

NOAA Report on the U.S. Marine Economy





NOAA's Office for Coastal Management

"Coastal management" is the term used by communities and organizations striving to keep the nation's coasts safe from storms, rich in natural resources, and economically strong.

The national lead for these efforts is the National Oceanic and Atmospheric Administration's Office for Coastal Management, an organization devoted to partnerships, science, and sound policy. This agency, housed within the National Ocean Service, oversees major initiatives that include the Coral Reef Conservation Program, Digital Coast, National Coastal Zone Management Program, and National Estuarine Research Reserve System.

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Data Note: This report is based on 2020 Economics: National Ocean Watch (ENOW) data, produced by NOAA's Office for Coastal Management. The employment and gross domestic product (GDP) statistics are derived from the Bureau of Labor Statistics' Quarterly Census of Employment and Wages data (accessed in August 2022) and the Bureau of Economic Analysis' GDP by State data (released in June 2022).

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Executive Summary

Before and after communities encounter coastal hazard challenges, economic data are used to guide decisions and investments to bolster economic resilience and track recovery. This report provides statistical information about the marine economy—industries that are dependent upon the oceans and Great Lakes for their economic activity and are perhaps more vulnerable than other industries to coastal hazards because of their proximity to the shore. This report provides statistics on the establishments, jobs, wages, and gross domestic product (GDP) in the marine economy. The marine economy can be divided into six economic sectors:

- living resources
- marine construction
- marine transportation
- offshore mineral extraction
- ship and boat building
- tourism and recreation

This report presents data from the year 2020, which is the most up-to-date information available.

Report Highlights

In 2020, the marine economy accounted for

- 164,000 individual business establishments,
- 2.9 million employees,
- \$132 billion in wages, and
- \$258 billion in goods and services (gross domestic product).

These figures represent a significant decline from 2019. With the onset of the COVID-19 pandemic, the U.S. labor market experienced a period of “unprecedented volatility” according to the Bureau of Labor Statistics.¹ Between March and April 2020 alone, the monthly survey of nonfarm establishments recorded a 13.6 percent decrease in employment (20.5 million jobs). The survey then showed an employment gain of 3.4 percent (4.5 million jobs) from May to June 2020. These numbers reflected the largest one-month drop, and the largest one-month increase since the survey began. The volatility encountered in the labor market, caused by unprecedented public health interventions, can clearly be witnessed in the marine economy.

Employment in the marine economy decreased 18.0 percent (losing 631,000 jobs), a greater decline than the national 6.1 percent fall in employment during the same reporting period. Marine economy job losses made up 7.0 percent of the total decline in U.S. employment from 2019 through 2020. Most jobs lost were in the tourism and recreation sector (656,000 jobs, or a 26.3 percent decline). The marine construction, living resources, offshore mineral extraction, and ship and boat building sectors also experienced job losses, while the marine transportation sector added 55,000 jobs in 2020 (a 9.4 percent increase).

The marine economy’s gross national product declined by 9.3 percent in 2020, compared to a 2.8 percent fall by the overall U.S. economy. Lost gross domestic product in the marine economy accounted for 6.9 percent of the total decline in U.S. gross domestic product over that period. Five of the six marine economy sectors experienced a fall in gross domestic product, with the greatest losses in tourism and recreation (27.7 percent). The marine transportation sector grew by 3.5 percent.

About the Data

The national-level data in this report come from NOAA’s Economics: National Ocean Watch (ENOW) project, a collection of marine-focused economic data that span the years 2005 to 2020. In addition to the national-level data, these data are also available at a more refined scale for eight coastal regions, 30 coastal states, and 402 coastal counties. This report presents data from 2020, the most up-to-date information available. ENOW is produced by NOAA in partnership with the Bureau of Economic Analysis, Bureau of Labor Statistics, and U.S. Bureau of the Census.

An alternative source for U.S. marine economy statistics that provides national data can be found at www.bea.gov/data/special-topics/ocean-economy. This data source provides information for ten marine sectors and uses a different methodology than is featured here, and it spans the years 2014 to 2021.

Using the Data, and Why They Matter

- These data allow stakeholders to establish a baseline for economic growth discussions and track changes in establishments, employment, wages, and GDP over time. The level of granularity available provides a unique resource for people who want to understand, advocate for, and invest in our nation’s marine economy.
- Changes in climate make these data more important than ever. Coastal residents, homeowners, and businesses are facing increasing coastal hazard challenges.
- Economic data are needed whenever important decisions are made that affect a community’s future. After all, communities cannot manage what they cannot count.
- Ultimately, this report helps frame nationally relevant discussions about the importance of the marine economy and its future in the face of coastal changes.

Special Notes

Causality

Understandably, readers want information about *why* certain indicators of the U.S. marine economy changed during the reporting period. The purpose of this report is to provide a baseline that communities can use to better understand their marine economy and track how it is changing over time. While it provides some context to help readers interpret the data, this report is not intended to determine the reasons for specific changes in the marine economy.

COVID-19

The figures reported here lag three years and come from the most recently available data sets issued by the Bureau of Labor Statistics, Bureau of Economic Analysis, and the Census Bureau. The onset of the COVID-19 pandemic in 2020 coincided with significant declines in marine economy employment and output, particularly in the tourism and recreation sector. The overall U.S. economy returned to growth in 2021 and 2022, but marine economy data are not yet available for those years, nor in this year’s report. Subsequent years of data will shed light the U.S. marine economy’s response to and recovery from pandemic-related disruptions.

A Note on Rounding

There may be instances when the sum of values in the donut charts round up to slightly more or less than 100 percent. This discrepancy can be attributed to simple rounding off to the nearest percent point.

¹ Bureau of Labor Statistics. “Labor Market Dynamics during the COVID-19 Pandemic.” Accessed at <https://www.bls.gov/blog/2022/labor-market-dynamics-during-the-covid-19-pandemic.htm>.

Introduction

The oceans and Great Lakes support the lives, lifestyles, and livelihoods of all Americans. We fish from their waters, vacation on their edges, ship cargo on their surface, and extract oil, gas, sand, and gravel from their seafloors.

Marine (ocean and Great Lakes-dependent) activities are important contributors to the nation's economy. Oil and gas production provides energy. Seafood production and processing meets the demands of restaurants and households. Tourism and recreation supports millions of jobs. Marine construction, marine transportation, and ship building provide access to global markets.

