

First Draft

ECONOMIC DEVELOPMENT PLAN FOR PUERTO RICO 2015

Economic & Social Planning Program
Puerto Rico Planning Board



Commonwealth of Puerto Rico
Office of the Governor

october 2014

First Draft

INTRODUCTION
ECONOMIC DEVELOPMENT PLAN
FOR PUERTO RICO
2015

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Chapter

First Draft

INTRODUCTION FOR THE ECONOMIC DEVELOPMENT PLAN 2015

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ECONOMIC DEVELOPMENT PLAN FOR PUERTO RICO

PREFACE

Act No. 75 of June 24, 1975, as amended, mandates the Planning Board (PB) to prepare a Comprehensive Development Plan for Puerto Rico. Consequently, the PB has designed an Economic Development Plan 2015. This document is a valuable tool to make decisions on public policy, and is a useful instrument for those interested on economic issues. The Introduction of this Plan covers five sections. The first section presents a description of the design of the Plan and the methodology used. The second section includes an investigative diagnosis of the most important macroeconomic statistics in Puerto Rico for the fiscal years 1950 to 2013. The third section provides an analysis by industrial sector. The fourth section evaluates economic development plans realized previously in the past decades. Finally, the fifth section analyzes the strengths and opportunities found in each industrial sector.

We want to thank the public and private entities that provided the data used to prepare this publication.

Introduction

On April 1, 2013, Planner Luis García Pelatti, President of the PB, assigned the Economic and Social Planning Program of the PB to design and prepare an Economic Development Plan for Puerto Rico which must focus on the following accountabilities:

- Identify market failures in industries.
- Identify niches that maximize investment.
- Identify strategies to increase production capacity.
- Propose strategies based on evidence.
- Conduct a cost-effective assessment of the strategies.
- Propose evaluation mechanisms and control of strategies.
- Propose cost effective public policy.

In order to fulfill the above objectives, the PB has hired 13 economists (ie, doctor of economics and economic consultants) with experience in the development of the sectors. The Plan has been designed to attend all the economic sectors of Puerto Rico. Table 1 shows all the sectors and the person responsible for investigating the assigned sector for the development of the said Plan.

Section 1: Description of the Design and Methodology of the Plan

Table 1: Industrial sector grouping and person responsible of develop the sector:

Industry	NAICS	Consultant
Agriculture and Mining	11	Dr. Alexandra Gregory and Dr. Gladys González
Construction Real Estate and Rental and Leasing	23 & 53	Prof. Joaquin Villamil
Wholesale Trade, Retail Trade Transportation and Warehousing	42 44-45 48-49	Dr. José Alameda and Dr. Carlos del Valle
Finance and Insurance	52	Dr. Juan Lara
Information	51	Lcda. Heidie Calero
Manufacturing	31-33	Dr. Wilfredo Toledo
Professional, Scientific, and Technical Services; Management of Companies and Enterprises; Administrative and Support, and Waste Management and Remediation	54-56	Dr. Julio César Hernández
Health Care and Social Assistance	62	Dr. José Laborde and Dr. Jaime del Valle
Educational Services	61	Dr. Julio César Hernández
Art, Entertainment and Recreation Accommodation and Food Services	71 & 72	Dr. Julio César Hernández
Tourism	Special theme	Dr. Juan Lara
Energy	Special theme	Prof. Joaquin Villamil

The Plan focuses on, identifying the condition of the sectors, develop strategies to promote the sectors, and create mechanisms to implement the changes effectively and efficiently. The chapters are as follows:

- Chapter 1: Diagnostic Assessment
- Chapter 2: SWOT Analysis
- Chapter 3: Mission, goals and objectives
- Chapter 4: Specific strategies
- Chapter 5: Evaluation mechanisms

Chapter 1 of the Plan consists of a diagnostic evaluation of different industries or sectors. For this purpose, the Scriven logic has been used for diagnostic evaluation. The steps are: selection of performance criteria; establish the standards of expected performance; identify and report measurement instruments or metrics for each criterion; compare the performance based on the instrument or metric standards; and, synthesize results or pass judgment.

Also, the Chapter 2 includes a SWOT analysis for each sector. The SWOT analysis evaluates four components: strengths, weaknesses, opportunities and threats. A matrix for these four components is created to allow the development of a macro view of the condition of each of the sectors.

In Chapter 3 mission, goals and objectives are defined for each sector. The mission presents a statement that provides an explicit philosophical perspective of the contribution of this component to the economy. The goals are an overall results or purpose to be achieved in the sector and subsectors. The objectives are the specific outcomes that must be achieved in the short term (0-3 years), medium term (3-7 years) and, long term (7-20 years). The objectives are in accordance with SMART properties (Specific, Measurable, Attainable, Relevant, and Timely).

The Chapter 4 specifies the strategies or activities needed to achieve the objectives for each sector. The strategies for the subsector are short term, medium term and long term. Those strategies must receive the input of the concerning organizations. Each strategy includes an assessment of the expected costs and benefits. They are supported by theory and empirical evidence.

In Chapter 5 specific metrics are established for formative and summative evaluation of each proposed strategy for the three terms (short, medium and long run). Also, a recommendation is issued in terms of the government agency in charge of conduct and specifies the metrics technics to be used. Also, continuing investigations and surveys are also identified to analyze the effectiveness of the measures.

Section 2: Economy of Puerto Rico for Fiscal Years 1950 to 2013 and Economic Outlook for Fiscal Years 2014 and 2015

This section presents an analysis of the historical behavior of key macroeconomic variables of Puerto Rico for fiscal years 1950 to 2013. During this period the economy of Puerto Rico has faced major challenges which have caused a reduced growth in recent fiscal years.

Gross National Product: What Happened in the 1970s?

The gross national product (GNP) represents the total market value of all final goods and services produced in an economy by residents of the country. This is the leading indicator of economic activity in Puerto Rico. In fiscal year 2013, the GNP registered \$6,511.5 million at constant prices (real means without the effect of price changes), representing an increase of 0.3 percent with respect to \$6,489.5 million estimated for fiscal year 2012. During fiscal years 2009 to 2011, this variable showed declines of 3.8, 3.6 and 1.7 percent, respectively. Figure 1 presents the historical trajectory and the percent change of the real GNP. This graph shows three drastic reductions in the economy of Puerto Rico. These falls reached their lowest points during the fiscal years 1975, 1982 and 2009.

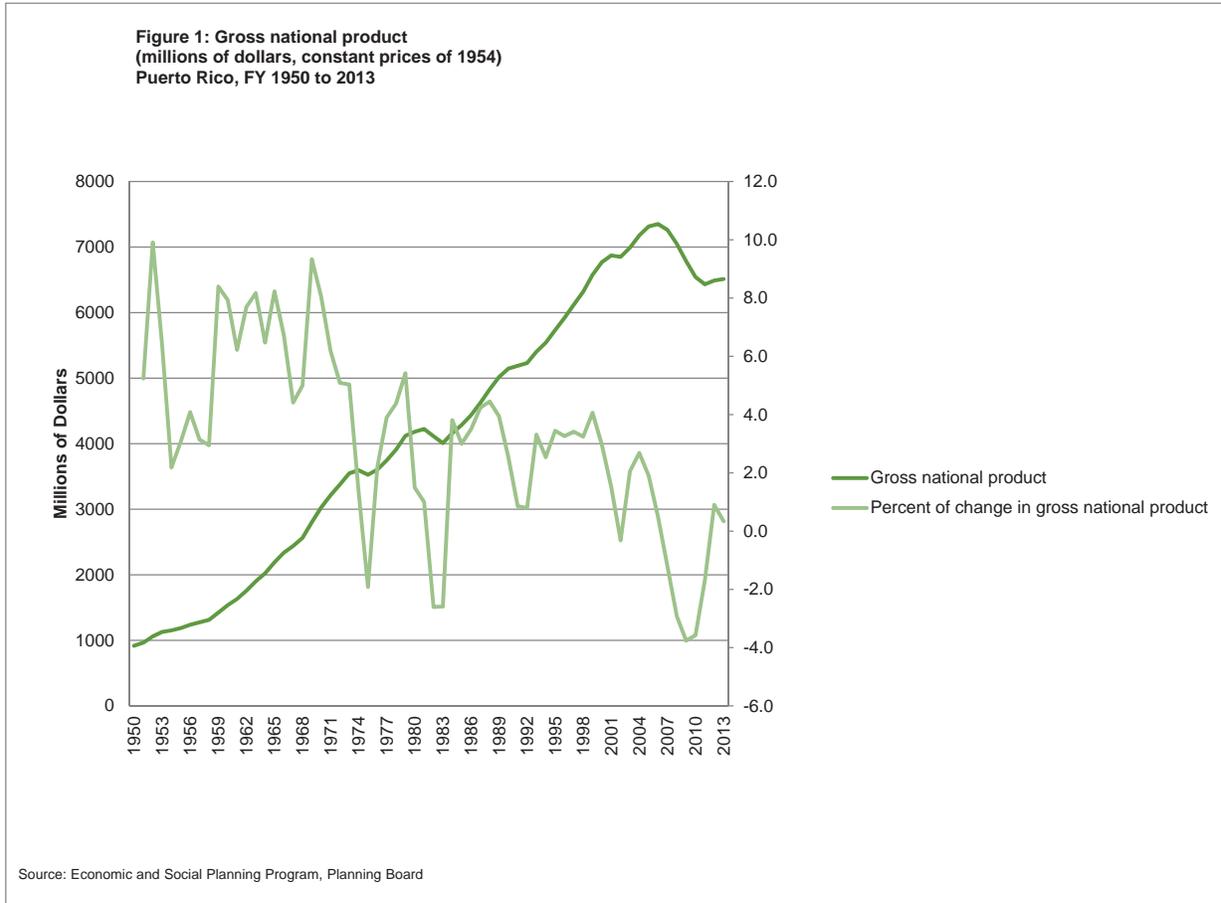
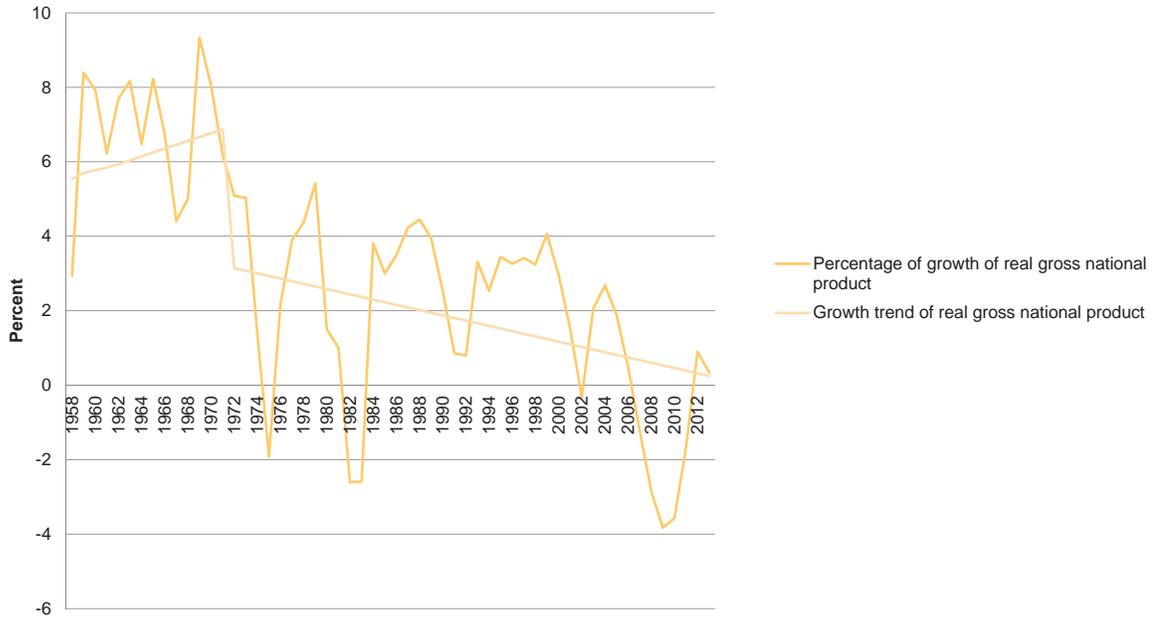


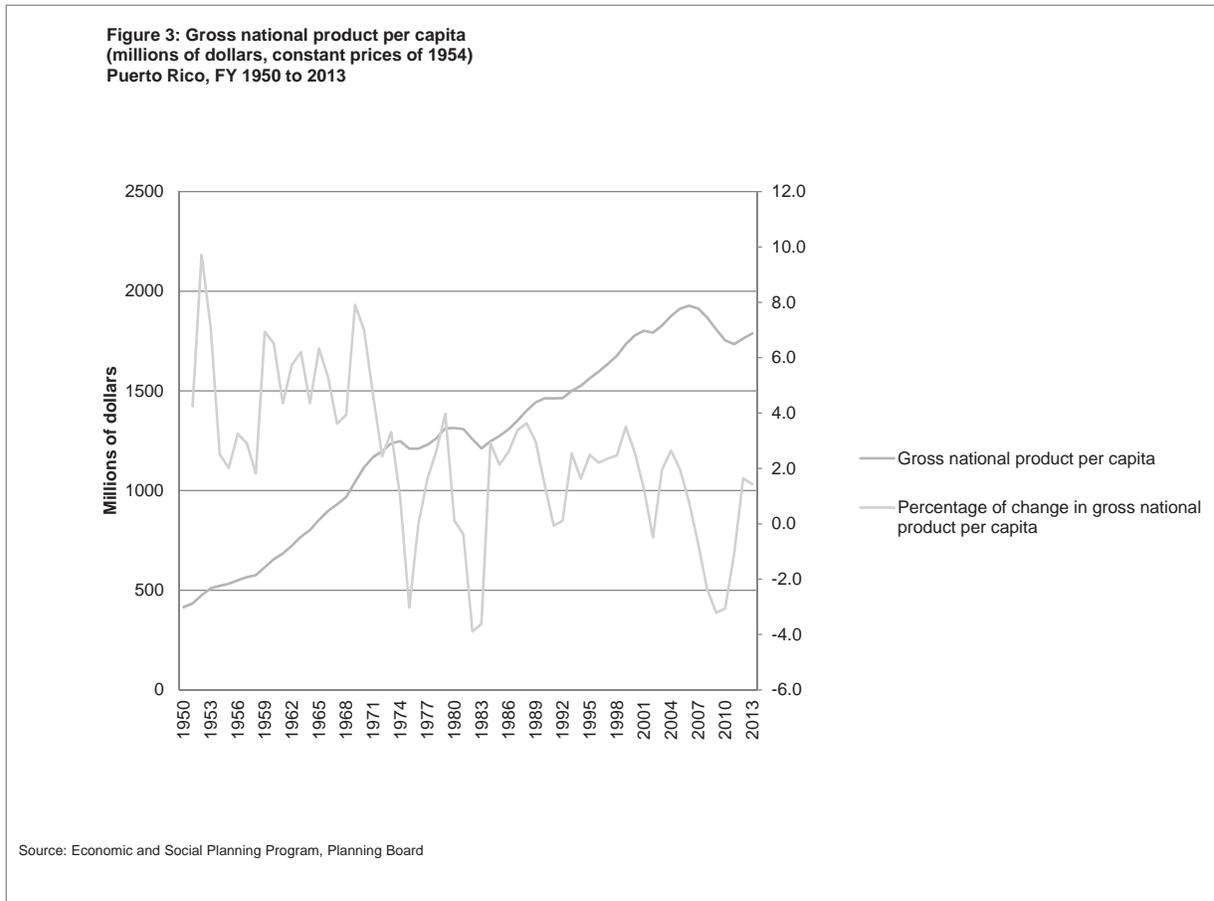
Figure 2 presents that after fiscal year 1970, the real GNP growth has been showing a different behavior to that observed in previous fiscal years. For example, in fiscal years 1951 to 1970 the average percent change was 5.1 percent. However, in fiscal years 1971 to 2013 the average percent change of the real GNP was 1.1 percent. A positive slope can be seen in fiscal years 1951 to 1970, while in fiscal years 1971 to 2013 is perceived a negative slope in the growth of the real GNP. Since fiscal year 1972, the trend of the real GNP has experienced an annual drop of 0.1 percent.

Figure 2: Growth and trend of real gross national product (constant prices of 1954) Puerto Rico, FY 1958 to 2013



Source: Economic and Social Planning Program, Planning Board

In per capita basis, the real GNP reached \$19,428 in fiscal year 2013. This represented an increase of \$763 per person, or 4.1 percent compared with the previous year. In the 2012 fiscal year the GNP per capita totaled \$18,665. In Figure 3, similar to what is observed in Figure 2; there are two periods in the economy of Puerto Rico that can be identified: one before and one after fiscal year 1970. Also, in per capita terms, it shows that the shrinkage occurred in early 1970's was less deep and extensive than the one observed in early 1980 and the mid-2000. This change in the economy during the 1970's decade has been attributed to several factors such as: bursting of real estate bubbles; (i.e., excessive growth in price levels that do not support the real value) in the construction sector and the mortgages for the year 1971 (Economic Report to the Governor, 1976); the rise in the price of oil of almost 170 percent in 1974; the increase in government transfers from the United States to Puerto Rico in social assistance programs for education (1973), housing (1974), and food (1975); an inadequate transition from an industrial system that was labor intensive, cheap, and non-skilled to another intensive in physical and human capital; the implementation in 1976 of the Section 936 of the United States Internal Revenue Code; and, the increase in the role of government in job creation (for 1980 the Government absorbed about a quarter of the jobs) (Dietz 1989; Catalá Olivieras, 1998).



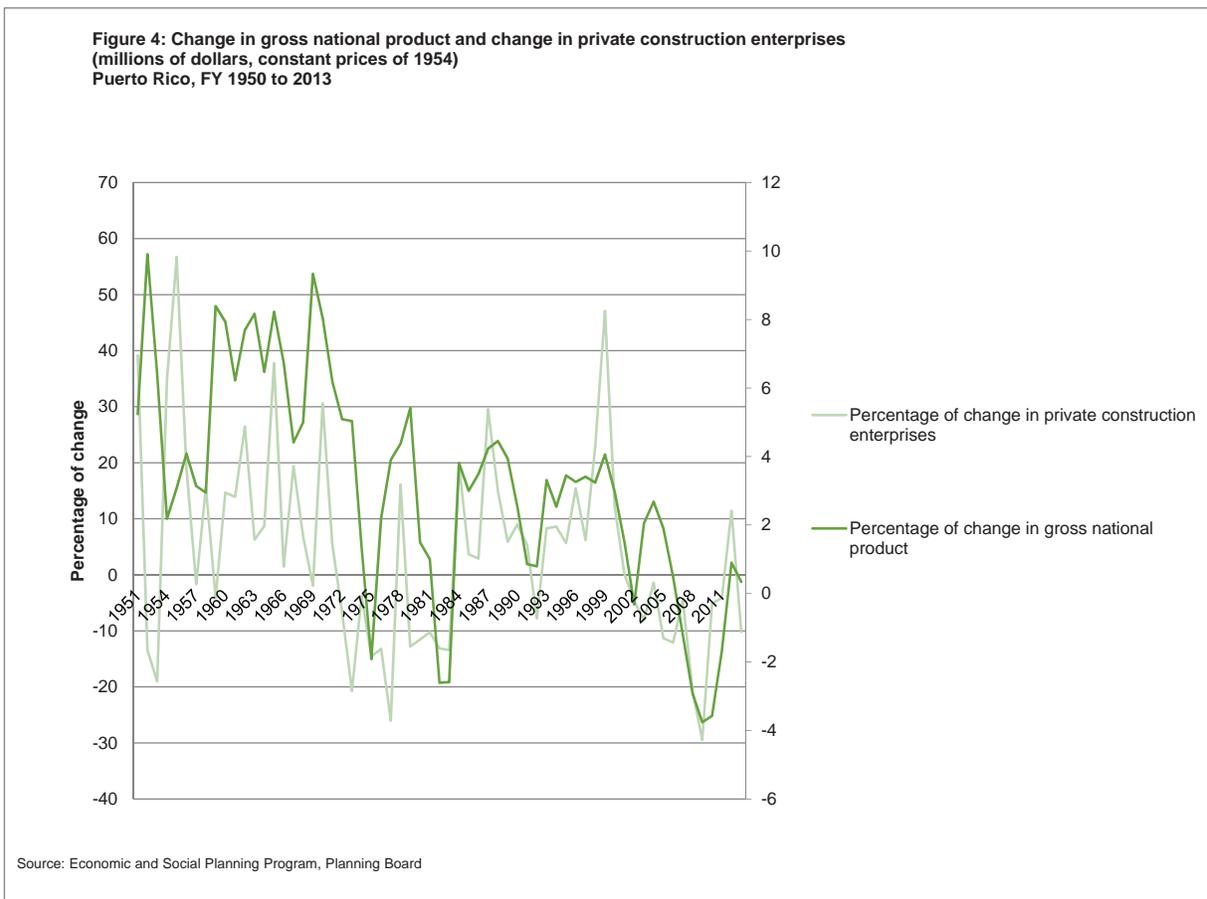
The reduction in the real GNP growth at the beginning of 1980 has also been attributed to the increase in oil prices and to the policies of the United States Federal Reserve to reduce inflation. For example in 1980 the price of oil increased by approximately 67.0 percent. It is important to highlight that in per capita basis the reduction in the real GNP growth in early 1980s was slightly deeper than the decreases experienced in fiscal years 1970 and 2000. After fiscal year 1985 a stable GNP growth both in levels and in per capita basis, prevailed.

In the middle of the 2000s, the GNP growth experienced another drastic reduction. This crisis experienced was preceded by two main events: the elimination of Section 936 and 30A in year 2005 (although permanently repealed in August of 1996); and, the bursting of the second real estate bubble in 2000. Other events such as, the government shutdown of 2006; the implementation of a new tax system in 2006; and, the global recession of 2008, caused by the subprime mortgage market crisis, have been mentioned as events that exacerbated the contraction from the middle of the 2000s. It is important to note that the slowdown of the economy began in fiscal year 2004, although it was not until the fiscal year 2006, which takes place a reduction in the real GNP levels.

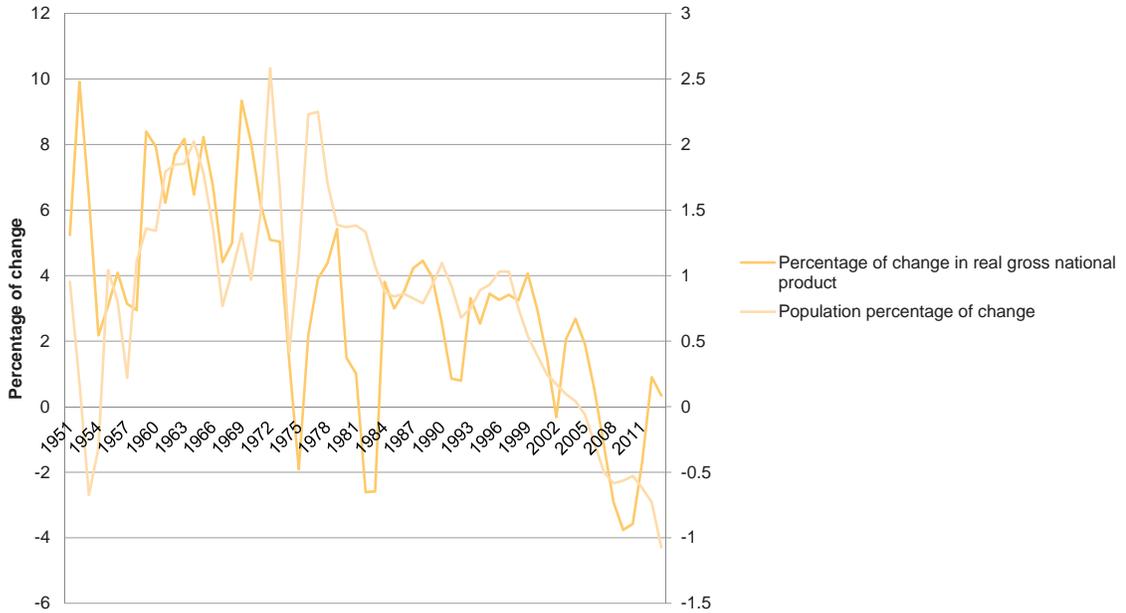
The PB projected the real GNP at \$6,517.0 million for the fiscal year 2015. This would represent an increase of 0.1 percent compared to the fiscal year 2013. In fiscal year 2015, it is expected that the real GNP to reach \$6,530.0 million, a rise of 0.2 percent.

Population and Construction of Private Companies: the Engines of the Economy

The population and the construction carried out by private companies are two factors that both, the press and academic studies have associated with the growth of the real GNP. This theory has been emphasized by the Press, and the academic studies conducted by the Economic and Social Planning Program of the PB have found a positive relationship between these two variables and hence the growth of the real GNP. These studies indicate that the population growth explains up to 39.0 percent the changes in the real GNP. On the other hand, the growth of the construction of private enterprises explains up to 24.0 percent the changes in the real GNP. This means that only these two variables may explain up to 63.0 percent of the changes in the economy over the last 60 years. Figures 4 and 5 compare the growth of the population and the construction of private companies with the growth of the real GNP.



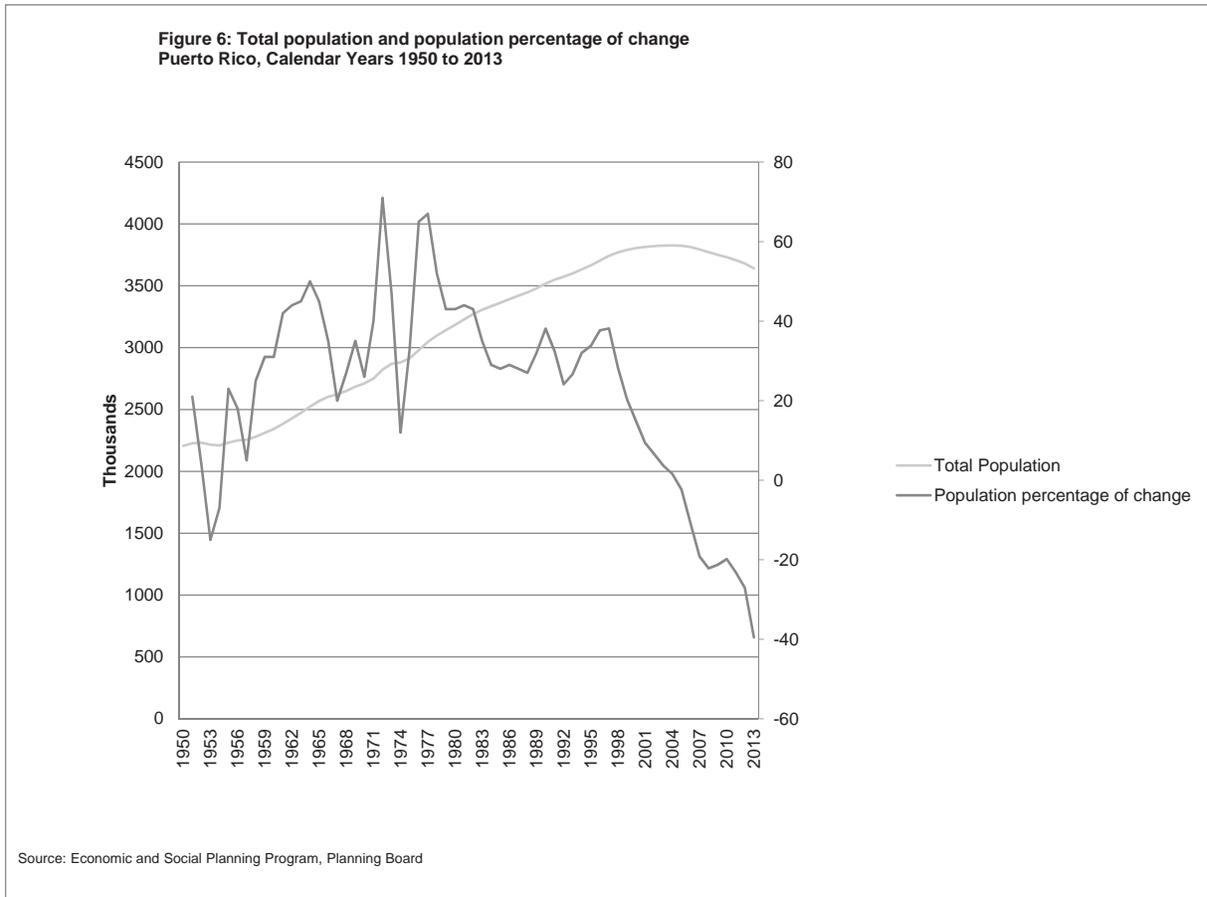
**Figure 5: Percentage of change in real gross national product and population
Puerto Rico, FY 1950 to 2013**



Source: Economic and Social Planning Program, Planning Board

Population: Fewer People, Fewer Births, Less Economic Activity

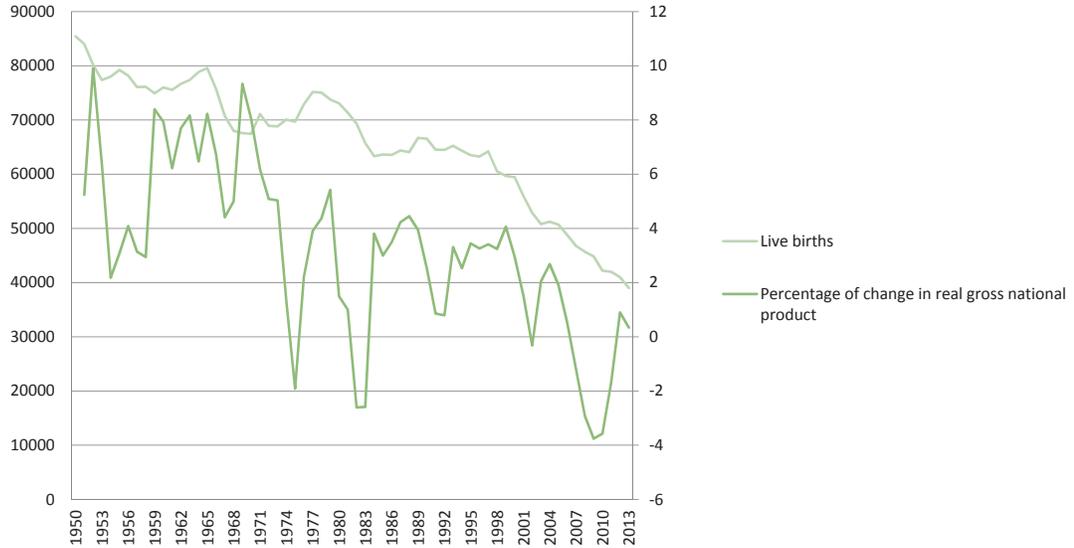
The total population of Puerto Rico on April 1, 2010 was 3,725,789 inhabitants, according to data from the United States Census Bureau. This figure represents a reduction of 82,821 inhabitants, compared with the population in the 2000 Census. In addition, it is the first time in more than a hundred years that the population shows a reduction from one census to another. The annual population growth rate has been undergoing a reduction since the 1980 Census. This rate was 1.0 percent for the period from 1980 to 1990; 0.8 percent for 1990-2000; and, -0.2 percent for 2000 to 2010. Figure 6 presents the changes in the population and the trajectory of the population during the period between 1950 and the 2013.



