payroll per Employee (\$) | 17,202 | 17,452 | 17,606 | 20,766 | 20,903 | 23,917 | 19,581 | 35,241 |
| Absolute Change | | 249 | 154 | 3,160 | 137 | 3,014 | -4,336 | 15,660 |
| Percent Change | | 1.45% | 0.88% | 17.95% | 0.66% | 14.42% | -18.13% | 79.97% |
| Benchmark Analysis - Sub-Sector vs. Total Average of Puerto Rico | 82.60% | 80.97% | 80.17% | 91.64% | 90.36% | 99.89% | 80.02% | 144.20% |
| 6115 - Technical and Trade Schools | | | | | | | | |
| Payroll per Employee (\$) | 18,108 | 18,064 | 18,203 | 19,649 | 20,292 | 20,843 | 21,356 | 20,695 |
| Absolute Change | | -43 | 139 | 1,446 | 644 | 551 | 513 | -661 |
| Percent Change | | -0.24% | 0.77% | 7.94% | 3.28% | 2.71% | 2.46% | -3.10% |
| Benchmark Analysis - Sub-Sector vs. Total Average of Puerto Rico | 86.94% | 83.81% | 82.89% | 86.70% | 87.72% | 87.05% | 87.27% | 84.68% |
| 6116 - Other Schools and Instruction | | | | | | | | |
| Payroll per Employee (\$) | 12,190 | 13,322 | 15,100 | 14,811 | 10,388 | 8,861 | 13,149 | 14,917 |
| Absolute Change | | 1,132 | 1,778 | -289 | -4,422 | -1,527 | 4,289 | 1,767 |
| Percent Change | | 9.29% | 13.34% | -1.92% | -29.86% | -14.70% | 48.40% | 13.44% |
| Benchmark Analysis - Sub-Sector vs. Total Average of Puerto Rico | 58.53% | 61.81% | 68.76% | 65.36% | 44.90% | 37.01% | 53.74% | 61.04% |
| 6117 - Educational Support Services | | | | | | | | |
| Payroll per Employee (\$) | 20,097 | 22,293 | 21,567 | 19,825 | 13,963 | 22,553 | 24,953 | 19,329 |
| Absolute Change | | 2,195 | -725 | -1,742 | -5,862 | 8,590 | 2,401 | -5,624 |
| Percent Change | | 10.92% | -3.25% | -8.08% | -29.57% | 61.52% | 10.65% | -22.54% |
| Benchmark Analysis - Sub-Sector vs. Total Average of Puerto Rico | 96.50% | 103.43% | 98.21% | 87.48% | 60.36% | 94.19% | 101.97% | 79.09% |

Source: U.S. Census Bureau, County Business Patterns; Analysis made by the Economic and Social Planning Program of the Puerto Rico Planning Board



| Table 18: Total Establishments NAICS 61 - Education Sector and Sub-Sectors Puerto Rico, 2005 - 2012 | | | | | | | | |
|--|-------|--------|--------|--------|--------|---------|---------|--------|
| | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
| 61 - Educational Services | | | | | | | | |
| Total Establishments | 746 | 741 | 768 | 769 | 778 | 799 | 830 | 839 |
| Absolute Change | | -5 | 27 | 1 | 9 | 21 | 31 | 9 |
| Percent Change | | -0.67% | 3.64% | 0.13% | 1.17% | 2.70% | 3.88% | 1.08% |
| Proportion of the Total for all Sectors | 1.59% | 1.60% | 1.62% | 1.66% | 1.71% | 1.79% | 1.88% | 1.87% |
| 6111 - Elementary and Secondary Schools | | | | | | | | |
| Total Establishments | 329 | 321 | 330 | 328 | 341 | 348 | 353 | 340 |
| Absolute Change | | -8 | 9 | -2 | 13 | 7 | 5 | -13 |
| Percent Change | | -2.43% | 2.80% | -0.61% | 3.96% | 2.05% | 1.44% | -3.68% |
| Proportion of the Total for all Sectors | 0.70% | 0.69% | 0.70% | 0.71% | 0.75% | 0.78% | 0.80% | 0.76% |
| 6112 - Junior Colleges | | | | | | | | |
| Total Establishments | 30 | 29 | 28 | 26 | 26 | 22 | 25 | 28 |
| Absolute Change | | -1 | -1 | -2 | 0 | -4 | 3 | 3 |
| Percent Change | | -3.33% | -3.45% | -7.14% | 0.00% | -15.38% | 13.64% | 12.00% |
| Proportion of the Total for all Sectors | 0.06% | 0.06% | 0.06% | 0.06% | 0.06% | 0.05% | 0.06% | 0.06% |
| 6113 - Colleges, Universities, and Professional Schools | | | | | | | | |
| Total Establishments | 91 | 86 | 87 | 85 | 84 | 88 | 89 | 83 |
| Absolute Change | | -5 | 1 | -2 | -1 | 4 | 1 | -6 |
| Percent Change | | -5.49% | 1.16% | -2.30% | -1.18% | 4.76% | 1.14% | -6.74% |
| Proportion of the Total for all Sectors | 0.19% | 0.19% | 0.18% | 0.18% | 0.18% | 0.20% | 0.20% | 0.19% |
| 6114 - Business Schools and Computer and Management Training | | | | | | | | |
| Total Establishments | 58 | 63 | 62 | 56 | 74 | 71 | 62 | 57 |
| Absolute Change | | 5 | -1 | -6 | 18 | -3 | -9 | -5 |
| Percent Change | | 8.62% | -1.59% | -9.68% | 32.14% | -4.05% | -12.68% | -8.06% |
| Proportion of the Total for all Sectors | 0.12% | 0.14% | 0.13% | 0.12% | 0.16% | 0.16% | 0.14% | 0.13% |
| 6115 - Technical and Trade Schools | | | | | | | | |
| Number of Employees | 67 | 69 | 74 | 76 | 70 | 68 | 73 | 68 |
| Total Establishments | | 2 | 5 | 2 | -6 | -2 | 5 | -5 |
| Percent Change | | 2.99% | 7.25% | 2.70% | -7.89% | -2.86% | 7.35% | -6.85% |
| Proportion of the Total for all Sectors | 0.14% | 0.15% | 0.16% | 0.16% | 0.15% | 0.15% | 0.17% | 0.15% |
| 6116 - Other Schools and Instruction | | | | | | | | |
| Total Establishments | 116 | 120 | 117 | 127 | 118 | 127 | 130 | 134 |
| Absolute Change | | 4 | -3 | 10 | -9 | 9 | 3 | 4 |
| Percent Change | | 3.45% | -2.50% | 8.55% | -7.09% | 7.63% | 2.36% | 3.08% |
| Proportion of the Total for all Sectors | 0.25% | 0.26% | 0.25% | 0.27% | 0.26% | 0.28% | 0.30% | 0.30% |
| 6117 - Educational Support Services | | | | | | | | |
| Total Establishments | 55 | 53 | 70 | 71 | 65 | 75 | 98 | 129 |
| Absolute Change | | -2 | 17 | 1 | -6 | 10 | 23 | 31 |
| Percent Change | | -3.64% | 32.08% | 1.43% | -8.45% | 15.38% | 30.67% | 31.63% |
| Proportion of the Total for all Sectors | 0.12% | 0.11% | 0.15% | 0.15% | 0.14% | 0.17% | 0.22% | 0.29% |

Source: U.S. Census Bureau, County Business Patterns; Analysis made by the Economic and Social Planning Program of the Puerto Rico Planning Board



EDUCATIONAL SERVICES SECTOR DEVELOPMENT PLAN

**Table 19: Gross Domestic Product (\$1,000) (Nominal)
NAICS 61 - Education Sector and Sub-Sectors
Puerto Rico, Fiscal Years 2000 to 2012**