The marine environment also provides a wide range of benefits that, although real and fitting for economic consideration, do not lend themselves to traditional measures of jobs, wages, and gross domestic product. Coastal and marine ecosystems sequester carbon from the atmosphere, protect communities from the harmful effects of coastal storms, and provide a myriad of other benefits that support human life and well-being.

This report provides insights into the benefits derived from the marine economy that result in jobs and wages and that contribute directly to the nation's gross domestic product. Data presented in this report can best be described as indicators of the impacts that marine resources and ecological systems have on the market economy of the United States, viewed through the lens of nationally consistent data produced by federal agencies.

Data presented in this report are from the National Oceanic and Atmospheric Administration's Economics: National Ocean Watch (ENOW) data set. ENOW data are produced by NOAA in partnership with the Bureau of Economic Analysis, Bureau of Labor Statistics, and Bureau of the Census,

and are derived from some of these agencies' most respected and commonly used data.

The consistency of ENOW's representation of the marine economy is one of its primary advantages. Another is the fact that it is produced in a manner that yields results that are comparable across time and from place to place. Gross domestic product figures are also updated each year so that the results are consistent with the Bureau of Economic Analysis' annual improvements of national industrial data. ENOW data are available for the years 2005 through 2020 for about 400 coastal counties, 30 coastal states, eight regions, and the nation.

The marine economy, as represented in the ENOW data, includes six economic sectors that depend in various ways on the marine environment:

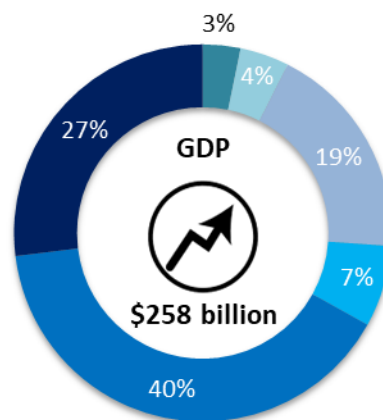
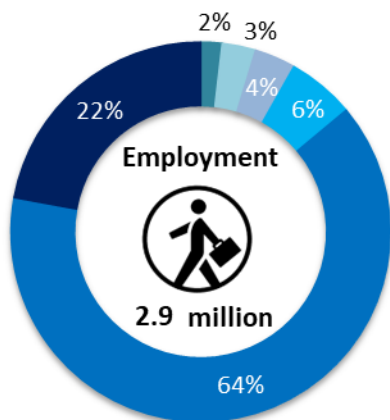
- living resources
- marine construction
- marine transportation
- offshore mineral extraction
- ship and boat building
- tourism and recreation

A review of this list underscores the complexity and importance of effective use, management, and governance of the marine economy. Some economic activities, such as commercial fishing (part of the living resources sector), depend on the health of marine ecosystems. Many marine economic activities, such as living resource extraction, marine transportation, and activities that occur at working waterfronts, rely on a close physical proximity to the coastline, presenting an increasing suite of challenges as these businesses encounter sea level rise and other coastal hazards.

2020 U.S. Marine Economy National Summary

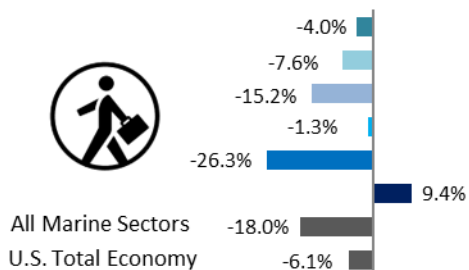
Annual Totals

The marine economy accounted for 2.1% of total employment and 1.2 % of total GDP in the United States.

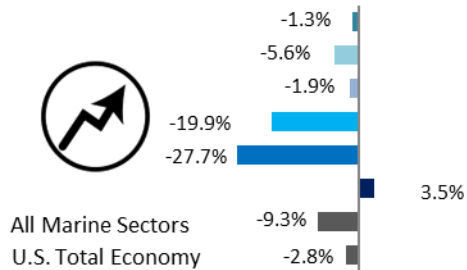


- Marine Construction
- Living Resources
- Offshore Mineral Extraction
- Ship and Boat Building
- Tourism and Recreation
- Marine Transportation

Annual Changes in Employment, 2019-2020



Annual Changes in GDP, 2019-2020

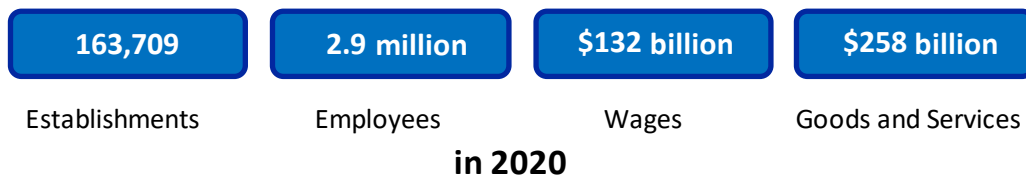


Economics: National Ocean Watch (ENOW)
coast.noaa.gov/digitalcoast/data/enow.html