Changes in the population respond directly to changes in three factors: births, mortality and net migration (i.e., the balance between those who immigrate and those who migrate). Due to the fact that since the 1990s, mortality has remained stable, with approximately 29 thousand deaths per year, this variable has not been a determining factor in population changes. On the other hand, the birth and net migration have undergone drastic changes in recent decades. Since the 1950's, Puerto Rico experienced a rapid reduction in the number of live births. These registered a reduction from approximately 60 thousand in the calendar year 2000 to approximately 42 thousand during the calendar year 2010. This represented a decrease of approximately 30.0 percent or about 1,700 live births on average per year. Studies conducted by the Economic and Social Planning Program of the PB suggests that the introduction of contraceptive technologies and the reduction of employment in the manufacturing sector explains approximately 50.0 percent of the changes in the number of live births. Also, it has been found that the birth rate was affected by the emigration of young people in reproductive ages. For example, as reflected in the 2010 Census, Puerto Rico experienced a decline in all age groups under than 43 years.

Figure 7 presents the historical series of birth rate and the percent change of the real GNP. This graph shows that the long term trend of births has had a negative slope since 1950. Studies conducted by the Economic and Social Planning Program of the PB found a positive association between live births and the growth of the real GNP. These studies indicate that the growth of births explained up to 15.0 percent of the changes in the real GNP.

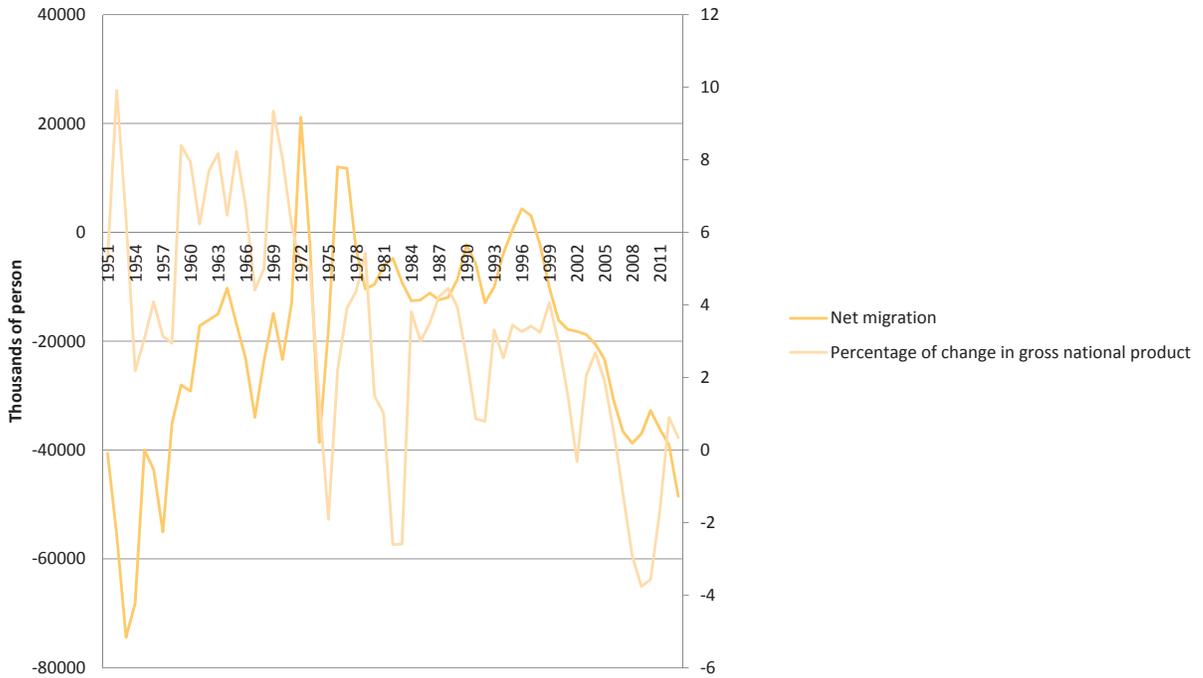
Figure 7: Live births and percentage of change in real gross national product
Puerto Rico, FY 1950 to 2013



Source: Economic and Social Planning Program, Planning Board

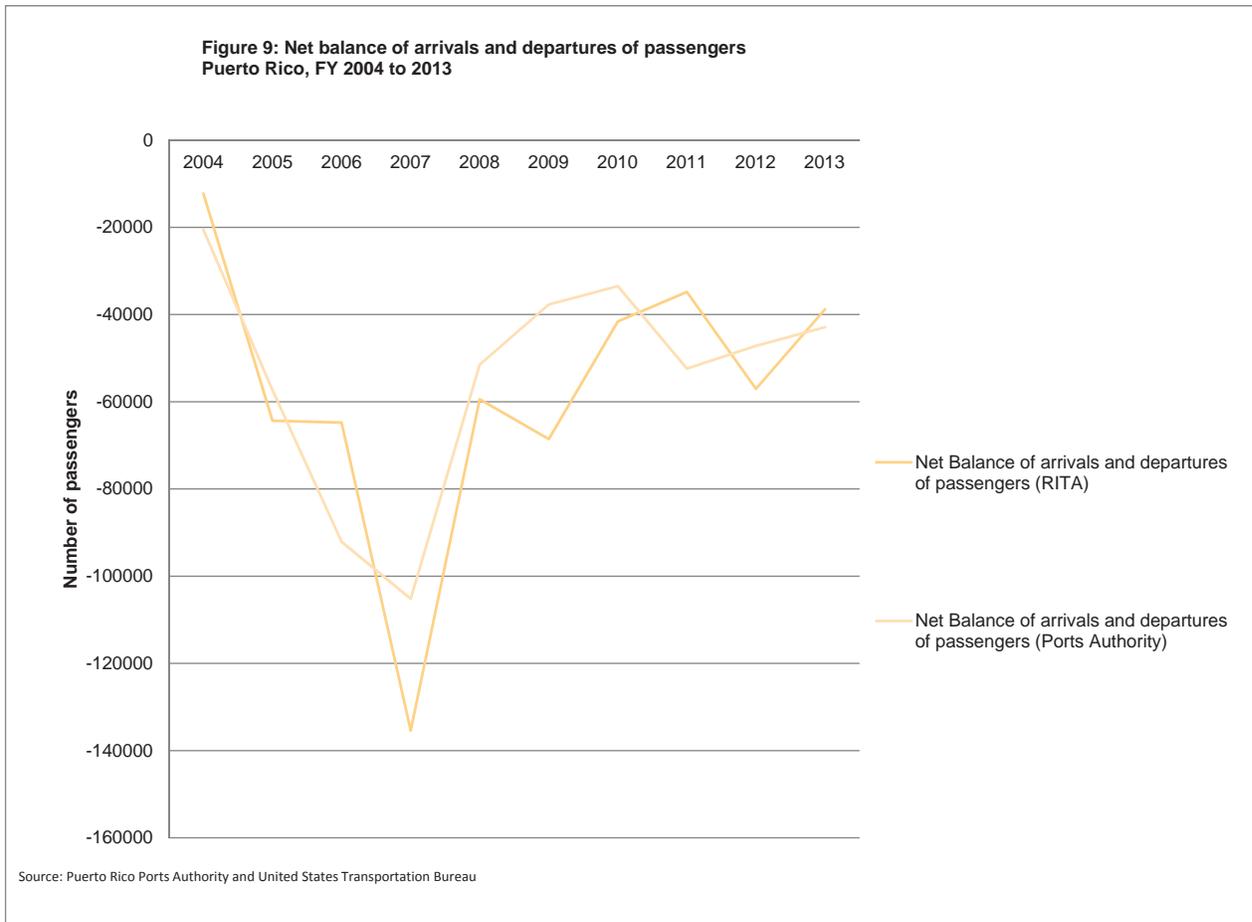
Figure 8 shows three periods of high emigration and two high return migrations. These three periods of high migration reached its minimum approximately in 1953, 1985 and 2008. On the other hand, return migration peaked approximately in 1976 and 1994. The average separation between the ends of cycles mentioned before was approximately 14 years. These cycles of migration could be explained by factors such as, employment, income, crime, and working lifespan of migrants. Economic and Social Planning Program of the Puerto Rico PB has found that net migration explains up to 11.0 percent of the changes in the real GNP.

Figure 8: Percentage of change in gross national product and net migration (millions of dollars, constant prices of 1954) Puerto Rico, FY 1950 to 2013



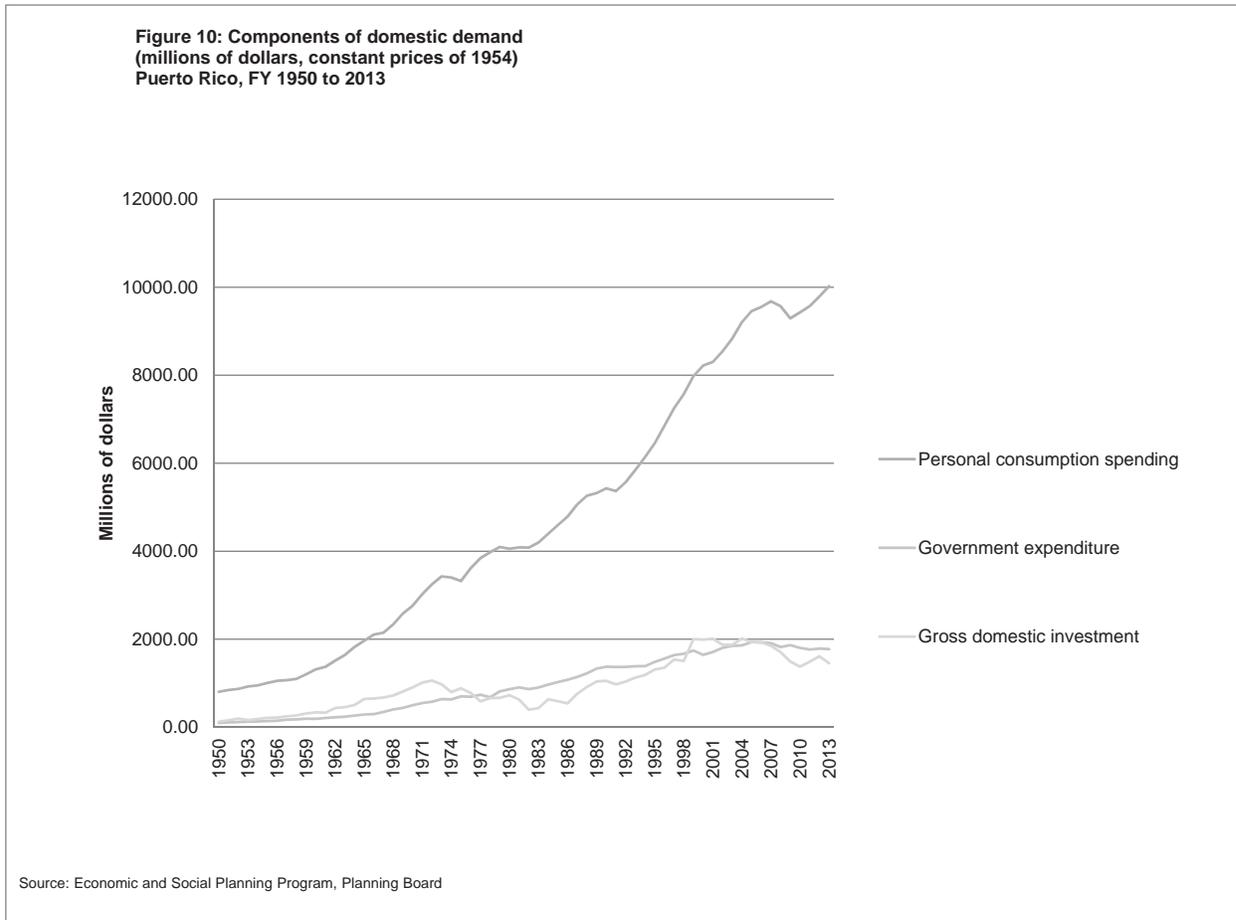
Source: Economic and Social Planning Program, Planning Board

Figure 9 presents the balance of inputs and outputs of passengers, according to the Puerto Rico Ports Authority and the United States Department of Transportation - Research and Innovative Technology Administration (RITA). Both data series shows that the balance of arrivals and departures of passengers reached its minimum in fiscal year 2007 and after this date the departures have been reduced in net terms.



Domestic Demand: We Continue Consuming More

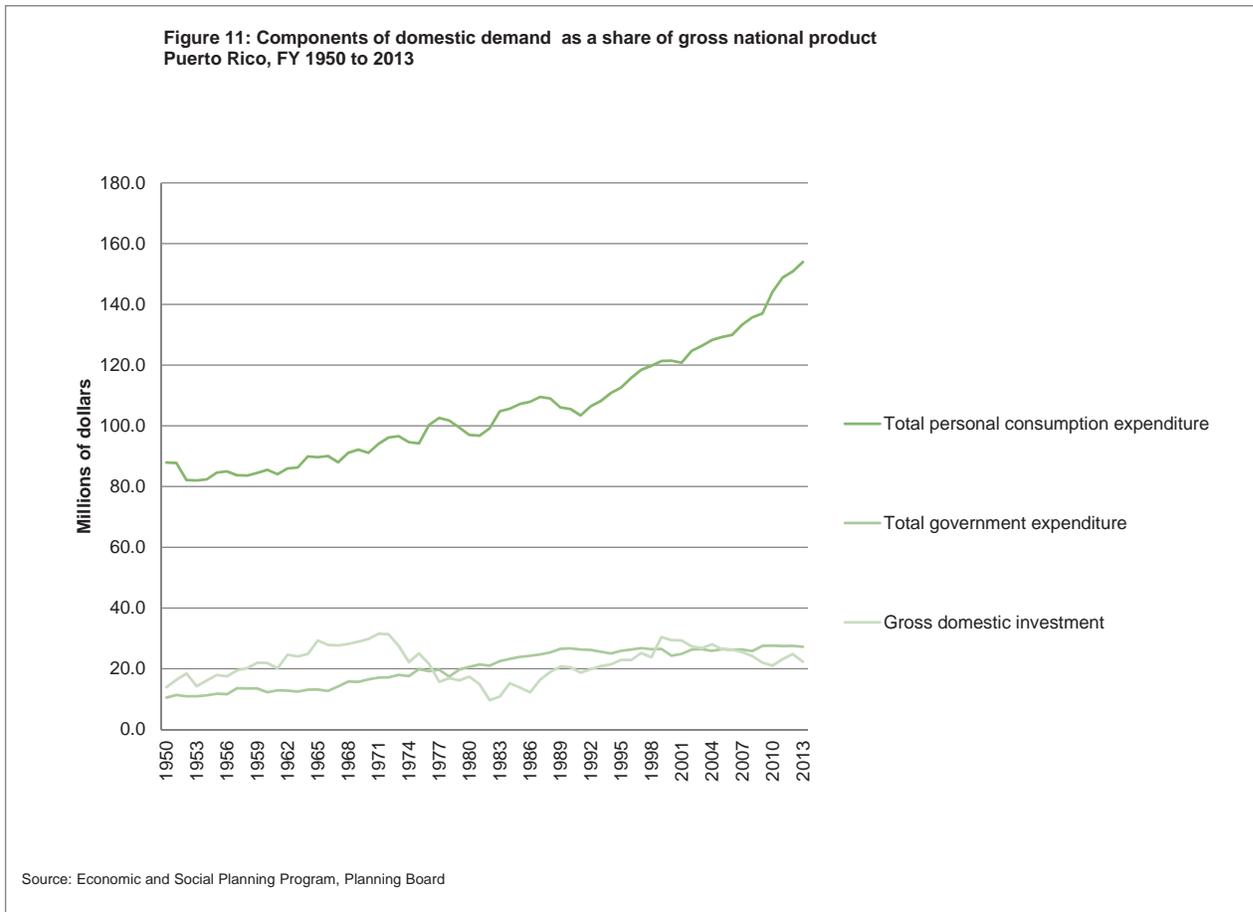
In the fiscal year 2013, domestic demand which represents the value of all goods and services consumed by the public and private sectors in Puerto Rico, increased 0.5 percent at constant prices (from \$13,187.6 million in fiscal year 2012 to \$13,250.0 million in fiscal year 2013). Domestic demand is composed of three components: personal consumption expenditures; government consumption expenditures; and, total gross domestic investment and are presented in Figure 10. During fiscal years 1950 to 2013 government consumption expenditures and total gross domestic investment have reflected a positive slope near zero. On the other hand, personal consumption expenditures have continued to increase through all these fiscal years.



The relative contribution of personal consumption expenditures in fiscal year 2013 was 75.6 percent, compared with the contribution of 74.2 percent in fiscal year 2012. In fiscal year 2013 the personal consumption expenditure, main component of domestic demand, totaled \$10,023.3 million at constant prices. This represented an increase of 2.4 percent related to the previous fiscal year. Similarly, the participation related to government consumption expenditures within the gross domestic demand reached 13.4 percent compared to the fiscal year 2012 when it accounted for 13.5 percent.

The amount of the consumption expenditure of central government and municipalities in fiscal year 2013 was \$1,772.8 million at constant prices, representing a decline of 0.7 percent when compared with the fiscal year 2012. The relative share of gross domestic investment in domestic demand fell to 10.9 percent in fiscal year 2013 compared with fiscal year 2012 when it was 12.2 percent. Within the total of gross domestic investment in fiscal year 2013, construction investment reached \$446.5 million at constant prices, reflecting a decline of 11.3 percent compared to the fiscal year of 2012 whose value was \$503.1 million.

Figure 11 presents personal consumption expenditure, government consumption expenditure, and total gross domestic investment relative to the real GNP from fiscal years 1950 to 2013. In this period, government consumption expenditure and total gross domestic investment were approximately 20 percent of the real GNP. In 1950, personal consumption spending represented approximately 88.0 percent of the real GNP in the fiscal year 1950. In contrast, for fiscal year 2013 the personal consumption expenditure represented 154.0 percent of the real GNP.



Gross Domestic Fixed Investment: Two Bubbles, Two Recessions

The construction activity plays a key role in the economy, both in job creation and the development of infrastructure in Puerto Rico. Construction investment refers to the new construction made by private companies and the state government. The construction activity includes the construction, expansion, repair and remodeling of buildings or structures such as residential, commercial, industrial buildings, roads, bridges, ports and other works made by construction companies.

In the fiscal year 2013, construction investment at nominal prices reached \$4,115.9 million and at constant prices, \$446.5 million. At constant prices, the investment in machinery and equipment in fiscal year 2013, Puerto Rico totaled \$994.4 million, reflecting a decrease of 4.3 percent. Similarly, at nominal prices, investment in machinery and equipment in fiscal year 2013 recorded a decrease of 1.9 percent reaching a total value of \$5,694.7 million.

Figure 12 presents the behavior of the components of gross domestic fixed investment during the fiscal years 1950 and 2013. By definition, gross domestic fixed investment consists of investment in construction and, machinery and equipment. In the case of construction, the figure 12 shows two reductions of great magnitude in the series in the fiscal years 1972 and 2001. After these fiscal years the construction sector experienced drastic reductions. However, in all these years, machinery and equipment investment has remained relatively stable, even in periods of contraction of the real GNP.

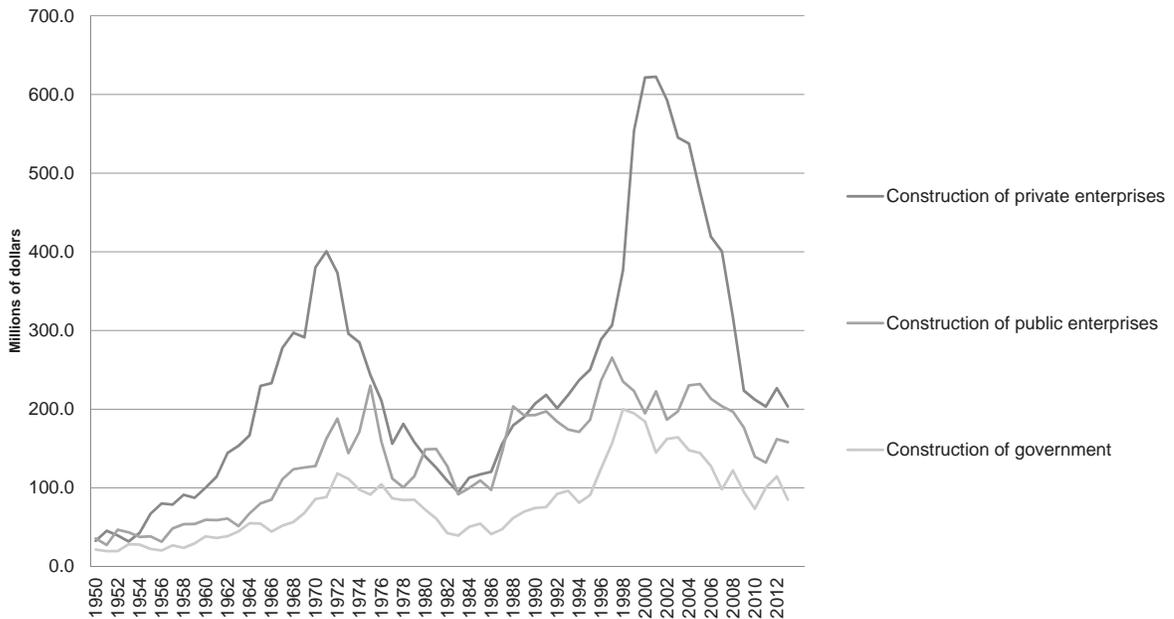
Figure 12: Components of gross fixed capital investment
 (millions of dollars, constant prices of 1954)
 Puerto Rico, FY 1950 to 2013



Source: Economic and Social Planning Program, Planning Board

Figure 13 demonstrates the components of construction investment. This figure presents that the main component of the construction investment is from private companies. Also, it shows that although construction investment of public enterprises and the government has experienced fluctuations during this period, they have been relatively stable when it is compared with private investment. Investment in construction of private companies has been a major source of change in total construction investment in Puerto Rico. These large peaks in construction investment of private companies, generated by bubbles (i.e., rapid increase in price levels that are not supported with real value) in real estate, both have preceded the same, the contraction of the early 1970s and the contraction of the middle of the 2000's.

Figure 13: Components of investment in construction
 (millions of dollars, constant prices of 1954)
 Puerto Rico, FY 1950 to 2013

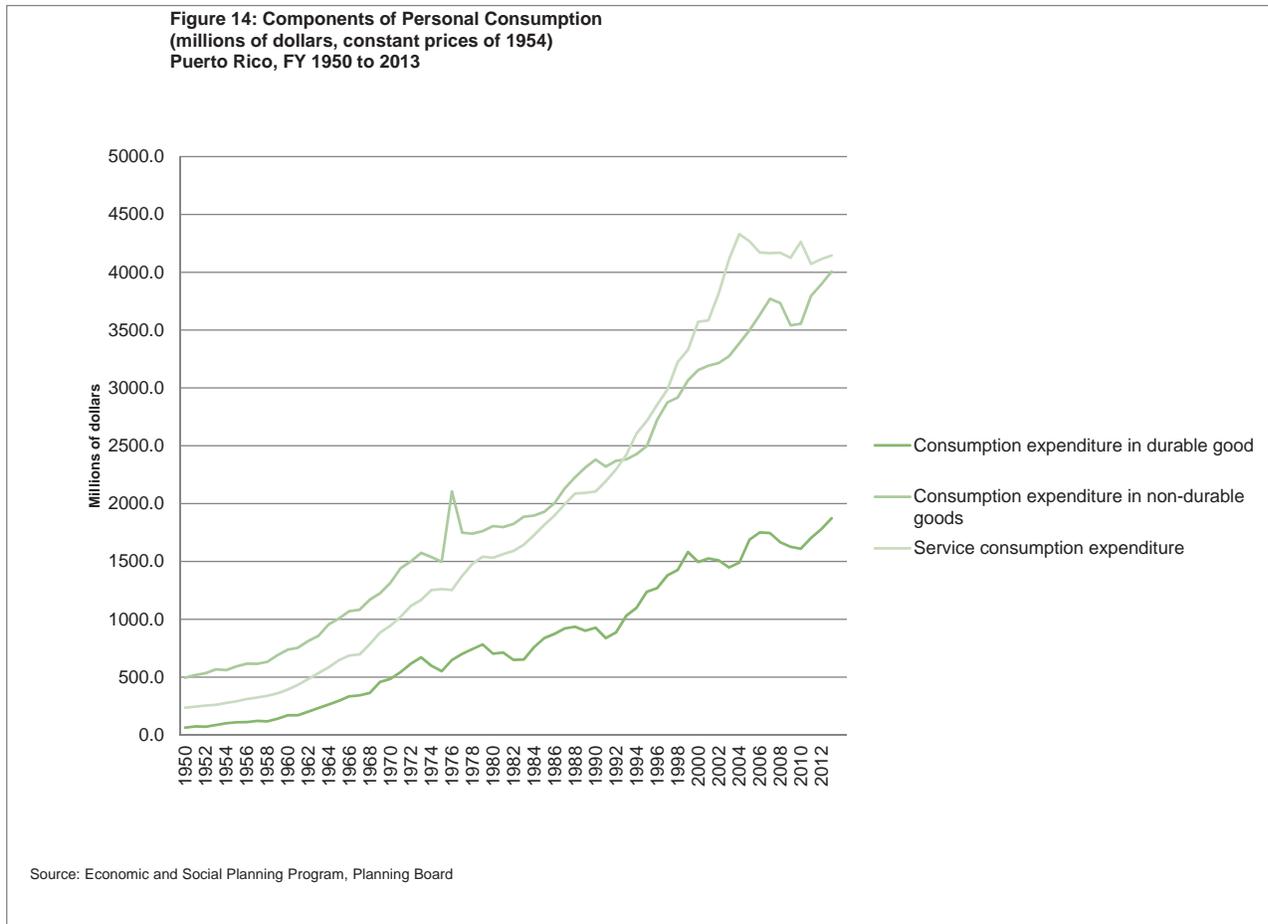


Source: Economic and Social Planning Program, Planning Board

The projections of the Economic and Social Planning Program of the PB indicates that for fiscal year 2015 the construction investment at constant prices will reach \$391.0 million, a decrease of 12.4 percent. Also, in fiscal year 2015 it's expected a decrease of 5.6 percent, which represents a value of \$369.0 million. On the other hand, the forecast for investment in machinery and equipment at constant prices indicates a value of \$945.0 million in fiscal year 2015 and \$893.0 million in fiscal year 2015.