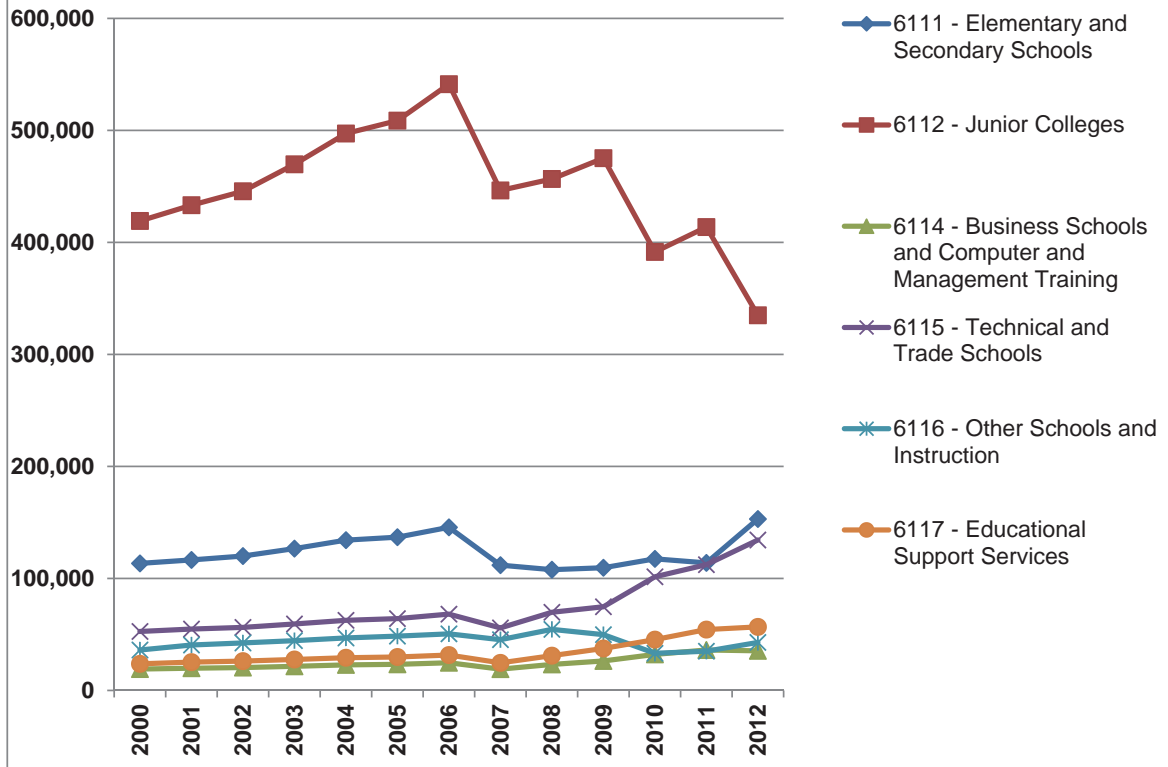
| | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 61 - Educational Services | | | | | | | | | | | | | |
| Gross Domestic Product (\$1,000) | 664,351 | 690,377 | 711,080 | 749,485 | 793,027 | 811,472 | 862,008 | 703,198 | 743,119 | 773,138 | 721,291 | 765,491 | 737,464 |
| Absolute Change | | 26,026 | 20,703 | 38,405 | 43,542 | 18,445 | 50,536 | - | 39,921 | 30,019 | -51,847 | 44,200 | -28,027 |
| Percent Change | | 3.92% | 3.00% | 5.40% | 5.81% | 2.33% | 6.23% | 158.81% | 5.68% | 4.04% | -6.71% | 6.13% | -3.66% |
| Proportion of the Total for all Sectors | 1.08% | 0.99% | 0.98% | 0.99% | 0.99% | 0.97% | 0.99% | 0.79% | 0.79% | 0.80% | 0.73% | 0.76% | 0.73% |
| 6111 - Elementary and Secondary Schools | | | | | | | | | | | | | |
| Gross Domestic Product (\$1,000) | 113,442 | 116,556 | 120,017 | 126,644 | 134,199 | 136,856 | 145,655 | 111,890 | 107,817 | 109,572 | 117,503 | 113,911 | 153,058 |
| Absolute Change | | 3,114 | 3,461 | 6,627 | 7,555 | 2,657 | 8,799 | -33,765 | -4,073 | 1,755 | 7,931 | -3,592 | 39,147 |
| Percent Change | | 2.75% | 2.97% | 5.52% | 5.97% | 1.98% | 6.43% | -23.18% | -3.64% | 1.63% | 7.24% | -3.06% | 34.37% |
| Proportion of the Total for all Sectors | 0.18% | 0.17% | 0.17% | 0.17% | 0.17% | 0.16% | 0.17% | 0.12% | 0.12% | 0.11% | 0.12% | 0.11% | 0.13% |
| 6112 - Junior Colleges | | | | | | | | | | | | | |
| Gross Domestic Product (\$1,000) | 419,172 | 433,263 | 445,672 | 469,761 | 497,227 | 508,760 | 541,279 | 446,420 | 456,638 | 475,213 | 391,525 | 413,720 | 334,952 |
| Absolute Change | | 14,091 | 12,409 | 24,089 | 27,466 | 11,533 | 32,519 | -94,859 | 10,218 | 18,575 | -83,688 | 22,195 | -78,768 |
| Percent Change | | 3.36% | 2.86% | 5.41% | 5.85% | 2.32% | 6.39% | -17.52% | 2.29% | 4.07% | -17.61% | 5.67% | -19.04% |
| Proportion of the Total for all Sectors | 0.68% | 0.62% | 0.61% | 0.62% | 0.62% | 0.61% | 0.62% | 0.50% | 0.49% | 0.49% | 0.40% | 0.41% | 0.33% |
| 6114 - Business Schools and Computer and Management Training | | | | | | | | | | | | | |
| Gross Domestic Product (\$1,000) | 19,119 | 19,854 | 20,451 | 21,570 | 22,837 | 23,310 | 24,732 | 19,016 | 23,241 | 26,334 | 32,196 | 36,144 | 35,392 |
| Absolute Change | | 735 | 597 | 1,119 | 1,267 | 473 | 1,422 | -5,716 | 4,225 | 3,093 | 5,862 | 3,948 | -752 |
| Percent Change | | 3.84% | 3.01% | 5.47% | 5.87% | 2.07% | 6.10% | -23.11% | 22.22% | 13.31% | 22.26% | 12.26% | -2.08% |
| Proportion of the Total for all Sectors | 0.03% | 0.03% | 0.03% | 0.03% | 0.03% | 0.03% | 0.03% | 0.02% | 0.02% | 0.03% | 0.03% | 0.04% | 0.04% |
| 6115 - Technical | | | | | | | | | | | | | |

EDUCATIONAL SERVICES SECTOR DEVELOPMENT PLAN

| | | | | | | | | | | | | | |
|---|--------|--------|--------|--------|--------|--------|--------|---------|--------|--------|---------|---------|---------|
| and Trade Schools Gross Domestic Product (\$1,000) | 52,675 | 54,819 | 56,308 | 59,370 | 62,634 | 64,160 | 68,162 | 55,874 | 69,797 | 74,719 | 101,474 | 112,289 | 134,334 |
| Absolute Change | | 2,144 | 1,489 | 3,062 | 3,264 | 1,526 | 4,002 | -12,288 | 13,923 | 4,922 | 26,755 | 10,815 | 22,045 |
| Percent Change | | 4.07% | 2.72% | 5.44% | 5.50% | 2.44% | 6.24% | -18.03% | 24.92% | 7.05% | 35.81% | 10.66% | 19.63% |
| Proportion of the Total for all Sectors | 0.09% | 0.08% | 0.08% | 0.08% | 0.08% | 0.08% | 0.08% | 0.06% | 0.07% | 0.08% | 0.10% | 0.11% | 0.13% |
| 6116 - Other Schools and Instruction Gross Domestic Product (\$1,000) | 36,145 | 40,585 | 42,433 | 44,481 | 46,901 | 48,502 | 50,537 | 45,332 | 54,535 | 49,830 | 33,181 | 35,071 | 42,891 |
| Absolute Change | | 4,440 | 1,848 | 2,048 | 2,420 | 1,601 | 2,035 | -5,205 | 9,203 | -4,705 | -16,649 | 1,890 | 7,820 |
| Percent Change | | 12.28% | 4.55% | 4.83% | 5.44% | 3.41% | 4.20% | -10.30% | 20.30% | -8.63% | 33.41% | 5.70% | 22.30% |
| Proportion of the Total for all Sectors | 0.06% | 0.06% | 0.06% | 0.06% | 0.06% | 0.06% | 0.06% | 0.05% | 0.06% | 0.05% | 0.03% | 0.04% | 0.04% |
| 6117 - Educational Support Services Gross Domestic Product (\$1,000) | 23,798 | 25,300 | 26,198 | 27,660 | 29,229 | 29,884 | 31,642 | 24,667 | 31,091 | 37,469 | 45,411 | 54,357 | 56,747 |
| Absolute Change | | 1,502 | 898 | 1,462 | 1,569 | 655 | 1,758 | -6,975 | 6,424 | 6,378 | 7,942 | 8,946 | 2,390 |
| Percent Change | | 6.31% | 3.55% | 5.58% | 5.67% | 2.24% | 5.88% | -22.04% | 26.04% | 20.51% | 21.20% | 19.70% | 4.40% |
| Proportion of the Total for all Sectors | 0.04% | 0.04% | 0.04% | 0.04% | 0.04% | 0.04% | 0.04% | 0.03% | 0.03% | 0.04% | 0.05% | 0.05% | 0.06% |

Source and Analysis made by Puerto Rico Planning Board

**Figure 29: Gross Domestic Product (Nominal)
NAICS 61 - Educational Services Subsectors
Puerto Rico, 2000 to 2012**



Source: Puerto Rico Planning Board

SWOT Analysis – Primary and Intermediate Schools

This section presents an analysis of the Strengths, Weaknesses, Opportunities, and Threats (SWOT) in the category of elementary and secondary schools (NAICS 6111) of Educational Sector in Puerto Rico. The analysis of the strengths and weaknesses are focused on the conditions of the subsectors given below. In addition, an analysis of the opportunities and threats that exist or could exist in the future has been made. Secondary sources were used for this analysis, such as analysis of news, reports, journals, and statistics from the Department of Education, the Puerto Rico Planning Board, and the United States Census, among other sources.

SWOT objectives are:

- Conduct an analysis of the subsector of primary and secondary schools;
- Determine the necessary conditions for the development of the subsector;
- Development of a Strategic Plan.

Strengths

1. **Skilled human capital.** According to the percentage of teachers with Master degree increased for the 2010-2011 academic year. Table 1 shows the academic level of teachers in percentage terms. Academic standards are: Bachelors, Masters and Doctoral degrees.

| Table 1: Educational Level of Teachers | | |
|---|----------------------|----------------------|
| Puerto Rico Department of Education, 2008-2009/2010-2011 | | |
| | Academic Year | |
| Academic Level | 2008-2009 (%) | 2010-2011 (%) |
| College credit | 0.99 | 0.57 |
| Bachelor's degree | 79.63 | 77.55 |
| Master's degree | 18.44 | 21.40 |
| Doctor's degree | 0.13 | 0.18 |
| No Specific | 0.81 | 0.31 |

Source: Puerto Rico Department of Education.