National Profile

The Importance of the Marine Economy

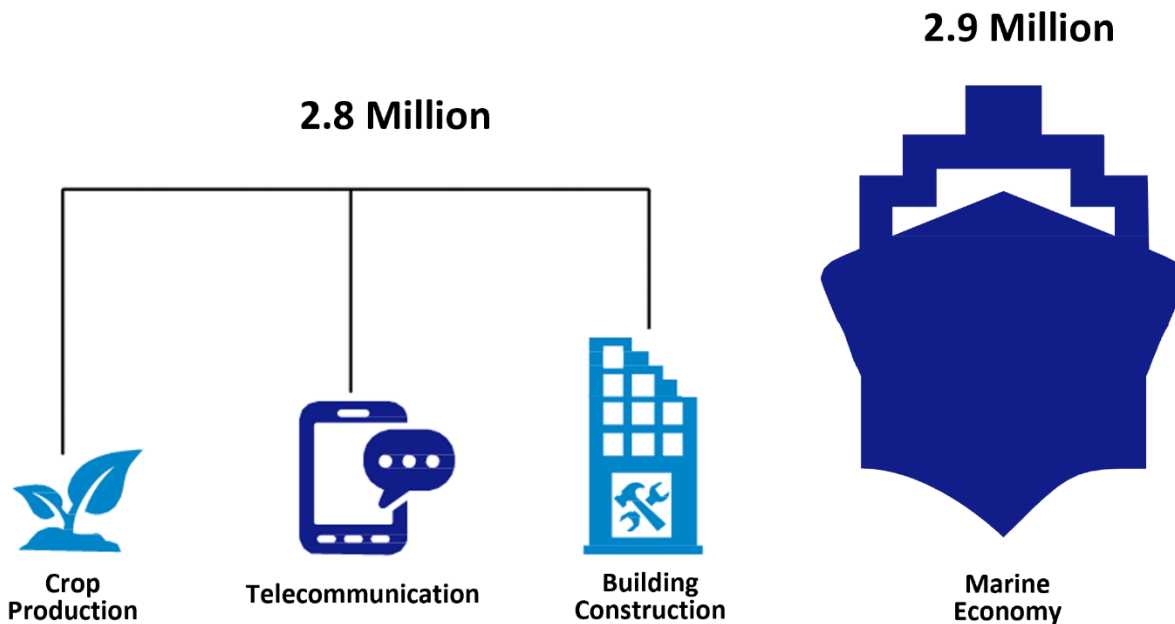
The U.S. marine economy accounted for



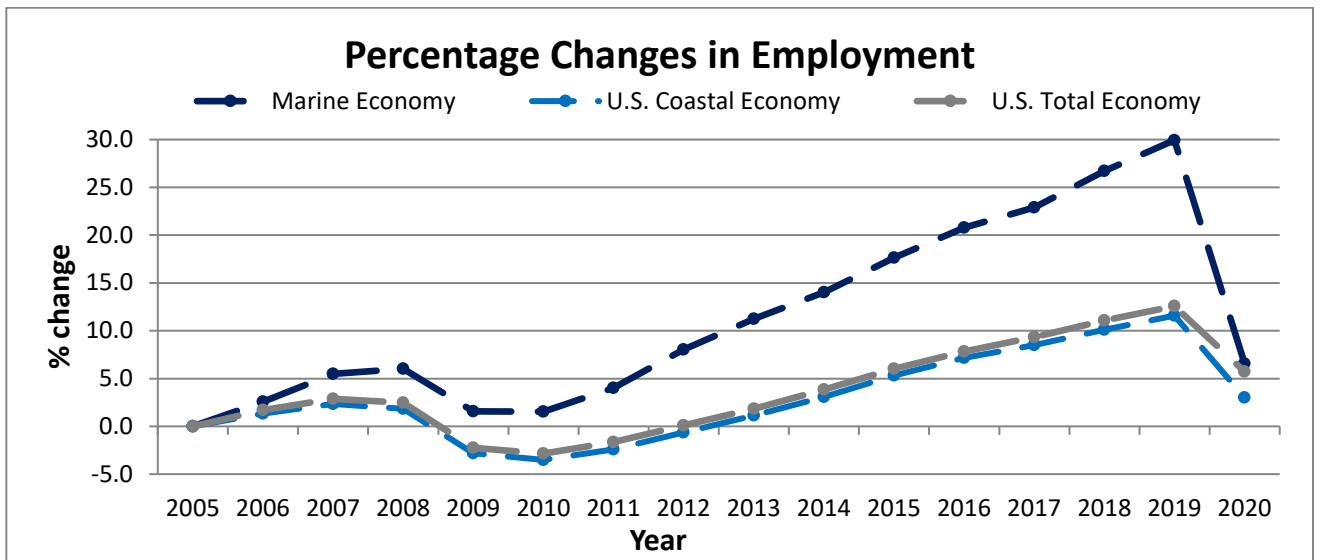
In 2020, the marine economy’s 164,000 business establishments employed about 2.9 million people, paid \$132 billion in wages, and produced \$258 billion in goods and services, or gross domestic product (GDP). This accounted for about 2.1 percent of the nation’s employment and 1.2 percent of its GDP.

This may seem small, but our nation’s economy is diverse and includes many “small” but integral parts. Most people, for example, have some sense of the importance of better-known economic activities such as crop production, telecommunications, and building construction. In 2020, the marine economy employed more people than these three sectors combined.

U.S. Total Employment Comparison



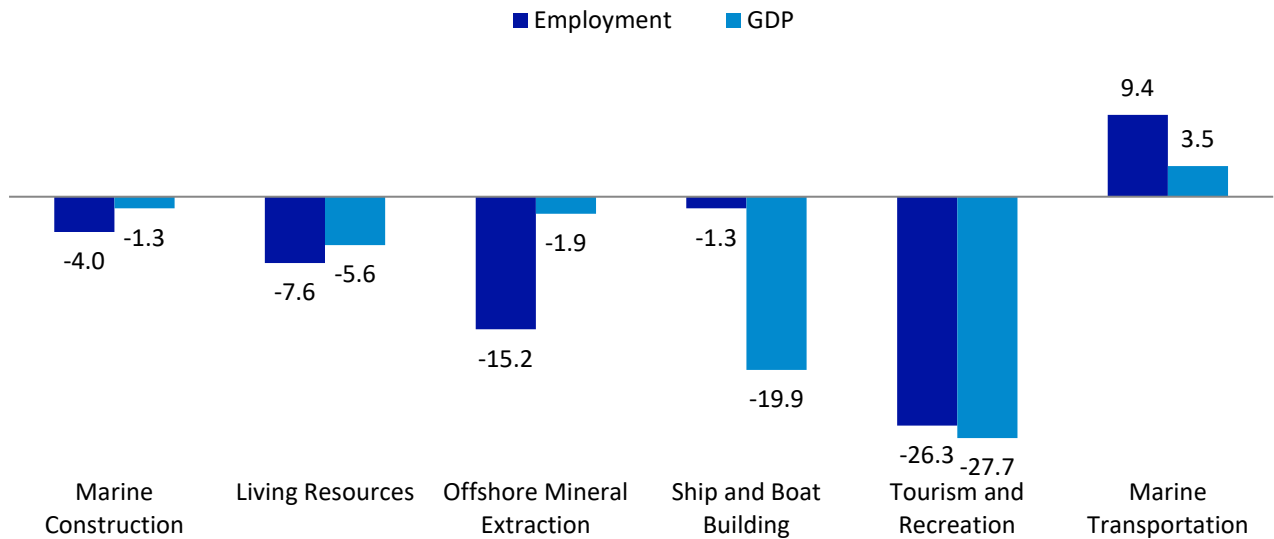
Trends in the Marine Economy



From 2019 to 2020, the marine economy lost about 631,000 employees, a decline of 18.0 percent. In the U.S. economy as a whole, employment fell by 6.1 percent during the same period.

