Grassroot Institute of Hawaii
POLICY BRIEF, JULY 2020

Quantifying the cost of the Jones Act to Hawaii

GRASSROOT INSTITUTE OF HAWAII
JOHN DUNHAM & ASSOCIATES

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Letter from the President

Keli'i Akina, Ph.D.
President and CEO
Grassroot Institute of Hawaii

Dear friend,

For years, the Grassroot Institute of Hawaii has been at the center of the national debate over Jones Act reform. As a matter of common sense and available evidence, we have always asserted that the protectionist law governing shipping between American ports has been a factor in Hawaii's high cost of living.

Until now, however, no one had ever produced detailed, reliable data to show how much the Jones Act has actually been costing us. With this report, that uncertainty is finally at an end.

Developed in conjunction with a nationally recognized economic research firm, this report represents the first comprehensive effort to catalog the costs of the Jones Act to Hawaii businesses and residents. Not only does it list the costs by industry, it tallies the downstream costs of the act and calculates what they mean for the average Hawaii family.

Thanks to this new research, we now know that local families pay almost $1,800 every year because of the act, including $389 for housing costs, $248 for groceries and restaurants, and $62 for gasoline. Overall, the act costs Hawaii's economy an extra $1.2 billion a year, with side effects including thousands of lost jobs and lower tax revenues for our state and local governments.

It is hard to overstate the significance of this information in the context of the larger national discussion about Jones Act reform. Without access to extensive, peer-reviewed data on the act's costs, we were unable to dispel the fiction that the act has been economically beneficial to our state, or at least had no or only a negligible negative impact.

This report sets the stage for the next phase in the Jones Act debate: honest discussion of the act's pros and cons, in light of its documented economic effects. At last, we will be able to make informed decisions about the utility of the Jones Act in terms of costs, jobs and productive economic activity.

This year, the Jones Act is celebrating its 100th birthday. To put that into perspective, Hawaii in 1920 was still many years away from becoming a state, and TV, personal computers, the internet, space travel, nuclear weaponry and artificial intelligence were still the subject of science fiction. It was even a few years before the first feature film was presented as a "talkie." In short, the Jones Act is a relic from another age, intended to address the trade and national security concerns of a very different America.

It should not be controversial to contend that this antiquated law could be modernized to better suit our current needs. There are many routes to reform, each with their own advocates. For example, the Grassroot Institute has recommended modifying the Jones Act build requirement to allow for the purchase of ships from our friendly trading partners.

Whichever form it takes, Jones Act reform should be a top priority for policymakers in the coming year. Our hope is that this report will provide the foundation for debate, discussion and a real effort to update the Jones Act for the 21st century.

Let's work together to make that happen.

Mahalo and aloha,

Keli'i Akina, Ph.D.
President and CEO
Grassroot Institute of Hawaii

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Acronyms used

JDA – John Dunham & Associates
MARAD – U.S. Maritime Administration
ILWU – International Longshore and Warehouse Union
PIERS – Port Import/Export Reporting Service
CIF – Cost of the goods (C), the insurance paid (I), and the freight paid (F)
HTS – Harmonized Tariff Schedule of the United States
FAK – Freight all kinds
BEA – U.S. Bureau of Economic Analysis
THC – Terminal handling charge
FEU – 40-foot-equivalent unit
ITC – U.S. International Trade Commission
BLS – U.S. Bureau of Labor Statistics
BTS – U.S. Bureau of Transportation Statistics
MPC – Marginal propensity to consume
GRT – Gross registered tonnage
LNG – Liquefied natural gas
FTE – Full time equivalent

Executive summary

The Jones Act is now celebrating its centenary. Known legally as Section 27 of the Merchant Marine Act of 1920, this federal maritime act has limited the shipment of goods between American ports for 100 years, including between Hawaii and the continental United States. It does this by requiring those goods to be carried on ships that are built and flagged in the U.S., and 75% owned and crewed by Americans.

When this explicitly protectionist law was enacted, the world was very different. Economic, cultural and sociopolitical changes over the past 100 years have prompted questions about the act's continued usefulness. But to thoroughly assess the impact of the Jones Act, we must know what it costs, not to just consumers, but also in terms of jobs, businesses and government tax revenues.

Hawaii is the perfect laboratory to examine the costs of the Jones Act, since marine commerce accounts for about 97% of Hawaii's trade by weight with the rest of the United States. This study examines the impact of the Jones Act on Hawaii using a model of international shipping costs for 260 different commodities. It then compares these costs with five different estimates of U.S.-flag shipping cost differentials. The results show that no matter which model is used, it is more expensive to import goods on Jones Act carriers than foreign-flagged vessels.