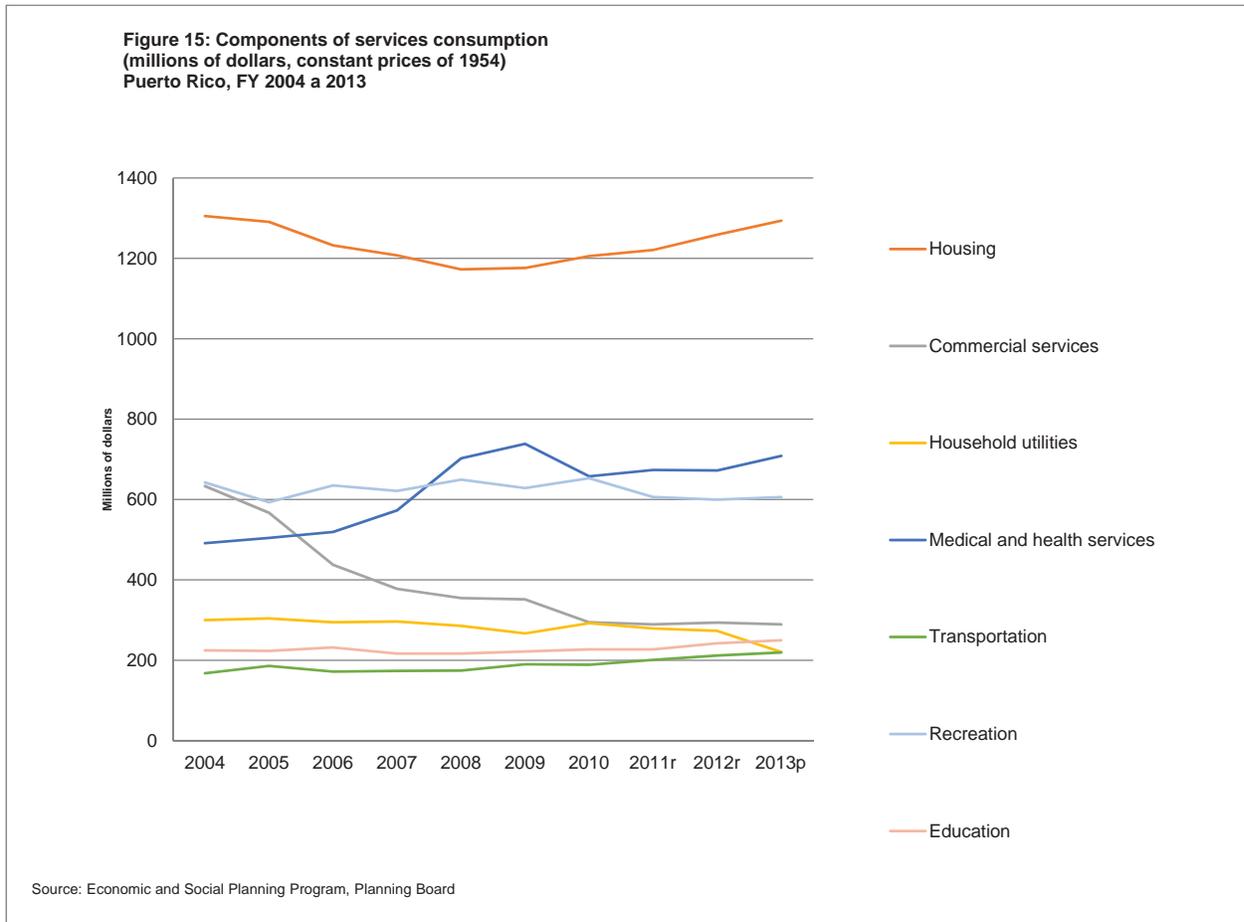
Personal Consumption: Puerto Rico will Remain to be a Service Economy?

The personal consumption expenditures are the main component of the GNP. Real personal consumption expenditures totaled \$10,023.3 billion in fiscal year 2013, representing an increase of 2.4 percent when compared with the fiscal year 2012. This performance was sustained by a rise of 5.3 percent in durable consumption expenditures, 2.8 percent in non-durable goods consumption expenditures, and 0.8 percent in consumption expenditures related to services. Figure 14 presents the time series of the components of personal consumption expenditures.



Similarly, it can be observed that since fiscal year 1993 the consumer expenditures related to services exceeded the non-durable goods consumption expenditures. This behavior is common in economies of developed countries. Since fiscal year 2005, consumer spending in services has shown a negative slope, which means that both series take almost the same value. If these trends continue, it is envisioned that in the next few year services will be no longer the main component of personal spending. It is possible that the decline in the growth of GNP has not affected symmetrically personal expenditures because the consumption of non-durables goods is composed of subsidies and transfers payments from the United States. It is understood that subsidies and transfers from the United States are insensitive to changes in economic activity in Puerto Rico.

Since fiscal year 2004, most of the components of services expenditures have remained stable, according to Figure 15. Despite this stability commercial services have declined. This is mainly related to the housing crisis. Moreover, the rise in aging population means that medical and health services will have unceasing rise.



In per capita terms, personal consumption expenditures in fiscal year 2013 totaled \$17,168. This represented an increase of \$604 per person or a 3.6 percent, compared with the previous fiscal year. For the fiscal year 2012, personal consumption expenditures per capita totaled \$16,564. On the other hand, disposable personal income per capita in fiscal year 2013 amounted to \$16,776. This reflected an increase of \$464 per person or a 2.8 percent compared with the previous fiscal year. It is possible that the discrepancy between disposable personal income per capita and personal consumption expenditures per capita can be explained by factors, such as: the underground economy, the generation of personal debt, and inflow of remittances by Puerto Ricans in the United States.

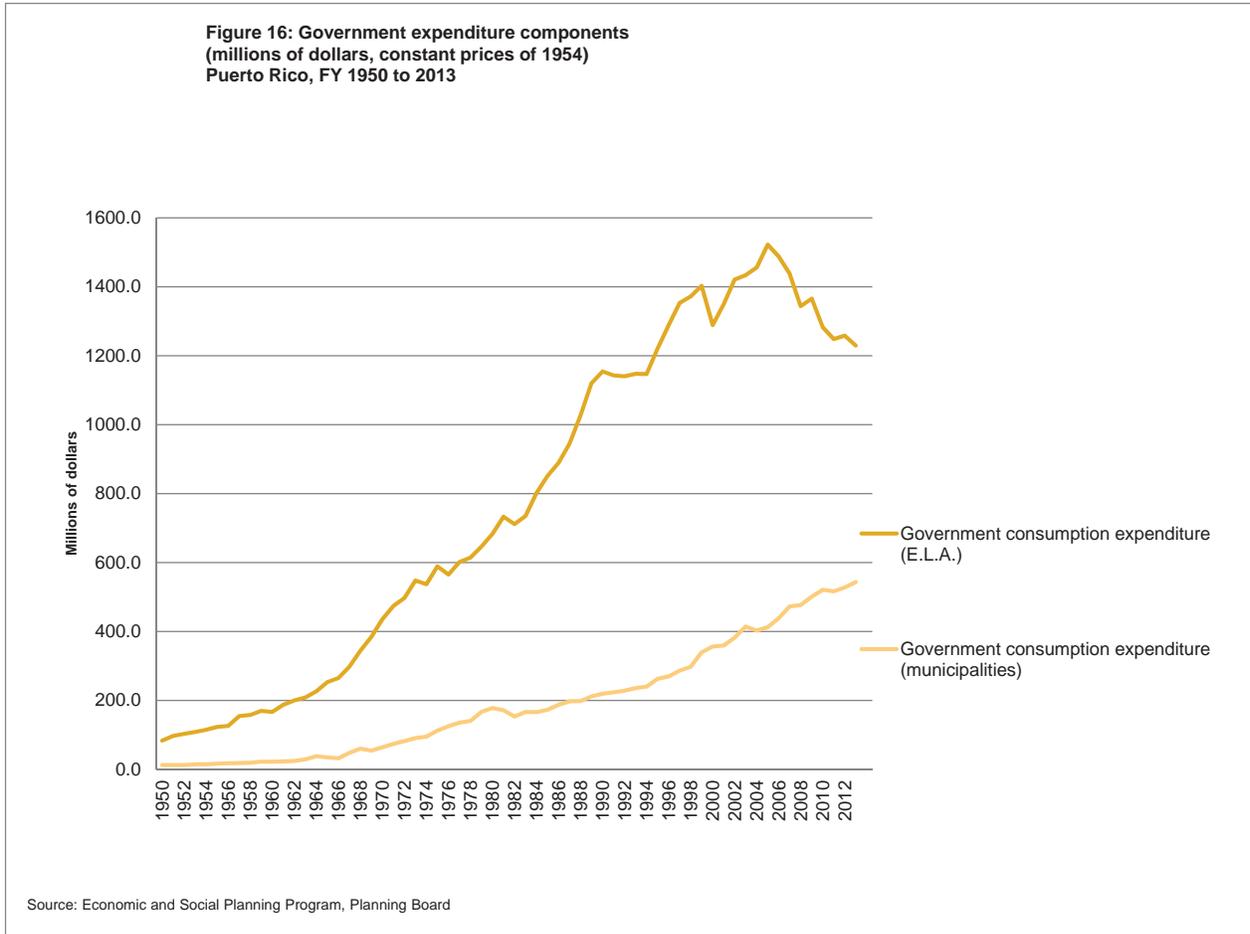
The personal consumption expenditures estimated for fiscal year 2015 is \$10,156.0 million, representing a growth of 1.3 percent; and for fiscal year 2015 is \$10,273.0 million, a rise of 1.2 percent. At nominal prices, the projected figures for those years are \$63,789.0 million and \$64,934.0 million, respectively. This results in respected increases of 2.0 and 1.8 percent

Government Expenditures and Gross Public Debt: Continues to Increase Municipality Expenditures

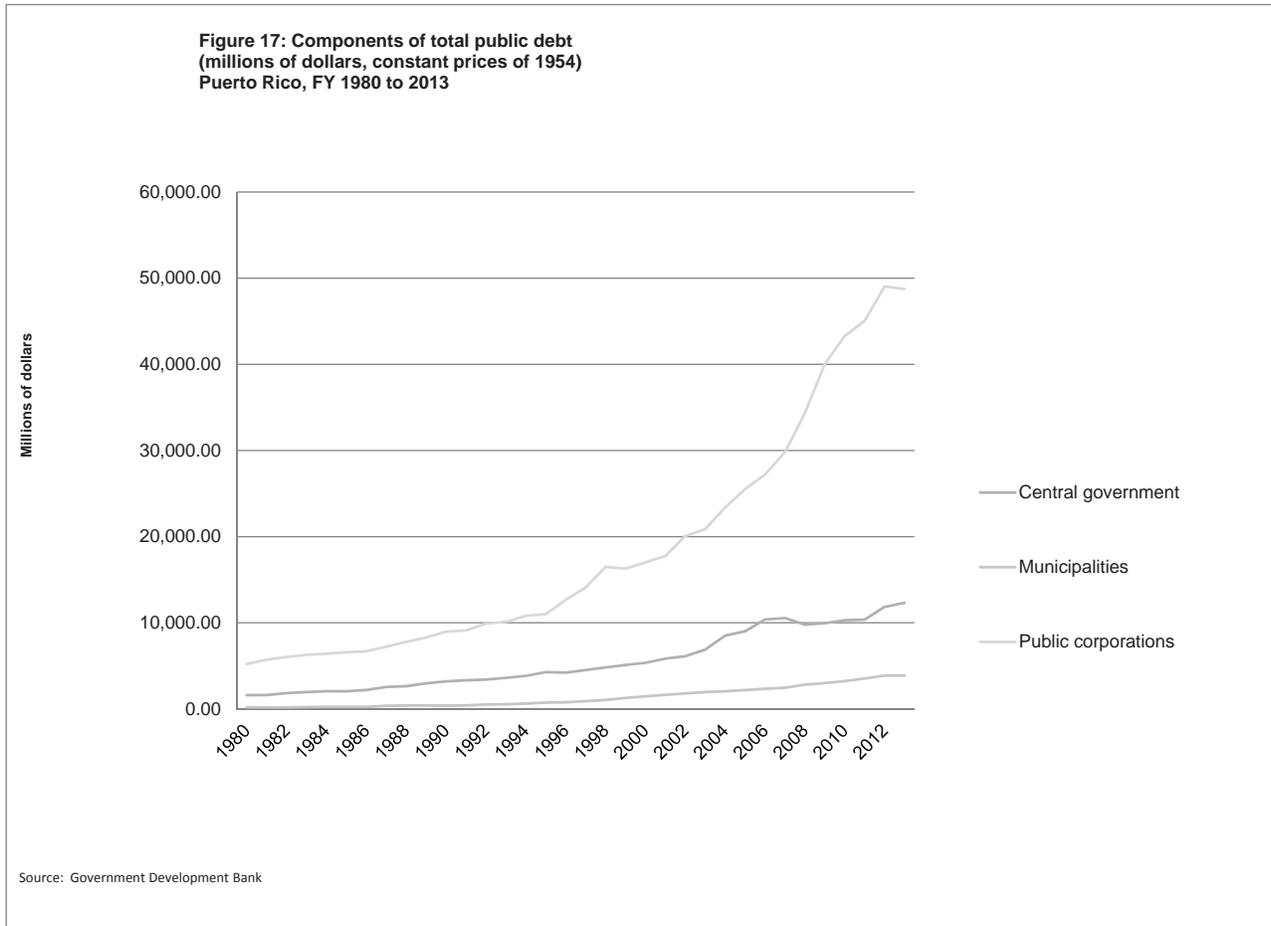
The total government expenditures accounted for 27.2 percent of real GNP in fiscal year 2013. Consistently, not seasonally adjusted data from the Current Employment Survey, known as Establishment Survey of the Department of Labor and Human Resources, indicates that the proportion of government employment as part of total employment in the economy was a 29.4 percent in the same fiscal year. In fiscal year 2013 total government expenditures at nominal prices reached \$10,716.0 million and at constant prices, \$1,772.8 million. Similarly, the spending of the government of the Commonwealth of Puerto Rico amounted \$1,229.6 million at constant prices, reflecting a decrease of 2.3 percent

compared with previous fiscal year. On the other hand, at constant prices, the expenditures of the Municipalities of Puerto Rico registered an increase of 2.9 percent, reaching a total value of \$543.2 million.

Figure 16 shows the behavior of the components of the total government expenditures at constant prices during the period of fiscal years 1950 and the 2013. The total government expenditures at constant prices include expenditures of the legislative and judicial branch, government agencies, the University of Puerto Rico, the State Insurance Fund Corporation, Highways and Transportation Authority, and the 78 municipalities. In terms of the government expenditures of the Commonwealth of Puerto Rico could observe an upward trend until fiscal year 2005. After that year, those expenditures have been reduced significantly to levels similar to those of the 1990's. However, the expenditures of Municipalities continued reflecting a positive upward trend in the period between 1950 and the 2013.



It should be noted that part of the total government expenditures has been funded with public debt. The Government of the Commonwealth of Puerto Rico has issued debt, as a rule, with the primary purpose of providing resources for the development of permanent public improvements and generates economic growth. As of June 30, 2013, the total debt of the government of the Commonwealth of Puerto Rico (central government agencies, municipalities and public corporations) was \$64,957.1 million (figure 17). The central government debt consists of emissions of general obligation bonds, which are issued mainly for the construction of permanent improvements and the purchase of other assets of capital. In Puerto Rico, the amount of the debt of the central government is constitutionally limited. The limit requires that the debt service does not exceed 15.0 percent of the average of the internal revenue corresponding to the preceding two fiscal years to which the debt is issued. This margin refers to debt whose payment promises the power to impose taxes to the central government. The gross debt of the central government at June 30, 2013 amounted to \$12,328.7 million, which represented an increase of \$484.6 million or 4.1 percent over the corresponding figure for the previous fiscal year which was \$11,844.1 million.

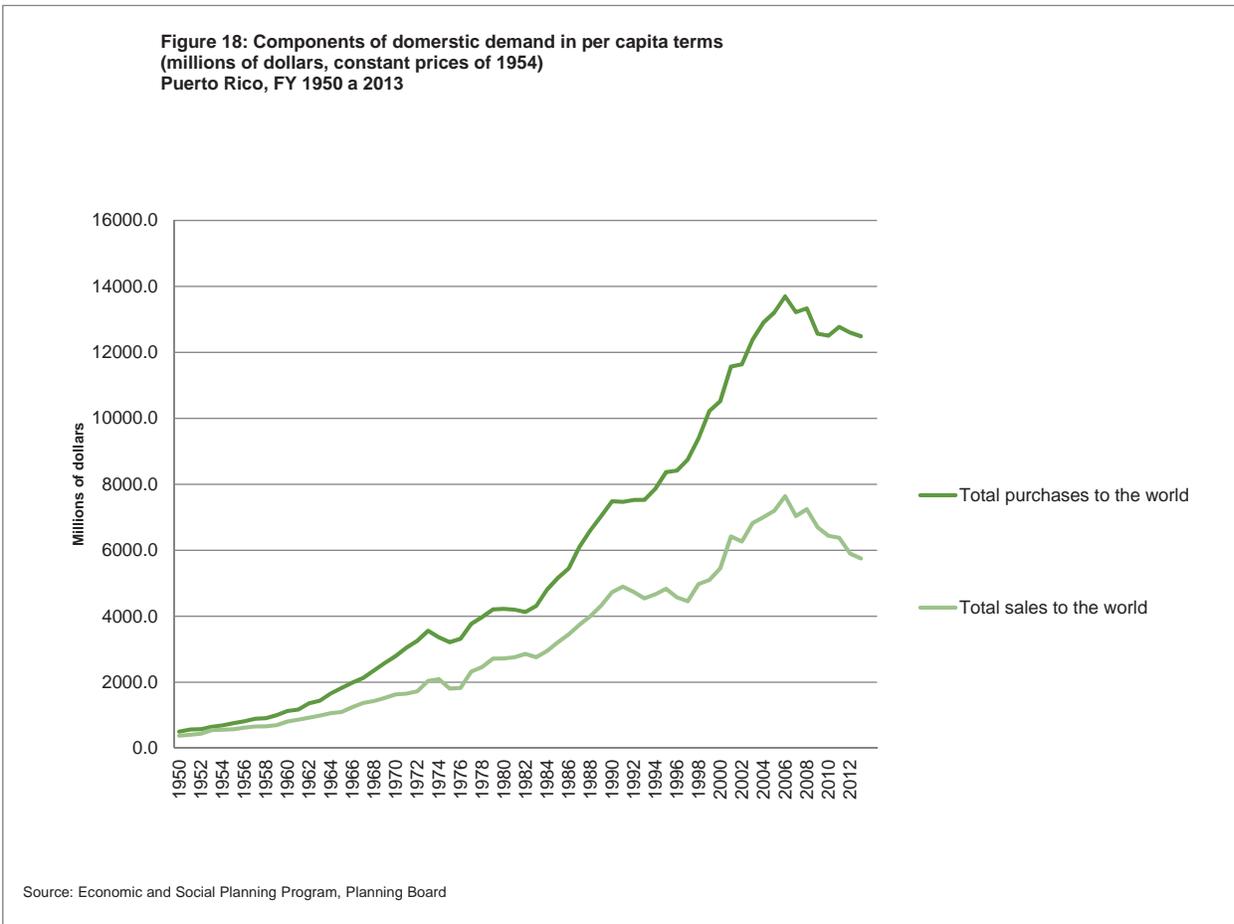


The debt of the public corporations that are payable from their own incomes are defined by trusts agreements that each public corporations underwrite with investors through one or more trustees. Each of these agreements establishes, among other aspects, the amount of income required to the service of the current debt and that which is required to issue new debt. At June 30, 2013, the amount of the debt of the public corporations amounted to \$48,746.4 million. Meanwhile the gross debt of the Municipios of Puerto Rico on June 30, 2013, totaled \$3,882.0 million. This figure exceeded by \$10.5 million the outstanding debt at June 30, 2012, which amounted to \$3,871.5 million. That is, the Municipal debt registered an increase of 0.3 percent.

Exports and Imports: Trade Deficit Continues to Expand?

Exports of goods and services totaled \$5,752.5 million at constant prices in the fiscal year 2013. This represented a decrease of 2.5 percent compared to \$5,900.8 million for fiscal year 2012. Industries that exported more were those of chemical products, and medical materials. On the other hand, total imports of goods and services totaled \$12,490.9 million at constant prices in fiscal year 2013. This represented a decrease of a 0.9 percent compared to fiscal year 2012.

Figure 18 presents the historical series of exports and imports at constant prices. The figure shows that both series have turned away over time. Also, it highlights that between fiscal years 1950 and 2007 exports and imports had an upward trend. After 2007, both series have begun to decrease. However, real exports appear to have decreased with a negative slope, which could imply for Puerto Rico a higher commercial trade deficit in the future. It is important to note that an increase in the commercial trade deficit implies loss of wealth. Since we do not sell more to foreign countries, internal wealth of Puerto Rico is used to cover purchases abroad. Two alternatives to reduce the trade deficit are, that the Government encourage the linkages (i.e., which industries buy and sell intermediate products to local industries) with local industries, and import substitution.

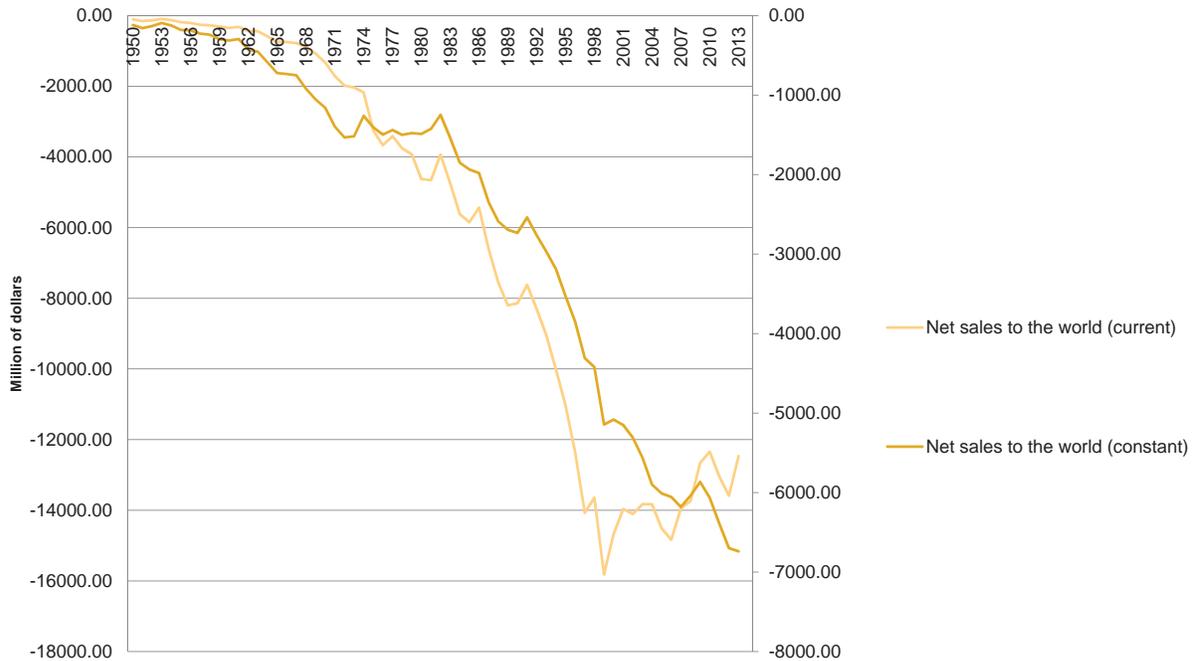


Regarding transactions with the rest of the world at nominal prices, an increase in sales of goods and services of 0.5 percent was registered for fiscal year 2013. The amount reached was \$75,092.7 million. The adjusted merchandise¹ represented 90.9 percent of total sales of goods and services. This reflected an increase of 0.4 percent reaching \$68,269.1 million. However, purchases of goods and services reflected a 0.9 percent reduction to record the amount of \$87,562.4 million in fiscal year 2013. In fiscal year 2012, sales and purchases of goods and services showed a decrease of 2.4 and 1.4 percent, respectively.

Figure 19 shows the net sales (i.e., net exports) in nominal and constant prices. This series presents four periods that coincide with contractions experienced in the economy of Puerto Rico. The first period occurs between fiscal years 1950 and 1970, the second from fiscal years 1971 to 1982, the third in fiscal years 1983 to 2000, and the fourth quarter of 2001 to the present.

¹ Some adjustment items are subtracted (-) and other add (+). Among them: unregistered goods (+); excise taxes on rum shipments (+); parcels (+); and re-exports (-).

**Figure 19: Net sales to the world at current and constant prices
(millions of dollars)
Puerto Rico, FY 1950 to 2013**



Source: Economic and Social Planning Program, Planning Board

The Economic and Social Planning Program of the PB project the adjusted merchandise exports of Puerto Rico. The projections in nominal prices are estimated according to the projected growth trend for the economy of the United States, considering the demand for goods expected. The exports are estimated to reach \$68,604.0 and \$69,467.0 million for fiscal year 2014 and 2015, respectively both at nominal prices. Those figures represent increases of 0.5 and 1.3 percent.

Gross Domestic Product

The gross domestic product (GDP) represents the market value of economic output originated in a particular country, regardless of the residence of the individuals or the companies that own the capital. In fiscal year 2013, the GDP reached \$10,417.3 million, an increase of 0.2 percent, when comparing to fiscal year 2012 which closed at \$10,394.6 million. In nominal prices, the GDP totaled \$103,134.8 million in fiscal year 2013, compared with \$101,080.7 million in fiscal year 2012. The analysis of GDP by sector is presented in the following section.

Section 3: Economy of Puerto Rico by Sector

In this section it will be used the U.S. Census Bureau County Business Pattern data classified by NAICS to evaluate the performance of the industrial sector of Puerto Rico in the years 2004 to 2012. The following variables will be discussed: total establishments, payrolls, annual payroll (deflated using the Consumer Price Index, CPI) and the real GDP by industrial sector.² The data from each sector were grouped into 13 categories to facilitate analysis. These are:

- Agriculture and Mining: NAICS 11 and 21
- Construction and Real Estate, and Rental and Leasing: NAICS 23 and NAICS 53

² It's important to note that for this analysis the real GDP used was from the National Accounts for fiscal year 2013. However, the analysis in the sections was done with the results of the National Accounts for fiscal year 2012 because it was available when the related works of the Economic Development Plan began.

- Manufacturing: NAICS 31-33
- Trade: NAICS 42, 44 and 45
- Transportation and Warehousing: NAICS 48 and 49
- Information: NAICS 51
- Finance and Insurance: NAICS 52
- Professional, Scientific, and Technical Services: NAICS 54
- Management of Companies and Enterprises: NAICS 55
- Administrative and Support and Waste Management and Remediation Services: NAICS 56
- Other Services: NAICS 81
- Educational Services: NAICS 61
- Health Care and Social Assistance: NAICS 62
- Arts, Entertainment, and Recreation: NAICS 71
- Accommodation and Food Services: NAICS 72
- Utilities: NAICS 22

In order to analyze the economic benefits of employees by industry at per capita level, the annual payroll per employee was calculated with the data of total annual payroll and number of employees. The annual payroll per employees is presented at nominal and constant prices. The annual payroll per employee at constant prices facilitates comparison between the time series of 2004 to 2012, eliminating the price effect.

Figure 20 shows the number of employees by sector for the years 2004 to 2012. The service, trade, and manufacturing sector recorded reductions. Meanwhile, the industries that experienced growth during the mentioned period were education, and health and social services. In 2012, the number of employees for all the sectors was 690,597. This represented an increase of 16,920 jobs or 2.5 percent compared to 2011 which reached 673,677. In 2004 the number of employees totaled 722,529 reflecting a reduction of 31,932 or 4.4 percent when compared to 2012.