In 2020, employment and gross domestic product fell in five of the six marine economy sectors. The largest decline was in the tourism and recreation sector, which lost about 656,000 jobs (a 26.3 percent decline from 2019). The only sector to report increasing employment was marine transportation, which added 55,000 jobs (a 9.4 percent increase) in 2020. A specific breakdown by sector is shown in the chart “Annual Percentage Change by Sector, 2019-2020” below.

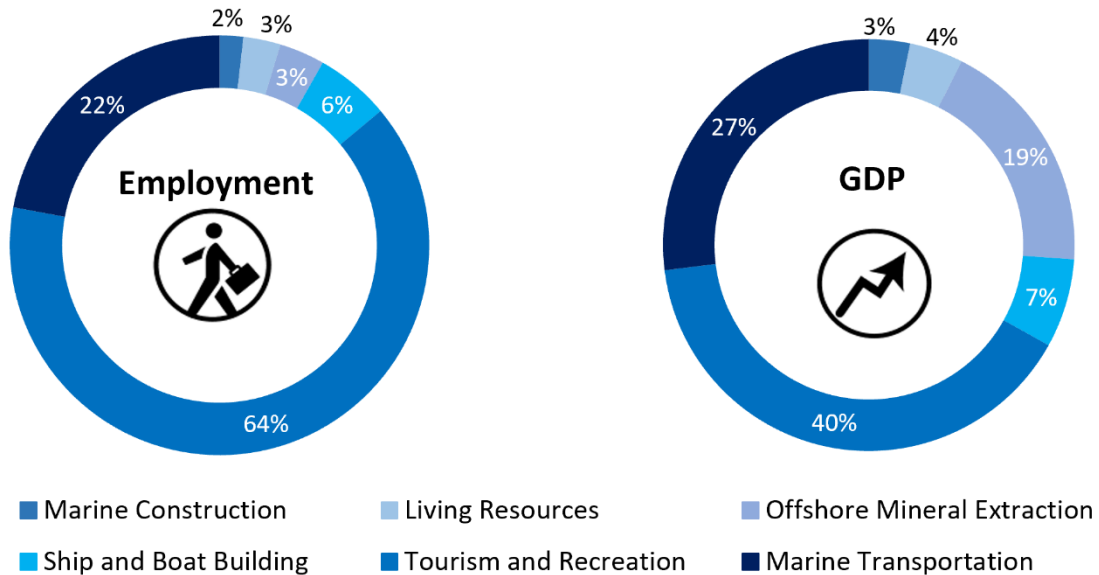
Annual Percentage Change by Sector, 2019-2020



The Composition of the Marine Economy

The six marine sectors vary in their contributions to the economy, as seen in the figure below, which compares employment and gross domestic product. Some sectors, such as tourism and recreation, include service-intensive activities that support a large number of jobs. Employment in this sector accounts for a much larger share of the marine economy (64 percent) than its gross domestic product (40 percent). In contrast, capital-intensive industries, such as offshore mineral extraction, yield high levels of gross domestic product with a relatively small share of the marine economy’s workforce (3.5 percent). In 2020, offshore mineral extraction accounted for 19 percent of the marine economy’s gross domestic product, third to tourism and recreation and marine transportation.