2. **Encourage the use of technology in the education system.** The Department of Education offers technology training to teachers. For teachers, it is an opportunity for continuous learning and to acquire the knowledge needed to pass on to their students in the classroom. The Department of Education promotes the professional development of their teachers to help in the education of the students. One available tool is the Virtual Learning Center of Microsoft. It also provides technology services to students with disabilities to have access to curricular content of the classroom. Some classrooms have new information technology (Windows Multipoint) to support the teacher labor and to improve student experience. Finally, the Department of Education expects the participation of 200 teachers in the Puerto Rico Innovative Teachers Forum. This forum serves to integrate the use of technology and helps teachers to be innovative in the classroom.
3. **Improvement in infrastructure for technological facilities.** The Department of Education has nearly of 1,461 public schools. Recently, the Secretary presented the transformation and reorganization plan for schools. The plan aims to improve the educational infrastructure to promote new resources in the classroom. One of the implemented programs is to improve the technology infrastructure, known as Schools for the 21st Century. This program aims to work physical problems of the schools and improve educational quality for students. Also included is an investment of \$ 756 million, earmarked to remodel 95 schools, construct five (5) new schools and create 14,000 new jobs.

4. **Number of educational institutions at primary and secondary level.** According to analysis of the location quotient, the number of primary and secondary schools in Puerto Rico exceed the number in the United States as well as selected states, like Connecticut, Florida, Hawaii, Massachusetts, Mississippi, New York and South Carolina (see table 10, section 1: Diagnosis). The infrastructure of the education system in Puerto Rico, according to Calderón (2014), consists of 1,461 public schools, 764 private schools and 118 Church schools. According to the Department of Education, the numbers of public schools by educational level for the academic year 2009 to 2010 are as follows:

| Table 2: Quantity of Public Schools by Level Puerto Rico, 2009-2010 | | |
|--|-----------------------|------------|
| Level | Public Schools | |
| | Quantity | % |
| Total | 1,509 | 100 |
| Primary | | |
| Preschool | 1,142 | 75.5 |
| Elemental | 1,083 | 71.8 |
| Secondary | | |
| Middle | 405 | 26.8 |
| High | 182 | 12.4 |
| Others | 9 | 0.6 |
| Source: Puerto Rico Department of Education. | | |

5. **Programming recreational and sports activities in schools sponsored by the public and private sector and integrated with the Department of Education.** The Department of Education has programs and partnerships with municipalities and other entities to promote sports and culture, such as competitions among schools, literary competitions, art exhibitions, theater, and crafts, among others. Also, promotes special events or activities such as Liga de Deporte, Roberto Clemente Award, and Sportsman of the Year.
6. **External funding for the promotion of educational activities.** The Department of Education has the Office of Federal Affairs, which was created in order to raise awareness and guide the school community, non-profit and profitable organizations and governmental entities on federal programs and funds available. This office has two federal programs: competitive proposals and, work plans. The Office of Federal Affairs provides technical assistance and support in compliance with the reporting requirements of use of funds and impact metrics.

Opportunities

1. **Visualize the Puerto Rico Department of Education as a tool for economic development.** Education is an asset that forms the national human capital. Education policy must be consistent with the strategies of economic development. Evidence shows that countries that have achieved a transformation in its economic development have been through a transformation in its political and educational systems. Such educational reforms have aimed to contribute to economic development.
2. **Create and integrate through private partnerships, government institutions and non-profit sectors, in order to avoid duplication of efforts and maximize human capital.** The purpose of the creation of partnerships between the private sector, government, and other institutions or nonprofit organizations is to avoid duplication of efforts on projects created. The integration of activities should contribute to a safe and healthy environment, and is part of the objectives of the education system of Puerto Rico.
3. **Take advantage of existing programs of assessment and monitoring to improve the quality of educational services.** The programs of educational assessment and monitoring must have the goal of improving the quality and value of educational services. These programs must have the ability to identify faults that impeded the natural

flow of the processes and proper management of the education system in order to implement necessary steps and make the necessary changes.

4. **Increase level of awareness about the importance of higher education.** The purpose of conducting an awareness campaign is to encourage people to continue their studies. Such guidance on higher education programs must be provided to students in high schools. The statistical data shows that although 195,928 students are enrolled at the elementary level, but just 86,058 graduate.
5. **Establish links with international and regional organizations related to education.** The objective of establishing links with international and regional organizations related to education is to encourage and stimulate students and teachers to learn about educational topics of interest and participate in regional and international activities related to the area of interest or educational work. For example, skills in science, mathematics, among others.
6. **Expand and evaluate strategies for attracting drop out students.** The aim is to extend and evaluate previous strategies for attracting drop out students. Also, the goal is to find and identify the causes and reasons for dropouts and influence to reduce this trend in the education system.
7. **Increase foreign language courses (ie French, German, Japanese, Mandarin, etc.).** The aim of offering foreign language courses is to broaden the school curriculum in order to motivate and prepare students for the labor market and other global market opportunities.
8. **Promote vocational education courses focused on labor market opportunities.** The goal of expanding vocational courses is dropout prevention and encourages students that do not want to pursue university studies, to opt for a short educational career or technical degrees. Several studies have found that career-oriented programs increase the market value of students (Crain, Heebner & Si 1992, Deming, Hastings, Kane and Staiger 2011, and Cullen, Jacob and Levitt (2005)).
9. **Perform an assessment of the education system in order to identify external funds.** The objective here is to identify and apply existing funds that are necessary for the Department of Education to apply to specific areas that have not been properly addressed and improve the distribution and efficiency of the available funds.
10. **Promote continuing education courses to teachers.** The objective of promoting continuing education to teachers is to increase their ability to teach. To achieve this, you must create programs for continuing education of teachers outside of school hours and school calendar months. The goal should be not to disrupt the teaching process to their students during the school year, and at the same time, update the curriculum according to what the teachers have learned.
11. **Improve and reassess the school transportation systems in order to meet the needs of the Sector.** The objective is to improve and evaluate the mass transportation system provided to children in schools, identify the needs of the service, and reorganize and improve efficiency. The goal should be directed to reach a safe and reliable school transportation system.
12. **Integrate public and private organizations in areas such as, agriculture, health and arts to the school curriculum.** Actually, the Department of Education has several programs such as: Agricultural Education, Industrial Arts, Home Economics, Business Education, and Health Education.
13. **Strengthen and protect home schooling as a family, cultural and socio-economic asset.** In Puerto Rico it is unknown how many families are educating their children at home. However, public information indicates that this is an educational alternative that has been increasing. In addition, there are educational programs for admitting

homeschooled students at the University of Puerto Rico and other similar educational institutions in and outside of Puerto Rico.

14. **Preschool Program Study, a key to success.** Education in early childhood has been shown to improve in the short and long term outcomes of students. This is particularly true for children from economically disadvantaged families (Heckman, 2006). For example, in the year of 2013 the inscription of “pre-pre K” is a quarter of enrollment in the first grade (Department of Education of Puerto Rico, 2014). It is an important study: the precise components of the program that are linked to specific child outcomes; patterns of program affect over time; and, the skills that can improve in the long-term (Duncan and Magnuson, 2013). Previous studies have shown that the results of the preschool programs are ethnically heterogeneous.
15. **Give incentives to high-quality teachers to relocate in disadvantaged schools.** Schools should provide incentives to high-quality teachers to relocate to disadvantaged schools. Previous studies have found that these teachers are more likely to relocate to schools serving disadvantaged students (Lankford, Loeb and Wyckoff 2002; Clotfelter, Ladd, Vigdor, and Wheeler 2007). Also, those teachers should not receive the same compensation as the other teachers. Puerto Rico must improve its compensation system and establish a salary formula based on performance. The evidence to support a positive effect of wages on teacher performance is weak (Cullen, Levitt, Robertson and Sadoff 2013). However, Fryer, Levitt, List and Sadoff (2012) found that student performance increased when the teachers that received performance bonuses in advance had to return it if student performance did not improve enough.
16. **Reduce the size of the schools in trouble.** Bloom & Unterman (2012) and Barrow, Claessens, Schanzenbach (2013) found that there is a high probability that the students will graduate when the size of the disadvantage school is reduced. However, closing schools is costly. For example, in Puerto Rico the fixed cost of a school is \$ 350 thousand (OGP, 2014).
17. **Promoting synergies between non-cognitive skills.** Heckman, Stixrud & Urzua (2006) found that non cognitive good manners capacity, confidence, and work ethic are linked to the achievement of personal and educational life.

Weaknesses

1. **Need of assessment of the student and teacher skills.** Puerto Rico needs to do research on the quality of execution of students and teachers. This research is very important to evaluate and make decisions about the course of action to take in relation to the teaching and performance. Through these investigations, Puerto Rico can justify and allocate funds for either training or resources to improve performance and raise the quality identified. In 2012, students of Puerto Rico participated in the Programme for International Student Assessment (PISA acronym in Spanish) test. This test evaluates the students in areas of Math, Science and Reading. Ruiz (2014) reported that Puerto Rican students had lower scores when compared with the United States and some other developing countries who took the PISA test. Globally, Puerto Rico scores position was 58 out of 65 in mathematics, 55 out of 65 in science, and 53 of out 65 in reading comprehension (Ruiz Kuilan, 2014). In addition, Ruiz Kuilan reported that male students performed better on Math tests, while females did better in reading. However, in science the results did not vary by gender (Kuilan Ruiz 2014). Moreover, García Pelatti reported that students from Asian countries were the best performers in the PISA report of 2012 results in terms of education. Results of the United States are below average and Latin American countries are at the bottom of the report (2013).

