

Technical Note

Gross Domestic Product for Puerto Rico, 2021

July 31, 2023

This technical note provides background information about the estimates presented in the Puerto Rico gross domestic product (GDP) news release. The [complete set of estimates for 2012–2021](#) is available on the U.S. Bureau of Economic Analysis (BEA) website. A description of the data sources and estimating methods is available in [Summary of Methodologies: Puerto Rico Gross Domestic Product](#).

Preliminary estimates and update cycles

Much of the source data that BEA uses to prepare the Puerto Rico GDP estimates is drawn from administrative or survey data that, over time, provides more comprehensive or relevant information. For the earliest, or “preliminary” estimates, GDP statistics are based on partial information sets that are supplemented with less comprehensive or less direct indicators of economic activity. Due to lags in the availability of source data, in particular for private inventory investment and central government spending, the 2021 estimates presented in the news release are preliminary estimates.

As improved source data become available, BEA incorporates the information and releases updated estimates once a year; see “Updates to GDP.”

Approximately every 5 years, BEA conducts “comprehensive” updates, which incorporates the most extensive source data available and introduces major methodological changes. These comprehensive updates may affect the estimates of Puerto Rico GDP for all years. By following this process, BEA ensures that the estimates are as timely, consistent, and accurate as possible, given the availability of the data sources.

Updates to GDP

Estimates of GDP and its components for 2018–2020 that were released on July 26, 2022, have been revised to incorporate updates to source data and methodologies. The revised estimates exhibit a pattern of inflation-adjusted GDP growth similar to the previously published estimates, as shown in table 1.

Table 1. Puerto Rico: Revisions to Real GDP

Line		Current release			Revision from prior release		
		2018	2019	2020	2018	2019	2020
	Real GDP						
1	Millions of chained (2012) dollars	99,036	99,424	93,265	-108	87	-100
2	Percent change from preceding period	-2.9	0.4	-6.2	-0.1	0.2	-0.2

Note. The revision from prior release is calculated as the value reported in the current release minus the value reported in the prior release.

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The largest revisions for 2018–2020 were to private inventory investment and personal consumption expenditures of housing and utilities services.

Within private inventory investment, the largest source of revision was the incorporation of more complete source data than those previously available, including the following:

- Approximately 1,500 additional financial statements for companies within manufacturing, wholesale trade, retail trade, and select service industries from tax year 2017 to tax year 2022 from the Puerto Rico Department of State online Registry of Corporations and Entities.
- Selected financial data on corporations from the Puerto Rico Department of Economic Development and Commerce.
- Tabulations of tax returns for taxable corporate businesses and proprietors from the Puerto Rico Department of Treasury.

Within personal consumption expenditures of housing and utilities services, the largest source of revision was from the incorporation of improved estimates of housing services. A new housing services method utilizing microdata for U.S. housing units from the U.S. Census Bureau annual American Community Survey (ACS) was first incorporated by BEA into national and state-level GDP in 2021. This approach was adapted for Puerto Rico using data from the Puerto Rico Community Survey, which is part of the broader ACS.¹ The use of a single official data source and methodology results in greater consistency across BEA's accounts.²

Other sources of revision to the estimates of Puerto Rico GDP and its components for 2018–2020 include the following:

- Newly available and updated information from the Puerto Rico Planning Board for business inventories and sales, balance of payments, construction spending, and intermediate purchases by the Commonwealth government of Puerto Rico.
- Newly available audited government financial statements and unaudited operating and budget statements for the Commonwealth government, its component units, and municipal governments.
- Newly available tabulations of declared sales by industry from the monthly Sales and Use Tax Return from the Puerto Rico Department of Treasury.
- Newly available statistics on government revenues from gambling and gambling bets from the Puerto Rico Department of Treasury.
- Updated gasoline consumption information from the Economic Development Bank for Puerto Rico.
- Updated federal administrative data on hospital revenues from the Centers for Medicare & Medicaid Services, higher education revenues from the National Center for Education Statistics, and government contract obligations from the Federal Procurement Data System.
- Updated price indexes from BEA's National Income and Product Accounts.