No one disputes that the Jones Act adds to the cost of living in Hawaii. Now we are able to quantify that cost:

- After running five different scenarios, the median annual cost of the Jones Act to the Hawaii economy is $1.2 billion.
- Under these scenarios, the annual cost of shipping to Hawaii is estimated to be $654 million higher and prices $916 million higher.
- The Jones Act annually costs each Hawaii resident more than $645.
- Thanks to the Jones Act, Hawaii has approximately 9,100 fewer jobs, representing $404 million in wages.

- Hawaii families across all income groups would benefit from Jones Act reform. In the absence of Jones Act restrictions, those making between $15,000 and $70,000 annually would see an annual across-the-board economic benefit ranging from $78 million to $154 million.

- Annual tax revenues would be $148.2 million higher.

- Focusing solely on the Jones Act requirement that vessels be built in the United States, we find that the build provision results in a 1.2% shipping cost increase for Hawaii. This translates annually to an added cost of $531.7 million to the state's economy, or about $296 per resident. It also means a loss of 3,860 jobs, and $30.8 million less in state and local tax revenues.

Because of the way that the Jones Act moves through the economy, raising the price of everything from cereal to air conditioning, the average Hawaii resident ends up paying for this protectionist legislation in a multitude of ways:

- Cars sold each year in Hawaii cost between $4.3 million and $9.7 million more.

- For gasoline, consumers pay between $19.1 million and $55.2 million more a year, and even car repair services are as much as $12.7 million more a year because of the added shipping costs. In total, it costs between $24.9 million and $63.2 million more a year for Hawaii's drivers to own and operate their cars because of Jones Act restrictions.

- Everything from housing and food to insurance and medical services costs more. We calculate that the Jones Act adds a dollar to the average family's housing costs, 40 cents to their food bills and 14 cents to their electricity bills, every single day.

- All told, the average Hawaii family spends $5 every day to support the Jones Act.

The Jones Act can be especially expensive for certain local industries:

- Its biggest effect is on the business and personal-services sectors of the economy, with $369.8 million in reduced output annually and about 4,100 fewer jobs.

- Currently it adds between $54.4 million and $255.9 million annually to the cost of real estate and construction services in Hawaii. This leads to the loss of between 230 and 785 jobs in these sectors of the economy.

- Costs for Hawaii's retail stores each year are about $54.3 million higher. Even national discount stores like Walmart and Target have to charge about $11.2 million more. The lost sales resulting from these higher prices lead to nearly 625 fewer retail jobs, including about 105 at these discount stores.

In light of the significant costs of the Jones Act, it is time for Hawaii's policymakers to reexamine its utility and consider whether it's time to update this archaic law for the 21st century.

After a century of protectionism, it is clear that the Jones Act has become a burden on Hawaii's consumers, businesses and economy. In lieu of repealing the entire act, modification of its U.S.-build requirement would be a good first step toward easing its impact on Hawaii and other parts of the United States that suffer from the Jones Act's restrictive cabotage provisions.

Introduction

This paper examines the consequences of the Jones Act on Hawaii, a place almost wholly dependent on waterborne trade for its economic survival.

The Jones Act was enacted into law 100 years ago as Section 27 of the U.S. Merchant Marine Act of 1920.[1]

The stated purpose of the Merchant Marine Act was to ensure a substantial maritime industry for national defense and promote the nation's foreign and domestic commerce. The act states:

> "It is necessary for the national defense and for the proper growth of its foreign and domestic commerce that the United States have a merchant marine of the best equipped and most suitable types of vessels sufficient to carry the greater portion of its commerce and serve as a naval or military auxiliary in time of war or national emergency, ultimately to be owned and operated privately by citizens of the United States."[2]

Section 27 was named after its sponsor, U.S. Sen. Wesley Jones, from Washington state. It requires that all goods transported by water between U.S. ports be carried on U.S.-flagged ships that are built in the United States and 75% owned and crewed by U.S. citizens.[3]

These kinds of requirements are known as cabotage laws and are fairly common around the world.[4] However, the Jones Act is stricter than most, and over the course of the past century has done little to develop or maintain a vibrant merchant marine "of the best equipped and most suitable types of vessels sufficient to carry the greater portion of its commerce." According to the U.S. Maritime Administration (MARAD), there were only 185 U.S.-flagged merchant vessels operating in the oceans in 2019, down from 282 in 2000 and 2,809 in 1920,[5] the year the law was enacted. During this same period, the capacity of these ships was down by a third.[6]