Schools must evaluate the level of knowledge of teachers in terms of the courses that they are teaching. For example, educational systems in Latin America evaluated the knowledge of teachers and have identified deficiencies (Metzler and Woessman, 2012). It is important to identify the gaps that the teachers have to implement mechanism to correct it. Four sets of standardized tests for each academic year in all grades are recommended. Students and

teachers need to get used to this type of testing. This will also help with the measurement and accountability of the implementations.

2. Need of updated quantitative and qualitative data.

Puerto Rico requires qualitative and quantitative information updated on the infrastructure, the performance of students and teachers, the school transportation system, children in need of special assistance, among others. A basis of updated information on these issues would identify in real time the situation in which there is the Educational Services Sector and prevent educational offerings and adjust to their reality.

3. Need of reform the public policy against school dropouts.

Puerto Rico needs to take control of the course of action to follow and assume a position of strength against dropouts in order to raise awareness and encourage greater student population to continue and complete their education. Puerto Rico has 195,928 students enrolled at the elementary level, but of these only 86,058 finish school.

4. Reduction in student enrollment and the adaptation to that reality.

The Transformation Plan and Reorganization of Schools of the Secretary of Education recognizes that schools use only 72 percent of capacity. In addition, this plan recognizes that “student enrollment decreased since 1980 by 41%. It is estimated that in the next six years this will fall by an additional 25%. Of 713,000 students in the public system in the 80s, today there are only about 423,000. In 2020, that number is estimated to be reduced by at least 100,000 students.”

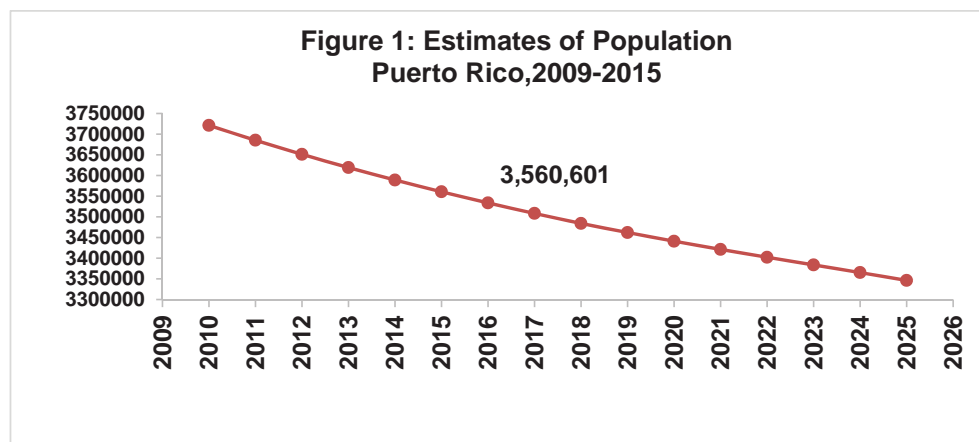
5. Needs of involvement of parents, legal guardians or other family member in the student academic life as a consequence of the incompatibility of schedules.

Most schools offer a schedule from 7:00 am to 4:00 pm. The average workday schedule of Puerto Ricans, are 8:00 am to 6:00 pm. So, Puerto Rico needs to consider these traffic variables and identify the connection between the two.

Threats

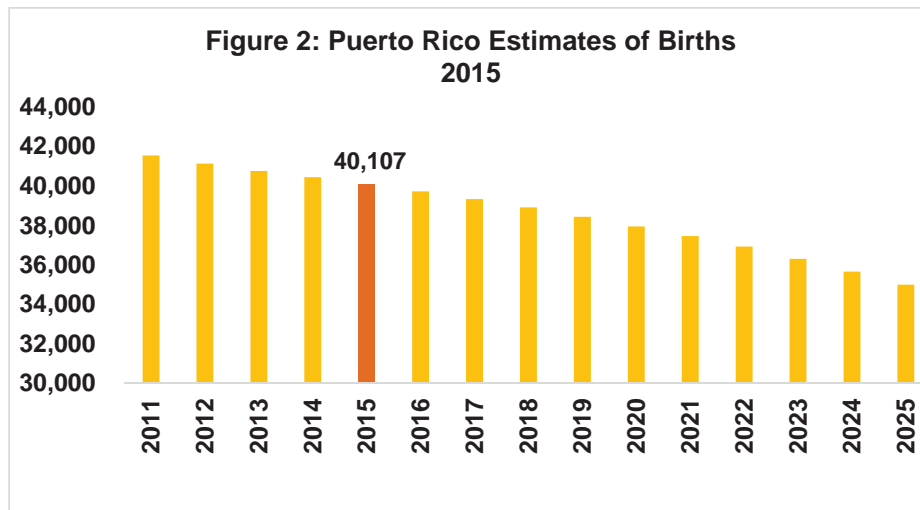
1. Population reduction could increase the average operating costs.

If the number of students and decrease in the total cost of the education system remain constant, then the average cost per student increases. The population projections calculated by the Puerto Rico Planning Board of Puerto Rico (2014) shows a decreasing trend that should affect both public finances and the demand for public school education.



2. Decrease in the birth rate.

Puerto Rico has witnessed a fast reduction in the number of live births (Hernández 2014). The Planning Board of Puerto Rico has estimated a drastic reduction in the number of births (Hernández 2014). This may have an impact on the demand and supply of the Services Education Sector.



3. Increase in migration patterns.

The population of between 20 and 59 years in Puerto Rico has been reduced since the last decade of the 20th Century (Marquez Naveiras 2014). The reduction of this key component of the population is due to immigration has increased. By contrast, the population aged 0 to 19 years of age has been declining since the early 80s as a result of the effectiveness of birth control policies of the state. However, in the sixty-year run from 1950 to 2010, the population of 60 years and over has increased steadily.

| Table 3: Net Migration Puerto Rico, 2011-2015 | |
|--|----------------|
| Year | Net Migration |
| 2011 | -41,908 |
| 2012 | -41,809 |
| 2013 | -41,697 |
| 2014 | -41,588 |
| 2015 | -41,474 |
| 2016 | -41,284 |
| 2017 | -41,065 |
| 2018 | -40,717 |
| 2019 | -39,559 |
| 2020 | -39,110 |
| 2021 | -38,364 |
| 2022 | -37,666 |
| 2023 | -37,327 |
| 2024 | -37,022 |
| 2025 | -37,276 |
| Source: Puerto Rico Planning Board. | |

4. Reduction in student enrollment.

A decline in enrollment in schools should be expected as a result of population reduction (Quintana 2014). Quintana (2014) indicates that enrollment in the public school system of Puerto Rico affects several important factors, among which may be mentioned: changes in the composition and trends in population size; the trend in the number of live births; the trend in the average number of children; migration changes; and the existence of a private school system that may have experienced an increase in time.

5. Reduction in educational services.

Schools, according to results presented by the Secretary in the Plan of Conversion and Reorganization of Schools, only use 72 percent of their capacity. That adds up to about 62 percent of schools that have physical facilities that are in very poor condition and in which optimal levels of academic achievement are becoming lower.

6. Increase in violence in the school environment.

The Planning Board of Puerto Rico found that incidents between the 2002-2003 and 2006-2007 school year reflect an upward trend for all years (2009). For 2006, total number of incidents were 2,830, while for the period 2002-2003 the number was only 1,419, representing an increase of 99.4 percent. However, the Department of Education has programs that promote the prevention of drug use and violence. Some school social workers have special projects such as: Encaminados al Éxito: Ayúdame a Crecer, Unidos en Armonía, and, Aprendiendo a Ser Felices. Also during the school year 2006-2007 school counselors developed the following projects: Aprendiendo a Estudiar con Amor, Career Education Response to Every Student (CERES), Claves para Mejorar tus Notas, Sistema Computarizado de Exploración Ocupacional (OPCIONES), Periodo de Orientación, Exploremos las Ocupaciones y Descubre tus Intereses, and Alcanzarás tu Meta Educativa y Ocupacional.

SWOT Analysis – Higher Education

This section presents a SWOT analysis of the educational services sector in Puerto Rico. The analysis of strengths and weaknesses are focused on the conditions of the educational services subsectors. Higher education consists of: junior colleges (NAICS 6112); colleges, universities, and professional schools (NAICS 6113); educational support services (NAICS 6117). In addition, an analysis of the opportunities and threats was made. The sources of information used for this analysis are secondary, such as news, reports, journal articles and other official sources.

SWOT objectives are:

- Conduct an analysis of the subsectors of higher education;
- Determine the necessary development of the subsector conditions;
- Develop a strategic plan.

Strengths

1. **Increased number of human resources.** According the analysis of the location quotient in terms of the number of employees in higher education subsectors, Puerto Rico has a large number of employees compared to the United States (see Table 8 of section 1 of this chapter).
2. **Skilled human capital.** The percent of people with associate and bachelor degrees is similar to those of the United States (Table 4). According to the official statistics for 2012 of the US Census Bureau, the data of educational attainment in adults is calculated for the population of 25 years and over, because it is presumed that at this age the average person has completed their education. In Puerto Rico, the proportion of adults who did not finish 12th grade was 30.3 percent. While this represented 14.2 percent for the United States, and is above other states observed as, Mississippi, New York, South Carolina, Massachusetts, Hawaii, Florida and Connecticut.

For high school education (high school diploma), the proportion in Puerto Rico was 25.7 percent, ranking even below those whose educational level was less than 12th grade. This proportion of people with an educational level of school above the average was similar to that of Massachusetts (25.9 percent), but is located below the United States level ratio and other observed states. Note that, unlike Puerto Rico, where the majority of adults fall under the category “less than 12th grade” level, in the United States and other states the bulk of adults falls under the category of “high school diploma”.

