NOAA Report on the U.S. Marine Economy

Office for Coastal Management
ECONOMICS

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 2019 Economics: National Ocean Watch (ENOW) data, produced by NOAA's Office for Coastal Management. The employment and gross domestic product statistics are derived from the Bureau of Labor Statistics' Quarterly Census of Employment and Wages data (accessed in August 2021) and the Bureau of Economic Analysis' gross domestic product by state data (released in July 2021).

Table of Contents

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 2019, which is the most up-to-date information available.

Report Highlights

In 2019, the marine economy accounted for

- 164,384 individual business establishments,
- 3.5 million employees,
- $149 billion in wages,
- $351 billion in goods and services.

Each of these represent an increase from 2018.

Employment in the marine economy increased 2.6 percent (adding 88,000 jobs), which is faster than the national average employment growth of 1.4 percent during the same reporting period. To put that in context, here's a comparison: the marine economy employed more people (3.5 million) than the crop production, telecommunication, and building construction sectors combined (2.9 million).

Marine transportation exhibited the most growth of any marine sector in terms of employment, both as a percentage and in absolute terms, growing by 8.4 percent or almost 45,000 jobs. In fact, of the nearly 88,000 jobs added to the marine economy between 2018 and 2019, almost half were in marine transportation. In terms of gross domestic product, offshore mineral extraction was the top performing sector, increasing by 18.9 percent or $28.1 million.

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.

Whenever important decisions are made that affect a community's future, economic data are needed. 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.

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 2019. 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 2019, 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 the 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 2019.

Special Notes

Causality

Understandably, readers want information about *why* certain indicators of the U.S. marine economy changed during the reporting period. It is not possible to determine the reason for many of these changes without in-depth research efforts. 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.

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 COVID-19 impacts from 2020 and 2021 are not yet reflected in these data, nor in this year's report. This is the most recent baseline data before the onset of the COVID-19 pandemic. Subsequent years of data will shed light on the depth and breadth of the impact that COVID-19 had on the U.S. marine economy.

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 part-time and entry-level 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 myriad 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 be 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.

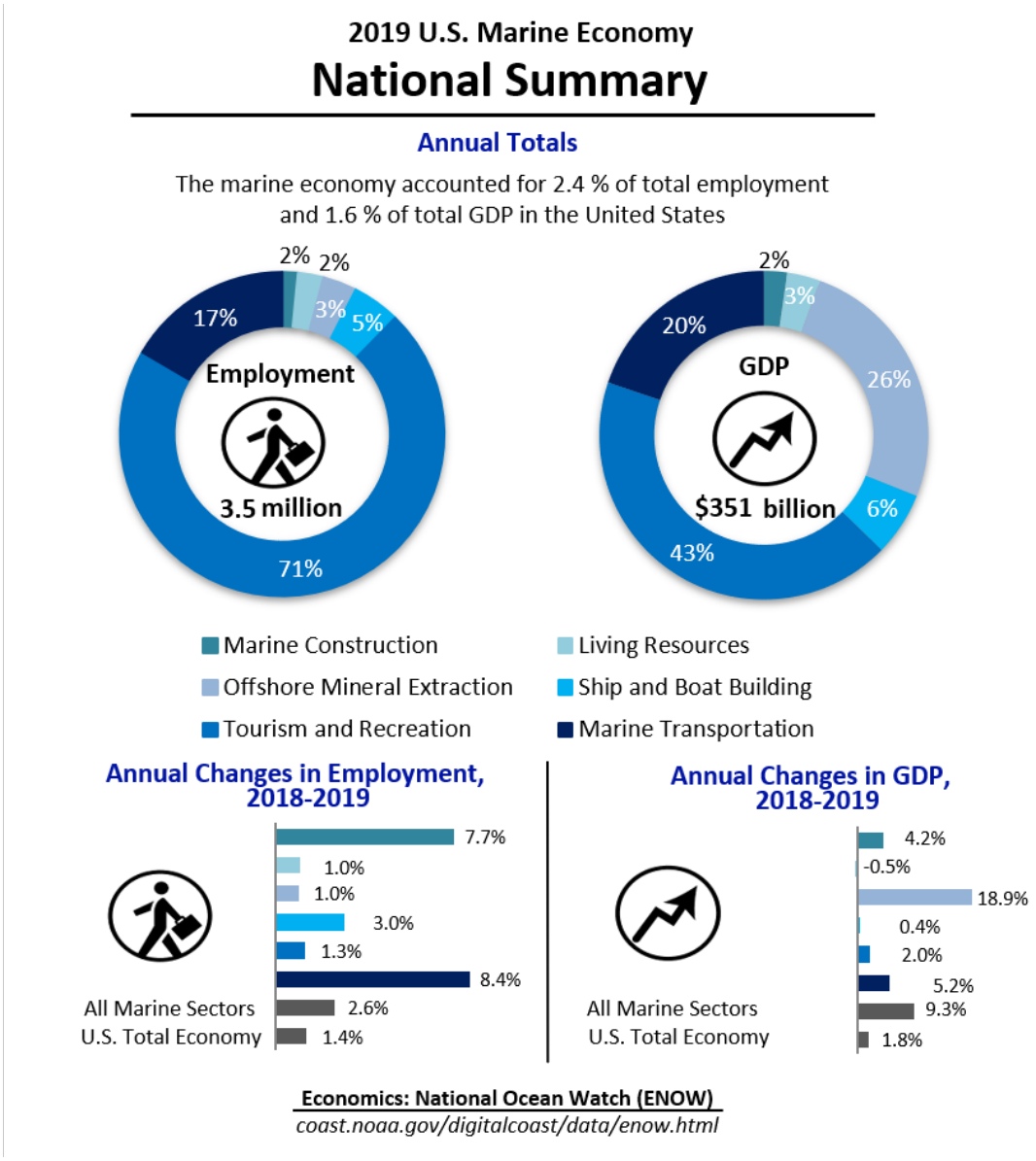
Data presented in this report are from the National Oceanic and Atmospheric Administration's Economics: National Ocean Watch (ENOW) data set. ENOW data are produced by NOAA in partnership with the Bureau of Economic Analysis, Bureau of Labor Statistics, and Bureau of the Census, and are derived from 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 2019 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.