1. The Puerto Rico Community Survey was not conducted in 2020; 2020 values are the average of 2019 and 2021 values.

2. For more information on the improved methodology implemented by BEA to estimate housing services, see the *Survey of Current Business* article "[Improved Measures of Housing Services for the U.S. Economic Accounts](#)" on the BEA website.

Key gaps and lags in Puerto Rico GDP source data

The U.S. territories, including Puerto Rico, are not included in many of the federal data sources that BEA relies on to prepare national estimates of GDP and related measures.³ Key data sources from which Puerto Rico is excluded are (1) the Census Bureau’s annual and other higher frequency surveys covering the manufacturing, construction, retail trade, wholesale trade, services, and government sectors and (2) the U.S. Bureau of Labor Statistics’ consumer and producer price programs.^{4,5}

For its estimates of Puerto Rico GDP, BEA relies heavily on information provided by Puerto Rico government agencies to fill several of the gaps in federal statistical agency data. A significant challenge associated with the use of Puerto Rico government data is lags in the availability of source data for major components of Puerto Rico GDP, including private inventory investment and central government spending. However, there have been notable improvements.

Puerto Rico Department of Treasury data for business inventories is a key data source for the estimates of inventory investment. Income tax return data for taxable corporate businesses and proprietors is now available through tax year 2020, while data for tax-exempt companies are only partially available through tax year 2017. BEA supplements these data with inventory investment information collected from hundreds of company financial statements filed on the Puerto Rico Department of State’s online [Registry of Corporations and Entities](#) website. Most of these statements are available through tax year 2021 or 2022.

Audited government financial statements are a key data source for estimates of central government spending. While most statements for fiscal year 2022 (which includes 6 months of calendar year 2021) have not yet been published, audited financial statements for fiscal years 2020 and 2021 for the Commonwealth government and many of its component units have become available within the last year. As shown in chart 1, publication of the audited financial statements for the Commonwealth government is becoming less lagged.

Other gaps in Puerto Rico GDP source data include information covering research and development (R&D) activity and price trends in Puerto Rico.