The category “some college” includes people with postsecondary education and people who have started college and have some number of approved credits, but do not have a diploma or certification. This category “some college” represented 12.8 percent of the adult population in Puerto Rico in 2012 (the lowest proportion of all observed jurisdictions), while representing 21.3 percent of the adult population in the United States. As for the category of “associate degree”, the data indicated that Puerto Rico had 8.7 percent of adults with this educational level, quite close to the national average of the United States (7.7 percent) and other states observed, which fluctuate from 7.3 percent to 9.8 percent for this category. On the other hand, in the category of “Bachelor”, in Puerto Rico the proportion of adults reached 16.4 percent, which is not far from the proportion of adults with bachelor degree in United States (17.9 percent). When comparing with some states, Mississippi and South Carolina had a lower proportion of adults with Bachelor degree, than that of Puerto Rico, with 12.8 percent and 15.8 percent, respectively.

**Table 4: Obtained Educational Level – Adult Population
Puerto Rico, United States and various states (2012)**

| | Puerto Rico | United States | Mississippi | New York | South Carolina | Massachusetts | Hawaii | Florida | Connecticut |
|--|-------------|---------------|-------------|------------|----------------|---------------|---------|------------|-------------|
| Total population 25+ | 2,440,974 | 204,336,017 | 1,904,849 | 13,101,982 | 3,075,655 | 4,465,898 | 928,132 | 13,127,624 | 2,431,340 |
| Less than 12th grade | 30.3% | 14.2% | 18.9% | 15.1% | 15.9% | 10.9% | 9.8% | 14.2% | 11.0% |
| High school diploma (includes GED) | 25.7% | 28.2% | 30.4% | 27.3% | 30.3% | 25.9% | 28.4% | 29.8% | 27.9% |
| Some college | 12.8% | 21.3% | 22.6% | 16.5% | 20.6% | 16.6% | 22.5% | 21.1% | 17.6% |
| Associate degree | 8.7% | 7.7% | 8.0% | 8.3% | 8.6% | 7.7% | 9.8% | 8.7% | 7.3% |
| Bachelor degree | 16.4% | 17.9% | 12.8% | 18.6% | 15.8% | 22.2% | 19.6% | 16.8% | 20.3% |
| Post graduate (includes master, doctoral and some professional degrees) | 6.1% | 10.6% | 7.2% | 14.1% | 8.7% | 16.8% | 10.0% | 9.4% | 15.8% |

Source: United States Census Bureau (2012) Table S1501- Educational Attainment. American Community Survey. <<http://factfinder2.census.gov>>

3. **Access and use of technology.** In Puerto Rico the higher education system has access to basic technological advances in areas of technology sciences (natural and social sciences) and research.
4. **Adequate infrastructure.** The higher education system is committed to the development of infrastructure for teaching, and research development.
5. **Large number of educational institutions.** The higher education system consists of public and private (profit and nonprofit) institutions. According to the Puerto Rico Education Council, Puerto Rico currently has a total of 88 higher education institutions or campuses. As shown in Table 10, the coefficient of quotation in terms of the number of establishments in Educational Services Sector in Section 1 of this Chapter, Puerto Rico has more institutions or campuses compared to States like Connecticut, Florida, Massachusetts, Mississippi, New York, and South Carolina.

**Table 5: Total Number of Higher Education Institutions or Campuses
Puerto Rico, Academic Year 2012-2013**

| Institutions/sector | 2012-2013 |
|--|------------------|
| Public Sector | 18 |
| Private Sector - non-profit | 51 |
| Private Sector - profit driven | 19 |
| TOTAL | 88 |
| Source: Puerto Rico Education Council. | |

6. **Opportunities for the development of student athletes in higher education sector.** Universities in Puerto Rico provide grants to high performance athletes. Some of these grants include: tuition, housing, books, supplies, meals, study and work, which vary depending on the university. The Inter-University Athletics League of Puerto Rico and Virgin Islands hold an annual event between universities to promote recreational and sport competition.
7. **External funding for the promotion of educational activities.** The higher education system receives external funding for research to contribute to economic, social and competitiveness development of Puerto Rico. On the other hand, public and private universities have programs of federal aids such as, Federal Pell Grant, Federal Supplemental Educational Opportunity Grant, Stafford Student Loans and others. There are also state aid programs such as, supplementary aid programs for students of high honor and state grant programs. Other institutional aid programs are: honors programs, athletics, choir, among others. Also, all public and private institutions receive funds for infrastructure development, research, technology and scholarships for low-income students. González Navarro (2014) says:

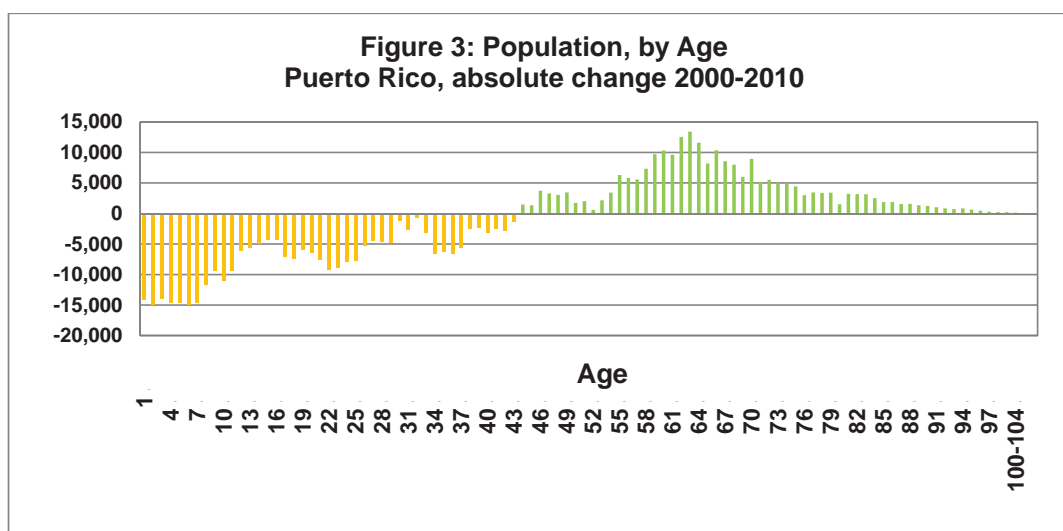
“In Puerto Rico, these funds are directed not only at the Department of Education, but there are also allocations to universities, colleges, schools and nonprofit organizations. The programs covered by federal grants are as follows; postsecondary education programs; rehabilitation services and disability research programs and student loans”.

Recently, Act No. 146 of December of 2013 established the “Law of Equal Opportunity and Access to Higher Education” and created a special fund that covers the cost of the University Evaluation and Admission Test for students attending the 11th and 12th years of public high schools (Cardona, 2014).

Opportunities

1. **Expand partnerships between private sector, government and other institutions.** Expand the quantity and quality of partnerships between higher education institutions and the private sector. An example is the “Santander U-Work Program”, which offers to college students their first work experience. (García Pelatti 2012).
2. **Improve the evaluation and monitoring mechanisms of the higher education institutions.** Rating agencies require that higher education institutions improve their monitoring and evaluation systems to ensure compliance with institutional objectives, accountability and efficient use of resources. It is important for universities to generate these mechanisms in order to correct faults, improve the academic performance and the retention of students.
3. **Establish links with international and regional organizations.** In order to strengthen the higher education institutions links with international and regional organizations should be expanded. These links will help to generate the growth of commercial trade between Puerto Rico and the rest of the world, increasing human capital immigration and the production of investigation.

4. **Promote multicultural experiences among students.** Universities should create programs, initiatives and events designed to recognize cultural diversity in a globalized environment. These programs should recognize, validate and affirm racial and ethnic identities that students will face in the labor markets of the United States, Latin America or the world.
5. **Attracting students from other countries.** Given the decline in the youth population in Puerto Rico a drastic reduction in the demand for educational services is contemplated (Figure 3). This decrease may be relieved by the export of educational services. That is, to bring students from the United States and other countries to receive educational services in Puerto Rico. For example, universities such as the Sacred Heart and the Pontifical Catholic University of Puerto Rico could use their institutional networks in the United States to attract Hispanic students. There are two constraints that must be analyzed: reduce the cost of air transportation, and increase college housing units.



6. **Attract faculty in areas of difficult recruitment.** Recently it has been identified the reduction of professionals in some technical areas. Some of the possible reasons for these could be: the lack of education in the area, difficulties in recruitment of teachers, changes in supply and demand in the labor market, among others. For example, employment of professionals in areas such as chemistry and mathematics presented reductions (Table 6).
7. **Expand online courses and programs for students in the United States and around the world.** The online courses and programs should be a strategy to sell educational services to the world. In Puerto Rico there are several universities that incorporate new technologies to deliver distance learning courses. Universities like, Ana G. Mendez University and the Inter American University offer academic programs such as, associate degrees, bachelors and masters degrees entirely online. Other institutions such as the University of Puerto Rico, University of Sacred Heart, Pontifical Catholic University of Puerto Rico and the Polytechnic University have incorporated online courses.
8. **Improve teaching skills.** Higher education institutions must broaden the training to their faculty in terms of teaching techniques. Programs to incorporate working practices with experienced teachers, collaborative work among peers and others should be created. Each institution has its own educational vision and each teacher has a particular view of the role that they have.