Note: Seafood wholesale activities were added to the living resources sector data from 2016 onward.

National Profile

The Importance of the Marine Economy

The U.S. marine economy accounted for

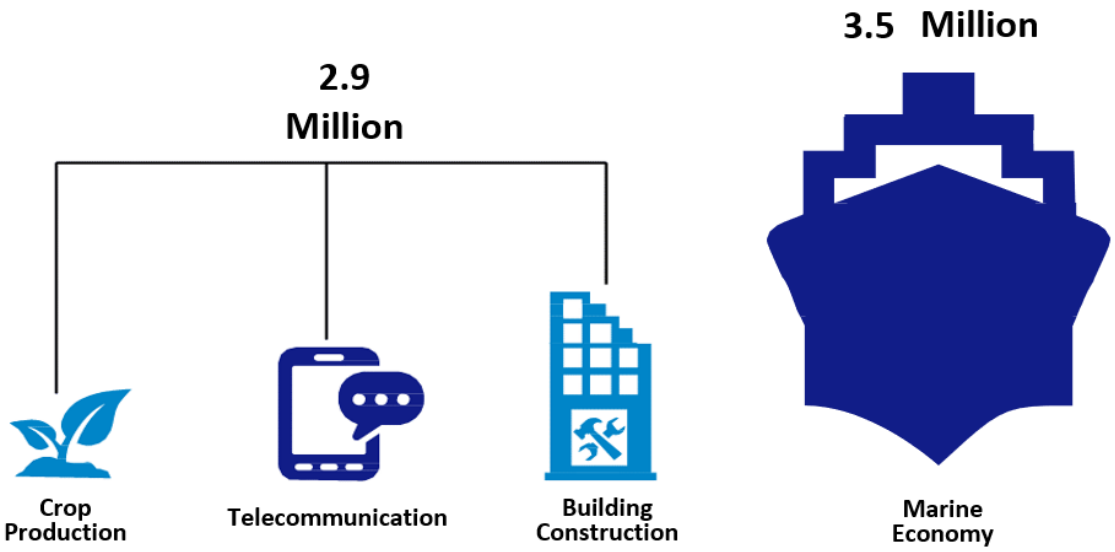
164,384	3.5 million	$149 billion	$351 billion
Establishments	Employees	Wages	Goods and Services

in the U.S. total economy in 2019

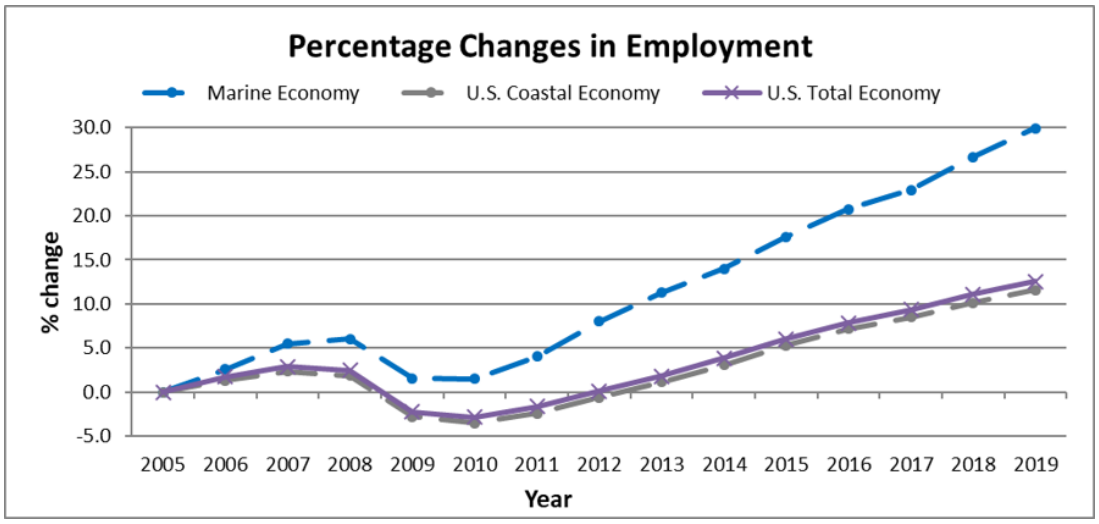
In 2019, the marine economy's 164,384 business establishments employed about 3.5 million people, paid $149 billion in wages, and produced $351 billion in goods and services, or gross domestic product (GDP). This accounted for about 2.4 percent of the nation's employment and 1.6 percent of its GDP.

This may seem small, but our nation's economy is diverse and includes many "small" but integral parts. By comparison, in 2019, the marine economy employed more people than crop production, telecommunication, and building construction combined.