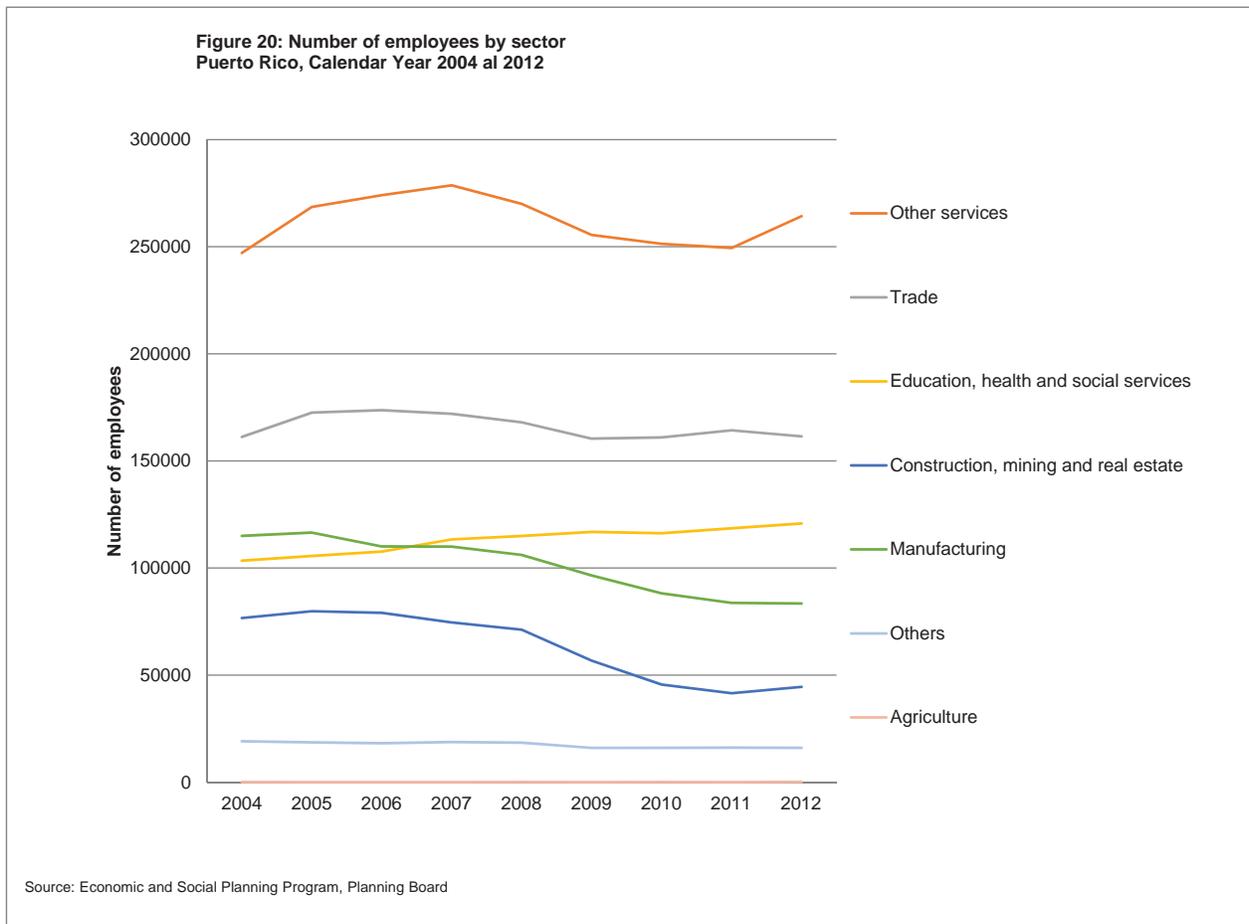
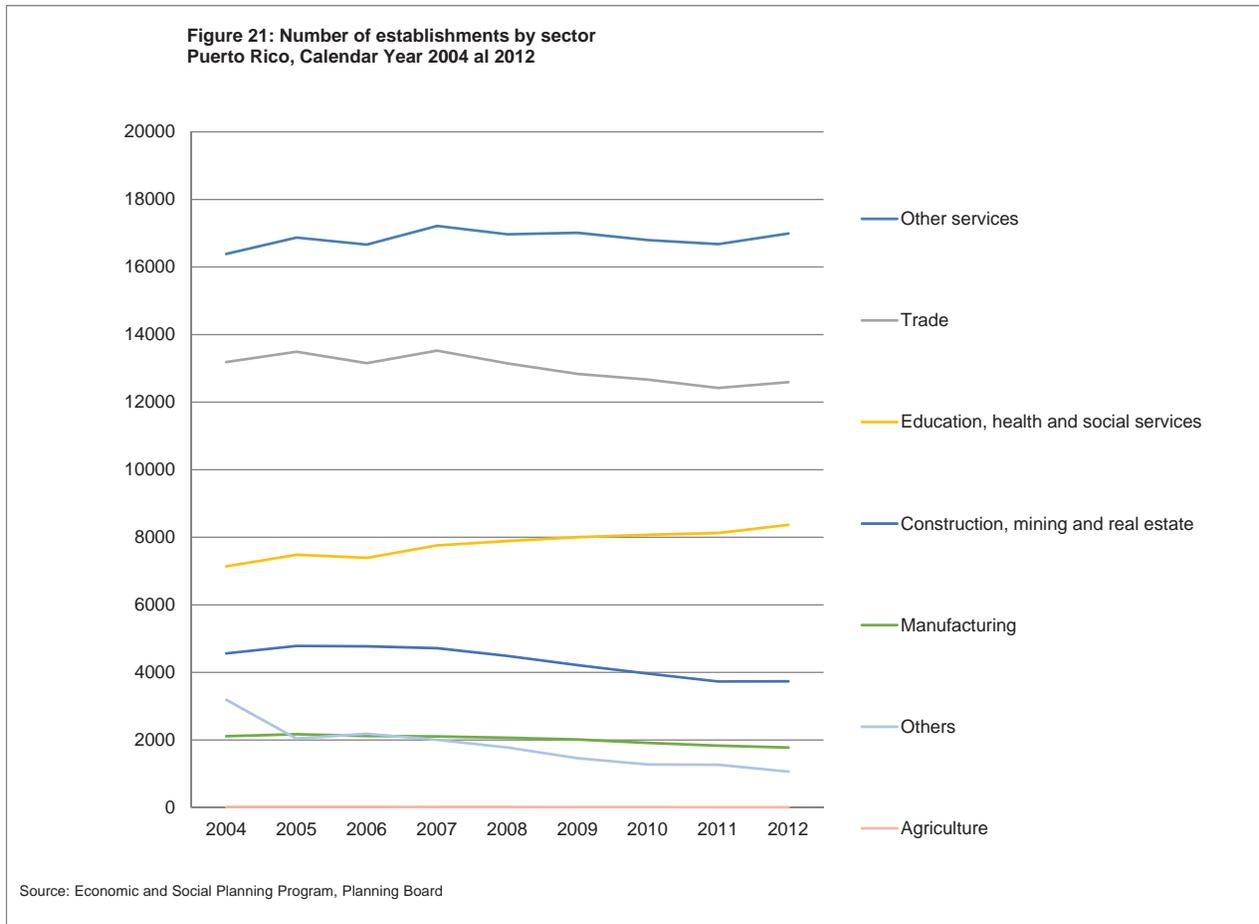


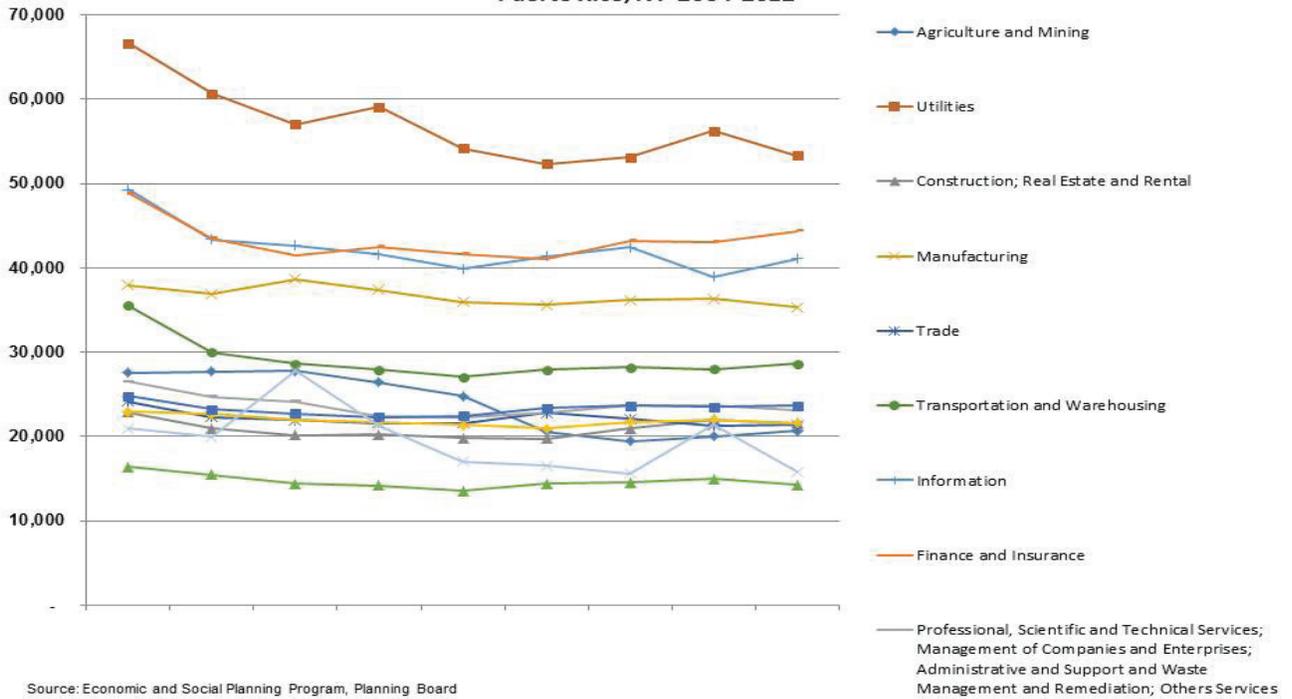
Figure 21 presents the fluctuation in the number of establishments by sector of the economy of Puerto Rico for the period 2004 to 2012. It can be observed that trade, professional, scientific and technical services, management of companies and enterprises; administrative and support services, other services, and health care and social assistance contain about 6,000 establishments. On the other hand, sectors with less than 1,000 establishments were information and educational services. Sectors with less than 100 establishments were agriculture, mining, and utilities.



The total number of establishments in Puerto Rico in 2012 was 44,767. This represented an increase of 711 or 1.6 percent compared to 2011 when the total of establishments reached 44,056. In 2004 the total was 46,595 establishments. In 2012 the number of establishment decreased by 1,828, or 3.92 percent compared to 2004. The sectors that showed growth in the number of establishment when comparing with the period between 2004 and 2012 were as follows: utilities, information, professional, scientific, and technical services; management of companies and enterprises, administrative and support services, other services, educational services, and health care and social assistance. It should be noted that the number of establishments in the unclassified sector decreased by 1,859 when comparing the period between 2004 and 2012.

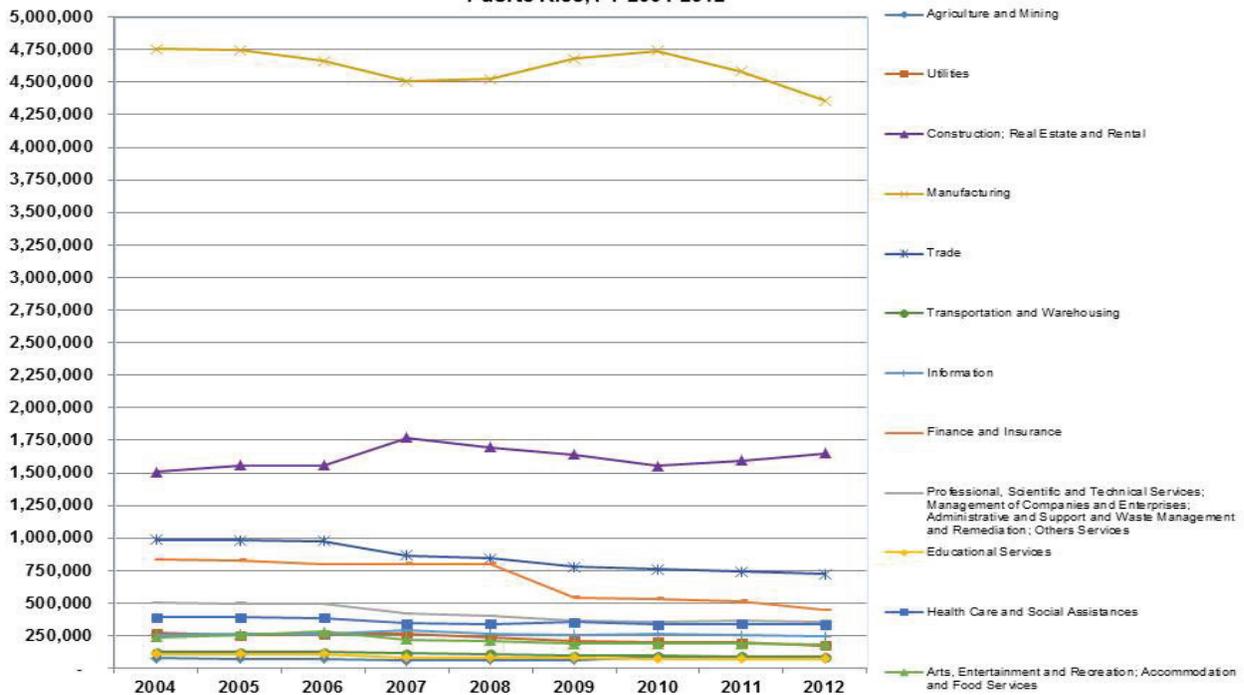
Figure 22 presents the annual payroll per employee by industrial sector for the period of 2004 to 2012, at constant prices of the year 2013. In order to make comparable the annual payroll per employee eliminating the inflation effect on the purchasing power of money, the data is presented at constant prices. The annual payroll per employee totaled \$24,698 in 2012. This represented a decrease at constant prices of \$364 or 1.5 percent with respect to 2011 when reported \$25,062. In 2004 annual payroll per employee was \$ 28,076. Comparing with 2012 and 2004 a reduction of \$3,377 or 12.0 percent is observed

Figure 22: Annual payroll by employee and economic sector
Constant prices 2013
Puerto Rico, NY 2004-2012



Analyzing the real GDP by industrial sector, the manufacturing and real estate contributed to total GDP with approximately 62.3 and 23.5 percent, respectively, in the fiscal year 2012 (Figure 23). In terms of absolute values the real GDP for fiscal years 2004, 2011 and 2012 totaled \$11,609.9, \$10,597.3 and, \$10,394.6 million, respectively.

Figure 23: Gross national product by economic sector (\$1,000)
Constant prices (based 1954)
Puerto Rico, FY 2004-2012



Source: Economic and Social Planning Program, Planning Board

In this section it will be presented a spatial analysis using choropleth maps about the number of total establishments by industrial sector in Puerto Rico for 2012. A choropleth map is a type of thematic map whose regions are tinged with different colors in order to highlight statistical information such as population density, income per capita, among others. The map is divided into several categories that were calculated using “natural break”, method which classifies the data to determine the best arrangement of values. In this particular case, the choropleth maps highlight the number of establishments by economic sector per municipality. It should be noted that various maps present discrepancy between the total number of establishments registered by the U.S. Census Bureau County Business Pattern and the total sum of establishments by municipality. This discrepancy is because there is a category called “Statewide” which is not comparable to any particular Municipio of Puerto Rico. Because according to the Census Bureau, Puerto Rico is considered a County. A total of 14 maps are presented for each different industrial sector.

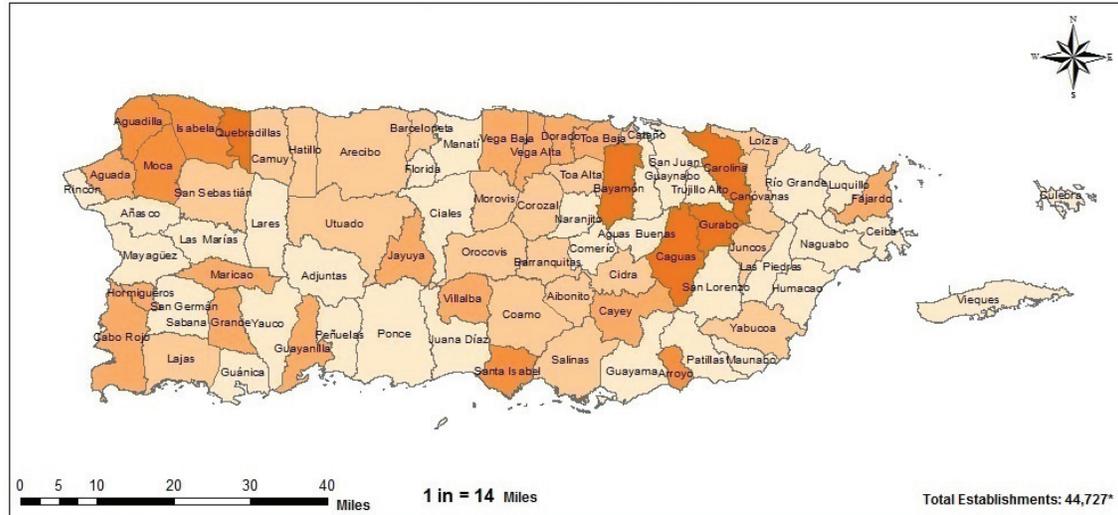
Figure 24 presents the total number of establishments for all industrial sectors in Puerto Rico and its 78 municipalities. The spatial analysis shows a total of 44,727 establishments divided into 5 categories. These are:

- First category: 19 to 205 establishments
- Second category: 206 to 391 establishments
- Third category: 392 to 721 establishments
- Fourth category: 722 to 1,615 establishments
- Fifth category: 1,616 to 3,220 establishments

The discrepancy in the total number of establishments for Puerto Rico is 40.

The following shows the performance of every industrial sector.

**Figure 24: Total establishments for all economic sectors
Puerto Rico NY 2012**



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



* The difference in total establishments in Puerto Rico due to the Statewide category. This category is not assigned to any particular municipality. This represents a difference of 40 compared to the total facilities according to County Business Patterns.



Agriculture and Mining Sectors

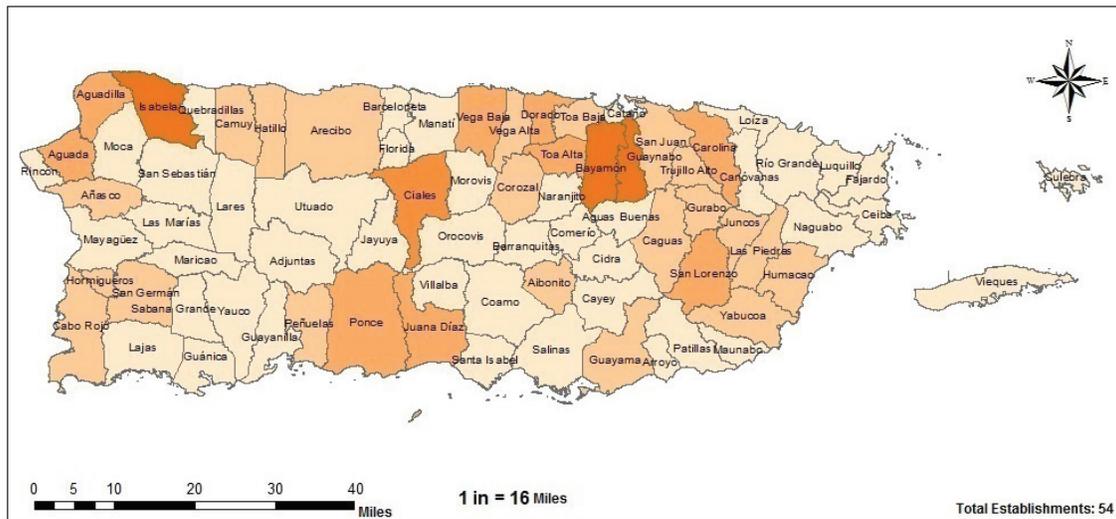
In the Agriculture and Mining sectors the total number of employees was 815 in year 2012. This represented an increase of 33 more jobs or 4.4 percent when comparing with year 2011 which totaled 782. In 2004 the employment for these sectors reached 952. When comparing between 2012 and 2004, there was a decrease of 137 jobs or 85.6 percent.

The annual payroll per employee in constant prices (real terms) in these sectors in 2012 was \$20,634, an increase of 3.0 percent compared with 2011. In 2004 the real annual payroll per employee was \$27,560, reflecting a decrease of \$6,926 or 25.1 percent when compared to the year 2012. Certainly the Agriculture and Mining sectors have maintained a downward trend in annual payroll per employee at constant prices of 2013.

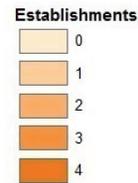
In fiscal year 2012 the GDP at constant prices from Agriculture and Mining sectors fell 1.4 percent, when compared to fiscal year 2011. However, when comparing fiscal years 2012 and 2004, it rose 12.5 percent. This increase was driven by the agricultural sector which reflected an upturn of 15.3 percent in fiscal year 2012 compared to fiscal year 2004.

The total number of establishments in the Agriculture and Mining sectors in 2012 was 54, representing a decrease of 3.6 percent compared to the year 2011. The number of establishments in 2012 compared to 2004 reflected a reduction of 6.9 percent. Figure 25 presents the total number of establishments for Agriculture and Mining sectors in Puerto Rico and its 78 Municipalities. In general, this map shows three principal pathways in terms of the mentioned sectors: (1) between the municipalities of Vega Baja and San Juan, (2) Aguadilla and Arecibo, (3) Cabo Rojo and Aguadilla and (4) Caguas and Humacao: Concentrations around the municipality of Ponce is also observed.

**Figure 25: Total establishments for agriculture and mining sectors
Puerto Rico NY 2012**



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County Business Patterns
Puerto Rico Planning Board
Economic and Social Plannign Program



Construction and, Real Estate and Rental Sectors

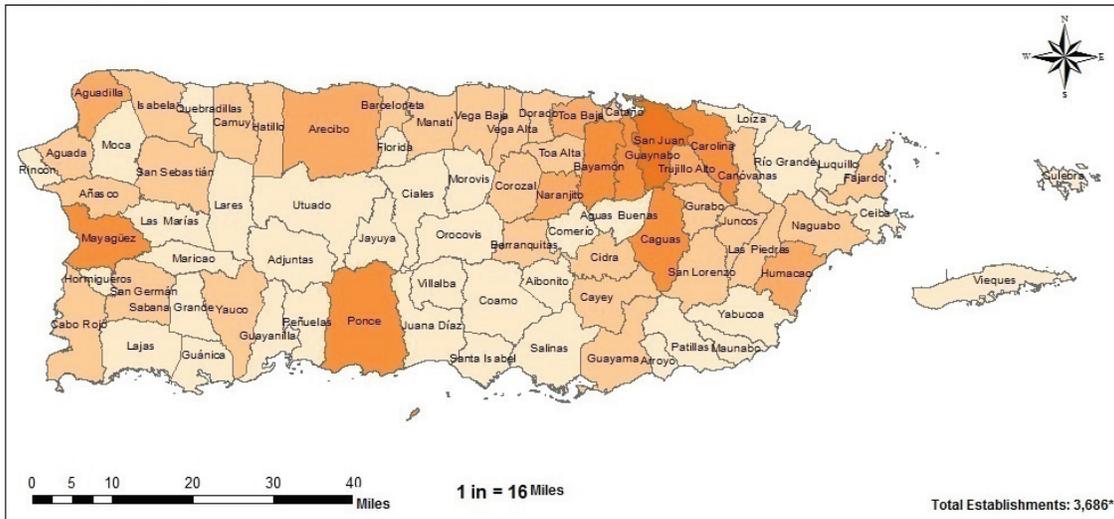
The Construction and, Real Estate and Rental sectors provide dynamism to the economy of Puerto Rico. In these sectors, in year 2012 the employment was 43,824. This represented a rise of 3,030 jobs or 7.4 percent in relation to 2011 that totaled 40,794. In 2004, employment in the Construction and, Real Estate and Rental sectors reached 75,777 compared with 2012. This represents a reduction of 42.2 percent. These sectors grew from 2004 to 2005, and then for the rest of the period until 2011 remained decreasing with a downward slope.

In 2012 the real annual payroll per employee of these sectors was \$21,591. This represented a reduction of \$433 or 2.0 percent from the year 2011. Comparing year 2012 with 2004 represented an increase in absolute terms of \$1,297.

The growth rate of real GDP from Construction and, Real Estate and Rental sectors in fiscal year 2012 increased 2.4 percent, compared to fiscal 2011. When comparing to fiscal 2004, it rose 23.3 percent. It must be emphasized that the second largest contribution to GDP came from Real Estate and Rental sector. Conversely, the Construction sector in the time series from 2004 to 2012 has declined consistently. In summary, in the fiscal year 2012 the contribution to real GDP from the construction, real estate and rental sectors was \$2,440.4 million.

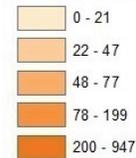
The Construction, Real Estate and Rental sectors experienced reductions in the number of establishments during the period of 2004 to 2015. The number of establishments in these sectors was 3,688 in 2012. This represented a rise of 0.1 per cent compared to the year 2011. In year 2004 the number of establishments in these sectors was 4,523. Comparing the year 2012 with 2004, the number of establishments decreased 18.5 percent. Figure 26 shows the total number of establishments for Construction, Real Estate and Rental sectors in Puerto Rico and its 78 municipalities. The spatial analysis reflects 3,686 establishments divided into 5 categories. The concentrations of the sectors in San Juan, Carolina, Mayaguez and Ponce can be seen in the following map.

Figure 26: Total establishments for the sectors of construction, real estate and rental Puerto Rico NY 2012



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Establishments



* The difference in total establishments in Puerto Rico due to the Statewide category. This category is not assigned to any particular municipality. This represents a difference of 2 compared to the total facilities according to County Business Patterns.



Trade Sector: Wholesale and Retail

As for the Trade sector, the number of employees in 2012 was 161,473 and 164,304 in the year 2011. This represented a reduction of 2,836 jobs or 1.7 percent. The employment in this sector totaled 161,195 in 2004. In year 2012 it increased to 278 compared to 2004.

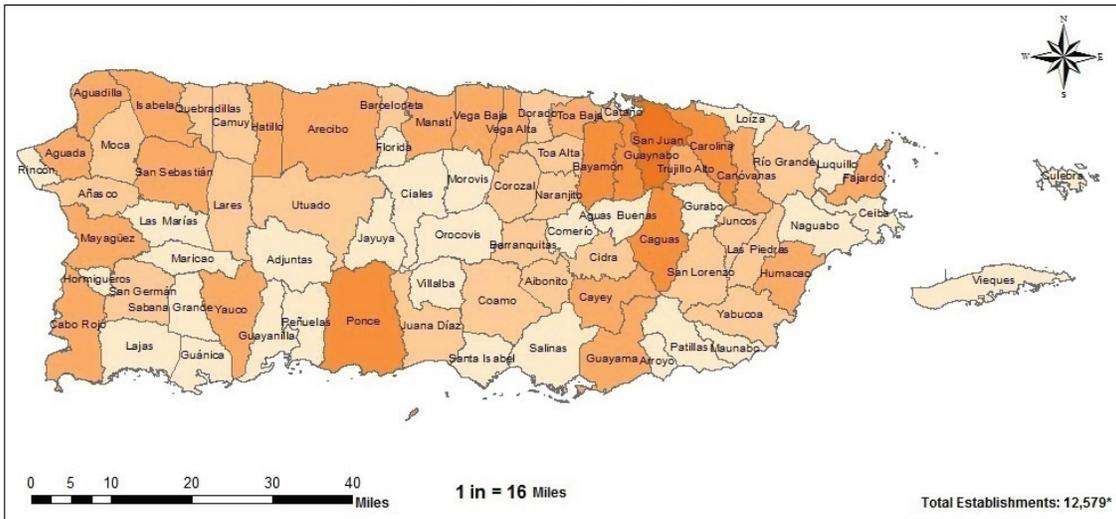
The number of establishments in the Trade sector in the year 2012 was 12,591, an increase of 170 establishments or 1.4 percent compared with the year 2011. The number of establishments in 2012 when compared with 2004 presented a reduction of 597 or 4.53 percent.

The Trade sector registered a reduction during the period of 2004 to 2012. The real annual payroll per employee in 2012 was \$21,356, diminishing at \$28 or 0.1 percent compared to the year 2011. In 2004 the real payroll per employee was \$24,148. This means that between 2004 and 2012, the real annual payroll per employee fell \$2,791, or 11.6 percent.

The real GDP from Retail sector for the fiscal years of 2011 and 2012 showed an increase of 3.1 and 3.2 percent, respectively. The contribution of the Trade sector to real GDP was 14.0 percent in fiscal 2012. Retail and Wholesale sectors contributed to real GDP with 8.5 and 5.3 percent, respectively.

Figure 27 shows the total number of establishments for the Retail sector in Puerto Rico and its 78 municipalities. The spatial analysis reflects 12,579 establishments divided into 5 categories. Also are observed in Agricultural and Mining companies between the municipalities of Vega Baja and Carolina, between Añasco and Arecibo, and between Caguas and Humacao.