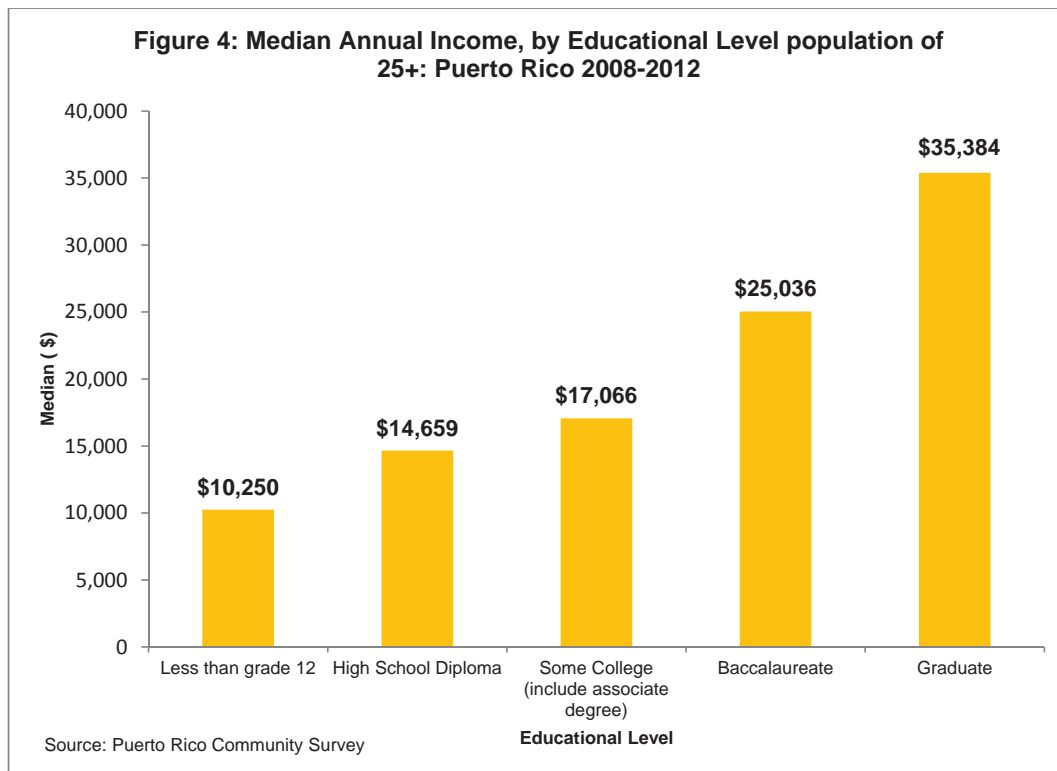
**Table 6: Employment, by Occupation
Puerto Rico, 2003 y 2012**

| Selected Occupation | Total Employment | | Absolute Change | Percentage Change |
|---|------------------|--------|-----------------|-------------------|
| | 2003 | 2012 | 2003 to 2012 | 2003 to 2013 |
| Kindergarten Teachers, Except Special Education | 1,270 | 140 | (1,130) | -89% |
| New Accounts Clerks | 1,820 | 270 | (1,550) | -85% |
| Graduate Teaching Assistants | 510 | 80 | (430) | -84% |
| Chemistry Teachers, Postsecondary | 250 | 50 | (200) | -80% |
| Optometrists | 150 | 40 | (110) | -73% |
| Mathematical Science Teachers, Postsecondary | 380 | 120 | (260) | -68% |
| Painters, Construction and Maintenance | 1,970 | 770 | (1,200) | -61% |
| Sales Engineers | 120 | 50 | (70) | -58% |
| Helpers--Carpenters | 2,460 | 1,160 | (1,300) | -53% |
| Biological Science Teachers, Postsecondary | 390 | 190 | (200) | -51% |
| Psychiatric Technicians | 180 | 90 | (90) | -50% |
| Telephone Operators | 740 | 390 | (350) | -47% |
| Licensed Practical and Licensed Vocational Nurses | 7,850 | 4,320 | (3,530) | -45% |
| Environmental Engineers | 290 | 160 | (130) | -45% |
| Economists | 160 | 90 | (70) | -44% |
| Judges, Magistrate Judges, and Magistrates | 810 | 460 | (350) | -43% |
| Health and Safety Engineers, Except Mining Safety Engineers and Inspectors | 140 | 80 | (60) | -43% |
| Carpenters | 6,600 | 3,930 | (2,670) | -40% |
| Human Resources Managers | 1,530 | 940 | (590) | -39% |
| Surveyors | 290 | 180 | (110) | -38% |
| Chemists | 2,390 | 1,520 | (870) | -36% |
| Home Health Aides | 4,010 | 2,600 | (1,410) | -35% |
| Executive Secretaries and Executive Administrative Assistants | 13,460 | 9,220 | (4,240) | -32% |
| Computer Programmers | 1,770 | 1,290 | (480) | -27% |
| Microbiologists | 280 | 210 | (70) | -25% |
| Electricians | 3,610 | 2,770 | (840) | -23% |
| Tellers | 4,700 | 3,680 | (1,020) | -22% |
| Correctional Officers and Jailers | 7,350 | 5,830 | (1,520) | -21% |
| Chemical Engineers | 150 | 120 | (30) | -20% |
| Heating, Air Conditioning, and Refrigeration Mechanics and Installers | 1,440 | 1,170 | (270) | -19% |
| Office Clerks, General | 27,850 | 22,640 | (5,210) | -19% |
| Financial Managers | 4,000 | 3,290 | (710) | -18% |
| Education Teachers, Postsecondary | 560 | 480 | (80) | -14% |
| Accountants and Auditors | 10,400 | 8,920 | (1,480) | -14% |
| Computer Systems Analysts | 1,200 | 1,030 | (170) | -14% |
| Heavy and Tractor-Trailer Truck Drivers | 9,630 | 8,330 | (1,300) | -13% |
| Secretaries and Administrative Assistants, Except Legal, Medical, and Executive | 26,750 | 24,250 | (2,500) | -9% |
| Medical and Clinical Laboratory Technicians | 570 | 530 | (40) | -7% |
| Physical Therapists | 590 | 550 | (40) | -7% |
| Receptionists and Information Clerks | 4,260 | 4,010 | (250) | -6% |
| Statisticians | 240 | 230 | (10) | -4% |
| Medical and Clinical Laboratory Technologists | 2,240 | 2,150 | (90) | -4% |
| Electronics Engineers, Except Computer | 290 | 280 | (10) | -3% |
| Police and Sheriff's Patrol Officers | 20,350 | 19,660 | (690) | -3% |
| Respiratory Therapy Technicians | 420 | 410 | (10) | -2% |
| Budget Analysts | 540 | 530 | (10) | -2% |

Source: U.S. Bureau of Labor Statistics

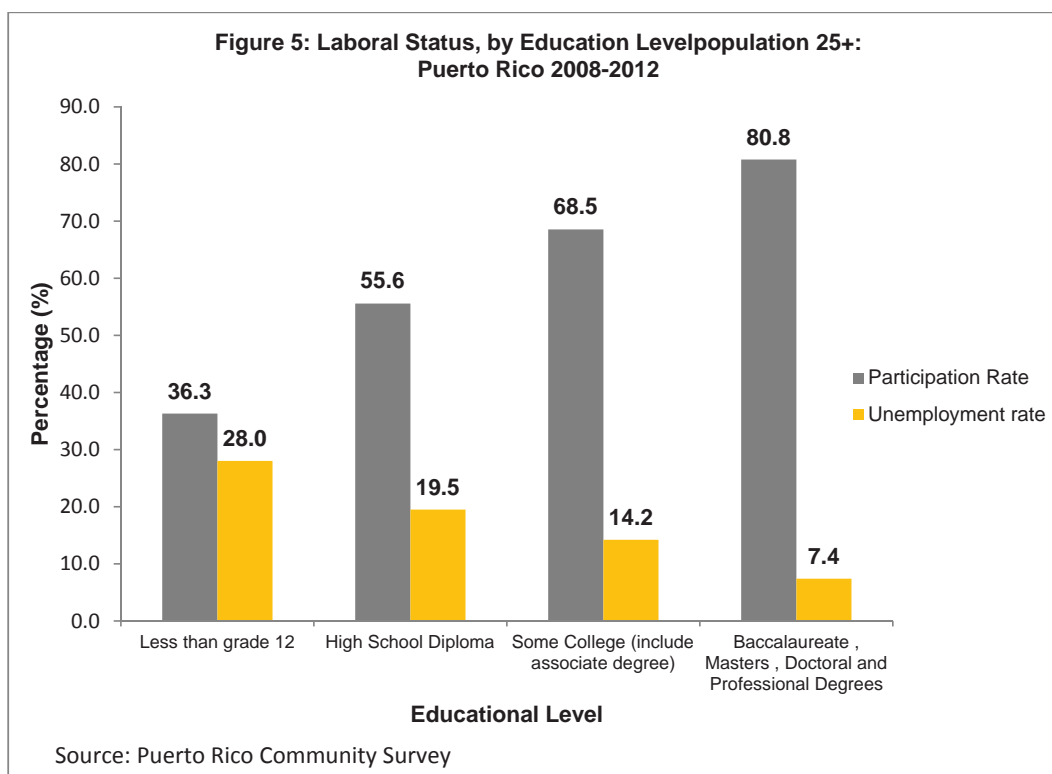
9. **Expand education programs for people of advanced age.** Public schools, private schools and higher education institutions reported a decrease in the total enrollment of students (Calderon 2014). This reflects the demographic, economic and migration factors. According to the Office of the Ombudsman for the Elderly and the Planning Board, Puerto Rico is experimenting changes in population that is aging, that is why institutions should establish a mechanism to serve this population with seminar, training, certifications, and more.