Congress has loosened the cabotage laws slightly over time. In 1936, the U.S. Virgin Islands were exempted from the Jones Act. American Samoa was exempted in 1934, as were the Northern Mariana Islands in 1976. Guam was partially exempted from the act in 2006, when a limited number of foreign-built ships were allowed to serve the island from U.S. territories.[7]

Other limited exemptions have been enacted over the years. For example, in 1947 Canadian-flagged vessels were allowed to perform intercoastal service to the town of Hyder, Alaska.[8] Waivers also have been granted for specific individual shipments of cargo or in times of national emergency, such as after a hurricane,[9] though these latter types of waivers typically lasted for only brief periods of time, depending on the nature of the emergencies. Only 10 waivers have been approved so far this century. Of those, four were related to hurricanes, two were for transportation of heavy-lift cargo for which no capable U.S.-flagged vessels existed, and two were military related: one for the Deepwater Horizon oil-spill disaster, the other for an emergency fuel delivery to Nome, Alaska, by a Russian ice-class tanker.[10]

Except for occasional exemptions, the Jones Act continues to limit the shipping of products throughout the United States.

Except for occasional exemptions, the Jones Act continues to limit the shipping of products throughout the United States. This has led to a number of both predictable and unintended consequences.

Predictably, it has led to an increase in consumer prices nationwide, especially in locations dependent on waterborne trade, such as Puerto Rico and Hawaii. As for unintended consequences, rather than achieving any of the goals set forth for it in 1920, the act has not corresponded with the development of the merchant marine and shipbuilding in the United States. Instead, it has reduced both foreign and domestic waterborne coastwise trade and harmed the environment.

The Jones Act and its economic costs to Hawaii

Because Hawaii is a remote island archipelago, the only way that it can receive bulk shipments from the continental United States is via marine commerce.[11] As shown in Table 1, marine commerce in 2017 accounted for 97% of Hawaii's trade by weight with the rest of the United States.[12]

Detailed statistics on domestic shipments to and from Hawaii are limited; however, the U.S. Army Corps of Engineers does provide some limited data on interstate trade, as seen in Table 2,[13] and according to its data from 2018, Hawaii received a total of 23,405,752 tons of maritime cargo. Of this, 5,241,902 tons originated in U.S. ports and were carried by Jones Act vessels. This represented 39.9% of all Hawaii imports. In addition, about 10,266,407 tons of cargo were shipped by American-flagged carriers on interisland routes.

Table 1: Hawaii cargo volumes, by mode (short tons), 2017

	Imports	Exports	Total	Percent
Maritime	3,152,962	1,141,626	4,294,588	97.0%
Air	98,066	32,754	130,820	3.0%
Total	3,251,028	1,174,380	4,425,408	100.0%

This demonstrates the dependency of Hawaii on trade with foreign countries compared with the mainland. Overall, 58.5% of the cargo volume brought into Hawaii by water consists of bulk cargos arriving on foreign-flagged vessels originating outside of the United States. However, almost 80% of the state's imports from foreign countries consist of fuels and petroleum products that could have come from the mainland U.S., if appropriate tankers had been available. If these shipments were instead to come from the U.S. mainland, the United States would account

Table 2: Hawaii waterborne import volumes, by origin (2018)

State	Volume	Percent
Alaska	1,080,892	8.23%
California	3,357,780	25.56%
Oregon	131,027	1.00%
Washington	672,203	5.12%
U.S. Territories	4,618	0.04%
Foreign	7,892,825	60.07%
Total	13,139,345	100.00%

for 87% of the waterborne cargo shipments to the islands.[14] This means that in terms of overall freight volume, foreign ports dominate due in large part to the lack of Jones Act-eligible bulk-cargo vessels.

According to MARAD, there are only 185 ocean-going ships flying the U.S. flag and just 99 of those are Jones Act-eligible, able to serve the entire U.S. coastwise trade or trade between the mainland and Alaska, Hawaii and Puerto Rico. Of these, there are only two small dry-bulk carriers, and nine general-cargo vessels, as shown in Table 3.[15] Nearly 80% of Jones Act-eligible vessel tonnage consists of tankers, about a third of which exclusively carry oil from Alaska to mainland ports.

Hawaii, in other words, has only a limited number of vessels available to carry cargo to and from the state, and currently Hawaii shippers and consignees have access to only two carriers that provide general-cargo service from the U.S. mainland. Moreover, the islands are served regularly from only four U.S. mainland ports: San Diego, Los Angeles, Oakland and Seattle.[16] This means that all cargo shipped to Hawaii from the U.S. mainland must first travel by rail or truck from its point of origin to one of these shipping ports.