**Figure 27: Total establishments for trade sector
Puerto Rico NY 2012**



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Transportation and Warehousing Sectors

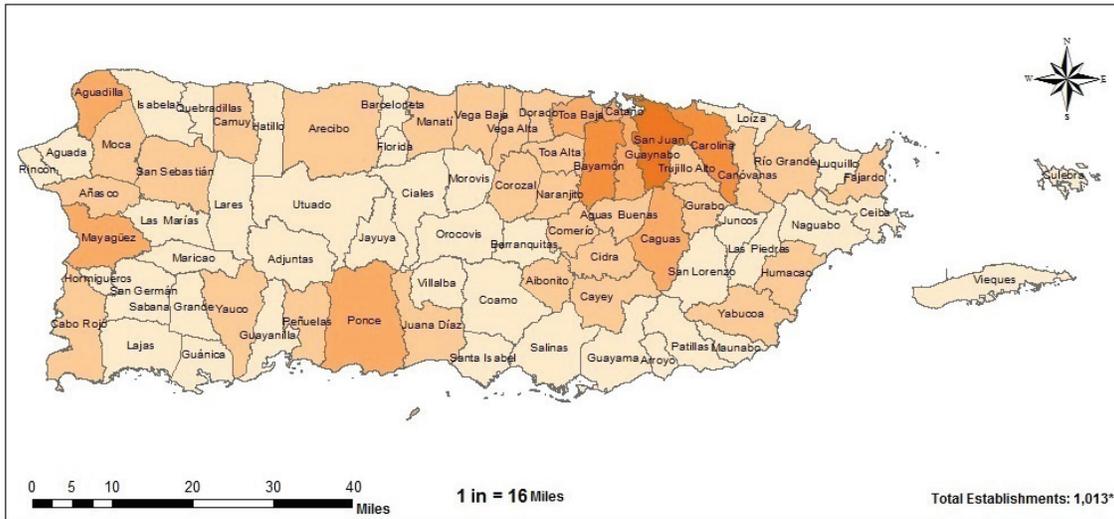
The number of employees in the sectors of Transportation and Warehousing has remained basically unchanged over the period from 2004 to 2012. The employment for these sectors in 2012 was 15,242. This represented a decrease of 134 jobs or 0.87 percent, from the year 2011. In year 2004, employment in the sector totaled 14,219. Comparing 2012 with 2004 showed a growth of 7.2 percent.

The annual payroll per employee at constant prices (real prices) has declined in approximately \$7,000 in the period under consideration. In 2012 the real annual payroll per employee in this sector was \$28,643, a decrease of 2.4 percent when compared with the year 2011. In 2004 the real annual payroll per employee was \$35,552.

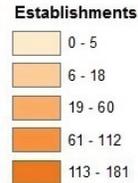
The GDP at constant prices from this sector in fiscal year 2004 totaled \$107.5 million and \$94.0 million in fiscal year 2012. Between fiscal years 2012 and 2011 reflected a decrease of 4.6 percent. However, the change in fiscal year 2012 over fiscal year 2004 showed a decrease of 12.5 percent.

The number of establishments for the Transportation and Warehousing sector in 2012 was 1,013. This represented a rise of 12 establishments compared to the year 2011. The number of establishments in 2004 totaled 1,046. Comparing years 2012 and 2004 it can be noted that the number of establishments declined by 3.2 percent. On the other hand, the Figure 28 presents the total number of establishments for the Transportation and Warehousing sector in Puerto Rico and its 78 municipalities and shows a very high concentration around the Metropolitan area, and, Ponce and Mayaguez.

**Figure 28: Total establishments for transportation and warehousing sector
Puerto Rico NY 2012**



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The Manufacturing Sector

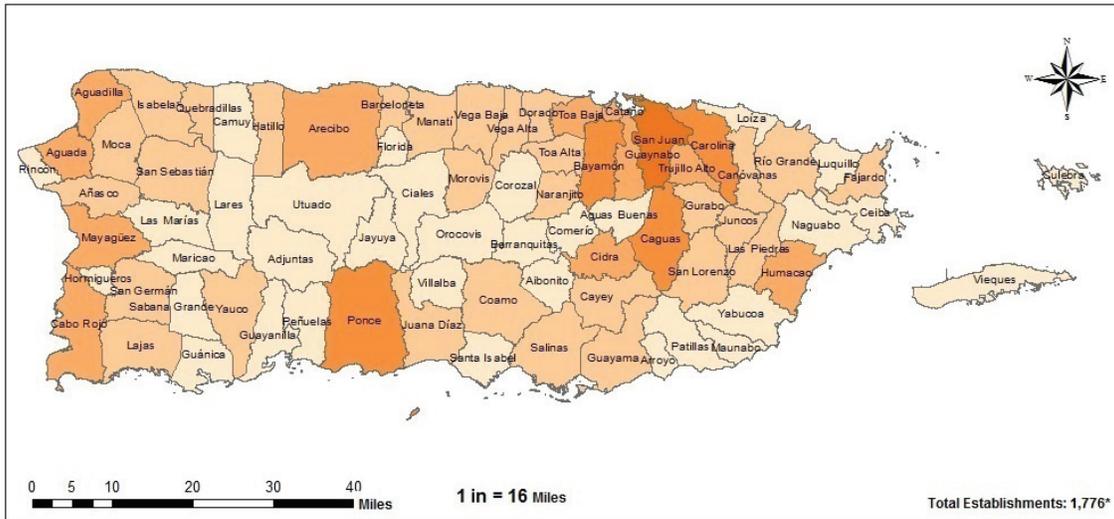
One of the sectors that experienced greater reduction in the number of employees was the Manufacturing sector. The number of employees in 2012 was 8,422 representing a reduction of 290 jobs, or 0.35 percent when compared to the year 2011. In 2004 employment in this sector was 114,998. According to the data from U.S. Census Bureau County Business Pattern, between years 2004 and 2012, this sector lost 31,576 jobs meaning a decrease of 27.5 percent.

The real annual payroll per employee for the Manufacturing sector in 2012 was \$35,309, a reduction of \$1,031 from year 2011. In 2004 the real payroll per employee was \$37,960.

In fiscal year 2012 the real GDP from the Manufacturing sector rose 2.4 percent, while in fiscal 2011 fell 0.5 percent. When comparing fiscal 2012 with fiscal year 2004, it increased 31.9 percent. The real GDP from manufacturing sector was the largest contributor to total GDP in fiscal year 2012.

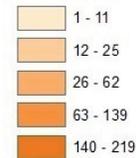
The number of establishments for the Manufacturing sector in 2012 was 1,776. These represented 53 establishments less or 2.9 percent compared with the year 2011 which totaled 1,829. In 2004 the number of establishments in this sector was 2,111. The total registered in 2012 showed a reduction of 335 establishments compared to 2004. Figure 29 shows five principal pathways in terms of manufacturing companies and those are: between Aguadilla to San Juan; San Juan and Fajardo; Caguas and Humacao, Caguas and Ponce, and Cabo Rojo and Aguadilla.

**Figure 29: Total establishments for manufacturing sector
Puerto Rico NY 2012**



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Establishments



The Information Sector

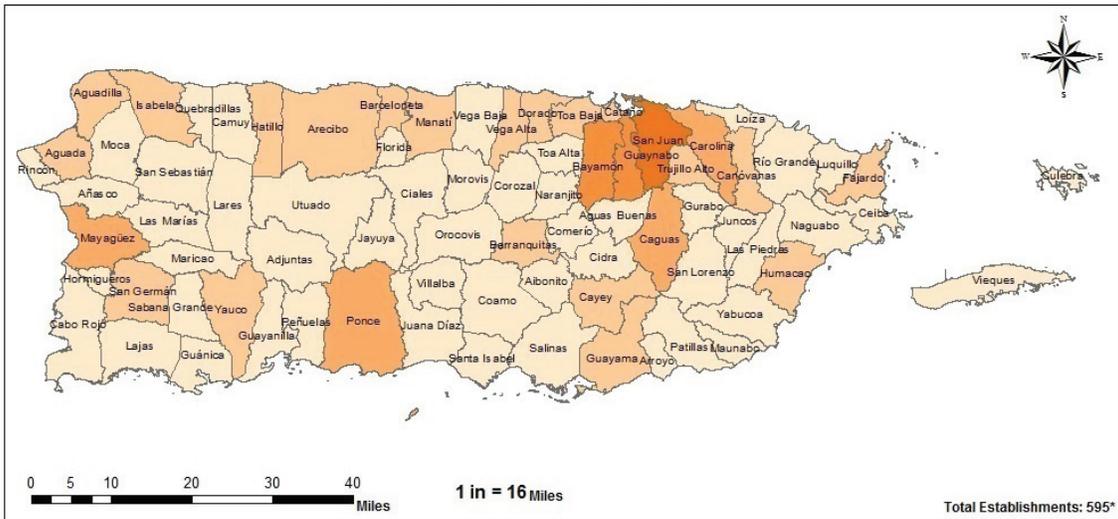
The Information sector showed a reduction in the number of employees during the years of 2004 and 2012. The total employment in this sector in 2012 was 17,880. Comparing with year 2011 represented a decrease of 859 jobs, or 4.58 percent. In 2004, the level of employment in the sector was 20,676. Comparing the years 2012 and 2004 there was a reduction of 2,796 jobs.

The real GDP from Information sector recorded the highest growth in fiscal year 2012, compared to fiscal year 2004. The increase was 52.7 percent or, in absolute terms \$343.0 million. Between fiscal years 2012 and 2011 grew by 2.5 percent. In fiscal year 2012, the Information sector contributed to real GDP with 9.6 percent, and in fiscal year 2004 contributed with 5.6 percent.

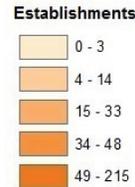
The annual payroll per employee in the Information sector was \$41,110 in 2012, representing an increase of 5.6 percent when compared with the year 2011. In year 2004 the real annual payroll per employee was \$49,274; and compared to 2012 decreased 16.57 percent.

The total number of establishments in this sector in 2012 was 598, representing a rise of 7.8 percent compared to the year 2011. In 2004 the number of establishments in this sector reached 517. The number of establishments in 2012 compared to 2004 increased by 2.8 percent. Figure 30 shows concentrations around the municipalities of San Juan, Ponce, Mayaguez and Arecibo.

**Figure 30: Total establishments for information sector
Puerto Rico NY 2012**



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* The difference in total establishments in Puerto Rico due to the Statewide category. This category is not assigned to any particular municipality. This represents a difference of 3 compared to the total facilities according to County Business Patterns.



The Finance and Insurance Sector

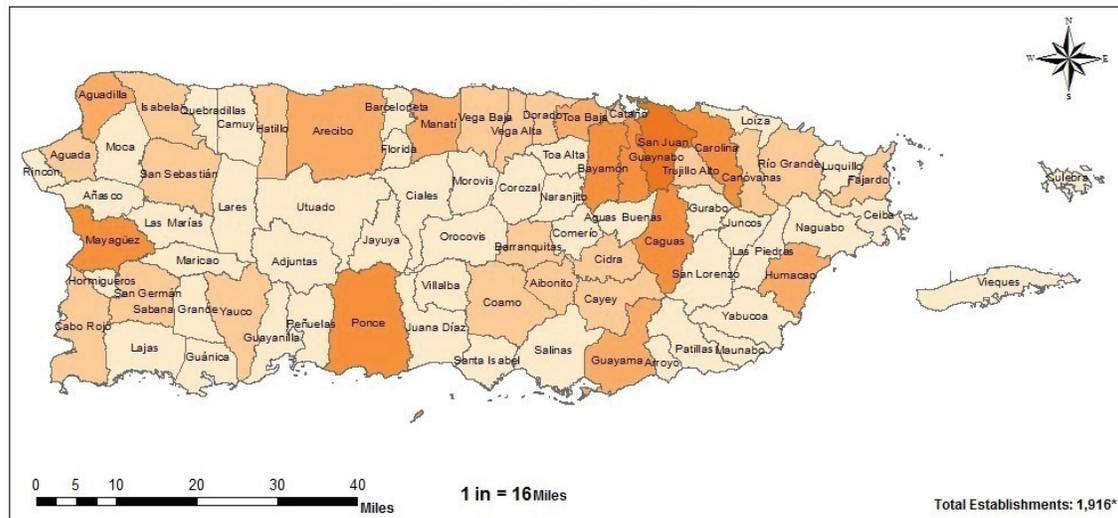
In the Finance and Insurance sector, the number of employees was 33,902 in 2012. This represented a reduction of 731 jobs or 2.1 percent when compared with the year 2011. In 2004 the employment in this sector totaled 37,924; and comparing with 2012 decreased by 4,022.

The real annual payroll per employee in this sector was \$44,328 in 2012; representing an increase of 2.8 percent over the year 2011. In year 2004 the real annual payroll per employee was \$48,828. Comparing the year 2012 with 2004 reflected a decrease of 9.2 percent.

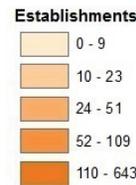
The real GDP from Finance and Insurance sector was \$524.8 million in fiscal year 2012. This represented an increase of 0.2 percent compared to fiscal year 2011, and a decrease of 67.6 percent compared to fiscal year 2004 (Figure 23).

The number of establishments in the Finance and Insurance sector reached 1,921 in 2012, representing an increase of 1.3 percent compared to the year 2011. In 2004 the number of establishments in this sector was 1,977. Comparing 2012 with 2004, the number of establishments fell by 2.8 percent. In Figure 31 five principal pathways in terms of finance and insurance establishments are presented: between the municipalities of San Juan to Hatillo, San Juan and Fajardo, San Juan and Fajardo, Ponce and Caguas, and Cabo Rojo and Isabela.

**Figure 31: Total establishments for finance and insurance sector
Puerto Rico NY 2012**



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



* The difference in total establishments in Puerto Rico due to the Statewide category. This category is not assigned to any particular municipality. This represents a difference of 5 compared to the total facilities according to County Business Patterns.



The Professional, Scientific, and Technical Services Sector; Management of Companies and Enterprises Sector; Administrative and Support Services Sector; and, Other Services Sector

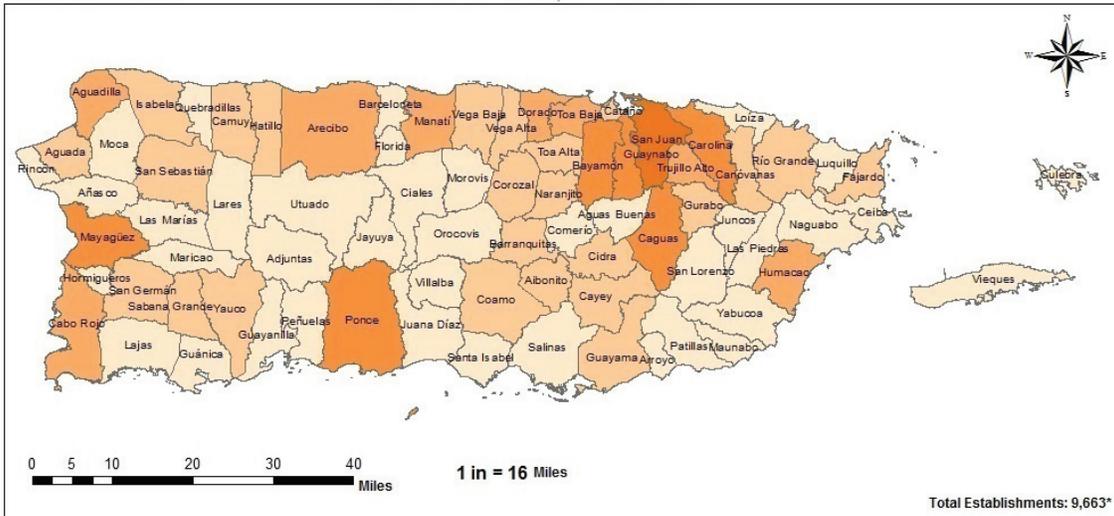
The Professional, Scientific, and Technical Services sector; Management of Companies and Enterprises sector; Administrative and Support Services sector; and, Other Services sector reached together 133,900 employees in 2012. This was an increase of 11,013 jobs or 9.0 percent over the year 2011. In the year 2004 the employment in these sectors totaled 117,101 representing a rise of 14.3 percent in 2012 compared with 2004.

On the other hand, the real annual payroll per employee in those sectors registered \$23,167 in 2012. With respect to year 2011 the payroll diminished by 2.4 percent; and 12.6 percent in 2004.

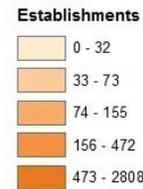
The real GDP from Professional, Scientific, and Technical Services sector; Management of Companies and Enterprises sector; Administrative and Support Services sector; and, Other Services in fiscal year 2012 was \$613.2 million. This represented an increase of 3.1 percent over the year 2011. In the fiscal year 2004, real GDP from those sectors totaled \$692.0 million. There was a reduction of \$78.8 million in 2012 compared to 2004.

The number of establishments in these sectors was 9,677 in 2012; an increase of 2.1 percent compared with the year 2011. Similar results occurred in year 2004 the number of establishments in this sector was 9,522. Comparing 2012 with 2004, the number of establishments increased 1.6 percent. Figure 32 shows establishments for the mentioned sectors for Puerto Rico and its 78 municipalities. In this map can be seen four principal pathways. Those are: between Aguadilla and Cabo Rojo; Aguadilla and San Juan; San Juan and Fajardo, and Caguas and Ponce:

Figure 32: Total establishments for the sectors of professional, scientific and technical services; management of companies and enterprises; administrative and support and waste management and remediation; other services Puerto Rico NY 2012



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



* The difference in total establishments in Puerto Rico due to the Statewide category. This category is not assigned to any particular municipality. This represents a difference of 14 compared to the total facilities according to County Business Patterns.



The Educational Services Sector

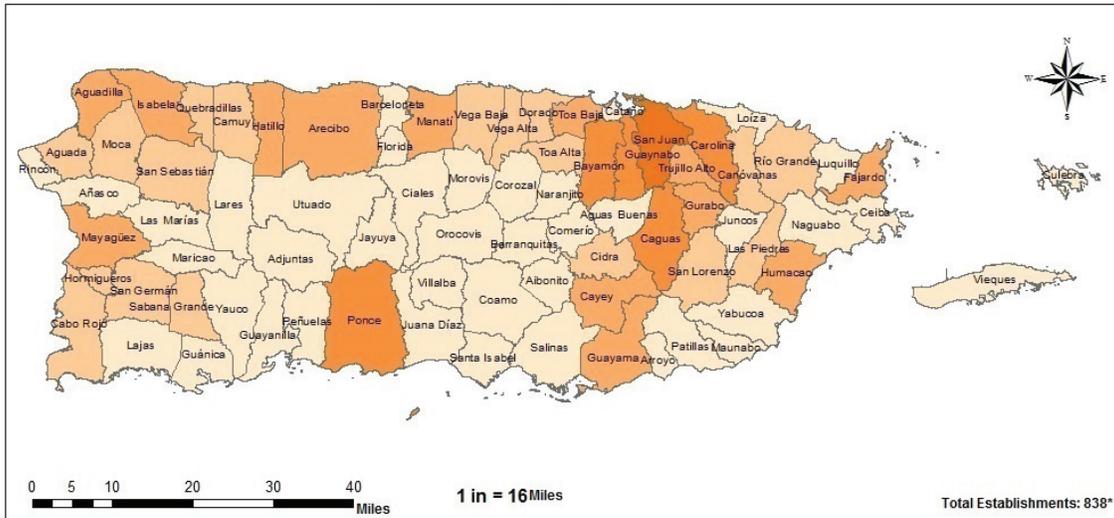
The Education sector registered growth during the period from 2004 to 2012, according to the data from the U.S. Census Bureau County Business Pattern. The employment in this sector was 39,116 in 2012, representing a rise of 2.56 percent compared to the year 2011. In 2004 the employment for educational services sector was 33,716. When compared with years 2012 and 2004, an increase of 16.0 percent was recorded in the employment level in this sector.

In terms of the Education sector, although increases were observed in the number of employees for the period of study, the real annual payroll per employee has been reduced. In 2012, the annual payroll per employee in this sector was \$21,611, a decrease of 1.9 percent when compared with the year 2011. The real annual payroll per employee was \$22,946 in 2004. The growth rate of 2012 compared to 2004 reflected a reduction of 5.8 percent.

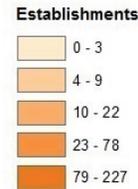
Also the GDP at constant price from Educational services sector decreased to 6.9 percent in fiscal year 2012 when compared with fiscal year 2011. In fiscal year 2004 the real GDP in this sector totaled \$133.6 million. The contribution of this sector to total GDP was 0.9 percent in the fiscal year 2012.

For the education sector, the number of establishments for the year 2012 was 839. When compared with year 2011, this represented an increase of 1.0 percent, and with year 2004, a rise of 16.4 percent. Figure 33 shows that there are five principal pathways in terms of educational services establishments: between Aguadilla and Cabo Rojo; Aguadilla and San Juan; San Juan and Fajardo; Caguas and Guayama; Caguas and Humacao. Also there is a clear concentration near Ponce.

**Figure 33: Total establishments for educational services sector
Puerto Rico NY 2012**



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



* The difference in total establishments in Puerto Rico due to the Statewide category. This category is not assigned to any particular municipality. This represents a difference of 1 compared to the total facilities according to County Business Patterns.



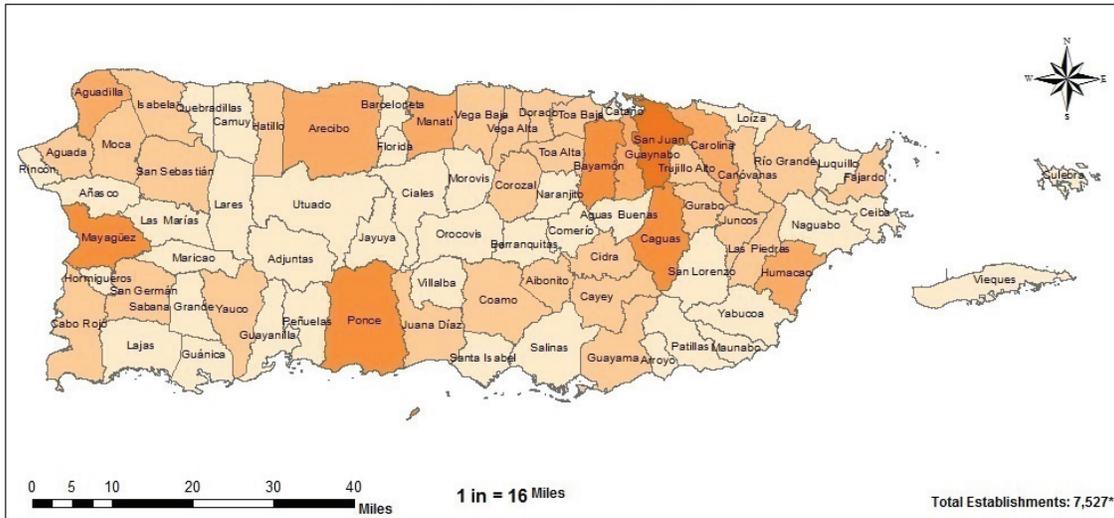
Health Care and Social Assistance Sector

The total number of employees in the Health Care and Social Assistance sector was 81,634 in the year 2012, reflecting an increase of 1.6 percent over the year 2011. In the year 2004, the employment in this sector reached 69,697. When compared years 2012 and 2004, employment grew by 17.1 percent. For 2012, the real annual payroll per employee in this sector was \$23,649, a reduction of 0.6 percent compared with the year 2011, and a decline of 4.5 percent when compared with year 2004.

The real GDP from Health Care and Social Assistance services sector reached \$295.1 million in fiscal year 2012. This represented a reduction of 2.5 percent when compared to fiscal year 2011. In fiscal year 2004, the real GDP from this sector was \$332.3 million. When compared fiscal years 2012 and 2004, it can be seen that the GDP of this sector decreased by \$37.3 million or 11.2 percent.

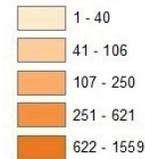
The health care and social assistance services sector recorded a total of 7,528 establishments; this means 235 more establishments than previous year (2011). In 2004 the number of establishments in this sector was 6,419. The number of establishments in 2012 relative to 2004 showed an increase of 17.3 percent. Figure 34 present five principal pathways of establishment for this sector: between Aguadilla and Cabo Rojo; Aguadilla and San Juan; San Juan and Fajardo; Caguas Ponce, and, Caguas and Humacao.

**Figure 34: Total establishments for health care and social assistances sector
Puerto Rico NY 2012**



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

Establishments



* The difference in total establishments in Puerto Rico due to the Statewide category. This category is not assigned to any particular municipality. This represents a difference of 1 compared to the total facilities according to County Business Patterns.



The Arts, Entertainment and Recreation; and, Accommodation and Food Services Sectors

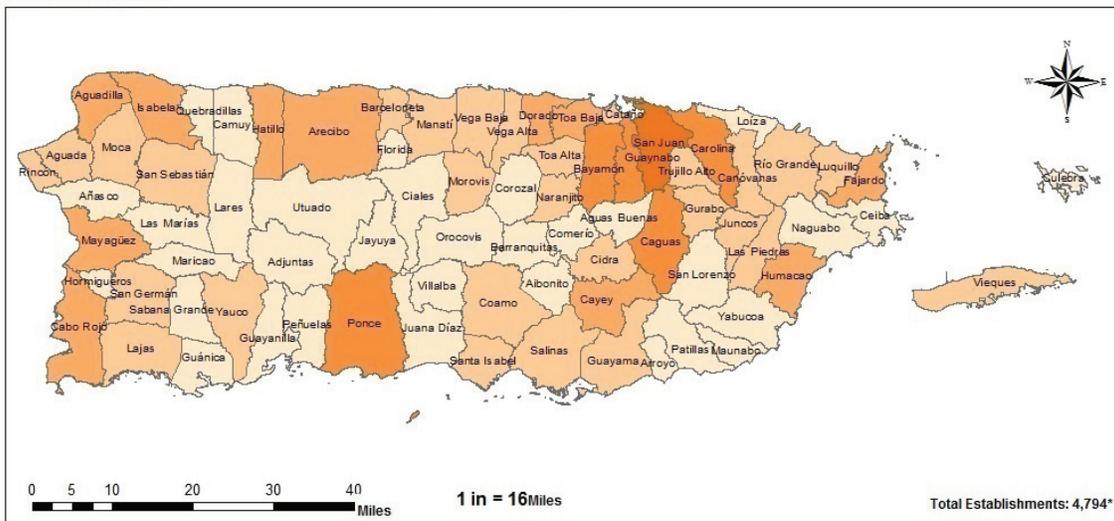
The employment in the sectors of Arts, Entertainment and Recreation; and, Accommodation and Food Services sectors was 78,600 in 2012. This represented 5,425 more jobs or a rise of 7.4 percent when compared with the year 2011. In year 2004, the employment in these sectors reached 71,416 and in 2012 rose to 10.1 percent.

In the year 2012, the annual payroll per employee in these sectors totaled \$14,255, a decrease of 4.61 percent from the year 2011. The real annual payroll per employee was \$16,374 in year 2004. Comparing years 2012 with 2004 registered a decrease of 12.9 percent. Between years 2012 and 2004 the employment for these sectors reflected a reduction of 12.9 percent.

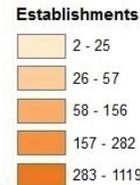
The real GDP from Arts, Entertainment and Recreation; and, Accommodation and Food Services sectors registered an amount of \$302.9 million in fiscal year 2012. This represented a reduction of \$5.3 million or 1.7 percent when compared to the fiscal year 2011. In the fiscal year 2004 the GDP from these sectors was \$ 322.8 million. Between fiscal years 2012 to 2004 showed a decrease of 6.2 percent.

The number of establishments in these sectors reached 4,796 in 2012; 52 more establishments or 1.1 percent when compared to the year 2011. In 2004 the number of establishments was 4,371. Comparing the number of establishments in the years 2012 and 2004 it can be seen an increase of 9.7 percent. Figure 35 presents five principal pathways for the mentioned sectors: between Cabo Rojo and Aguadilla, Aguadilla and San Juan, San Juan and Fajardo, Caguas and Ponce, and Caguas and Humacao.

**Figure 35: Total establishments for the sectors of arts, entertainment and recreation; accommodation and food services
Puerto Rico NY 2012**



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



* The difference in total establishments in Puerto Rico due to the Statewide category. This category is not assigned to any particular municipality. This represents a difference of 2 compared to the total facilities according to County Business Patterns.



Utilities Sector

The number of employees in the Utilities sector in the year 2012 was 374. This reflected a rise of 41 jobs or 12.3 percent over the year 2011. In 2004, employment in this sector reached 316. This means that the change in 2012 compared to 2004 resulted in an increase of 18.4 percent.