Employment and GDP by Marine Sector, 2020

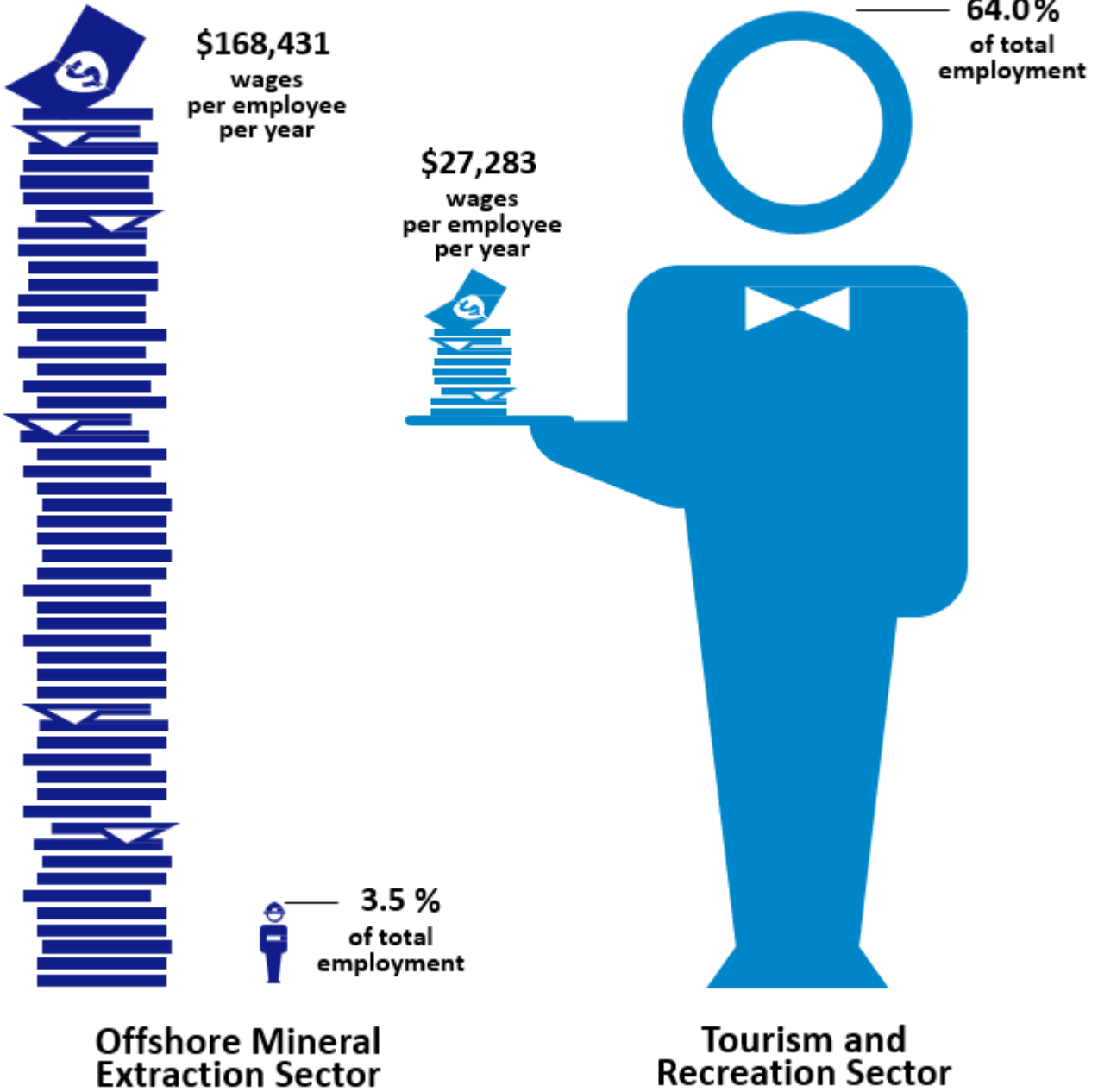


The Importance of Marine-Dependent Jobs

Average wages for different types of jobs within the marine economy vary greatly. In 2020, offshore mineral extraction paid the highest wage per employee (\$168,000). The occupations represented in this sector range from the workers on offshore oil platforms to the engineers, geologists, and mappers who support exploration activities. The tourism and recreation sector paid the lowest average wage (\$27,000) of all marine economy sectors.

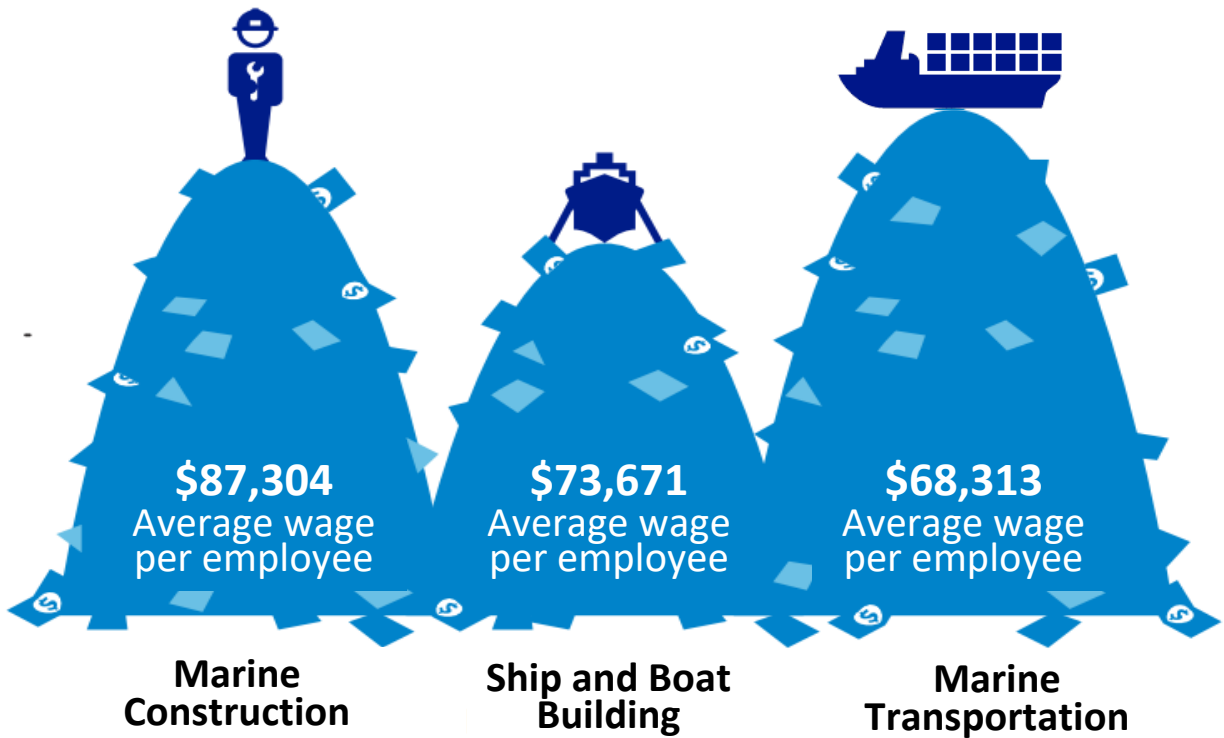
The living resources sector also paid an average wage (\$52,000) that was lower than the national average of \$64,000. Similar to tourism and recreation, this sector employs a significant number of seasonal and part-time workers, most of whom are not highly paid. The three remaining sectors—marine construction, marine transportation, and ship and boat building—all paid wages that were higher than the 2020 national average.

2020 Employment versus Wages



2020 Wages per Employee Working on the Water

All three sectors paid an average wage per employee above the national average of \$64,021



Sector Profiles

Marine Construction



This sector accounts for the heavy construction activities associated with dredging navigation channels and beach renourishment. Publicly available sector-level data often exclude marine construction because of the small number of businesses conducting these activities in any one area. Protecting the confidentiality of these businesses often requires the suppression of the entire sector, including information for activities that could otherwise be reported. For this reason, these activities are not always included in ENOW’s data on the marine economy on the county level or the state level.

Marine construction accounted for 1.8 percent of the employment and 3.2 percent of the gross domestic product in the U.S. marine economy. While the sector represents a small percentage of the marine economy, it is an integral component, paying one of the highest average wages per employee of \$87,000, much higher than the national average of \$64,000. Furthermore, dredging navigation channels and renourishing beaches are vital to the marine transportation and tourism and recreation sectors.

From 2019 to 2020, employment in this sector decreased by 4.0 percent, while gross domestic product decreased by 1.3 percent. At the state and local levels, trends are far more erratic, spiking and rapidly declining as major harbor dredging or beach renourishment projects are initiated and completed.