10. **Expand state resources for innovation and development.** The knowledge and technological development have become the most important component of modern economies. National systems of innovation can be defined as the network of higher education institutions that fund and perform research and development (Mowery & Oxley, 1995, p 68). Indicators of technology creation and knowledge such as patents, investment in research and development, should be strengthened.
11. **Improving the administration of external funding for research.** In order to raise the level of external funding received, Puerto Rico should improve the management of external funds. The administration of external funding requires high skills in leadership, administration and management of proposals, and bilingual communication (conversational and writing).
12. **Increase the number of academic offerings at graduate level.** Puerto Rico should expand the number of graduate programs, especially doctoral programs. Recruiting specialists in these areas is vital for the development of high quality research in other disciplines. Similarly, Puerto Rico does not have doctoral programs focused on the three main social problems that generate greater public concern: economy, demographics, and crime.
13. **Expand the offering to special education students.** The Department of Education has identified that 23.0 percent of the student enrollment has some condition that merits special education (OGP, 2014).
14. **Generate degree in three steps.** Higher education institutions should implement degrees in three steps: certificate (1 year study), associate degree (2 years), and bachelor (4 years). This would ensure that most students have a higher education certification to support the society's acquisition of human capital. Rosenbaum and Strain (2013) found that the certificates and associate degrees improve labor market outcomes and help students to complete their bachelor degree. According to the Puerto Rico Community Survey (average for 2008-2012), the data by educational level indicates that for those who do not finish high school, the median income is about \$10,250 per year, followed by those with just a high school diploma with \$14,659. Those with some form of post-secondary education (including associate degree) reach a \$17,066 median income, while those with a Bachelor degree report a median income of \$25,036, and those with postgraduate studies report a median of \$35,384 per year. Note that the smallest difference between the median annual incomes is between those with a high school diploma and those with some college (a difference of only \$2,407). Moreover, the largest difference (about \$10,348) is among those with a bachelor degree and those with post graduate studies. The difference between those who only have a high school diploma and those who do not have one is \$4,409. The median income consistently increases as the educational level rises, but this increase does not necessarily have a linear form.



In terms of labor status by educational level, data on the labor force participation rate and unemployment rate are included. The data indicate that for those who do not finish high school, the participation rate in the labor market is 36.3 percent, followed by those with just a high school diploma with 55.6 percent. Those who have started some form of post-secondary education (including associate degree) have a participation rate of 68.5 percent, while those with a high school diploma or more (including graduate and professional degrees) report a participation rate of 80.8 percent. The participation rate increases consistently with educational level. The difference in the participation rate among those with a high school diploma and some college is quite similar to the difference between those with some college and those with high school or more (12.9 percent and 12.3 percent of difference, respectively).

On the other hand, in terms of unemployment rates by education level, the data presented show that for those who do not finish high school the unemployment rate is 28.0 percent, followed by those with just a high school diploma with 19.5 percent. Those who have some form of postsecondary education (including associate degree) the unemployment rate decreases to 14.2 percent, while those with a high school diploma or more (including graduate school and professional degrees) report an unemployment rate of 7.4 percent. The data clearly show that the unemployment rate decreases consistently as education level increases. Note that the biggest difference is between the unemployment rates among those who do not have a high school diploma and those who do have that diploma - a difference of 8.5 percent. The smallest difference, 5.3 percent, in the unemployment rates is among those with a high school diploma and some college with a difference, while the difference between those with some college and those with high school or more is 6.8 percent. The fact that the participation rates increase and unemployment rates consistently decrease as educational level increases indicates that the variable “educational attainment” has a significant effect on the employment status of people in Puerto Rico.



15. **Monitoring and mandatory counseling.** Higher education institutions must implement a rigorous monitoring and counseling program for students. Rosenbaum, Rosenbaum, Stephan, Foran and Schuetz (2014 coming out soon) found that monitoring and advising the student increase the chance that he/she will complete higher education programs. The success of this measure is in coordination between the planning offices, academic programs, and counseling programs in universities.
16. **Job placement.** Higher education institutions must participate in the transition of students into the labor market. There is evidence that the active participation of higher education institutions in the placement of the students in employment increases the probability that the student completes their studies (Rosenbaum & Rosenbaum 2013).
17. **Timely, achievable and structured curriculums (Timely, Achievable & Structured Curriculums, TASC for its acronym in English).** Higher education institutions must have curriculums that use resources efficiently such as, time and student financial aid. The clear and bearable path must be related to student success (Rosenbaum & Rosenbaum 2013). For example, a certificate (1 year) should be no more than 30 credits; associate degree (2 years) no more than 60 credits; and bachelor (4 years) no more than 120 credits.
18. **Promoting entrepreneurship and business skills irrespective of the academic program.** In the past we have encouraged entrepreneurship as a discipline not associated with the areas of applied knowledge such as social sciences, natural sciences, and engineering. We must integrate entrepreneurship courses focused in the concentration area of the students.

Weaknesses

1. **Reduced number of people with master and doctor degrees.** In the case of postgraduate education, including master, doctoral and professional degrees such as, juris doctor and medicine, the data indicate that in Puerto Rico (unlike United States and all other observed states, except Mississippi) these represent the lowest percentage of the entire adult population, with 6.1 percent, which is about half the ratio for United States (10.6 percent), and the lowest proportion of adults with graduate degrees in all jurisdictions observed (Table 7).

**Table 7: Obtained Educational Level
Adult population (percentage)
Puerto Rico, EEUU and various states (2012)**

| | Puerto Rico | United States | Mississippi | New York | South Carolina | Massachusetts | Hawaii | Florida | Connecticut |
|---|-------------|---------------|-------------|------------|----------------|---------------|---------|------------|-------------|
| Total population 25+ | 2,440,974 | 204,336,017 | 1,904,849 | 13,101,982 | 3,075,655 | 4,465,898 | 928,132 | 13,127,624 | 2,431,340 |
| Postgraduate (including master, doctoral and professional degrees) | 6.1% | 10.6% | 7.2% | 14.1% | 8.7% | 16.8% | 10.0% | 9.4% | 15.8% |

- Labor market needs and academic offerings do not match.** Specialties have been identified where the number of graduates does not match with the labor market needs.
- Lack of services and extended hours in terms of childcare for students in the higher education system.** Most educational centers offer a schedule from 7:00 am to 4:00 pm. The average workday schedule in Puerto Rico is 8:00 am to 6:00 pm. The students that work and study may need childcare services.
- Lack of inventory of projects, patents and innovations.** The Puerto Rico Education Council conducted an analysis of the activities of research and development at universities in Puerto Rico and recommended creating an Internet portal with an inventory of projects and interests of academic researchers, patents, and innovations. However, Puerto Rico has shown that from 1986 to 2012 the creation of patents has not reflected changes (Lobato, Vico, Torres and Vega 2014).

Threats

- Reduced number of birth.** Puerto Rico has experienced a rapid reduction in the number of live births (Hernández, 2014) (Figure 2). The Planning Board projected a drastic decrease in the number of births (Hernández, 2014). This will have a future impact on the demand and supply in the education services sector.
- Increased emigration.** The projected net migration estimated by the Planning Board suggests a reduction in the population (Table 3). This migration has been mainly focused on young people (Traveller Survey, 2014) below the age of 40. This migration of young population could reduce the demand for educational services.
- Emigration of Professionals.** The income and differences in the employment market between Puerto Rico and the United States may be one of the reasons that encourages the emigration of professionals (see Tables 8 -10).

Table 8: Median Annual Income, by Educational Level (adult population): 2008-2012

| | <u>Puerto Rico</u> | <u>United States</u> | <u>Connecticut</u> | <u>Florida</u> | <u>Hawaii</u> | <u>New York</u> | <u>South Carolina</u> |
|--|--------------------|----------------------|--------------------|----------------|---------------|-----------------|-----------------------|
| Median income, total | \$17,713 | \$35,522 | \$44,558 | \$31,339 | \$36,839 | \$39,959 | \$31,361 |
| Less than 12 th grade | \$10,767 | \$19,642 | \$22,408 | \$18,298 | \$21,578 | \$20,101 | \$18,102 |
| High School Diploma | \$14,419 | \$27,607 | \$33,841 | \$25,400 | \$30,165 | \$29,933 | \$25,704 |
| Some college (includes associate degree) | \$17,268 | \$33,857 | \$40,548 | \$31,303 | \$35,774 | \$37,161 | \$31,143 |
| Bachelor | \$26,085 | \$50,096 | \$59,595 | \$43,841 | \$46,243 | \$53,643 | \$43,365 |
| Post graduate | \$36,836 | \$66,109 | \$76,758 | \$58,921 | \$61,324 | \$69,562 | \$54,018 |