U.S. Total Employment Comparison

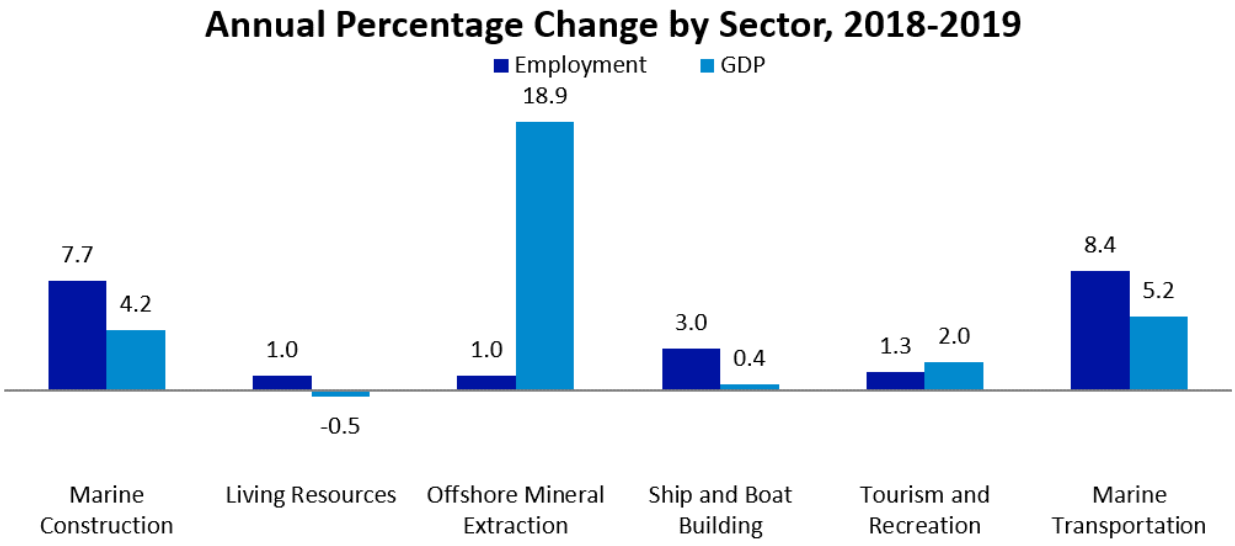


The Resilience of the Marine Economy



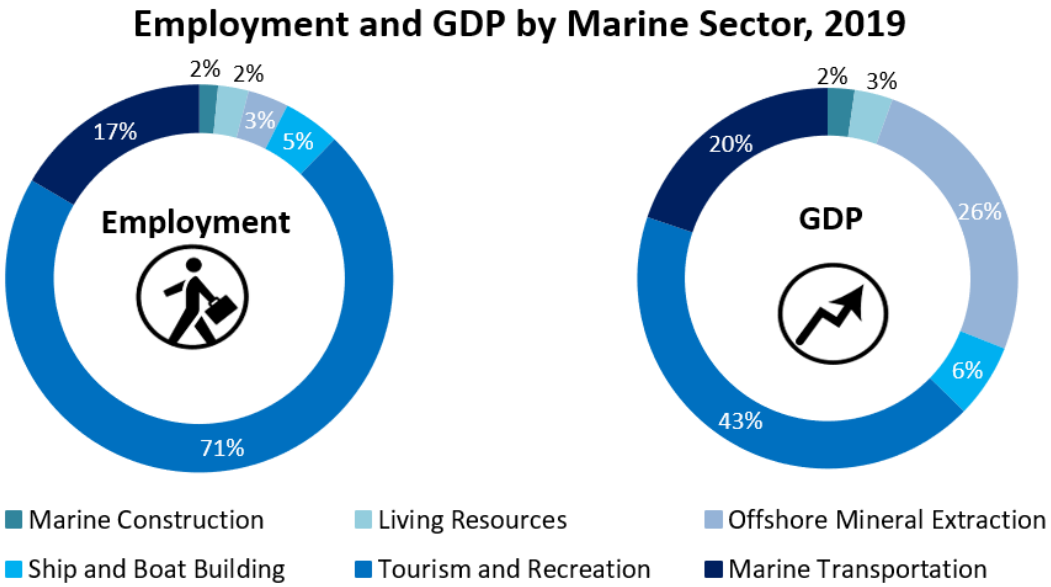
From 2018 to 2019, the marine economy gained 87,554 employees, an increase of 2.6 percent—more than the U.S. economy as a whole, which grew by 1.4 percent during the same period. As illustrated above, the marine economy not only weathered the 2008 recession better than the U.S. coastal economy, but it also continued to track, while growing at a faster rate over time, even into 2019.

In 2019, employment increased in all six of the marine economy sectors. Employment in the marine transportation sector showed the highest rate of increase (8.4 percent). The tourism and recreation sector added the greatest number of jobs (55,000) in 2019. All sectors except the living resources sector saw an increase in gross domestic product. A specific breakdown by sector is shown in the chart “Annual Percentage Change by Sector, 2018-2019” below.