The annual payroll per employee in real terms in this sector was \$53,346 in 2012, a decrease of 5.1 percent when compared with the year 2011. In 2004 the real annual payroll per employee reached \$66,617. Between years 2012 and 2004 a decrease of 19.9 percent was observed.

During the fiscal years 2004 to 2012 real GDP from Utilities sector gradually decreased. In the fiscal year 2012 reflected a reduction of 12.4 percent was observed when compared to fiscal 2011. Also the GDP from this sector decreased by \$168.9 million or 53.1 percent when compared fiscal years 2012 and 2004.

The number of establishments in this sector was 24 in 2012, a decrease of 4.0 percent when compared with the year 2011. In 2004 the number of establishments in this sector was 21. Comparing the number of establishments in 2012 with respect to 2004 it can be seen an increase of 14.3 percent. Figure 36 shows the total establishments in the Utilities sector in Puerto Rico and its 78 municipalities. This map shows that the activities around this sector are concentrated in the municipalities of San Juan, Arecibo, Peñuelas and Caguas.

Plan	Year	Source
Plan Chardón: Plan de reconstrucción del presidente Roosevelt para Puerto Rico	1934	Puerto Rico Reconstruction Administration
Plan Perloff	1950	Puerto Rico Planning Board
Overall Economic Development Plan	1967	Puerto Rico Planning Board
The Four Year Economic and Social Development Plan	1969	Puerto Rico Planning Board
Una Estrategia para la Próxima Década (Informe Echenique)	1975	Puerto Rico Planning Board
Puerto Rico 2005	1992	Puerto Rico Planning Board
Nuevo modelo de desarrollo económico	1994	Puerto Rico Planning Board
Proyecto Puerto Rico 20250.	2004	Puerto Rico Office of the Governor
Plan de desarrollo económico y transformación de gobierno	2006	Puerto Rico Office of the Governor
Modelo estratégico para una nueva economía	2009	Puerto Rico Office of the Governor
Un nuevo Puerto Rico	2013	Puerto Rico Department of Economic Development and Commerce
Agenda para la recuperación económica (2014)	2014	Puerto Rico Office of the Governor
Plan de Desarrollo Económico para Puerto Rico (2014)	2014	Puerto Rico Planning Board

Source: Economic and Social Planning Program, Puerto Rico Planning Board.

Table 3 presents some of the comprehensive economic studies with proposals to improve the performance of the economy. Most of these studies have been presented by federal and international public bodies engaged in research as the Federal Reserve (FED), the General Accounting Office of the United States (GAO), the US Department of Commerce and the Economic Commission for Latin America (ECLAC).

Study	Year	Source
Informe Tobin	1976	Committee for the Study of Puerto Rico Finance
Economy Study of Puerto Rico (Informe Kreps)	1979	US Department of Commerce
Estudio de Desarrollo Económico de Puerto Rico (Informe Carrión-Ferré)	1984	Private Entity
Hacia la Segunda Transformación Económica	1989	Private Entity
Informe de la Cámara de Comercio	1997	Puerto Rico Chamber of Commerce
Futuro Económico de Puerto Rico	1999	University of Puerto Rico
Hacia una Economía Posible	2003	Puerto Rico Chamber of Commerce
The Puerto Rico Life Sciences Road Map	2003	PRIDCO
Desafíos de Puerto Rico frente al Siglo XXI	2005	CEPAL
GAO Report	2006	General Accounting Office
Restoring Growth in Puerto Rico	2006	CNE-Brookings
Report on the Competitiveness of Puerto Rico's Economy	2012	FED
An Update on the Competitiveness of Puerto Rico's Economy	2014	FED

Source: Economic and Social Planning Program, Puerto Rico Planning Board.

Many of the proposals presented in these documents have not been implemented or have been partially implemented. The implementation follow up of many plans have been stopped after management changes. These management changes tend to bring depth reviews on priorities and strategies. Another of the limitations of these plans or economic studies has been the separation of the groups of interest to processes of proposing, analyzing and monitoring the implementation of the strategies. It is possible, that inclusive processes of the groups of interest in formulating and accountability of economic strategies could reduce the impact of political cycles and enable their implementation in the long run.

It is also important to discuss some of the technical reasons that cause that these economic development plans could not have been successfully implemented. Some of the technical reasons that may affect the implementation of these proposals were:

1. The origins of the deficiencies which are intended to correct are not identified.
2. The vision, mission, goals and objectives were not clearly defined.
3. Lack of criteria and performance standards for strategies.
4. Lack of appropriate evaluation mechanisms.
5. Lack of creation of programs responsible for implementing the strategies.
6. The benefits and costs of strategies are not evaluated.
7. The plans omit strategies for relevant industrial sectors.

One of the possible limitations of these plans is that they did not offer a detailed analysis of the condition of the economy or the niche of the economy looking for improves. In order to convince citizens and public policy makers that there is a problem it is essential to provide evidence based on descriptive and inferential analysis to justify actions. Identify problems and its magnitude is essential before outlining the vision, mission, goals and objectives.

Define vision, mission, goals and objectives should be the preface to the strategies. Vision is an image of the future. Usually it is a statement of how the country is imagined in the long run. For example, in Puerto Rico 2025 (2004) one of the economic visions was as following: "In 2025, Puerto Rico will be a prosperous, productive and innovative society able to generate knowledge". On the other hand, in the New Model (1994) that vision provided was: "That Puerto Rico achieve and maintain levels of economic welfare comparable with the United States".

The mission, however, presents a statement that provides the philosophical perspective of the company. An example of this is provided by the Economic Development and Government Transformation Plan (2006): "A competitive economy is a prerequisite that will allow finance the social, cultural and physical infrastructure that all Puerto Ricans want."

Furthermore, goals are the overall results or purpose to be achieved. A New Puerto Rico Plan (2013): one of the goals was: "reinventing, promote and expand tourism". Another example is provided by the Strategic Model for a New Economy (2009). In this plan one of the goals was "converting government in facilitator agent of the healthy development of the private sector".

Meanwhile the objectives are specific outcomes that must be achieved in different terms, usually in the short, medium and long run. For the Strategic Model for a New Economy (2009) one of the objectives was to increase the growth rate of real GDP to 3.0 percent by 2017. For the Economic Development Plan (2015) one of its objectives is: "that the economy of Puerto Rico generates 1.5 million full-time jobs by 2020". Most of the plans do not have goals and criteria defined or performance standards for the strategies. As hypothetical example, the training program for young entrepreneurs has the potential to generate 1,000 jobs and contribute to the objective of generating new jobs full time at 2.0 percent. A second example (also hypothetical) is as follow: an investment of \$1,000 million on a cluster of high technology has the potential to increase GDP by 0.3 percent. To determine if the proposed measures are sufficient to achieve the objectives is important to have an idea of what will be the contribution of each of the strategies.

Table 4 illustrates an analysis of the presence of statements of vision, mission, goals and objectives in previous plans. Although in all plans the goals were identified, most of them did not contain vision, mission and objectives. For plans evaluated (eight in total), only four had a general vision, three had a mission, and two had objectives. Without clear vision, mission and objectives it is difficult to measure the success of initiatives.

Plan	Vision	Mission	Goals	Objectives
The Four Year Economic and Social Development Plan (1969)	Unidentified	Unidentified	Identified	Unidentified
Puerto Rico 2005 (1992)	Unidentified	Unidentified	Identified	Unidentified
Un nuevo modelo (1994)	Identified	Unidentified	Identified	Unidentified
Puerto Rico 2025 (2004)	Identified	Unidentified	Identified	Unidentified
Plan desarrollo económico y transformación de gobierno (2006)	Identified	Identified	Identified	Unidentified
Modelo estratégico para una nueva economía (2009)	Identified	Unidentified	Identified	Identified
Un nuevo Puerto Rico (2013)	Identified	Unidentified	Identified	Unidentified
Agenda para la recuperación económica (2014)	Identified	Identified	Identified	Unidentified
PDE - Plan de Desarrollo para Económico para Puerto Rico (2014)	Identified	Identified	Identified	Identified

Source: Economic and Social Planning Program, Puerto Rico Planning Board.

In most of the plans the evaluation mechanisms for strategies were not identified. For example, many of these plans do not provided general guidelines about the instruments, indicators or metrics needed to evaluate the effectiveness of the strategies. Theoretically, a strategy could be understood effective, but once implanted have no effect. Therefore, to have the instruments, indicators or metrics needed to evaluate the performance minimizes the loss of resources and facilitates clever public policy decisions.

Although most of these plans proposed strategies, they do not identify the organisms (ie, programs, agencies, or other private entities) in charge of implement it. The first step to implement strategies is to assign responsibilities to existing programs or propose the creation of programs to charge of these tasks. The absence of a responsible entity does not allow the measurement and accountability process. Likewise, plans that do not present an assessment of the expected benefits and costs of strategies or of a group of strategies may present problems in its implementation.

Consider in an economic development plan the different strategic sectors are also important. One of the limitations of previous plans is that they do not consider relevant industrial sectors. Most plans focus on improving government performance and paid attention to productive sectors such as agriculture and manufacturing. Not consider emerging sectors could generate strategic weaknesses for the country in the future.

In an effort to enable the public to assess these plans and economic studies the PB has digitized and published most of these documents on its website <http://www.jp.gobierno.pr/> (Economía>>Planes de Desarrollo Económico). The next section presents an analysis by industrial sector of different strategies proposed, classified by 2012 NAICS.

Strategies by Industrial Sector

This section describes the different strategies of economic development plans that were analyzed and classified by 20 industry sectors.⁴ Some of the sectors were combined in order to simplify the analysis. These strategies were compiled independently by two groups of economists and the strategies that both groups agreed in 92.0 percent were included.

Among the plans evaluated were identified five plans that included strategies to incentivize agricultural activity. Table 5 details the strategies for the Agricultural sector (NAICS 11) with the plans evaluated. The Agriculture, Forestry, Fishing and Hunting (NAICS 11) include the following 3 digit NAICS level (subsectors): Forestry and Logging and, Support Activities for Agriculture and Forestry. Related to these subsectors some of the strategies proposed were: the establishment of cooperatives and family farms, the regulation of agricultural land, protection of natural resources and environment, the creation of distribution systems and market intelligence that allows the identification of potential markets and agricultural products for export, establishment of support mechanisms to increase efficiency and quality of agricultural production, including the provision of production inputs and technical advice to farmers and, implement mechanisms to ensure food security for the population. It is also important when creating intelligence systems and

⁴ Among those: Agriculture, Forestry, Fishing and Hunting (NAICS 11), Utilities (NAICS 22), Construction (NAICS 23), Manufacturing (NAICS 31-33), Wholesale Trade (NAICS 42), Retail Trade (NAICS 44-45), Transportation and Warehousing (48-49), Information (51), Finance and Insurance (NAICS 52), Real State and Rental and Leasing (NAICS 53), Professional, Scientific, and Technical Services (NAICS 54), Management of Companies and Enterprises (NAICS 55), Administrative and Support and Waste Management and Remediation Services (NAICS 56), Educational Services (NAICS 61), Health Care and Social Assistance (NAICS 62), Arts, Entertainment and Recreation (NAICS 71), Accommodation and Food Services (72), Other Services (except Public Administration) (NAICS 81) and, Public Administration (NAICS 92).

distribution markets, consider particularly promote the marketing of agricultural products abroad. This, in a context in which technical assistance to farmers for creating business plans is offered to them. Another point to focus ought to be to incorporate farmers from the informal sector into the formal sector. One possible mechanism to encourage this addition is promoting alternative ways of financing conditional on the formalization of agricultural business.

Table 5: Agriculture, Forestry, Fishing and Hunting Sector (NAICS - 11)

Strategy or Recommendation	Paper	Page/Slide
Establish cooperatives in rural areas with training programs and productive economic activities focused on agriculture and manufacturing.	1975 - Puerto Rico's Economic Development: A Strategy for the Next Decade (Informe Echenique)	125 y 127
Preserve natural resources and the environment.		12
No tariff regulations over product imports with environmental benefits.		68
Develop a system of family owned farms.		93, 127
Complete a regulated land use plan accompanied by effective controls.		113
Reevaluate the use of natural resource terrains to establish new industrial plants, and establish a penalty system for contamination.		115
Production and Productivity - Identify, produce, and market those commodities which have the greatest economic comparative advantage for mainland and export markets and domestic consumption.	1979 - Economic Study of Puerto Rico (Informe Kreps)	290
Production and Productivity - Provide fertilizers, seeds or plant materials, machinery services, operating supplies, and technical assistance consistent with efficient production patterns.		290
Marketing Efficiency and Product Quality - Develop handling, processing, and storage facilities and systems for consistent high-quality products produced by Puerto Rican farmers.		290
Food Prices and Nutrition - Food and nutrition goals similar to those in the United States for eliminating hunger and malnutrition.		291
Food Prices and Nutrition - Improving island food production and marketing efficiency to competitively provide cheaper and more nutritious diets.		291
Expand the environmental quality concept and make it applicable to physical infrastructure	2004 - Project Puerto Rico 2025	71
Invest in education to foster consciousness of environmental responsibility		71
Reduce environmental risks to health		55
Establish environmental market-based systems to encourage self-administration by businesses and households		71
Strengthen or modify current environmental laws, and explore new regulation schemes to ensure environmental conservation		72
Define community compliance goals for environment safekeeping		72
Harmonize government support mechanisms applied to agriculture with restrictions and agreements of free commerce.	2005 - Cepal Study - Globalization and Development	231
Maximize production on high value agricultural soils.	2009 - Strategies of a Strategic Model	26
Reinvent traditional industries	2013 - A New Puerto Rico	28

Source: Economic and Social Planning Program, Puerto Rico Planning Board.

Table 6 includes the strategies for the Utilities sector, mainly those concerning to public corporations such as the Puerto Rico Electric Power Authority (AEE, for its acronym in Spanish) and the Puerto Rico Aqueduct and Sewer Authority (AAA, for its acronym in Spanish). This sector includes the following 4 digit NAICS level (subsectors): Power Generation, Transmission and Distribution of Natural Gas and Water and, Sewage and other Systems. At least six different plans have presented strategies for Utilities sector (NAICS 22). Table 5 includes proposals aimed at the energy sector. In the case of the AAA the proposals focused on: study the consumption needs and water management, promote the reduction of water consumption, increase investment in water supply infrastructure and systems to improve efficiency and, open the market to competition at all levels of water and wastewater. In the case of AEE these plans proposed: to evaluate the implementation of power subsidies, establish an independent regulatory body for the power sector, diversify energy sources and promote the use of sources renewable energy, promote the reduction of energy consumption, open the power market to competition in all areas (generation, transmission and distribution) and, increase investment in electrical infrastructure and systems to improve efficiency. In both cases, the strategies were directed in offering technical and cost efficiency, for both the public corporations. For example, studies conducted by the Economic and Social Planning Program of the PB show that energy costs have a negative impact on the economy of Puerto Rico (Hernández, 2015).

Table 6: Utilities (NAICS - 22) and Energy Sectors		
Strategy or Recommendation	Paper	Page/Slide
Cease electric subsidies to low consumption families.	1975 - Puerto Rico's Economic Development: A Strategy for the Next Decade (Informe Echenique)	111
Establish a solar energy research program with government funding.		111
Analyze and investigate alternatives to resolve water shortages.		112
Establish the fabrication of copper and petroleum products in Puerto Rico and limit their contribution exemptions.		81
Increase gasoline taxes to reduce consumption.		110, 139
Review and update the long-term water and sewage management plan	2004 - Project Puerto Rico 2025	73
Increase investment in water and sewage infrastructure and systems to improve efficiency and reliability and reduce pollution		74
Establish a truly independent regulatory body for the electricity sector		75
Promote use of renewable energy sources		75
Promote reduced water-usage		75
Reduce waste generation by reducing usage of materials and maximizing recycling		75
Promote reduced energy-usage		76
Diversify fuel sources for electric power generation		76
Promote cleaner use of fossil fuels for electric power generation		76
Redefine water and sewage pricing structure		76
Redefine electricity pricing structure		76
Strengthen the water and sewage regulatory body so that it becomes truly independent		77
Open the electric power market to competition in all areas (generation, transmission and distribution)		77
Open the water and sewage market to competition at all levels		77
Increase investment in electricity infrastructure and systems to improve efficiency and	76	
Energy reform to lower costs and eliminate barriers of entry.	2006 - Restoring Growth	580
Create independent regulatory board to provide oversight of generation and distribution of electricity.		580
Improve quality of transportation and water and sewer systems.		581
Diversify energy sources to reduce dependency on petroleum fuel by half.	2006 -Economic Development And Government Transformation Plan For Puerto Rico	9
Reduce the cost of energy and the dependency on petroleum.	2013 - A New Puerto Rico	25

Source: Economic and Social Planning Program, Puerto Rico Planning Board.

The Construction sector (NAICS 23) has been spearheading of the economic development plans from Manos a la Obra Plan in the decade of 1940. Given its high linkages with other sectors, the construction sector has been one of the main mechanisms to revitalize the economy in the short term. At least seven plans proposing strategies to encourage the construction sector were identified. Table 7 shows the strategies for the Construction sector (NAICS 23) sector and Real Estate and Rental and Leasing (NAICS 53). The Construction sector includes the following three digits NAICS level

subsectors: Construction of Buildings, Heavy and Civil Engineering Construction, and, Specialty Trade Contractors. The Real Estate sector and Rental at three digits NAICS level (subsectors) includes: Real Estate, Rental and, Leasing services and, Lessors of Nonfinancial Intangible Assets (except Copyrighted Works). The proposed strategies can be grouped into the following: establish a land use and zoning plan to establish a healthy balance between natural resources and economic activity related to the construction sector, construction of housing on a self-help basis, generate efficiency and agility in the financial sector to improve infrastructure and housing, promote investment in public construction projects and, encourage the creation of industrial clusters that encourage the construction of new facilities. In order to promote this sector a strategy to consider is encourage exporting our skills in design, construction and real estate to foreigners and niches among Hispanics in the United States. Also one should be consider the densification of urban areas and restoration of existing buildings as possible strategies to revive this sector.

Strategy or Recommendation	Paper	Page/Slide
Reevaluate the use of natural resource terrains to establish new industrial plants, and establish a penalty system for contamination.	1975 - Puerto Rico's Economic Development: A Strategy for the Next Decade (Informe Echenique)	115
Increase contribution incomes through property reappraisals.		139
Complete a regulated land use plan accompanied by effective controls.		113
Rural Living - Construct homes on a self-help basis.	1979 - Economic Study of Puerto Rico (Informe Kreps)	291
Create and enact an integrated and detailed land-use master plan	2004 - Project Puerto Rico 2025	69
Communicate the new land-use plan and permitting process to the community		70
Strengthen mechanisms for enforcing compliance with the new land-use plan		70
Restructure the functions of government agencies to carry out the land-use planning and permitting process		71
Improve mechanisms for community participation in the land-use planning and permitting process		71
Redefine and ensure compliance with environmental agencies' processes		71
Expand the environmental quality concept and make it applicable to physical infrastructure		71
Ensure that the land-use plan reduces the need for transport	81	
Form strategic clusters for high technology manufacturing and service industries.	2005 - Cepal Study - Globalization and Development	230
Industrial clusters	2006 - Restoring Growth	578
Advance and upgrade infrastructure, facilitate private investments with a new financial method focused on efficiency and agility.	2006 - Economic Development And Government Transformation Plan For Puerto Rico	8
Construction development projects from government investment	2013 - A New Puerto Rico	24

Source: Economic and Social Planning Program, Puerto Rico Planning Board.

The Manufacturing sector (NAICS 31) has been the sector that has shaped the economic development of Puerto Rico. All plans evaluated considered strategies for the Manufacturing sector (Table 8). This sector includes the following three digits NAICS level subsectors: Food Manufacturing, Beverage and Tobacco Product, Textiles Mills, Textiles Product Mills, Apparel Manufacturing, Leather and Allied Product Manufacturing, Wood Product Manufacturing,

Paper Manufacturing, Printing and Related Support Activities, Petroleum and Coal Products Manufacturing, Chemical Manufacturing, Plastics and Rubber Products Manufacturing, Nonmetallic Mineral Product Manufacturing, Primary Metal Manufacturing, Fabricated Metal Product Manufacturing, Machinery Manufacturing, Computer and Electronic Product Manufacturing, Electrical Equipment, Appliance, and Component Manufacturing, Transportation Equipment and Manufacturing, Furniture and Related Product Manufacturing and, Miscellaneous Manufacturing. Strategies for the manufacturing sector can be summarized in: establish industrial cooperatives, evaluate the tax exemptions and tariff policy, evaluate subsidy incentives and financing policies, encourage establishment of high-tech industries, improve the measurement of productivity and costs, establish an effective regulatory framework, promote a skilled labor force to meet industry skills demand mainly associated with high-tech, review of the export promotion system, expand the capital stock and, import substitution. Recent studies have identified that the manufacturing sector in Puerto Rico has a decreased level of horizontal and vertical linkages with other sectors of the economy (Rosa Polanco, 2015). It is vital that new strategies consider incentives to industries to achieve integration with other industries or sectors of the economy. To accomplish this, the policy of subsidies that government provides should be changed to conditioned subsidies for purchasing local products.

Table 8: Manufacturing Sector (NAICS - 31)		
Strategy or Recommendation	Paper	Page/Slide
Offer incentives to businesses in order to establish offices in Puerto Rico.	1975 - Puerto Rico's Economic Development: A Strategy for the Next Decade (Informe Echenique)	23, 81
Develop policies directed to retain labor intensive industries.		27
Grant the autonomy to impose tariffs over imports and use the income as subsidies for the local production.		33, 68
Replace exemptions for contribution credit over investment that allows businesses to reduce their future contributions.		35, 37
Implement a salaries subsidy program directed to slow the closing turnover of labor intensive industries.		36
Promote and develop industries that are less sensitive to the costs of labor.		43
Measure the changes in total productivity.		53
Reevaluate the use of natural resource terrains to establish new industrial plants, and establish a penalty system for contamination.		115
Establish cooperatives in rural areas with training programs and productive economic activities focused on agriculture and manufacturing.		125 y 127
Selective policy for bank regulation in favor of industry loan exempting them from contributions.		148
Promote high technology industries.		23
Establish the fabrication of copper and petroleum products in Puerto Rico and limit their contribution exemptions.		81
Increase gasoline taxes to reduce consumption.		110, 139
Improving the Product - Endow Puerto Rico with the best physical, technological, and human capital that will provide a competitive advantage in the global economy.		1994 - New Model of Economic Development
Puerto Rico Destination and Global Bridge - Adopt strategies that enable and promote a competitive environment at a global scale.	19-20	
Government Facilitator - An effective Regulatory framework that promotes coherent visions on economic development and business development.	21	
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	
Design a future workforce learning resource center	2003 - The Puerto Rico Life Sciences Road Map	9, 109
Recognize the importance of supply chains, promote technology transfers, and the migration from exogenous to endogenous models.	2003 - Towards a Feasible Economy	49
Expand the environmental quality concept and make it applicable to physical infrastructure	2004 - Project Puerto Rico 2025	71
Increase the productivity of local human capital through increasing use of technology		33
Overhaul the systems for promoting exports from Puerto Rico		35
Form strategic clusters for high technology manufacturing and service industries.	2005 - Cepal Study - Globalization and Development	230
Strengthen the local capital industry and project it to external markets.		230
Industrial development policy that translates widely and has a context and object based national innovation system.		230
Export promotion for high technology and particularly sectors that have not had international market exposure and can have competitive advantages.		231
Lowering Dependence on a Shrinking Industry	2012 - Report on the Competitiveness of Puerto Rico's Economy	12
Reinvent traditional industries	2013 - A New Puerto Rico	28

Source: Economic and Social Planning Program, Puerto Rico Planning Board.

The strategies for the sectors of Retail and Wholesale are compiled in Table 9. Over 10 plans have submitted different strategies for these sectors. The Wholesale Trade sector (NAICS 42) includes the following three digits NAICS level subsectors: Merchant Wholesalers Durable Goods, Merchant Wholesalers Nondurable Goods and, Wholesale Electronic Markets and Agents and Brokers. On the other hand, Retail Trade sector (NAICS 44-45) includes the following three digits NAICS level subsectors: Motor Vehicles and Parts Dealers, Furniture and Home Furnishings Stores, Electronics and Appliance Stores, Building Material and Garden Equipment and Supplies Dealers, Food and Beverage Stores, Health and Personal Care Stores, Gasoline Stations, Clothing and Clothing Accessories Stores, Sporting Goods, Hobby, Book, and Music Stores, General Merchandise Stores, Miscellaneous Store Retailers and, Nonstore Retailers. Some of the strategies proposed for this sector are: increase the marketing of companies, provide assistance for the development of business plans, promote efficiency in the commercial sector, market those product abroad those products with greater comparative advantage, use tourism as commercial recovery mechanism, improve the supply chains intelligence, incorporate the informal traders to the formal sector, promote alternative financing methods and, reduce the costs of establishing a business. Although many of these strategies indicate that commercial sector is an important one for economic development, most of these strategies are not intended to propose specific mechanisms for the development of these sectors.

Table 9: Wholesale Trade (NAICS - 42) and Retail Trade (NAICS -44) Sectors		
Strategy or Recommendation	Paper	Page/Slide
Import substitution to create more opportunities for industrial investment and agricultural production.	1975 - Puerto Rico's Economic Development: A Strategy for the Next Decade (Informe Echenique)	12
Increase private savings and expand the financial flow to local businesses.		141
Intensify the efforts of local market promotions.		69
Evaluate the faculties of the Commercial Administration and prioritize their improvement plans.		78
Increase tariffs over automobiles, durable goods, and luxury products.		139 y 146
Grant the autonomy to impose tariffs over imports and use the income as subsidies for the local production.		33, 68
Replace exemptions for contribution credit over investment that allows businesses to reduce their future contributions.		35, 37
Increase gasoline taxes to reduce consumption.		110, 139
Urban Concentration of Tourism - Increased demand has facilitated private refurbishing of many tourism facilities and the opening of closed retail establishments and hotels	1979 - Economic Study of Puerto Rico (Informe Kreps)	343
Production and Productivity - Identify, produce, and market those commodities which have the greatest economic comparative advantage for mainland and export markets and domestic consumption.		290
Food Prices and Nutrition - Improving island food production and marketing efficiency to competitively provide cheaper and more nutritious diets.		291
Redefining Responsibilities - Obtain the fiscal resources that will stimulate business activities, and productivity with efficiency.	1994 - New Model of Economic Development	23
Government Facilitator - An effective Regulatory framework that promotes coherent visions on economic development and business development.		21
Recognize the importance of supply chains, promote technology transfers, and the migration from exogenous to endogenous models.	2003 - Towards a Feasible Economy	49
Promote deeper linkages between multinational firms and local firms, and develop an entrepreneurial environment in large firms	2004 - Project Puerto Rico 2025	24
Move as many productive units from the informal sector and black markets to the formal economic sector.	2005 - Cepal Study - Globalization and Development	232
Harmonize government support mechanisms applied to agriculture with restrictions and agreements of free commerce.		231
Create and sustain a comprehensive program to promote the development of island-based businesses.	2006 - Restoring Growth	576
Reform regulatory environment surrounding the entry of new business firms and development.		576
Combine broad tax base with low rates.		583
Promote local businesses by providing support to local business owners in the form of financing alternatives, and access to internal and external markets.	2006 -Economic Development And Government Transformation Plan For Puerto Rico	8
Promote entrepreneurship and improve value offers for consumers with a focus on diversification and competition.	2009 - Strategies of a Strategic Model	26
Reducing the Costs of Doing Business	2012 - Report on the Competitiveness of Puerto Rico's Economy	21

Source: Economic and Social Planning Program, Puerto Rico Planning Board.

The Transportation and Warehousing sector (NAICS 48) includes the following three digits NAICS level subsectors: Air Transportation, Rail Transportation, Water Transportation, Truck Transportation, Transit and Ground Passenger Transportation, Pipeline Transportation, Scenic and Sightseeing Transportation, Support Activities for Transportation, Postal Services, Couriers and Messengers and, Warehousing and Storage. Some of the strategies for this sector are described as follow: establish a policy for the naval fleet traffic that travels to Puerto Rico, establish an efficient and sustainable transport system for the metropolitan area, establish nonstop air transportation between San Juan and its main markets, expand the load capacity and terminals and, improve ports and airports productivity. For individual transportation some of the proposed strategies were: establish a land use plan and zoning to reduce transportation costs, encourage reduction in car use, promote the use of cleaner fuels and, encourage the use of efficient mass transportation (Table 10).