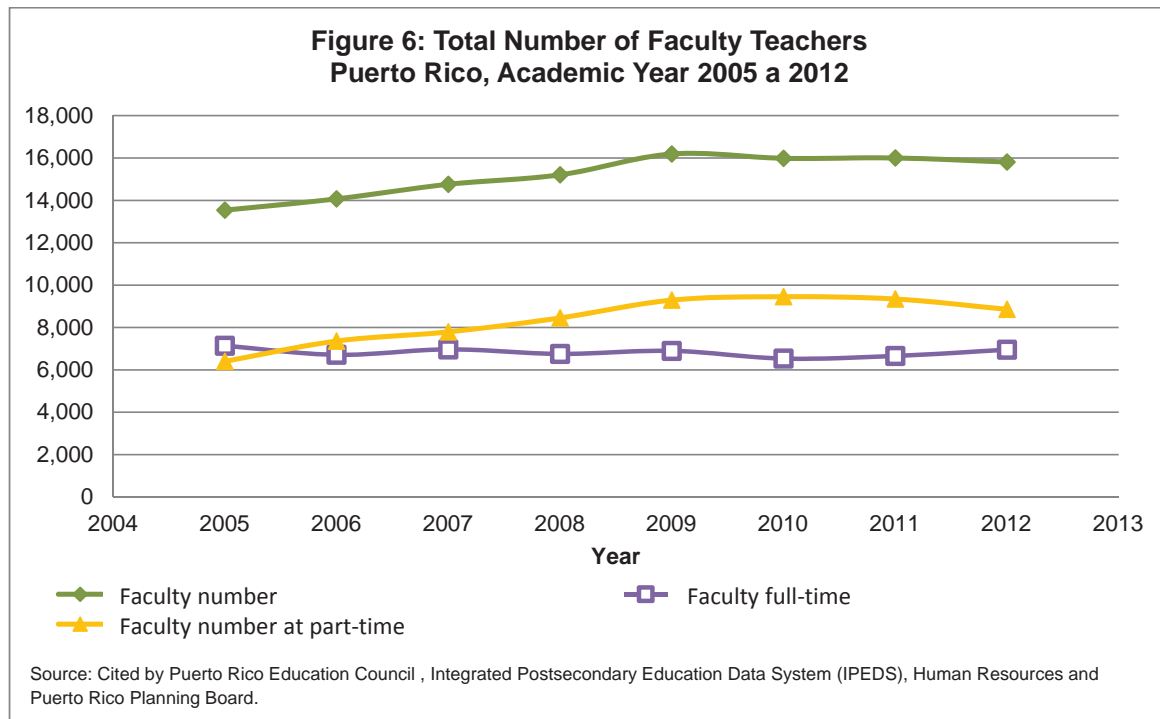
Table 9: Participation Rate, by Educational Level (adult population): 2008-2012

| | <u>Puerto Rico</u> | <u>United States</u> | <u>Connecticut</u> | <u>Florida</u> | <u>Hawaii</u> | <u>Massachusetts</u> | <u>South Carolina</u> |
|---|--------------------|----------------------|--------------------|----------------|---------------|----------------------|-----------------------|
| Less than 12 th grade | 36.3 | 61.6 | 64.1 | 63.0 | 63.5 | 60.2 | 55.2 |
| High School Diploma | 55.6 | 74.4 | 80.1 | 73.9 | 76.6 | 78.4 | 72.1 |
| Some college (includes associate degree) | 68.5 | 80.4 | 84.9 | 79.5 | 82.3 | 83.4 | 79.4 |
| Bachelor, master, doctoral and some professional degree | 80.8 | 86.2 | 86.8 | 84.1 | 85.8 | 88.0 | 84.8 |

Table 10: Unemployment Rate, by Educational Level (adult population): 2008-2012

| | <u>Puerto Rico</u> | <u>United States</u> | <u>Connecticut</u> | <u>Florida</u> | <u>Hawaii</u> | <u>Massachusetts</u> | <u>South Carolina</u> |
|---|--------------------|----------------------|--------------------|----------------|---------------|----------------------|-----------------------|
| Less than 12 th grade | 28.0 | 14.2 | 16.7 | 17.2 | 9.6 | 14.7 | 20.8 |
| High School Diploma | 19.5 | 9.8 | 10.4 | 12.3 | 8.2 | 10.2 | 11.4 |
| Some college (includes associate degree) | 14.2 | 7.7 | 8.2 | 9.2 | 5.0 | 7.8 | 8.4 |
| Bachelor, master, doctoral and some professional degree | 7.4 | 4.1 | 4.1 | 5.4 | 3.0 | 4.2 | 4.0 |

4. **Population decline may represent increases in average operating costs.** If the number of students decreases and the total costs of the education system remain constant, then the average cost per student increases. This means an increase in the financial burden on higher education institutions.
5. **Reduction in the number of teachers.** Current trends show a reduction in the number of teachers in Puerto Rico is expected. According to data from the Puerto Rico Education Council as can be observed in Figure 6, the total number of teachers in higher education has been declining.

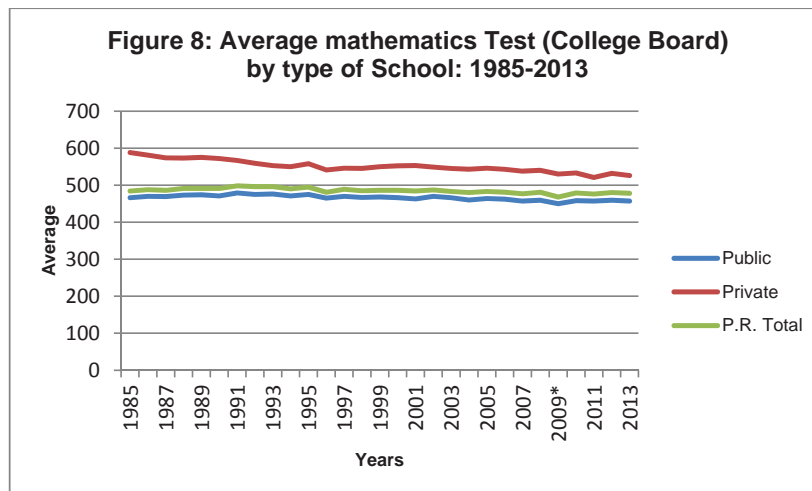
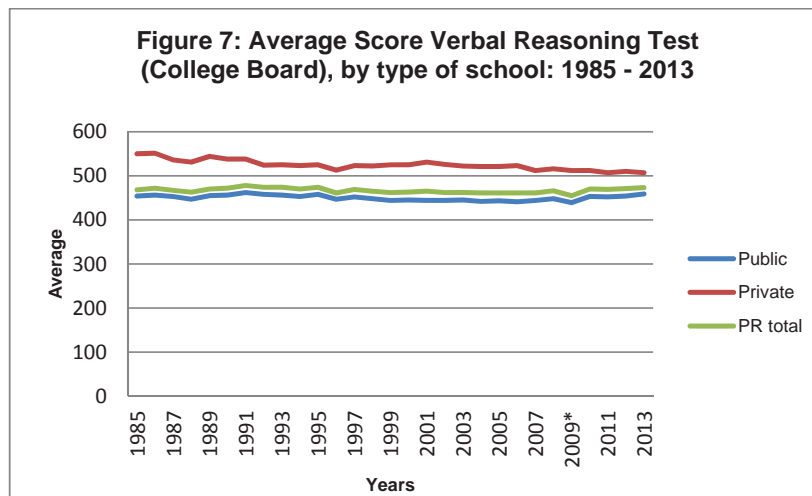


The Puerto Rico Education Council gathers a historical overview of the academic year by faculty, industry, tasks, and academic rank in the higher education institutions. The total number of professors, associate professors, assistant professors, instructors and lecturers are presented in Table 11. The data suggest that in the academic years 2007 and 2013 the number of full-time faculty increased from 6,711 to 6,952, or 3.4 percent.

| Table 11: Historical Data, by Faculty – Number of Member Higher Education Institutions Puerto Rico, Academic Year 2005 - 2013 | | | | | | | | |
|---|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| | 2005-06 | 2006-07 | 2007-08 | 2008-09 | 2009-10 | 2010-11 | 2011-2012 | 2012-2013 |
| Total, by Sector | 13,539 | 14,070 | 14,759 | 15,206 | 16,190 | 15,985 | 16,001 | 15,810 |
| Public | 5,444 | 4,816 | 5,051 | 5,066 | 5,474 | 5,010 | 4,561 | 4,962 |
| Private | 8,095 | 9,254 | 9,708 | 10,140 | 10,716 | 10,975 | 11,440 | 10,848 |
| Faculty Number, by Task and Rank | | | | | | | | |
| Full Time | 7,139 | 6,711 | 6,967 | 6,755 | 6,897 | 6,533 | 6,657 | 6,952 |
| Professor | 2,466 | 2,186 | 2,235 | 2,256 | 2,223 | 2,421 | 2,357 | 2,500 |
| Associate Professor | 1,567 | 1,383 | 1,378 | 1,349 | 1,343 | 1,343 | 1,408 | 1,457 |
| Assistance Professor | 1,660 | 1,296 | 1,275 | 1,299 | 1,344 | 1,313 | 1,331 | 1,331 |
| Instructor | 860 | 729 | 851 | 729 | 678 | 585 | 600 | 800 |
| Lecturer | 2 | 2 | 1 | 4 | 2 | 6 | 2 | 1 |
| No Academic rank | 584 | 174 | 201 | 224 | 211 | 221 | 217 | 113 |
| Other | - | 941 | 1,026 | 894 | 1,096 | 644 | 742 | 750 |
| Part Time | 6,400 | 7,359 | 7,792 | 8,451 | 9,293 | 9,452 | 9,344 | 8,858 |

Source: Cited by Consejo de Educación de Puerto Rico, Integrated Postsecondary Education Data System (IPEDS), Human Resources.

6. **Inadequate investment in infrastructure.** The crisis in the financial and government sectors could limit investment intended for infrastructure in universities. According to the Capital Improvement Program (Four Years Investment Program) for fiscal years 2015 through 2018, the University of Puerto Rico (UPR) expects to invest a total of \$10.8 million for infrastructure development. While the University of Puerto Rico is going through a difficult fiscal situation, this amount is insufficient to create new technical facilities and renovate existing ones.
7. **Poor quality of students entering the universities.** Recent data from the College Board reflect a reduction in the academic performance of students who aspire to be college students. This could involve increased costs related to remedial courses and difficulties in the adsorption of new techniques and technologies by students.



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