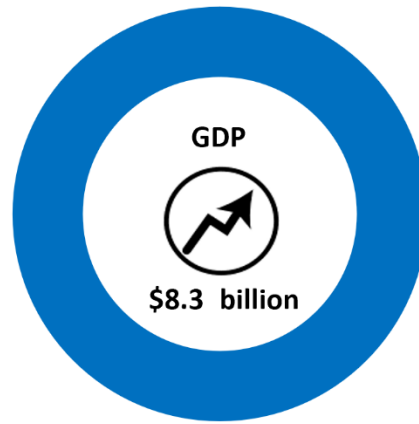
Marine construction activities occur in all coastal states, but the sector is concentrated in Florida, Texas, California, and Louisiana. Together, these four states accounted for about 61 percent of the employment and about 59 percent of the gross domestic product in this sector in 2020.

2020 U.S. Marine Economy

Marine Construction Sector

Annual Totals

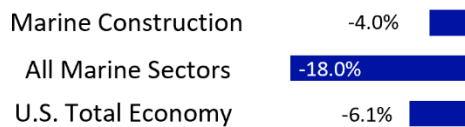
This sector accounted for 1.8 % of total employment and 3.2 % of total GDP in the marine economy.



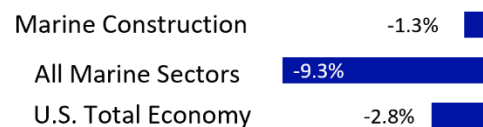
■ Marine Related Construction



Annual Changes in Employment, 2019-2020



Annual Changes in GDP, 2019-2020



Economics: National Ocean Watch (ENOW)
coast.noaa.gov/digitalcoast/data/enow.html

Living Resources



This sector includes commercial fishing, aquaculture, and seafood processing and markets and accounted for only 2.9 percent of the employment and 4.2 percent of the gross domestic product of the U.S. marine economy. This sector had the second lowest average wage (\$52,000) of the six marine economy sectors.

Seafood markets are the largest producer in the living resources sector, accounting for 43 percent of its gross domestic product. The seafood market industry also accounts for most of the employed workers (47 percent) in the sector.

From 2019 to 2020, employment in the sector decreased by 7.6 percent, and gross domestic product (adjusted for inflation) decreased by 5.6 percent.

One thing to note for this sector is the importance of self-employed workers in seafood harvesting. Fishing vessel owners are often self-employed. In addition, even though fishing vessels require multiple crew members, these individuals are frequently not employed by the owner but work for a share of the catch.

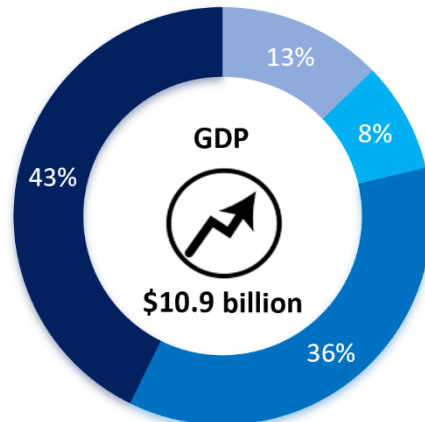
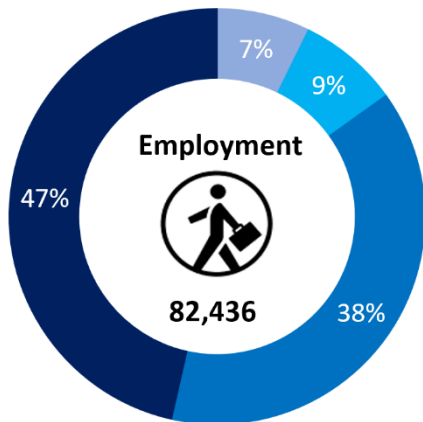
For this reason, NOAA has developed a complementary data set, ENOW for Self-Employed Workers, which is derived from the Nonemployer Statistics produced by the Census Bureau. In 2020, the Nonemployer Statistics release was postponed due to limited availability of the source data. Therefore, there are no data yet available for this complementary data set for the year 2020. Currently, the most recent data available is for data year 2019, which was released in summer 2022. In 2019, the Nonemployer Statistics data release reported 51,990 jobs in the living resources sector, which was about a 1.5 percent decrease than the number of jobs reported in this data set in 2018.

2020 U.S. Marine Economy

Living Resources Sector

Annual Totals

This sector accounted for 2.9 % of total employment and 4.2 % of total GDP in the marine economy.



- Fishing
- Seafood Processing

- Fish Hatcheries and Aquaculture
- Seafood Markets



Annual Changes in Employment, 2019-2020



Annual Changes in GDP, 2019-2020



Economics: National Ocean Watch (ENOW)
coast.noaa.gov/digitalcoast/data/enow.html

Offshore Mineral Extraction

The offshore mineral extraction sector accounted for



This sector includes oil and gas exploration and production, as well as limestone, sand, and gravel mining. The largest component of this sector is oil and gas production, which is concentrated in the Gulf of Mexico region.

In 2020, offshore mineral extraction accounted for 3.5 percent of the total employment in the marine economy but contributed 18.7 percent of its gross domestic product. Average wages per employee of \$168,000 per year in this sector were more than three times the national average for marine economy workers. That number was largely due to high wages in the oil and gas exploration and production industry: \$175,000 per year. Average wages per employee in the limestone, sand, and gravel industry were \$75,000, also higher than the national average.

Oil and gas exploration and production is the dominant industry in this sector, accounting for 93.7 percent of the employment and 96 percent of the gross domestic product in 2020.

From 2019 to 2020, employment in the offshore mineral extraction sector decreased by 15.2 percent and the sector's gross domestic product decreased by 1.9 percent. Future trends in this sector will likewise be driven by oil prices and production levels, which are more sensitive to global than national conditions.

The national center of the oil and gas industry is Texas. Harris County, Texas, alone accounted for 57.6 percent of the employment in the nation's offshore mineral extraction sector and 77.2 percent of its gross domestic product in 2020.