Table 10: Transportation and Warehousing Sector (NAICS - 48)		
Strategy or Recommendation	Paper	Page/Slide
Establish a fleet policy for naval traffic traveling to Puerto Rico.	1975 - Puerto Rico's Economic Development: A Strategy for the Next Decade (Informe Echenique)	68
Establish an efficient and viable transportation system for the metropolitan area and explore a underground system.		113
Reduce tariffs and costs associated to air travel and accommodations.		102
Increase gasoline taxes to reduce consumption.		110, 139
Air Transportation - New gateways to the U.S. mainland providing additional nonstop service between San Juan and its major U.S. markets.	1979 - Economic Study of Puerto Rico (Informe Kreps)	343
Expand the capacity of passenger air terminals	2004 - Project Puerto Rico 2025	82
Expand capacity of existing air cargo facilities		82
Encourage reduction in car use		82
Expand the capacity of existing sea ports for cargo services		83
Increase the number and frequency of air connections for passengers		83
Increase the number and frequency of maritime connections for passengers		83
Expand capacity of passenger sea terminals		83
Improve the productivity of land freight services		83
Invest in new land freight systems		84
Transform small and military airports into new airports for cargo services		84
Transform small and military sea ports into new ports for shipping services		84
Create and promote efficient and reliable collective transport		79
Complete the road and highway network		80
Improve the productivity and competitiveness of existing ports and airports		80
Ensure that the land-use plan reduces the need for transport		81
Increase the efficiency and capacity of existing roads	81	
Promote clean fuels and advanced technology for transportation	82	
Create new mechanisms to incorporate the community in transportation planning and communication process	83	
Improve quality of transportation and water and sewer systems.	2006 - Restoring Growth	581

Source: Economic and Social Planning Program, Puerto Rico Planning Board.

The Information industry (NAICS 51) has been a recent addition to the economic development plans. Despite this, the sector provides services to all sectors of the economy. This industrial sector has high linkages with other sectors of the economy. The Information sector (NAICS 51) includes the following three digits NAICS level subsectors: Publishing Industries (except Internet), Motion Picture and Sound Recording Industries, Broadcasting (except Internet), Telecommunications, Data Processing, Hosting and Related Services and, (6) Other Information Services. After 2003 at least four plans have been identified proposing strategies for this sector and those are: implement a plan for continuous updating of our information systems, integrate the most modern information systems to educational centers, promote innovation technology, encourage the use of information systems to improve decision-making in the management of private enterprises and, increase the use of technology in the provision of public services. (Table 11)

Strategy or Recommendation	Paper	Page/Slide
Design a digital portal for research, technology and skills to link expertise on and off the island	2003 - The Puerto Rico Life Sciences Road Map	9, 109
Count on an integrated education policy and create collaborative networks inside and outside of Puerto Rico.	2003 - Towards a Feasible Economy	47
Information Technology-enable the education system and promote extensive use of the Internet	2004 - Project Puerto Rico 2025	48
Deepen linkages between Puerto Rico's people and the world		36
Optimize the use of health data and information		54
Optimize health infrastructure		55

Source: Economic and Social Planning Program, Puerto Rico Planning Board.

A healthy financial sector is vital for the proper functioning of the economy. Main features are: facilitate risk management, allocate resources, monitor managers and exert corporate control, mobilizes savings, and, provides the exchange of goods and services (Levine, 1997). Table 12 shows the proposed strategies for the finance and insurance sector (NAICS 52). The Financial and Insurance sector includes the following three digits NAICS level subsectors: Monetary Authorities – Central Bank, Credit Intermediation and Related Activities, Securities, Commodity Contracts, and Other Financial Investment and Related Activities, Insurance Carriers and Related Activities and, Fund, Trust and Other Financial Vehicles. The strategies for this sector can be summarized as: promote the creation of credit unions, create financial instruments to encourage public and private savings, review of legislation and banking regulations in order to make the industry more efficient, eliminate tax deductions for loans, encourage the mobilization and channeling of financial resources to productive investments, encourage the funding of non-traditional sectors (eg, research and development companies, and artistic and cultural companies), encourage the financing of small and medium enterprises, increase the participation of low-income populations in the formal financial networks and, encourage the financing of export activities. In evaluating strategies most of these are aimed at allocating resources to some sectors in particular. Future plans should also encourage financial institutions to promote savings and reduction of unnecessary debt, create more efficient mechanisms to monitor managers and corporations, and use the financial infrastructure to train the general population in managing personal finances.

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Table 12: Finance and Insurance Sector (NAICS - 52)		
Strategy or Recommendation	Paper	Page/Slide
Increase public and private savings to increase national equity.		12
Create a private retirement plan complementary to the Social Security.		144
Issue new savings bonds with low denominations available to the public.		144 y 146
Fix maximum interests on saving deposits for commercial banks and credit unions.		146
Eliminate contribution deductions over personal loans.	1975 - Puerto Rico's Economic Development: A Strategy for the Next Decade (Informe Echenique)	146
Revise law regulations for investment companies.		147
Consider grants over guaranteed loans by the Government Development Bank.		147
Selective policy for bank regulation in favor of industry loan exempting them from contributions.		148
Allow wholesale banking to participate with international banks.		158
Establish cooperatives in rural areas with training programs and productive economic activities focused on agriculture and manufacturing.		125 y 127
Capital to Work - Propriate the mobilization and channeling of financial resources towards productive investments through efficient capital markets.		1994 - New Model of Economic Development
Redefining Responsibilities - Obtain the fiscal resources that will stimulate business activities, and productivity with efficiency.		23
Improve financing for cultural activities in Puerto Rico	2004 - Project Puerto Rico 2025	64
Reform University budget and incentive structure to promote research and development and technology transfer		28
Increase funding for laboratories, research centers and other research and development infrastructure at universities		28
Improve financial management of the education system		45
Expand direct government funding for independent research and development centers and initiatives		23
Enhance and expand indirect government support and incentives for private sector research and development		24
Expand the availability and effectiveness of private equity funding for start-up businesses and small and medium enterprises		26
Increase support to small and medium enterprises in accessing federal and other external funding sources		26
Fund major scientific infrastructure projects needed to attract more private sector research and development		29
Reduce the tax burden and other financial costs that government imposes on small and medium enterprises		29
Improve the effectiveness of existing entities designed to promote the growth and formation		29
Enhance use of public equity funding for local enterprises		29
Increase the agility and reduce the financial cost of government		32
Overhaul the systems for promoting investment in Puerto Rico		35
Raise participation of low-income populations in formal financial networks		42
Guarantee the effectiveness of programs that receive public funding through external assessment		62
Increase investment in electricity infrastructure and systems to improve efficiency and		76
Optimize the use of financial resources in promotion and prevention activities		52
Optimize the use of financial resources for health treatment		55
Invest in new land freight systems		84
Promote job creation by small and medium enterprises, community businesses and cooperatives	39	
Redefine water and sewage pricing structure	76	
Redefine electricity pricing structure	76	
Enhance debt financing options available to small and medium enterprises	29	
Public funds to provide financial assistance directly to students	2006 - Restoring Growth	580
Promote local businesses by providing support to local business owners in the form of financing alternatives, and access to internal and external markets.	2006 -Economic Development And Government Transformation Plan For Puerto Rico	8
Advance and upgrade infrastructure, facilitate private investments with a new financial method focused on efficiency and agility.		8
Promote a strong and healthy financial system to facilitate the efficient flow of capital to the economy and develop exporting capacities.	2009 - Strategies of a Strategic Model	26
Reducing the Costs of Doing Business	2012 - Report on the Competitiveness of Puerto Rico's Economy	21
Streamline Business Regulation - Mobilizing Finance for Business Development and Growth		11
Promote and formalize a high quality entrepreneur and investor community that resides locally in Puerto Rico.	2013 - A New Puerto Rico	17
Promote change in the business and investment paradigm.		18
Allow cooperatives to be the motor of economic development.		23

Source: Economic and Social Planning Program, Puerto Rico Planning Board.

Table 13 presents the different proposed strategies for the sector of Professional, Scientific and Technical (NAICS 54). These include the following three digits NAICS level subsectors: Legal Services, Accounting, Tax preparation, Bookkeeping and Payroll Services, Architectural, Engineering and Related Services, Specialized Design Services,

Computer Systems Design and Related Services, Management, Scientific and Technical Consulting Services, Scientific Research and Development Services, Advertising, and Related Services, and Other Professional, Scientific and Technical Services. For this sector the main developed strategies are focused on the area of technology and these are: design a digital website for research, technology and skills to link knowledge within and outside Puerto Rico, integrate into the global network of science and technology, build a research and marketing center, identify geographic areas of innovation and development, finance projects of scientific infrastructure needed to attract more private research and development, extend funding to research and development projects, simplify the patenting process of local technological innovations, encourage the export of high technology products, improve the regulatory environment to encourage the development of new businesses, and attract global talent to conduct research and development in universities. In addition, it is important the integration of universities and industries.

Table 13: Professional, Scientific and Technical Services Sector (NAICS - 54)		
Strategy or Recommendation	Paper	Page/Slide
Promote high technology industries.	1975 - Puerto Rico's Economic Development: A Strategy for the Next Decade (Informe Echenique)	23
Evaluate education facilities, specifically for chemical engineering, industrial engineering, metalworking, mining, and others.		78
Improving the Product - Endow Puerto Rico with the best physical, technological, and human capital that will provide a competitive advantage in the global economy.	1994 - New Model of Economic Development	24-25
Design a digital portal for research, technology and skills to link expertise on and off the island	2003 - The Puerto Rico Life Sciences Road Map	9, 109
Create a Puerto Rico science and technology global network		9, 109
Build a research and commercialization center (technology transfer for Puerto Rico) and incubator		9, 109
Build a physical and virtual innovation zone around Puerto Rican hubs and nodes		9, 109
Target the marketing and branding of Puerto Rican technology capabilities		9, 109
Focus on the development of new knowledge technologies and the capacity to innovate.	2003 - Towards a Feasible Economy	46
Inventory current research and development skills and launch accelerated programs to fill gaps	2004 - Project Puerto Rico 2025	22
Attract more global talent to conduct research and development at universities		28
Develop research and development at universities in collaboration with industry		49
Launch a coordinated campaign to attract more federal and external research and development projects to Puerto Rico		22
Create government research centers to pursue high-priority research needs		29
Define and implement a coordinated Innovation Agenda to prioritize action and policy across government, business and academia		23
Increase funding for laboratories, research centers and other research and development infrastructure at universities		28
Expand direct government funding for independent research and development centers and initiatives		23
Enhance and expand indirect government support and incentives for private sector research and development		24
Fund major scientific infrastructure projects needed to attract more private sector research and development		29
Develop industrial linkages and technology transfers.	2005 - Cepal Study - Globalization and Development	230
Export promotion for high technology and particularly sectors that have not had international market exposure and can have competitive advantages.		231
Educational programs in the area of business and entrepreneurial skills.	2006 - Restoring Growth	577
Regional center for finance and business services.		578
Reform regulatory environment surrounding the entry of new business firms and development.		576
Move Puerto Rico towards an economy of knowledge with excellence in Biotechnology, Engineering, and Informatics.	2006 -Economic Development And Government Transformation Plan For Puerto Rico	8
Retain, expand, and diversify the current industrial base, and attract high value product manufacturing based on technologies and Research and Development.	2009 - Strategies of a Strategic Model	26
Boost the Service Industry.	2013 - A New Puerto Rico	21
Position Puerto Rico into the economy of knowledge through the Science and Technology Trust.		26

Source: Economic and Social Planning Program, Puerto Rico Planning Board.

Table 14 presents the Management of Companies and Enterprises sector (NAICS 55), and Administrative and Support and Waste Management and Remediation Services (NAICS 56) sector. The Management of Companies and Enterprises sector includes following three digits NAICS level subsectors: Support Services to Business and, Waste Management and Remediation Services. For the Waste Management subsector the strategies proposed are: implement and update the solid waste management plan and, decrease waste generation by reducing the use of materials and increase recycling. As part of this strategy linkages between manufacturing and waste management should be created to use recycled material as raw materials. On the other hand, for the subsector Travel Agencies and Reservation services, proposals have been aimed to encourage tourism in general. For example, it has been proposed: encourage domestic tourism, increase local tourism, and compete locally with foreign tourist offer. These travel agencies should be focus in create domestic tourism packages that can be sell both locally and in foreign markets.

Strategy or Recommendation	Paper	Page/Slide
Fluctuating Demand - Growth in secondary U.S. market areas, foreign origins, and internal Puerto Rican tourism provide enhanced opportunities for tourism growth and diversification	1979 - Economic Study of Puerto Rico (Kreps Report)	343
Provide support and incentives to non-profit organizations to create more job opportunities	2004 - Project Puerto Rico 2025	41
Implement and update the solid-waste management plan		74
Reduce waste generation by reducing usage of materials and maximizing recycling		75
Export promotion for high technology and particularly sectors that have not had international market exposure and can have competitive advantages.	2005 - Cepal Study - Globalization and Development	231
Transform the tourism industry into the economic development motor that drives Puerto Rico.	2006 -Economic Development And Government Transformation Plan For Puerto Rico	9
Create and promote the mechanisms for investing in tourism projects.	2013 - A New Puerto Rico	16
Reinvest, boost, and enlarge tourism options.		20

Source: Economic and Social Planning Program, Puerto Rico Planning Board.

In terms of the Education Services sector, 11 plans proposing with related strategies were identified. Table 15 detail the strategies for the Education Services sector (NAICS 61) based on the plans evaluated. This sector includes the following three digits NAICS level subsectors: Elementary and Secondary Schools, Junior Colleges, Colleges, Universities and Professional Schools, Business Schools and Computer and Management Training, Technical and Trade Schools, Other Schools and Instructions, Educational and Support Services. Some of the strategies proposed for this sector of education K-12 (ie, the three levels of education, elementary, intermediate and secondary) are: establish cooperatives in rural areas with training programs, establish a local evaluation system of education services, improve teaching in terms of entrepreneurial skills, business management and personal finances, improve skills in math, science and technology, promote multilingual education and, increase retention and graduation rates in middle and high school. In order to implement these measures is important to begin to see the school system as a tool for economic development. The schools and colleges are the ideal places to transfer human capital and those skills needed to impart dynamism to the economy. For postsecondary education sector, some strategies have been proposed: establishing an incentive structure to promote research and development and technology transfer, encourage the development of research and development at universities in collaboration with industries and government, optimize retention and graduation rates at universities and, create programs to increase human capital acquisition of vulnerable groups (eg, illiterate adults, seniors, people with special needs, among others). For universities is essential ensure the integration of the production sectors and academia for the generation of new knowledge applied to create patents and products. Both the lack of funding and linkages with other sectors has generated limited the growth of university institutions.

Table 15: Educational Services Sector (NAICS - 61)		
Strategy or Recommendation	Paper	Page/Slide
Establish cooperatives in rural areas with training programs and productive economic activities focused on agriculture and manufacturing. Evaluate education facilities, specifically for chemical engineering, industrial engineering, metalworking, mining, and others.	1975 - Puerto Rico's Economic Development: A Strategy for the Next Decade (Informe Echenique)	125 y 127
		78
Policy Options - Increase spending for adult education	1979 - Economic Study of Puerto Rico (Informe Kreps)	733
Policy Options - Greater use of the Right to Read Program		733
Policy Options - Bilingual education		733
Improving the Product - Endow Puerto Rico with the best physical, technological, and human capital that will provide a competitive advantage in the global economy.	1994 - New Model of Economic Development	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
Design a future workforce learning resource center	2003 - The Puerto Rico Life Sciences Road Map	9, 109
Focus on the development of new knowledge technologies and the capacity to innovate. Count on an integrated education policy and create collaborative networks inside and outside of Puerto Rico.	2003 - Towards a Feasible Economy	46
		47
Improve teaching of entrepreneurial and business skills in the education system	2004 - Project Puerto Rico 2025	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

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
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.	2005 - Cepal Study - Globalization and Development	231
Improve the education system for productive transformation and better social welfare.		232
Educational programs in the area of business and entrepreneurial skills.	2006 - Restoring Growth	577
Education management changes.		579
Develop network of training and education		575
Public funds to provide financial assistance directly to students		580
Move Puerto Rico towards an economy of knowledge with excellence in Biotechnology, Engineering, and Informatics.	2006 -Economic Development And Government Transformation Plan For Puerto Rico	8
Developing Human Capital	2012 - Report on the Competitiveness of Puerto Rico's Economy	20
Foster Partnerships between Industry and Higher Education		22
Position Puerto Rico into the economy of knowledge through the Science and Technology Trust.	2013 - A New Puerto Rico	26
Source: Economic and Social Planning Program, Puerto Rico Planning Board.		

The Health Care and Social Assistance Services sector (NAICS 62) traditionally have not been seen as an industry to develop in business or economical terms. This may be because the local idiosyncrasy considers health and social services as public goods. We identified only two plans with strategies for this sector. The Health Care and Social Assistance Services sector includes the following three digits NAICS level subsectors: Ambulatory Health Care Services, Hospitals, Nursing and Residential Care Facilities, and Social Assistance. Table 16 shows the strategies for this sector. The strategies for the Health Care and Social Assistance Services sector identified were: establish an effective nutritional system that meets international standards, promote the consumption of more nutritious diets but at the same time cheaper, massively improve preventive health services, improve the collection, analysis and dissemination of information on health issues, behaviors, attitudes and knowledge, prevention and treating drug use, expand the offering of specialized services for vulnerable populations such as older adults, people with special needs and the prison population, among others, and reduce environmental health risks. Most of these strategies are aimed at disease prevention. Despite this, the health sector is not seen as a sector with export potential.

As the prices of health services in Puerto Rico are lower than those in the United States our health and social services have comparative advantages over services offered on the continent. Puerto Rico should focus on the provision of medical services to patients and retirees living in the United States. Furthermore, strategies to social services particularly focused on food issues. These strategies directed to niches related to the provision of mental health and addiction rehabilitation services to residents of the United States should also be promoted.

Table 16: Health Care and Social Assistance Sector (NAICS - 62)		
Strategy or Recommendation	Paper	Page/Slide
Food Prices and Nutrition - Food and nutrition goals similar to those in the United States for eliminating hunger and malnutrition.	1979 - Economic Study of Puerto Rico (Informe Kreps)	291
Food Prices and Nutrition - Improving island food production and marketing efficiency to competitively provide cheaper and more nutritious diets.		291
Incorporate preventive services into routine medical care, both public and private	2004 - Project Puerto Rico 2025	53
Improve collection, analysis and dissemination of information about health problems, behaviors, attitudes and knowledge		53
Optimize the use of health data and information		54
Establish and publicize quality standards for healthcare providers		54
Promote illness prevention in target population groups		54
Optimize health infrastructure		55
Optimize the use of financial resources for health treatment		55
Guarantee food assistance for higher risk groups and strengthen nutritional food surveillance systems		55
Promote recreation and sports among the physically and mentally disabled		67
Promote and reinforce human resource skills in the health system		55
Promote coordination between diverse public and private organizations for the achievement of health objectives		55
Optimize treatment of drug addiction in Puerto Rico		58
Promote the habilitation and rehabilitation of the prison population		62
Reduce environmental risks to health		55
Promote security and the battle against drug use in schools		44

Source: Economic and Social Planning Program, Puerto Rico Planning Board.

The inclusion of strategies to promote Arts, Entertainment and Recreation (NAICS 71) has been included recently in economic development plans. For example, it is not until the Puerto Rico 2025 plan that 18 strategies dedicated to this sector were proposed. Three plans proposing strategies to encourage activity in this industrial sector were identified. The Arts, Entertainment and Recreation include the following three digits NAICS level subsectors: Performing Arts, Spectator Sports and Related Industries, Museums, Historical sites, and Similar Institutions, Amusement, Gambling, and Recreation Industries. Table 17 shows the strategies the sector. These strategies focus on, promotion, development, management and coordination of cultural, artistic, sporting, and recreational activities and, promotion of human capital and entrepreneur skills in cultural, arts, sports and recreational areas. It is important for future plans to consider the insertion of this sector in tourism. This insertion should look primarily to integrate small and medium businesses in offering a diversified visit. Other strategies to consider are: creation of distribution system and market intelligence that allows the identification of potential export markets and, establishment of support mechanisms to increase efficiency and quality of local production. Perhaps one of the great challenges of this sector is that we should begin to see this sector from the point of view of business and commerce rather than a folk activity separated from the economy.

Table 17: Arts, Entertainment and Recreation Sector (NAICS - 71)		
Strategy or Recommendation	Paper	Page/Slide
Develop arts and culture	2004 - Project Puerto Rico 2025	50
Protect Puerto Rico's historic and archaeological heritage and patrimony		63
Improve financing for cultural activities in Puerto Rico		64
Promote and develop the musical arts		64
Develop and strengthen culture and recreation centers in municipalities and communities		65
Provide incentives for professional and competitive sports		65
Promote recreation and sport among children and youth in schools and universities		65
Develop human capital for cultural production		65
Facilitate access to schools specializing in art and culture		66
Establish a coordinated organizational model for cultural activities in Puerto Rico, that improves coordination, resource-allocation and continuity, while maintaining autonomy		66
Promote the development, management and coordination of museums		66
Promote Puerto Rican festivities and traditions		66
Promote and develop the plastic arts		66
Promote and develop the representational arts		66
Promote the development of literature and its diffusion within and outside Puerto Rico		66
Promote Puerto Rican cultural production in the international environment		67
Promote recreation and sports among seniors		67
Promote recreation and sports among the physically and mentally disabled	67	
Develop the movie, cinematography, and creative service industry, and help transform it into an economically viable industry for the long run.	2009 - Strategies of a Strategic Model	26

Source: Economic and Social Planning Program, Puerto Rico Planning Board.

Table 18 shows some of the strategies for the Accommodation and Food Services (NAICS 72). The sector includes the following three digits NAICS level subsectors: Accommodation and, Food Services and Drinking Places. Most strategies aimed this sector have been focused to encourage tourism by nonresidents. We have identified three main areas of proposed strategies to encourage the Accommodation and Food Services sector as follows: cost reduction to tourists, improving tourism infrastructure and, strategic marketing of Puerto Rico in United States and European markets. While these strategies are still valid and should be part of an ongoing review process, today we should consider adding the following strategies: provide a diversified tourism experience from other tropical regions and is important to identify and consolidate a design for our tourism system that makes us unique, integrate small and medium businesses (including folklore, arts and sports) in offering a diversified visit, create a dynamic process linking the commercial and business tourist with the Puerto Rico beyond the period and purpose of visit.

Table 18: Accommodation and Food Services (NAICS - 72) and Tourism Sectors		
Strategy or Recommendation	Paper	Page/Slide
Develop tourism outside of San Juan and the metro area.	1975 - Puerto Rico's Economic Development: A Strategy for the Next Decade (Informe Echenique)	102-104
Reduce tariffs and costs associated to air travel and accommodations.		102
Fluctuating Demand - Growth in secondary U.S. market areas, foreign origins, and internal Puerto Rican tourism provide enhanced opportunities for tourism growth and diversification	1979 - Economic Study of Puerto Rico (Informe Kreps)	343
Urban Concentration of Tourism - Increased demand has facilitated private refurbishing of many tourism facilities and the opening of closed retail establishments and hotels		343
Air Transportation - New gateways to the U.S. mainland providing additional nonstop service between San Juan and its major U.S. markets.		343
Transform the tourism industry into the economic development motor that drives Puerto Rico.	2006 -Economic Development And Government Transformation Plan For Puerto Rico	9
Design new offers to retain and attract and develop new tourist segments.	2009 - Strategies of a Strategic Model	26
Create and promote the mechanisms for investing in tourism projects.	2013 - A New Puerto Rico	16
Reinvest, boost, and enlarge tourism options.		20
Source: Economic and Social Planning Program, Puerto Rico Planning Board.		

Table 19 contains strategies for Other Services (except Public Administration) (NAICS 81). This industry includes the following three digits NAICS level subsectors: Repair and Maintenance, Personal and Laundry Services, Religious, Grantmaking, Civic, Professional, and Similar Organizations and, Private Households. These strategies were not necessarily designed for the industry of Other Services. Despite this, strategies that may be applicable to the industry were compiled and these are: eliminate or reduce government regulations that create inefficiencies for small and medium businesses, encouraging small and medium businesses in government contracting, promote coordinated business support networks to help small and medium businesses, expand the sources of funding for the creation of new small and medium businesses and, reduce the tax burden and other financial expenses imposed by government to small and medium businesses. For this industry can be adopted strategies proposed for the Retail Trade sector such as: increase marketing services companies, provide assistance for the development of business plans, promote efficiency in other services sector, using tourism as a mechanism for reactivation of other services, improve the supply chain intelligence in services, incorporate the informal traders into the formal sector, and reduces the costs of establishing a business.

Table 19: Other Services Sector (NAICS - 81)		
Strategy or Recommendation	Paper	Page/Slide
Review and adjust government regulations and inefficiencies that unnecessarily hinder the growth of small and medium enterprises	2004 - Project Puerto Rico 2025	25
Make government procurement processes more favorable to local small and medium enterprises		25
Establish coordinated entrepreneurial support networks to help small and medium enterprises get organized and leverage capabilities		28
Promote job creation by small and medium enterprises, community businesses and cooperatives		39
Expand job-search and placement assistance programs		40
Expand the availability and effectiveness of private equity funding for start-up businesses and small and medium enterprises		26
Increase support to small and medium enterprises in accessing federal and other external funding sources		26
Reduce the tax burden and other financial costs that government imposes on small and medium enterprises		29
Create and sustain a comprehensive program to promote the development of island-based businesses.		2006 - Restoring Growth
Reform regulatory environment surrounding the entry of new business firms and development.	576	
Boost the Service Industry.	2013 - A New Puerto Rico	21

Source: Economic and Social Planning Program, Puerto Rico Planning Board.

Table 20 presents strategies to be implemented in the Public Administration sector because this is a crucial one that affects the competitiveness of other sectors of the economy. Discussion of strategies for this sector is outside the scope of study of this plan. Strategies are summarized in three broad categories: strategies to eliminate market failures, strategies to create incentives and, strategies for improving business intelligence locally. For example, The New Model of Economic Development (1994) proposed eliminate market failure by promoting the mobilization and channeling of financial resources into productive investments through efficient capital markets. On the other hand, the Economic Development of Puerto Rico, A Strategy for the Next Decade (Echenique Report, 1975) suggests promoting incentives to companies in order to establish offices in Puerto Rico. Finally, Puerto Rico 2025 (2004) aims to improve the business intelligent at local level through a coordinated innovation agenda to prioritize action and policy through government, business and academia.