The Composition of the Marine Economy

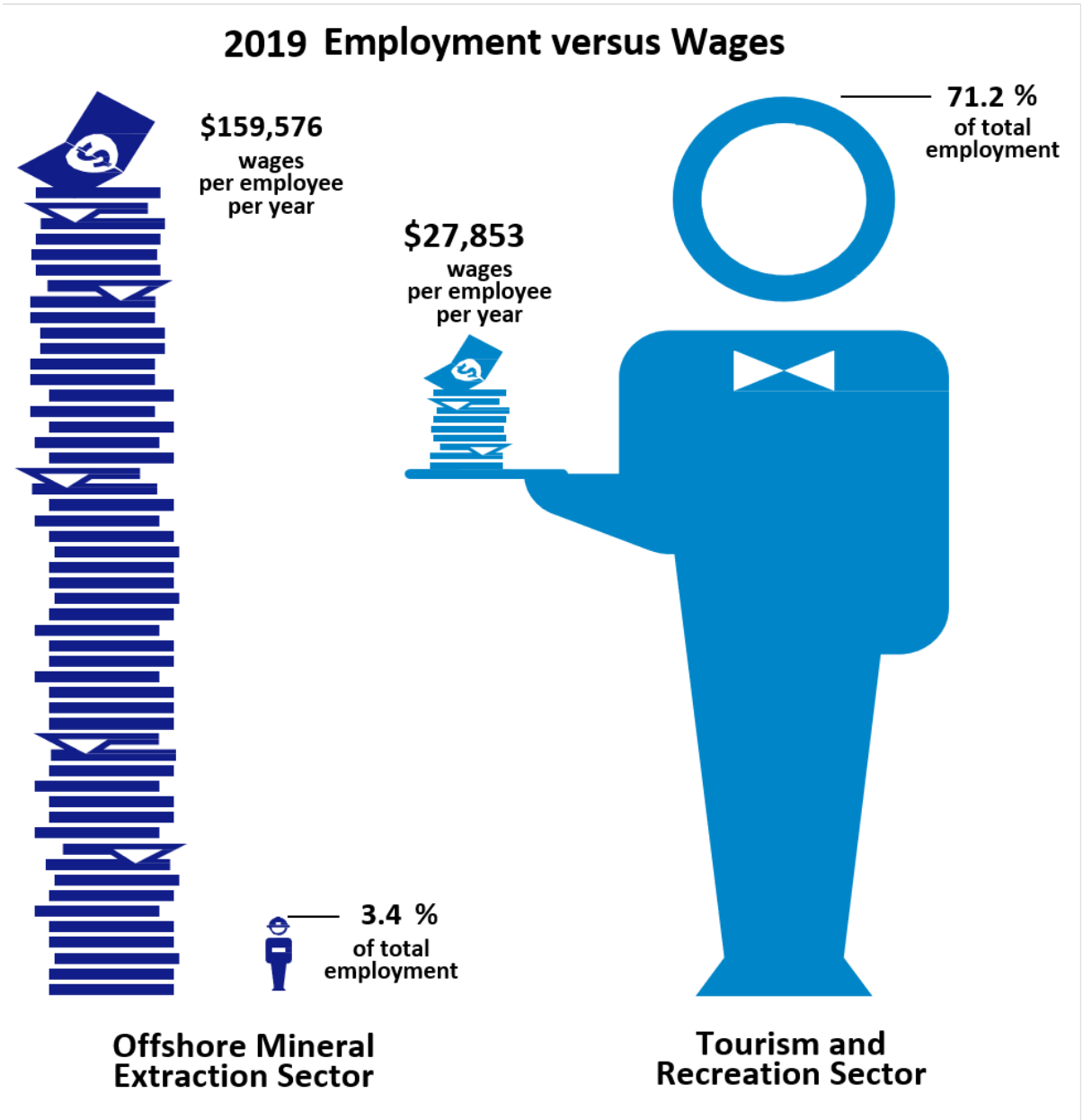
The six marine sectors vary in their contributions to the economy, as seen in the figure below, which compares employment and gross domestic product. Some sectors, such as tourism and recreation, include service-intensive activities that support a large number of jobs. Employment in this sector accounts for a much larger share of the marine economy (71.2 percent) than its gross domestic product (42.9 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 (3.4 percent). In 2019, offshore mineral extraction accounted for 25.5 percent of the marine economy's gross domestic product, second only to tourism and recreation.