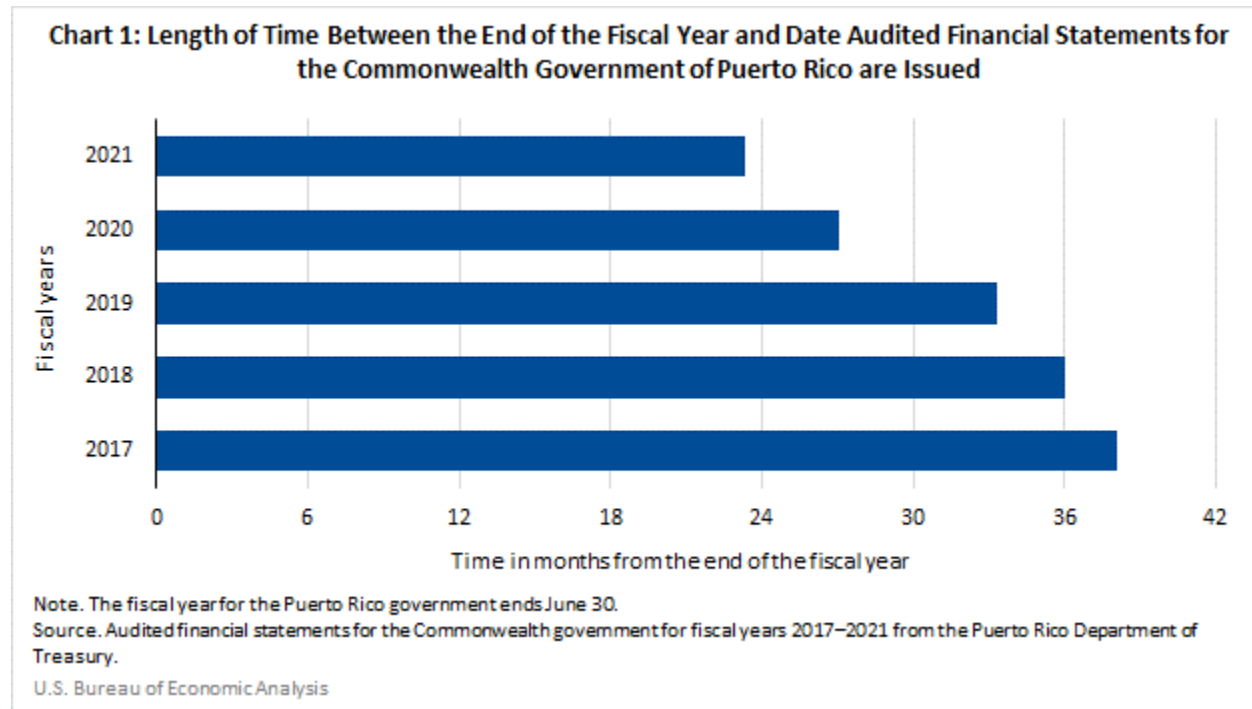
The lack of annual information on R&D activity presents a measurement challenge for Puerto Rico GDP. Although BEA can estimate R&D performed by computer service providers and by businesses classified as scientific R&D service providers, R&D performed by other sectors in Puerto Rico, such as pharmaceutical and medical equipment manufacturing, are not well covered in the data sources. BEA is not aware of any current, systematic, comprehensive data on the value and other characteristics of private-sector R&D taking place in Puerto Rico.

3. For information on federal data sources that do include Puerto Rico and are used in BEA’s Puerto Rico GDP estimate, see [“Federal Economic Data That Make BEA’s Puerto Rico GDP Estimate Possible”](#) on the BEA website.

4. Puerto Rico is not included in the following Census Bureau surveys: the Annual Wholesale Trade Survey; the Annual Retail Trade Survey; the Annual Capital Expenditures Survey; the Value of Construction Put in Place Survey; the Service Annual Survey; the Annual Survey of Manufactures; the Manufacturers’ Shipments, Inventories, and Orders Survey; and the Annual Survey of State and Local Government Finances. The Census Bureau does publish annual building permit data for Puerto Rico; the most recent year available is 2016.

5. Puerto Rico is included in the Bureau of Labor Statistics International Price Program as part of the United States but cannot be separately identified from the rest of the nation.

For producing estimates of inflation-adjusted GDP, the primary challenge is that price information specific to Puerto Rico is limited. The Puerto Rico Department of Labor and Human Resources produces consumer price indexes, which BEA uses within the estimates of consumer spending, but there are no producer price indexes for Puerto Rico, nor are there price indexes that cover trade in goods and services between the Commonwealth of Puerto Rico and the rest of the United States.



Comparisons to existing macroeconomic statistics for Puerto Rico

BEA’s GDP estimation methodology is substantially different from that used in other published statistics about Puerto Rico’s economy, such as those produced by the Puerto Rico Planning Board.

BEA’s methodology for estimating Puerto Rico GDP includes a variety of techniques that are used for other BEA statistics. These techniques include the following:

- Using chain-type indexes for inflation adjustment.
- Benchmarking components of consumer spending, private fixed investment, and private inventory investment to information from the Census Bureau’s 2012 and 2017 Economic Census of Island Areas.
- Treating intellectual property products as investment.
- Adjusting for inflation at a greater level of detail to ensure the selected price indexes better reflect the mix of goods and services produced by the Puerto Rico economy.

This results in macroeconomic measures that are comparable with other data that BEA produces—for the nation, for states, and for the other U.S. territories. BEA’s estimates are also presented on a calendar year basis. Thus, direct comparisons with fiscal year statistics that use older national accounting techniques may be misleading.