Table 20: Government (NAICS - 92) and Competitiveness Sectors		
Strategy or Recommendation	Paper	Page/Slide
Offer incentives to businesses in order to establish offices in Puerto Rico.		23, 81
Develop policies directed to retain labor intensive industries.		27
Explore opportunities to import without paying tariffs.		32
Grant the autonomy to impose tariffs over imports and use the income as subsidies for the local production.		33, 68
Replace exemptions for contribution credit over investment that allows businesses to reduce their future contributions.		35, 37
Implement a salaries subsidy program directed to slow the closing turnover of labor intensive industries.		36
Promote and develop industries that are less sensitive to the costs of labor.		43
Measure the changes in total productivity.		53
Create an agency responsible to investigate and promote opportunities on import substitution.		68
Establish a fleet policy for naval traffic traveling to Puerto Rico.		68
No tariff regulations over product imports with environmental benefits.		68
Intensify the efforts of local market promotions.		69
Evaluate education facilities, specifically for chemical engineering, industrial engineering, metalworking, mining, and others.		78
Evaluate the faculties of the Commercial Administration and prioritize their improvement plans.		78
Establish the fabrication of copper and petroleum products in Puerto Rico and limit their contribution exemptions.		81
Develop a system of family owned farms.		93, 127
Reduce tariffs and costs associated to air travel and accommodations.		102
Increase gasoline taxes to reduce consumption.		110, 139
Cease electric subsidies to low consumption families.	1975 - Puerto Rico's Economic Development: A Strategy for the Next Decade (Informe Echenique)	111
Establish a solar energy research program with government funding.		111
Analyze and investigate alternatives to resolve water shortages.		112
Complete a regulated land use plan accompanied by effective controls.		113
Establish an efficient and viable transportation system for the metropolitan area and explore a underground system.		113
Reevaluate the use of natural resource terrains to establish new industrial plants, and establish a penalty system for contamination.		115
Reduce the public sector deficit through increases on income and reduction in costs.		135
Develop new incomes through nontraditional sources.		139
Increase contribution incomes through property reappraisals.		139
Increase tariffs over automobiles, durable goods, and luxury products.		139 y 146
Terminate contribution exemptions over public corporations and authorities.		140
No increases over individual and corporate contributions.		140
Create a private retirement plan complementary to the Social Security.		144
Issue new savings bonds with low denominations available to the public.		144 y 146
Fix maximum interests on saving deposits for commercial banks and credit unions.		146
Eliminate contribution deductions over personal loans.		146
Revise law regulations for investment companies.		147
Consider grants over guaranteed loans by the Government Development Bank.		147
Selective policy for bank regulation in favor of industry loan exempting them from contributions.		148
Allow wholesale banking to participate with international banks.		158
Import substitution to create more opportunities for industrial investment and agricultural production.		12
Production and Productivity - Identify, produce, and market those commodities which have the greatest economic comparative advantage for mainland and export markets and domestic consumption.		290
Production and Productivity - Provide fertilizers, seeds or plant materials, machinery services, operating supplies, and technical assistance consistent with efficient production patterns.		290

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Marketing Efficiency and Product Quality - Develop handling, processing, and storage facilities and systems for consistent high-quality products produced by Puerto Rican farmers.	1979 - Economic Study of Puerto Rico (Informe Kreps)	290
Food Prices and Nutrition - Food and nutrition goals similar to those in the United States for eliminating hunger and malnutrition.		291
Food Prices and Nutrition - Improving island food production and marketing efficiency to competitively provide cheaper and more nutritious diets.		291
Rural Living - Construct homes on a self-help basis.		291
Income Security - Modify existing income security programs while promoting job creation and training opportunities		734
Puerto Rico Destination and Global Bridge - Adopt strategies that enable and promote a competitive environment at a global scale.	1994 - New Model of Economic Development	19-20
Government Facilitator - An effective Regulatory framework that promotes coherent visions on economic development and business development.		21
Capital to Work - Propitiate the mobilization and channeling of financial resources towards productive investments through efficient capital markets.		22
Redefining Responsibilities - Obtain the fiscal resources that will stimulate business activities, and productivity with efficiency.		23
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
Promoting our people - Transform how education and vocational training is perceived.		26
New Social Contract - Social stability and security that provides an attractive environment for the location of new economic activities in Puerto Rico.		27-28
Reinventing the Government - Promote the restructuring of agencies and institutions to adapt them to new requirements and context by eliminate those that are unnecessary and unresponsive, and create new entities for key activities or necessary interactions that are not yet met in the actual organizational scheme.	29	
Build a physical and virtual innovation zone around Puerto Rican hubs and nodes	2003 - The Puerto Rico Life Sciences Road Map	9, 109
Target the marketing and branding of Puerto Rican technology capabilities		9, 109
Redefine Government functions through institutional reform created by a broad consensus.	2003 - Towards a Feasible Economy	44
Create the Puerto Rico brand, segment promotional strategies, and change the focus of "achieving" to "exceeding".		45
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
Analysis on budget subsidies, implement zero based budgeting and zero based organization, and coordinate municipal, agency, and private sector efforts.		48
Recognize the importance of supply chains, promote technology transfers, and the migration from exogenous to endogenous models.	49	
Launch a coordinated campaign to attract more federal and external research and development projects to Puerto Rico		22
Define and implement a coordinated Innovation Agenda to prioritize action and policy across government, business and academia		23
Expand direct government funding for independent research and development centers and initiatives		23
Enhance and expand indirect government support and incentives for private sector research and development		24
Review and adjust government regulations and inefficiencies that unnecessarily hinder the growth of small and medium enterprises		25
Make government procurement processes more favorable to local small and medium enterprises		25
Expand the availability and effectiveness of private equity funding for start-up businesses and small and medium enterprises		26
Increase support to small and medium enterprises in accessing federal and other external funding sources		26
Launch a broader campaign to cultivate a widely-held entrepreneurial culture		27
Establish coordinated entrepreneurial support networks to help small and medium enterprises get organized and leverage capabilities		28
Fund major scientific infrastructure projects needed to attract more private sector research and development		29
Create government research centers to pursue high-priority research needs		29
Reduce the tax burden and other financial costs that government imposes on small and medium enterprises		29

Improve the effectiveness of existing entities designed to promote the growth and formation		29
Enhance use of public equity funding for local enterprises		29
Increase the agility and reduce the financial cost of government		32
Increase the productivity of local human capital through increasing use of technology		33
Increase the productivity of local human capital through training and skills programs		33
Reduce regulatory inefficiencies impacting the economy		34
Overhaul the positioning and branding of Puerto Rico		34
Overhaul the systems for promoting investment in Puerto Rico		35
Overhaul the systems for promoting exports from Puerto Rico		35
Institute programs to attract more global talent to Puerto Rico		36
Deepen linkages between Puerto Rico's people and the world		36
Promote multilingual abilities in all sectors of the economy		36
Rationalize unproductive subsidies distorting competition and resource allocation in key economic sectors		36
Improve the ongoing process for defining the overall economic strategy of Puerto Rico		36
Reduce the total effective cost of human resources in Puerto Rico		36
Remove protections and other impediments limiting competition in key economic sectors		36
Ensure that all have access to the education and skills needed to compete in the labor market		38
Promote self-sufficiency and individual and community responsibility as priorities for all Puerto Ricans		38
Provide incentives for job creation in the private sector		39
Promote job creation by small and medium enterprises, community businesses and cooperatives		39
Use direct government funding to stimulate job creation		40
Expand job-search and placement assistance programs		40
Provide support and incentives to non-profit organizations to create more job opportunities		41
Reform social assistance programs to encourage employment		41
Use fiscal mechanisms to increase the incentives for seeking employment		41
Provide practical services that make it easier to access and stay in employment		41
Rationalize regulations in order to stimulate more job creation		41
Raise participation of low-income populations in formal financial networks	2004 - Project Puerto Rico	42
Optimize the distribution of jobs in the public sector	2025	42
Increase the role of employers in keeping employees motivated and in the workforce		42
Promote security and the battle against drug use in schools		44
Promote and reinforce human resource skills in the health system		55
Promote coordination between diverse public and private organizations for the achievement of health objectives		55
Reduce environmental risks to health		55
Promote citizen participation in crime prevention		57
Optimize treatment of drug addiction in Puerto Rico		58
Develop a plan for the ongoing study of violence		58
Provide assistance and protection to the victim of crimes and violence		59
Guarantee the independence of the legal justice system and the continuity of key policies		59
Guarantee compliance with international human rights norms		60
Coordinate crime fighting efforts at local, regional and international levels		60
Guarantee access to justice for all citizens		61
Substantially reduce corruption		61
Develop a juvenile criminal justice plan		62
Intervene to prevent domestic violence and sexual aggression, and eliminate recurrence		62
Expedite penal procedures		62
Promote the habilitation and rehabilitation of the prison population		62
Guarantee the effectiveness of programs that receive public funding through external assessment		62
Create and enact an integrated and detailed land-use master plan		69
Communicate the new land-use plan and permitting process to the community		70
Strengthen mechanisms for enforcing compliance with the new land-use plan		70
Restructure the adjudication, permitting and approval process		70
Restructure the functions of government agencies to carry out the land-use planning and permitting process		71
Improve mechanisms for community participation in the land-use planning and permitting process		71
Redefine and ensure compliance with environmental agencies' processes		71

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Establish environmental market-based systems to encourage self-administration by businesses and households		71
Strengthen or modify current environmental laws, and explore new regulation schemes to ensure environmental conservation		72
Promote environmental consciousness among individuals through regulation and incentives		72
Define community compliance goals for environment safekeeping		72
Review and update the long-term water and sewage management plan		73
Implement and update the solid-waste management plan		74
Increase investment in water and sewage infrastructure and systems to improve efficiency and reliability and reduce pollution		74
Establish a truly independent regulatory body for the electricity sector		75
Promote use of renewable energy sources		75
Promote reduced water-usage		75
Reduce waste generation by reducing usage of materials and maximizing		75
Promote reduced energy-usage		76
Diversify fuel sources for electric power generation		76
Promote cleaner use of fossil fuels for electric power generation		76
Increase investment in electricity infrastructure and systems to improve		76
Redefine water and sewage pricing structure		76
Redefine electricity pricing structure		76
Strengthen the water and sewage regulatory body so that it becomes truly independent		77
Open the electric power market to competition in all areas (generation, transmission and distribution)		77
Open the water and sewage market to competition at all levels		77
Create and promote efficient and reliable collective transport		79
Complete the road and highway network		80
Improve the productivity and competitiveness of existing ports and airports		80
Ensure that the land-use plan reduces the need for transport		81
Increase the efficiency and capacity of existing roads		81
Promote clean fuels and advanced technology for transportation		82
Create new mechanisms to incorporate the community in transportation		83
Enhance debt financing options available to small and medium enterprises		29
Strengthen the local capital industry and project it to external markets.	2005 - Cepal Study - Globalization and Development	230
Industrial development policy that translates widely and has a context and object based national innovation system.		230
Learning processes associated to the development of productive linkages.		231
Export promotion for high technology and particularly sectors that have not had international market exposure and can have competitive advantages.		231
Harmonize government support mechanisms applied to agriculture with restrictions and agreements of free commerce.		231
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
Move as many productive units from the informal sector and black markets to the formal economic sector.		232
Reform social protection program to promote efforts by individuals to seek employment.	2006 - Restoring Growth	574
Income tax credits similar to USA.		574
Review transfer programs		574
Develop network of training and education		575
Create and sustain a comprehensive program to promote the development of island-based businesses.		576
Reform regulatory environment surrounding the entry of new business firms and development.		576
Modify the application of minimum wage.		579
Public funds to provide financial assistance directly to students		580
Accountability to allocate resources where they are needed.		579
Energy reform to lower costs and eliminate barriers of entry.		580
Restructuring public policy (high quality, reliable, cost efficiency)		580
Create independent regulatory board to provide oversight of generation and distribution of electricity.		580
Improve quality of transportation and water and sewer systems.		581
Combine broad tax base with low rates.		583
Attractive base for international business.	583	
Broad base consumption tax to reduce tax evasion and disincentives toward work.	583	
Advance and upgrade infrastructure, facilitate private investments with a new financial method focused on efficiency and agility.	2006 -Economic Development And Government Transformation Plan For Puerto Rico	8
Transform the government, without privatization or severance, so that: a) offer high quality services with efficiency and agility, b) contribute to the socioeconomic development.		9

Promote a strong and healthy financial system to facilitate the efficient flow of capital to the economy and develop exporting capacities.	2009 - Strategies of a Strategic Model	26
Promote entrepreneurship and improve value offers for consumers with a focus on diversification and competition.		26
Develop a business and labor environment based on quality and competitiveness.		26
Improving Labor Market Opportunities - Reduce Barriers to Job Creation and Labor Force Participation	2012 - Report on the Competitiveness of Puerto Rico's Economy	19
Developing Human Capital		20
Reducing the Costs of Doing Business		21
Streamline Business Regulation - Mobilizing Finance for Business Development and Growth		11
Lowering Dependence on a Shrinking Industry		12
Promote Independent Policy Evaluation		23
Incubate the Chief Information Office so that it can strengthen and obtain its own identity.	2013 - A New Puerto Rico	19
Promote the restructuring of agencies and institutions to adapt them to new requirements and context.		22
Construction development projects from government investment		24
Federal strategy initiatives.		27
Dollars stay here.		28
Publicity focused on results and branding recognition.		28

Source: Economic and Social Planning Program, Puerto Rico Planning Board.

The economic development of Puerto Rico, like all countries, is limited by their levels of efficiency and production capacity. These economic development plans contain excellent strategies to boost our levels of efficiency and productive capacity. Strategies compiled by these economic development plans focus on the following areas: cost reduction, improve business and human capital skills, improve business intelligence, eliminate market failures caused by government intervention, and increase levels of physical capital. These strategies should be cause for reflection for public policy makers and other civilian population groups.

Section 5: Strengths and opportunities in industrial sectors

In this section the strengths and opportunities in various industrial sectors are discussed. For this purpose will be used the analysis of the location coefficient (LQ) to compare Puerto Rico with the United States, to assess our competitive advantages. The location quotient analysis (LQ) was performed in order to study the different industrial sub-sectors of the economy of Puerto Rico. The LQ quantify the industry concentration in a region compared, usually, with a larger region, in this case Puerto Rico to the United States. The LQ was calculated for 186 subsectors (4 digit NAICS level) based on data for Puerto Rico and the United States, provided by the U.S. Census Bureau County Business Pattern for 2011. Data for agriculture, forestry, fishing and hunting sector (NAICS 11) were not available for 2011. The criteria used to evaluate the sector performance were: number of employees, total annual payroll, annual payroll per employee and, number of establishments. To simplify the analysis the cumulative distribution function (CDF) was used to identify and prioritize the LQ by subsector according to the observed variables. The CDF is a function whose value is the probability that a continuous random variable has a corresponding lower or equal value to the function argument. The parameters chosen for the CDF analysis of all variables were 30 percent higher, or sectors that showed superior performance percentile 70 was selected. Also, annual payroll per employee was analyzed with the parameter of the 30 percent lower CDF. This is because lower costs mean more competitive.

Table 21 shows subsectors whose LQ gather all possible combinations of CDF for the observed variables. MID combinations are presented in Table 20. There were 28 subsectors who met at least 1 combination. Footwear manufacturing (NAICS 3162) was the only subsector that followed all the possible combinations of parameters (combination G). Drugs and druggists sundries merchant wholesalers (NAICS 4242), and medical and diagnostic laboratories (NAICS 6215) met the combined endpoint about the number of employees, annual payroll per worker

(lowest 30 percent), and number of establishments (combination E). Bakeries and tortilla manufacturing (NAICS 3118), beverage manufacturing (NAICS 3121), cut and sew apparel manufacturing (NAICS 3152), pharmaceutical and medicine manufacturing (NAICS 3254), paint, coating and adhesive manufacturing (NAICS 3255), cement and concrete product manufacturing (NAICS 3273), health and personal care stores (NAICS 4461), shoe stores (NAICS 4482), support activities related for water transportation (NAICS 4883), non-depository credit intermediation (NAICS 5222), investigation and security (NAICS 5616), junior colleges (NAICS 6112), and educational support services (NAICS 6117) met the combined endpoint of number of employees, annual payroll and, number of establishments (L combination).

Table 21: Cumulative Distribution Function Analysis for Location Quotient for all Sub-Sectors in Puerto Rico, 2011 (NAICS 11 - 72)

Sector by NAICS	A	B	C	D	E	F	G	H	J	K	L	Conditions Met
3162 - Footwear manufacturing												11
3118 - Bakeries and tortilla manufacturing												4
3121 - Beverage manufacturing												4
3152 - Cut and sew apparel manufacturing												4
3254 - Pharmaceutical and medicine manufacturing												4
3255 - Paint, coating, and adhesive manufacturing												4
3273 - Cement and concrete product manufacturing												4
4461 - Health and personal care stores												4
4482 - Shoe stores												4
4883 - Support activities for water transportation												4
5222 - Nondepository credit intermediation												4
5616 - Investigation and security services												4
6112 - Junior colleges												4
6117 - Educational support services												4
4242 - Drugs and druggists' sundries merchant wholesalers												4
6215 - Medical and diagnostic laboratories												4
2361 - Residential building construction												1
3119 - Other food manufacturing												1
3241 - Petroleum and coal products manufacturing												1
3353 - Electrical equipment manufacturing												1
3391 - Medical equipment and supplies manufacturing												1
4413 - Automotive parts, accessories, and tire stores												1
4481 - Clothing stores												1
4852 - Interurban and rural bus transportation												1
5259 - Other investment pools and funds												1
5611 - Office administrative services												1
5622 - Waste treatment and disposal												1
6211 - Offices of physicians												1

Legend

- A - Number of Employees (CDF 70% or higher), Annual Payroll Per Employee (CDF 30% or lower)
 - B - Total Annual Payroll (CDF 70% or higher), Annual Payroll Per Employee (CDF 30% or lower)
 - C - Annual Payroll Per Employee (CDF 30% or lower), Number of Establishments (CDF 70% or higher)
 - D - Number of Employees (CDF 70% or higher), Total Annual Payroll (CDF 70% or higher), Annual Payroll Per Employee (CDF 30% or lower)
 - E - Number of Employees (CDF 70% or higher), Annual Payroll Per Employee (CDF 30% or lower), Number of Establishments (CDF 70% or higher)
 - F - Total Annual Payroll (CDF 70% or higher), Annual Payroll Per Employee (CDF 30% or lower), Number of Establishments (CDF 70% or higher)
 - G - Number of Employees (CDF 70% or higher), Total Annual Payroll (CDF 70% or higher), Annual Payroll Per Employee (CDF 30% or lower), Number of Establishments (CDF 70% or higher)
 - H - Number of Employees (CDF 70% or higher), Total Annual Payroll (CDF 70% or higher)
 - J - Number of Employees (CDF 70% or higher), Number of Establishments (CDF 70% or higher)
 - K - Total Annual Payroll (CDF 70% or higher), Number of Establishments (CDF 70% or higher)
 - L - Number of Employees (CDF 70% or higher), Total Annual Payroll (CDF 70% or higher), Number of Establishments (CDF 70% or higher)
- *CDF = Cumulative Distribution Function with respect to the Location Quotient

The Table 22 shows the CL for the number of employees by sub-sector with the parameter superior to 30 percent of the CDF. The first 4 subsectors had an LQ greater than 8, these were: NAICS 3162 – footwear manufacturing (17.55); the NAICS 3254 – pharmaceutical and medicine manufacturing (13.69), NAICS 3152 - cut and sew apparel manufacturing (11.29), and NAICS 3391 – medical equipment and supplies manufacturing (8.26).

Table 22: Location Quotient of Number of Employees for All Sub-Sectors in Puerto Rico, 2011 (NAICS 11-72) with Cumulative Distribution Function 70% or Higher

Sector by NAICS	Location Quotient
3162 - Footwear manufacturing	17.55
3254 - Pharmaceutical and medicine manufacturing	13.69
3152 - Cut and sew apparel manufacturing	11.29
3391 - Medical equipment and supplies manufacturing	8.26
5616 - Investigation and security services	4.61
3353 - Electrical equipment manufacturing	4.44
3255 - Paint, coating, and adhesive manufacturing	3.85
4883 - Support activities for water transportation	3.62
6112 - Junior colleges	3.58
5622 - Waste treatment and disposal	3.24
5222 - Nondepository credit intermediation	3.22
6215 - Medical and diagnostic laboratories	3.14
4482 - Shoe stores	2.96
6117 - Educational support services	2.91
4461 - Health and personal care stores	2.81
4242 - Drugs and druggists' sundries merchant wholesalers	2.8
5611 - Office administrative services	2.77
3118 - Bakeries and tortilla manufacturing	2.7
5259 - Other investment pools and funds	2.68
3121 - Beverage manufacturing	2.43
3273 - Cement and concrete product manufacturing	2.38
2361 - Residential building construction	2.35

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

Analysis made by the Puerto Rico Planning Board

Table 23 shows the CL for the total annual payroll by sub-sector with the parameter superior to 30 percent of the CDF. The first 4 subsectors had an LQ greater than 9 and these were: NAICS 3254 – pharmaceutical and medicine manufacturing (18.82); the NAICS 3162 – footwear manufacturing (15.06), the NAICS 3152 - cut and sew apparel manufacturing (12.23); and NAICS 3391 - medical equipment and supplies manufacturing (9.17).

Table 23: Location Quotient of Total Annual Payroll for All Sub-Sectors in Puerto Rico, 2011 (NAICS 11-72) with Cumulative Distribution Function 70% or Higher

Sector by NAICS	Location Quotient
3254 - Pharmaceutical and medicine manufacturing	18.82
3162 - Footwear manufacturing	15.06
3152 - Cut and sew apparel manufacturing	12.23
3391 - Medical equipment and supplies manufacturing	9.17
4482 - Shoe stores	5.07
3353 - Electrical equipment manufacturing	4.92
5616 - Investigation and security services	4.42
6112 - Junior colleges	4.19
4461 - Health and personal care stores	3.69
3255 - Paint, coating, and adhesive manufacturing	3.53
4883 - Support activities for water transportation	3.4
5222 - Nondepository credit intermediation	3.3
3121 - Beverage manufacturing	3.28
5611 - Office administrative services	3.23
6117 - Educational support services	3.17
5622 - Waste treatment and disposal	3.03
4481 - Clothing stores	2.94
4413 - Automotive parts, accessories, and tire stores	2.88
3256 - Soap, cleaning compound, and toilet preparation manufacturing	2.87
4532 - Office supplies, stationery, and gift stores	2.84
3118 - Bakeries and tortilla manufacturing	2.83
3119 - Other food manufacturing	2.78
3273 - Cement and concrete product manufacturing	2.56

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

Analysis made by the Puerto Rico Planning Board

Table 24 presents the LQ for the payroll per worker by sub-sector with the parameter 30 percent lower of the CDF. The first four subsectors had an LQ of 0.5 or lower were: NAICS 5239 - other financial investment activities (0.36); NAICS 7115 - independent artists, writers, and performers (0.37); NAICS 2379 - other heavy and civil engineering construction (0.43); NAICS 3311 - iron and steel and ferroalloy manufacturing (0.5).

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Table 24: Location Quotient of Annual Payroll Per Employee for All Sub-Sectors in Puerto Rico, 2011 (NAICS 11-72) with Cumulative Distribution Function 30% or Lower

Sector by NAICS	Location Quotient
5239 - Other financial investment activities	0.36
7115 - Independent artists, writers, and performers	0.37
2379 - Other heavy and civil engineering construction	0.43
3311 - Iron and steel mills and ferroalloy manufacturing	0.5
5191 - Other information services	0.55
6211 - Offices of physicians	0.57
2372 - Land subdivision	0.59
6212 - Offices of dentists	0.59
2373 - Highway, street, and bridge construction	0.6
5259 - Other investment pools and funds	0.6
2371 - Utility system construction	0.62
3345 - Navigational, measuring, electromedical, and control instruments manufacturing	0.63
5112 - Software publishers	0.63
5612 - Facilities support services	0.63
4236 - Electrical and electronic goods merchant wholesalers	0.65
4852 - Interurban and rural bus transportation	0.65
5122 - Sound recording industries	0.65
2362 - Nonresidential building construction	0.66
3335 - Metalworking machinery manufacturing	0.66
4243 - Apparel, piece goods, and notions merchant wholesalers	0.66
2389 - Other specialty trade contractors	0.67
3279 - Other nonmetallic mineral product manufacturing	0.68
5324 - Commercial and industrial machinery and equipment rental and leasing	0.69
3241 - Petroleum and coal products manufacturing	0.72
3321 - Forging and stamping	0.73
6215 - Medical and diagnostic laboratories	0.75
4245 - Farm product raw material merchant wholesalers	0.77
5615 - Travel arrangement and reservation services	0.77
2381 - Foundation, structure, and building exterior contractors	0.78
3363 - Motor vehicle parts manufacturing	0.78
4235 - Metal and mineral (except petroleum) merchant wholesalers	0.78
5331 - Lessors of nonfinancial intangible assets (except copyrighted works)	0.78
2383 - Building finishing contractors	0.79
7114 - Agents and managers for artists, athletes, entertainers, and other public figures	0.8
2361 - Residential building construction	0.82
3359 - Other electrical equipment and component manufacturing	0.82
4881 - Support activities for air transportation	0.82
3323 - Architectural and structural metals manufacturing	0.83
3329 - Other fabricated metal product manufacturing	0.83
3327 - Machine shops; turned product; and screw, nut, and bolt manufacturing	0.84
4239 - Miscellaneous durable goods merchant wholesalers	0.84
5629 - Remediation and other waste management services	0.84
7212 - RV (recreational vehicle) parks and recreational camps	0.84
4232 - Furniture and home furnishing merchant wholesalers	0.85
3162 - Footwear manufacturing	0.86
3371 - Household and institutional furniture and kitchen cabinet manufacturing	0.86
2382 - Building equipment contractors	0.88
4242 - Drugs and druggists' sundries merchant wholesalers	0.89
4841 - General freight trucking	0.9

Source: U.S. Census Bureau, County Business Patterns
 Analysis made by the Puerto Rico Planning Board

Table 25 shows the LQ for the annual payroll per worker by sub-sector with the parameter at the top of 30 percent of the CDF. The first 4 subsectors had a LQ greater than 1.9 and they were: NAICS 3151 – apparel knitting mills (4.24); NAICS 7113 – promoters of performing arts, sports, and similar events (2.10); NAICS 4533 – used merchandise stores (2.0); and, NAICS 6216 – home health care services (1.92).

Table 25: Location Quotient of Annual Payroll Per Employee for Sub-Sectors with Cumulative Distribution Function 70% or Higher

Sector by NAICS	Location Quotient
3151 - Apparel knitting mills	4.24
7113 - Promoters of performing arts, sports, and similar events	2.1
4533 - Used merchandise stores	2
6216 - Home health care services	1.92
7213 - Rooming and boarding houses	1.9
4512 - Book, periodical, and music stores	1.86
4921 - Couriers and express delivery services	1.86
4884 - Support activities for road transportation	1.85
7139 - Other amusement and recreation industries	1.73
7222 - Limited-service eating places	1.73
4532 - Office supplies, stationery, and gift stores	1.72
4482 - Shoe stores	1.71
7111 - Performing arts companies	1.71
3119 - Other food manufacturing	1.66
6222 - Psychiatric and substance abuse hospitals	1.65
7211 - Traveler accommodation	1.57
4541 - Electronic shopping and mail-order houses	1.54
4529 - Other general merchandise stores	1.53
6232 - Residential mental retardation, mental health and substance abuse facilities	1.52
6244 - Child day care services	1.51
5323 - General rental centers	1.51
4511 - Sporting goods, hobby, and musical instrument stores	1.49
4431 - Electronics and appliance stores	1.49
5231 - Securities and commodity contracts intermediation and brokerage	1.49
4531 - Florists	1.47
5242 - Agencies, brokerages, and other insurance related activities	1.46
5111 - Newspaper, periodical, book, and directory publishers	1.46
7224 - Drinking places (alcoholic beverages)	1.44
6243 - Vocational rehabilitation services	1.43
6116 - Other schools and instruction	1.41
7221 - Full-service restaurants	1.41
3328 - Coating, engraving, heat treating, and allied activities	1.39
3111 - Animal food manufacturing	1.38
6231 - Nursing care facilities	1.38
3254 - Pharmaceutical and medicine manufacturing	1.37
4471 - Gasoline stations	1.37
7223 - Special food services	1.37
4481 - Clothing stores	1.35
3121 - Beverage manufacturing	1.35
7121 - Museums, historical sites, and similar institutions	1.34
3256 - Soap, cleaning compound, and toilet preparation manufacturing	1.34
4922 - Local messengers and local delivery	1.33

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

Analysis made by the Puerto Rico Planning Board

Table 26 illustrates the LQ for the number of establishments by sub-sector with the parameter at the top of 30 percent of the CDF. The first 4 subsectors had an LQ of 4.7 or higher, they were: NAICS 5232 - securities and commodity exchanges (11.13); NAICS 6215 - medical and diagnostic laboratories (7.57); NAICS 4854 – school and employee bus transportation (5.36); NAICS 4852 - interurban and rural bus transportation (4.7).

Table 26: Location Quotient of Number of Establishments for All Sub-Sectors in Puerto Rico, 2011 (NAICS 11-72) with Cumulative Distribution Function 70% or Higher

Sector by NAICS	Location Quotient
5232 - Securities and commodity exchanges	11.13
6215 - Medical and diagnostic laboratories	7.57
4854 - School and employee bus transportation	5.36
4852 - Interurban and rural bus transportation	4.7
3254 - Pharmaceutical and medicine manufacturing	4.66
6112 - Junior colleges	4.36
3118 - Bakeries and tortilla manufacturing	4.17
3162 - Footwear manufacturing	3.57
3379 - Other furniture related product manufacturing	3.56
6113 - Colleges, universities, and professional schools	3.55
4482 - Shoe stores	3.24
6223 - Specialty (except psychiatric and substance abuse) hospitals	2.99
6111 - Elementary and secondary schools	2.79
3115 - Dairy product manufacturing	2.73
6219 - Other ambulatory health care services	2.72
4461 - Health and personal care stores	2.69
4413 - Automotive parts, accessories, and tire stores	2.65
6211 - Offices of physicians	2.63
4883 - Support activities for water transportation	2.56
3241 - Petroleum and coal products manufacturing	2.47
4242 - Drugs and druggists' sundries merchant wholesalers	2.34
4441 - Building material and supplies dealers	2.34
4481 - Clothing stores	2.31
3113 - Sugar and confectionery product manufacturing	2.3
5616 - Investigation and security services	2.23
6117 - Educational support services	2.17
3119 - Other food manufacturing	2.17
6221 - General medical and surgical hospitals	2.16
3273 - Cement and concrete product manufacturing	2.1
7131 - Amusement parks and arcades	2.08
3121 - Beverage manufacturing	2.07
3255 - Paint, coating, and adhesive manufacturing	2.06
3151 - Apparel knitting mills	2.06
6233 - Community care facilities for the elderly	2.02
4483 - Jewelry, luggage, and leather goods stores	1.99
3152 - Cut and sew apparel manufacturing	1.99
5222 - Nondepository credit intermediation	1.97

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

Analysis made by the Puerto Rico Planning Board

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