The Importance of Marine-Dependent Jobs

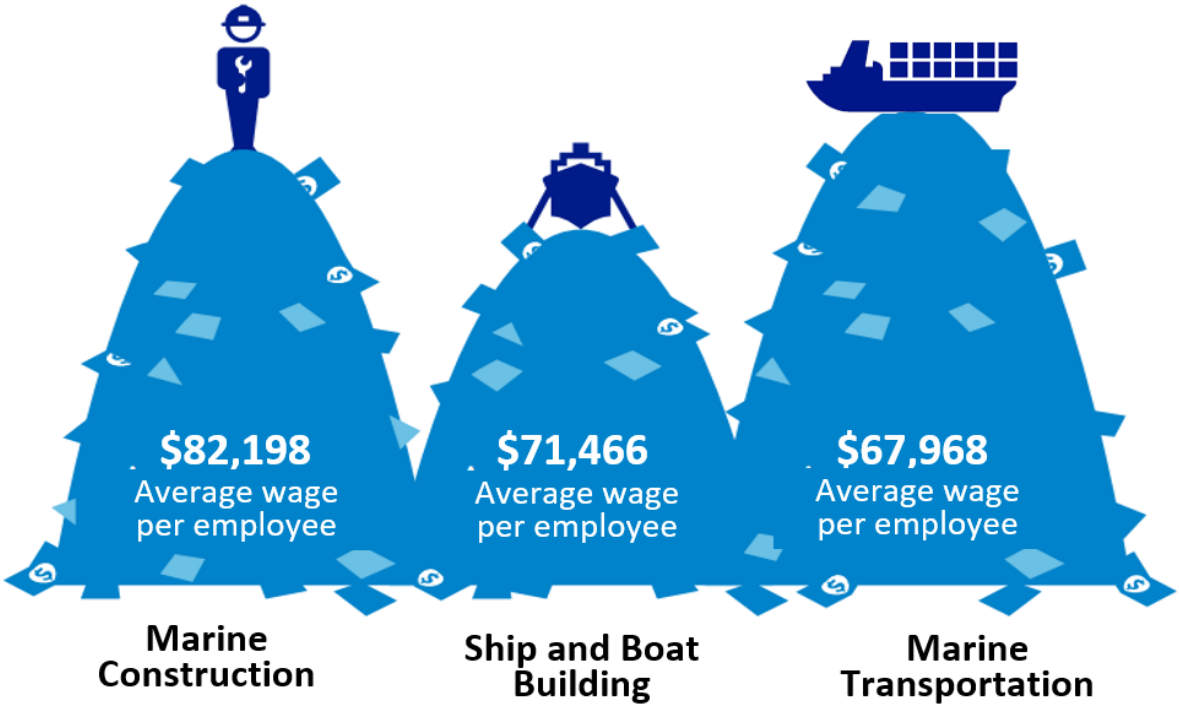
Average wages for different types of jobs within the marine economy vary greatly. In 2019, offshore mineral extraction paid the highest average wage per employee ($159,576). The occupations represented in this sector range from the workers on offshore oil platforms to the engineers, geologists, and mappers who support exploration activities. The tourism and recreation sector paid the lowest average wage ($27,853) of all marine economy sectors. This low wage is partly due to the large share of part-time jobs here, which are often held by retirees, students, and those just entering the work force.

The living resources sector also paid an average wage ($49,597) that was lower than the national average of $59,209. Similar to tourism and recreation, this sector employs a significant number of seasonal and part-time workers. The three remaining sectors—marine construction, marine transportation, and ship and boat building—all had average wages that were higher than the 2018 national average.


2019 Employment versus Wages
$159,576
wages
per employee
per year
$27,853
wages
per employee
per year
71.2 %
of total
employment
3.4 %
of total
employment
Offshore Mineral
Extraction Sector
Tourism and
Recreation Sector

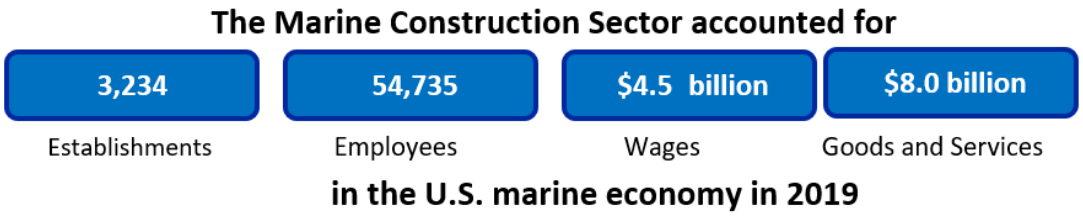
2019 Wages per Employee Working on the Water

All three sectors paid an average wage per employee above the national average of $59,209



Sector Profiles

Marine Construction



This sector accounts for the heavy construction activities associated with dredging navigation channels and beach renourishment. These data are almost always suppressed 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 included in ENOW's data on the marine economy on the county level, and sometimes the state level.

Marine construction accounted for 1.6 percent of the employment and 2.3 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 important component, paying one of the highest average wages per employee of $82,198, much higher than the national average of $59,209.

From 2018 to 2019, employment in this sector increased by 7.7 percent, while gross domestic product increased by 4.2 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.

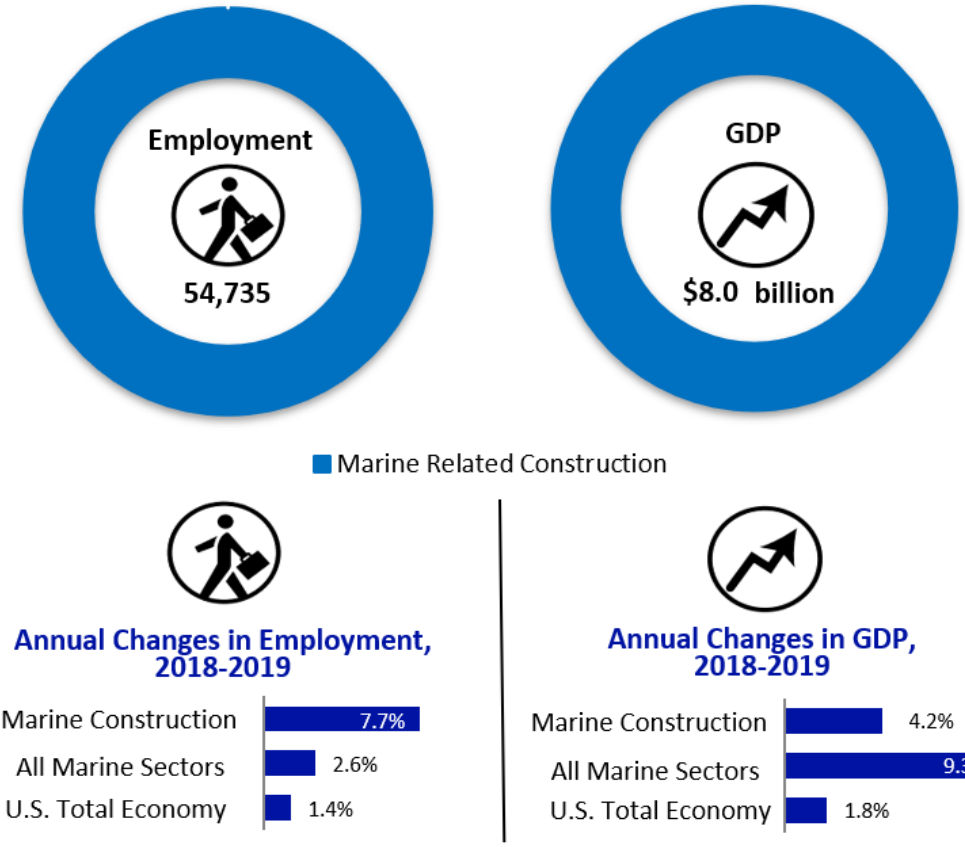
Marine construction activities occur in most regions of the U.S., but are highly concentrated in Florida, Texas, California, and Louisiana, which together in 2019 accounted for about 62 percent of the employment and about 58.8 percent of the gross domestic product in this sector.