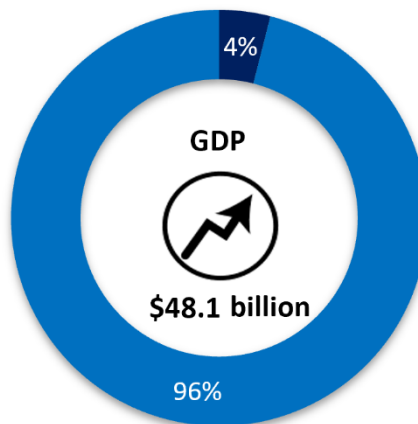
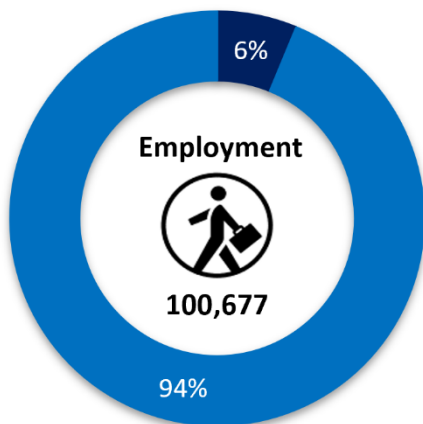
Offshore mineral extraction is often the most volatile of the six marine economy sectors. Since 2005, the sector's gross domestic product has fluctuated (increased or decreased) by an average of 12 percent per year, compared to 3 percent in the overall marine economy. Employment in the sector has fluctuated by an average 7 percent per year, compared to 4 percent in the U.S. marine economy as a whole.

2020 U.S. Marine Economy

Offshore Mineral Extraction Sector

Annual Totals

This sector accounted for 3.5 % of total employment and 18.7 % of total GDP in the marine economy.

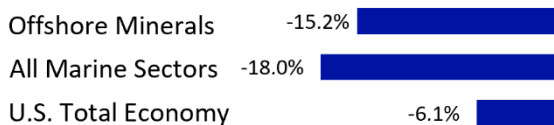


■ Limestone, Sand and Gravel

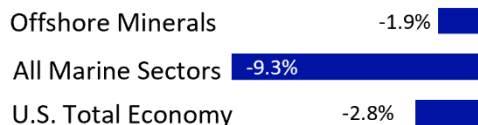
■ Oil and Gas Exploration and Production



Annual Changes in Employment, 2019-2020



Annual Changes in GDP, 2019-2020



Economics: National Ocean Watch (ENOW)
coast.noaa.gov/digitalcoast/data/enow.html

Ship and Boat Building

The ship and boat building sector accounted for



This sector includes the construction, maintenance, and repair of ships, recreational boats, commercial fishing vessels, ferries, and other marine vessels. Economic impacts of the ship building and repair industry are concentrated around a few major shipyards, each employing several thousand workers. This sector also includes boat repair services—generally small businesses that are common in areas that are home to fishing fleets or frequented by recreational boats. Boat building and repair is spread more evenly around the nation, with concentrations in areas with high levels of commercial fishing and recreational boating.

In 2020, the ship and boat building sector accounted for 5.7 percent of the employment and 7.0 percent of the gross domestic product in the U.S. marine economy. Average wages per employee, \$74,000, were significantly higher than the national marine economy average of \$46,000. The ship building, maintenance, and repair component of this sector accounted for about 83.0 percent of the employment and 82.9 percent of the gross domestic product.

The ship and boat building sector experienced a 1.3 percent drop in employment compared to 2019 and a 19.9 percent decline in gross domestic product.

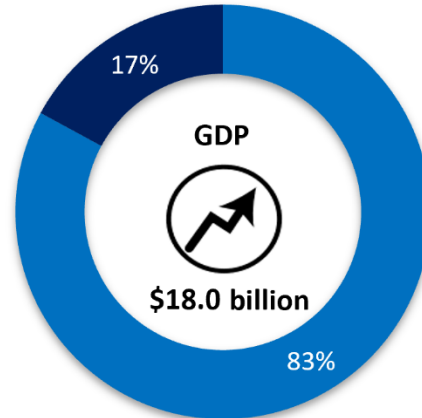
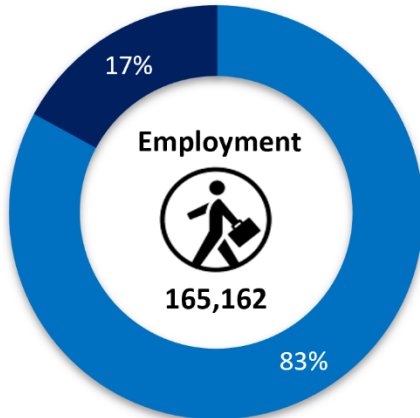
In 2020, Virginia contributed most to employment in this sector, accounting for 25.0 percent of the national total. Washington State was the largest contributor to gross domestic product in this sector, accounting for 22.5 percent of the total. Kitsap County, Washington, was the largest county in the nation's ship and boat building sector; it alone accounted for about 9.6 percent of the employment and 19.4 percent of the gross domestic product in the nation's ship and boat building sector.

2020 U.S. Marine Economy

Ship and Boat Building Sector

Annual Totals

This sector accounted for 5.7 % of total employment and 7.0% of total GDP in the marine economy.

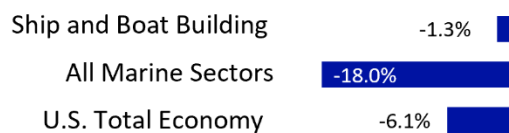


■ Ship Building and Repair

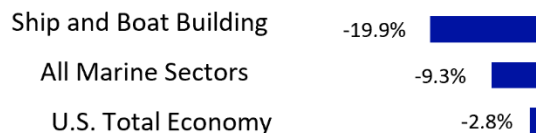
■ Boat Building and Repair



Annual Changes in Employment, 2019-2020



Annual Changes in GDP, 2019-2020



Economics: National Ocean Watch (ENOW)
coast.noaa.gov/digitalcoast/data/enow.html

Tourism and Recreation

The tourism and recreation sector accounted for



This sector has more business establishments and employs more people than all the other five sectors combined. In 2020, it was also the largest sector measured in terms of gross domestic product, accounting for about 40.0 percent of the total marine economy. This sector includes a wide range of businesses that attract or support marine-based tourism and recreation: eating and drinking places, hotels and lodging, scenic water tours, aquariums, parks, marinas, boat dealers, recreational vehicle parks and campsites, and associated sporting goods manufacturing.

Since many of the activities associated with this sector, such as hotels and restaurants, are not always directly marine dependent, only businesses located in shore-adjacent zip codes are considered marine dependent.

Many of the coastal and marine amenities that attract visitors are free, generating no direct employment, wages, or gross domestic product, yet these “non-market” features are usually key drivers for market-based activities.