Exported Intellectual Property-Intensive Products Are Key Drivers of Puerto Rico GDP

Puerto Rico’s economic activity, as measured by GDP, includes a significant amount of exported products generated by intellectual property-intensive industries, particularly by pharmaceutical manufacturers, medical and scientific equipment manufacturers, and computer service providers. To assist data users in assessing the overall impact of these industries—which include several firms with global operations—on the Puerto Rico economy, BEA has conducted an analysis of GDP and its components that removes net exports of goods and services (that is, exports less imports) and private inventory investment that are closely associated with these industries. For this analysis, BEA excluded from GDP the exports and imports of pharmaceuticals and organic chemicals, exports and imports of medical and scientific equipment and appliances, exports of computer services including software, inventory investment by chemical manufacturers, and inventory investment by miscellaneous goods manufacturers including medical equipment and supplies manufacturers.

The resulting series (lines 1–2, table I) are approximations of economic activity excluding the impact of these industries. A weakness of these measures is that they do not take into account all intermediate inputs that are imported by these industries for use in production, such as petroleum and other energy products. These series are not intended to be substitutes for estimates of gross national product (GNP); however, by removing much of the production in Puerto Rico that is associated with nonresident firms, they may exhibit levels and trends that are similar to GNP. In 2021, real GDP less pharmaceuticals, medical and scientific equipment, and computer services increased 10.6 percent (line 3, table I), while real GDP as shown in table 1.3 of the news release increased 4.0 percent. For both measures, personal consumption expenditures (PCE) was a key source of growth in 2021. As described in the news release, PCE was supported by government assistance payments distributed to households through the Coronavirus Aid, Relief, and Economic Security Act; the Coronavirus Response and Relief Supplemental Appropriations Act; and the American Rescue Plan Act.

Table I. GDP and Net Exports Less Pharmaceuticals, Medical and Scientific Equipment, and Computer Services

Line		2012	2013	2014	2015	2016	2017	2018 ^r	2019 ^r	2020 ^r	2021 ^p
	GDP less pharmaceuticals, medical and scientific equipment, and computer services¹										
1	Millions of dollars	66,742	67,502	67,723	68,597	70,877	68,767	70,238	69,842	66,735	74,636
2	Millions of chained (2012) dollars	66,742	66,124	65,128	63,748	64,569	62,240	63,062	62,020	58,618	64,806
3	Percent change from preceding period	-0.9	-1.5	-2.1	1.3	-3.6	1.3	-1.7	-5.5	10.6
	Net exports less pharmaceuticals, medical and scientific equipment, and computer services²										
4	Millions of dollars	-17,245	-16,186	-14,848	-12,571	-10,030	-13,068	-19,755	-17,622	-19,046	-20,782

^r Revised

^p Preliminary

... Growth rates are not available in 2012.

1. GDP less exports and imports of pharmaceuticals and organic chemicals, exports and imports of medical and scientific equipment and appliances, exports of computer services including software, inventory investment by chemical manufacturers, and inventory investment by miscellaneous goods manufacturers including medical equipment and supplies manufacturers.

2. Net exports of goods and services less exports and imports of pharmaceuticals and organic chemicals, exports and imports of medical and scientific equipment and appliances, and exports of computer services including software.

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As shown in charts I–III, BEA’s analysis reveals different trends in most years for the Puerto Rico economy outside of the industries listed above. Chart I shows the growth in real GDP less pharmaceuticals, medical and scientific equipment, and computer services, compared with the growth in real GDP shown in table 1.3. Chart II shows GDP less pharmaceuticals, medical and scientific equipment, and computer services, compared with GDP shown in table 1.1 of the news release. Chart III shows net exports of goods and services less pharmaceuticals, medical and scientific equipment, and computer services; this series was negative for the entire period, compared with the positive trade balance shown in table 1.1.