2019 U.S. Marine Economy

Marine Construction Sector

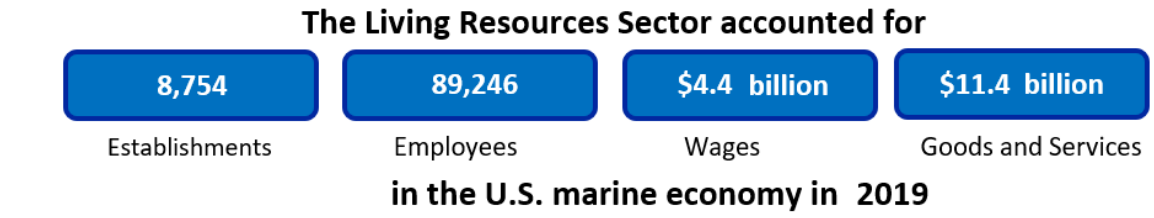
Annual Totals

This sector accounted for 1.6 % of total employment and 2.3 % of total GDP in the marine economy.



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

Living Resources



This sector includes commercial fishing, aquaculture, seafood processing, and wholesale and retail markets, and accounted for 2.5 percent of the employment and 3.3 percent of the gross domestic product of the U.S. marine economy. This sector had the second lowest average wage of all the marine sectors.

Seafood markets are the largest producer in the living resources sector, accounting for 42.5 percent of its gross domestic product. The seafood market industry also accounts for most of the employed workers (46.8 percent) in the sector.

From 2018 to 2019, employment in the sector increased by 1.0 percent, and gross domestic product decreased by 0.5 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. At a national level, roughly half the workers in this sector are self-employed, most of whom work in fish harvesting (as opposed to seafood processing, wholesale, and retail).

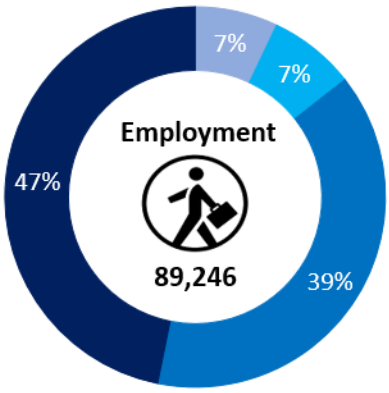
For this reason, NOAA has developed a complementary data set, ENOW for Self-Employed Workers, which is derived from the Nonemployer Statistics produced by the Bureau of the Census. In 2019, the Nonemployer Statistics release was postponed due to limited availability of the source data. Therefore, there are no data available for this complementary data set for the year 2019.

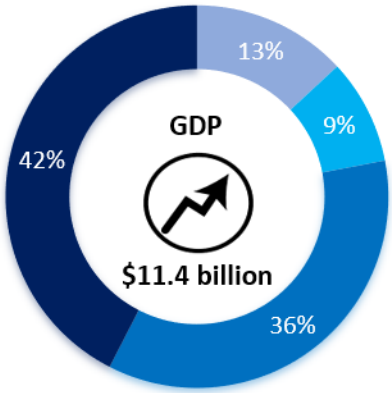
2019 U.S. Marine Economy

Living Resources Sector

Annual Totals

This sector accounted for 2.5 % of total employment and 3.3 % of total GDP in the marine economy.

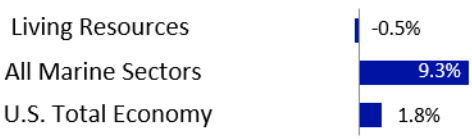




Fishing
Fish Hatcheries and Aquaculture
Seafood Processing
Seafood Markets

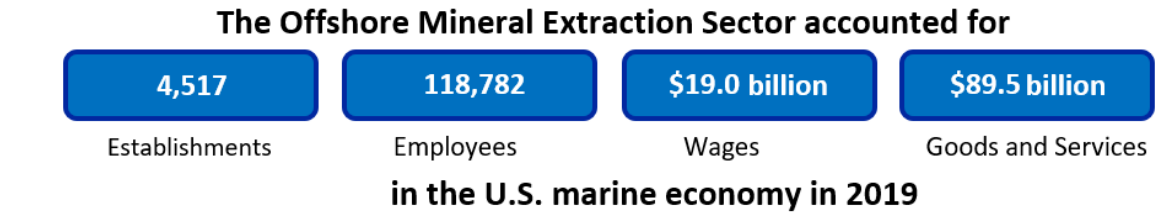
Annual Changes in Employment, 2018-2019

Annual Changes in GDP, 2018-2019



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

Offshore Mineral Extraction



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 2019, offshore mineral extraction accounted for 3.4 percent of the total employment in the marine economy and contributed 25.5 percent of its gross domestic product. Average wages per employee of $159,576 per year in this sector were almost three times the national average, and that number was largely due to the high wages in the oil and gas exploration and production industry. Average wages per employee in the limestone, sand, and gravel industry were about $74,251, also higher than the national average.