The majority of the jobs in this sector are in hotels and restaurants in nearshore areas where many of the tourist attractions are located. These two industries accounted for 93.2 percent of the employment and 89.7 percent of the gross domestic product in this sector in 2020.

From 2019 to 2020, tourism and recreation lost 656,000 jobs (26.3 percent). Gross domestic product in the sector declined by 27.7 percent. These decreases were, by far, the largest among the six marine economy sectors.

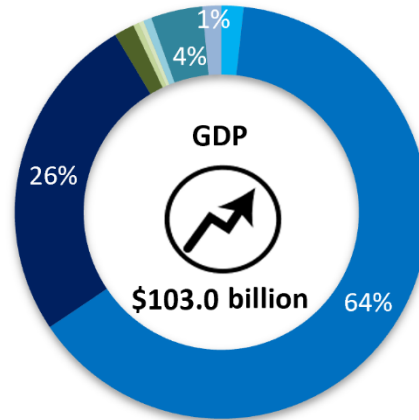
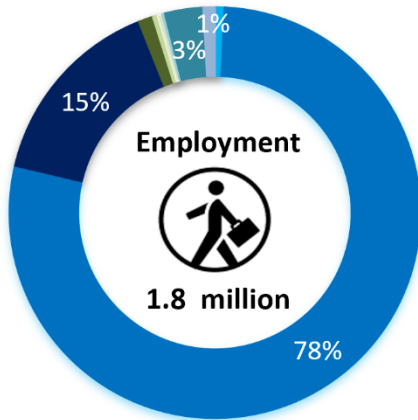
Florida, California, and New York are the three largest contributors to this sector, together accounting for 48.5 percent of the sector’s total employment and 52.3 percent of its gross domestic product in 2020. They also experienced the largest declines in sector employment, losing 354,000 jobs from 2019 through 2020.

2020 U.S. Marine Economy

Tourism and Recreation Sector

Annual Totals

This sector accounted for 64.0 % of total employment and 40.0 % of total GDP in the marine economy.

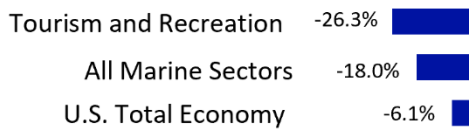


- Boat Dealers
- Hotels and Lodging Places
- RV Parks and Campgrounds
- Sporting Goods Manufacturing
- Zoos and Aquaria

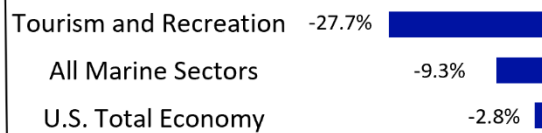
- Eating and Drinking Places
- Marinas
- Scenic Water Tours
- Amusement and Recreation Services



Annual Changes in Employment, 2019-2020



Annual Changes in GDP, 2019-2020



Economics: National Ocean Watch (ENOW)
coast.noaa.gov/digitalcoast/data/enow.html

Marine Transportation



This sector includes businesses engaged in deep-sea freight, marine passenger services, marine transportation services, warehousing, and the manufacture of navigation equipment. It accounted for 22.1 percent of the employment and 27.0 percent of the gross domestic product in the U.S. marine economy. The sector paid average wages of \$68,000 per employee in 2020.

Warehousing is the largest component of the marine transportation sector in terms of employment, accounting for 62.7 percent of total employment for the sector. To avoid overestimation, only warehousing activities located in shore-adjacent counties are included in the ENOW data.

While these figures include economic activity associated with loading, unloading, warehousing, and moving cargo, they do not include the value of the cargo itself. Including cargo values is not an appropriate measure of the direct contribution of marine transportation to the national economy. (That said, the \$1.5 trillion of vessel cargo imported and exported in 2020 is indicative of the large indirect effects of our coastal ports.¹)

Water remains the leading mode to transport foreign goods for trade by volume; ships moved goods accounting for 40.1 percent of U.S.-international freight trade as measured by value and 70.6 percent as measured by weight in 2020.²

In the marine transportation sector, about 45.0 percent of employment and 47.1 percent of gross domestic product is supported by three states: California, Florida, and New Jersey. The rest is distributed across the nation, concentrated around major seaports.

¹ U.S. Department of Transportation, Bureau of Transportation Statistics. "2022 Port Performance Freight Statistics Program: Supply Chain Feature." Accessed at <https://www.bts.dot.gov/sites/bts.dot.gov/files/2022-01/2022-Port-Performance-Freight-Statistics-Program-Supply-Chain-Feature-accessible.pdf>.

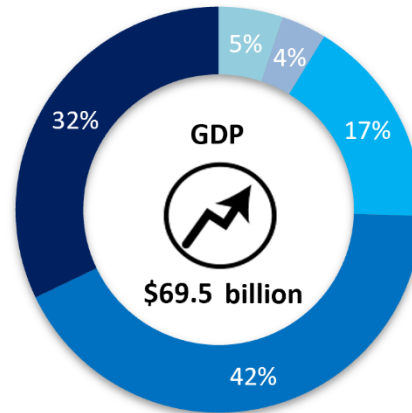
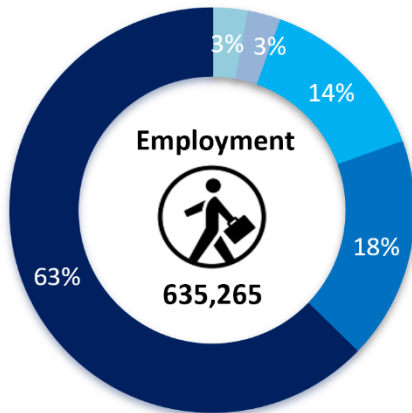
² U.S. Department of Transportation, Bureau of Transportation Statistics. "U.S.-International Freight Trade by Transportation Mode." Accessed at <https://www.bts.gov/browse-statistical-products-and-data/freight-facts-and-figures/us-international-freight-trade>.

2020 U.S. Marine Economy

Marine Transportation Sector

Annual Totals

This sector accounted for 22.1% of total employment and 27.0% of total GDP in the marine economy.



- Marine Freight
- Marine Transportation Services
- Warehousing

- Marine Passenger Transportation
- Search and Navigation Equipment



Annual Changes in Employment, 2019-2020



Annual Changes in GDP, 2019-2020



Economics: National Ocean Watch (ENOW)
coast.noaa.gov/digitalcoast/data/enow.html



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