Oil and gas exploration and production is the dominant industry in this sector, accounting for 94.6 percent of the employment and 98 percent of the gross domestic product in 2019.

From 2018 to 2019, offshore mineral extraction sector increased by 1.0 percent in employment and increased by 18.9 percent in gross domestic product. 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 57.5 percent of the employment in the nation's offshore mineral extraction sector and 77 percent of its gross domestic product in 2019.

2019 U.S. Marine Economy

Offshore Mineral Extraction Sector

Annual Totals

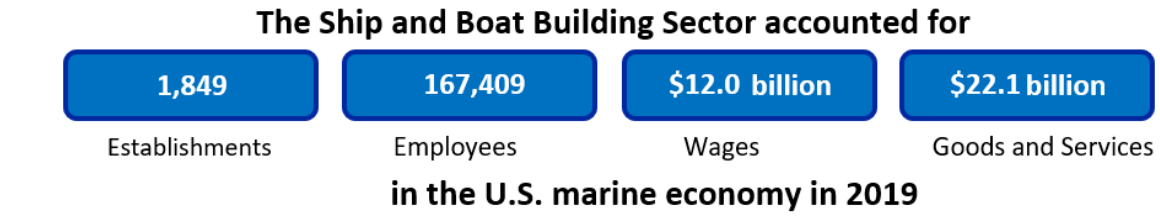
This sector accounted for 3.4 % of total employment and 25.5 % of total GDP in the marine economy.

Annual Changes in Employment, 2018-2019

Annual Changes in GDP, 2018-2019

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

Ship and Boat Building



This sector includes the construction, maintenance, and repair of ships, recreational boats, commercial fishing vessels, ferries, and other marine vessels. An important attribute is the concentration of large shipyards in a few locations around the country. Boat building and repair is spread more evenly around the nation, with concentrations in areas with high levels of commercial fishing and recreational boating. Ship building, ship repairs, and to some extent boat building tend to be concentrated in a few areas around the country. Major shipyards, for example, are absent from most areas' marine economies, but where they are present, they typically employ 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.

In 2019, the ship and boat building sector accounted for 4.8 percent of the employment and 6.3 percent of the gross domestic product in the U.S. marine economy. Average wages per employee, of $71,466, were significantly higher than the national average of $59,209. The ship building, maintenance, and repair component of this sector accounted for about 82 percent of the employment and 81 percent of the its gross domestic product in 2019.

The ship and boat building sector increased by 3.0 percent in employment and increased by 0.4 percent in gross domestic product from 2018 to 2019.

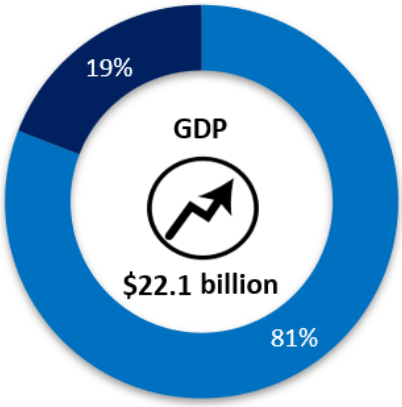
In 2019, Virginia contributed most to employment in this sector, accounting for 24.6 percent of the national total. Washington State was the largest contributor to gross domestic products in this sector, accounting for 19.3 percent of the total. Kitsap County, Washington, was the largest county in the nation's ship and boat building sector; it alone accounted for about 9.3 percent of the employment and 16.5 percent of the gross domestic product in the nation's ship and boat building sector.

2019 U.S. Marine Economy

Ship and Boat Building Sector

Annual Totals

This sector accounted for 4.8 % of total employment and 6.3 % of total GDP in the marine economy.

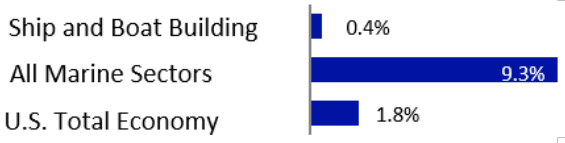


Ship Building and Repair

Boat Building and Repair

Annual Changes in Employment, 2018-2019

Annual Changes in GDP, 2018-2019



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

Tourism and Recreation

This sector has more business establishments and employs more people than all the other five sectors combined. In 2019, it was also the largest sector measured in terms of gross domestic product, accounting for about 42.9 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 93.7 percent of the employment and 92 percent of the gross domestic product in this sector in 2019.

From 2018 to 2019, tourism and recreation gained 31,759 jobs, which was the second largest growth in absolute terms of any marine sector after marine transportation.

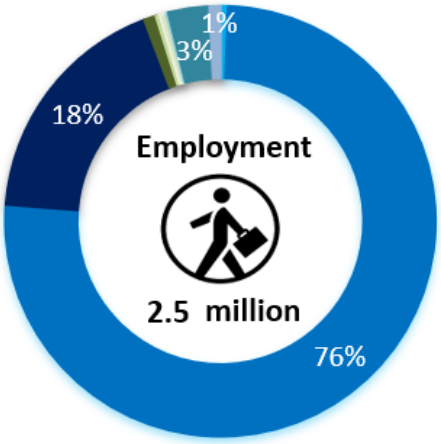
California and Florida are the two largest contributors to this sector, together accounting for more than one-third of the sector’s total employment and gross domestic product in 2019.

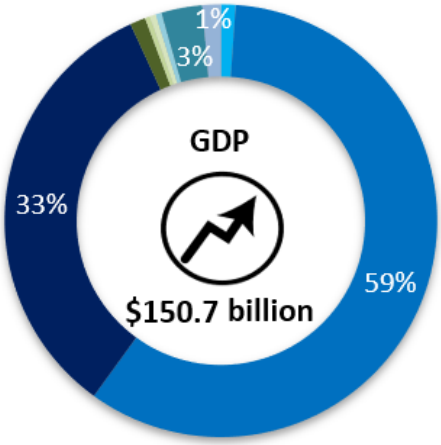
2019 U.S. Marine Economy

Tourism and Recreation Sector

Annual Totals

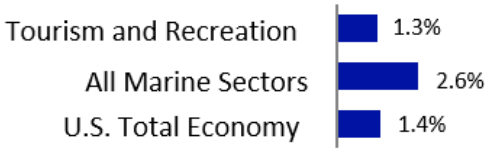
This sector accounted for 71.2 % of total employment and 42.9 % of total GDP in the marine economy.



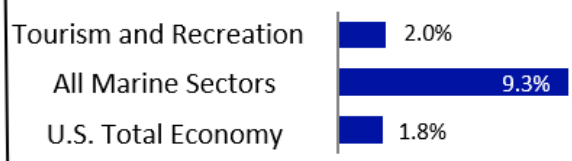


- Boat Dealers
- Hotels and Lodging Places
- RV Parks and Campgrounds
- Sporting Goods Manufacturing
- Zoos and Aquaria
- Eating and Drinking Places
- Marinas
- Scenic Water Tours
- Amusement and Recreation Services

Annual Changes in Employment, 2018-2019

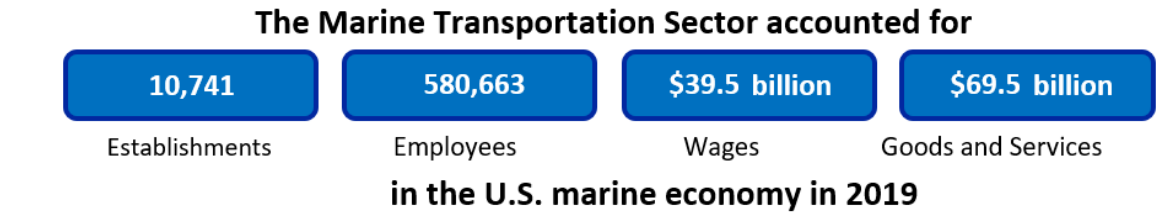


Annual Changes in GDP, 2018-2019



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 16.6 percent of the employment and 19.8 percent of the gross domestic product in the U.S. marine economy. The sector paid one of the highest average wages per employee, $67,968, in 2019.

Warehousing is the largest component of the marine transportation sector in terms of employment, accounting for 57 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, 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 $1.70 trillion of vessel cargo imported and exported in 2019 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 41.9 percent of U.S.-international freight trade as measured by value and 70.9 percent as measured by weight in 2019.[2]

In the marine transportation sector, about 20.5 percent of employment and 25.1 percent of real gross domestic product are supported by California. The rest is distributed across the nation, concentrated around major seaports.

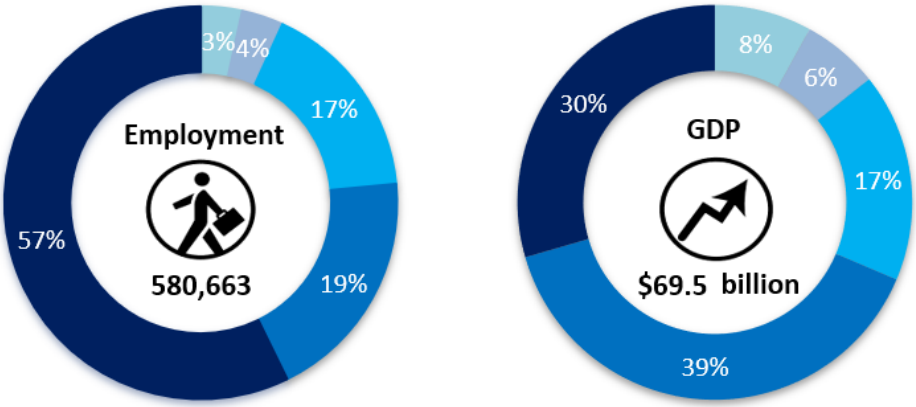
[1] U.S. Department of Transportation Bureau of Transportation Statistics . "Port Performance Freight Statistics: Annual Report to Congress 2020." Accessed at https://rosap.ntl.bts.gov/view/dot/54022.
[2] U.S. International Trade Administration. "Maritime Services Trade Data." Accessed at https://www.trade.gov/maritime-services-trade-data.

2019 U.S. Marine Economy

Marine Transportation Sector

Annual Totals

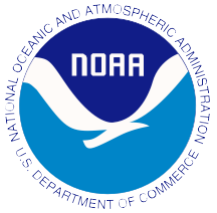
This sector accounted for 16.6 % of total employment and 19.8 % of total GDP in the marine economy.



Annual Changes in Employment, 2018-2019

Annual Changes in GDP, 2018-2019

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



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