Table 3: Ships available to serve domestic Jones Act-controlled market

Type	Number	DWT
Containership	24	781,141
Dry Bulk	2	73,658
General Cargo	9	15,602
Ro-Ro	7	139,288
Tanker	57	3,862,748
Total	99	4,872,437

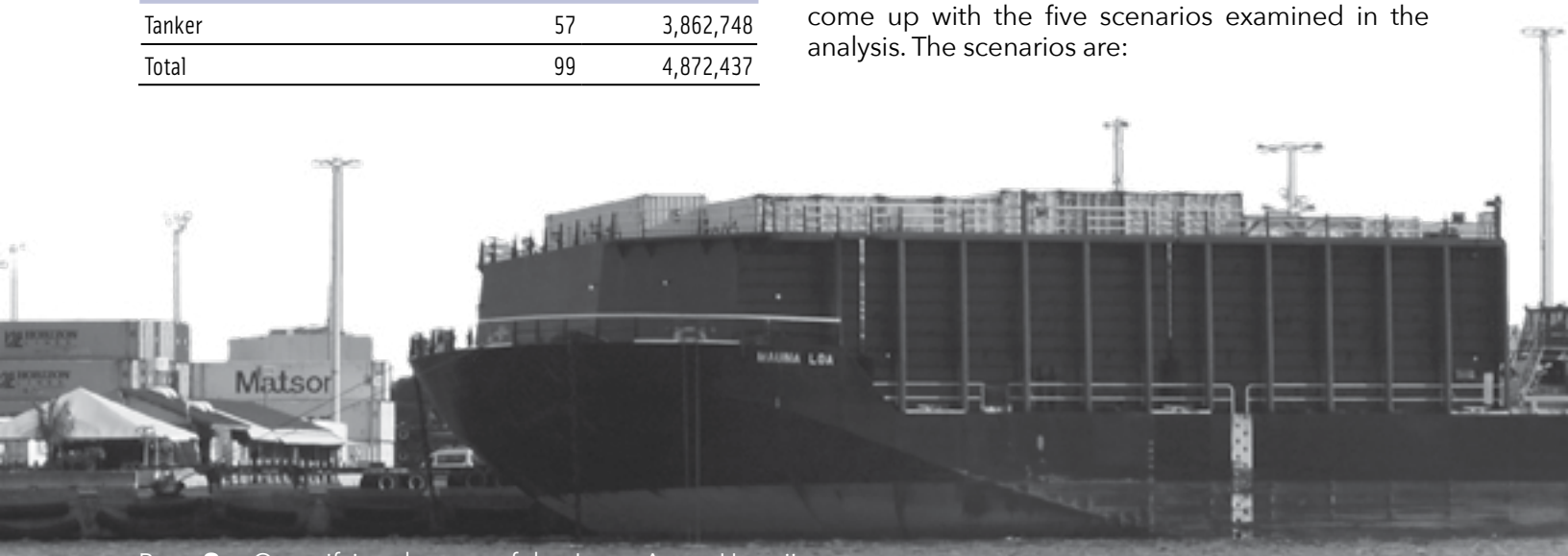
Since all four ports, as well as ports in Hawaii itself, are manned by workers from the International Longshore and Warehouse Union, businesses in Hawaii are at risk whenever there are work stoppages or slowdowns. Mainland ports, on the other hand, are manned by multiple unions in addition to the ILWU, such as the International Longshoremen's Association and the Teamsters, as well as by nonunion workers.

Models used in this analysis

This analysis examines the price and economic effects of the Jones Act on Hawaii based on a number of different models developed by John Dunham & Associates, using publicly available data from either government sources or subscription data providers. These models include:

- A standardized model of international shipping rates that was developed using data from the U.S. Department of Commerce and the Port Import/Export Reporting Service (PIERS) maintained by IHS Markit.
- A model of production in Hawaii that uses data from the U.S. Bureau of Economic Analysis and the economic-impact assessment software system known as IMPLAN to show the flow of changes in shipping costs throughout the Hawaii economy.
- The IMPLAN input/output model that is used to determine the impact of the higher freight costs on the economy of Hawaii.

Additional models described below are used to come up with the five scenarios examined in the analysis. The scenarios are:



- Scenario 1: Analysis based on modeled shipping costs.
- Scenario 2: Model based on a meta-analysis of differential operating costs.
- Scenario 3: Model based on analysis of differential shipbuilding costs.
- Scenario 4: Model based on earlier analysis of price effects in Hawaii.
- Scenario 5: Analysis based on shipping cost model and dynamic economic effects.

Each model is discussed in detail either below or in the sections related to each scenario.

I. Model of international shipping rates

Average international freight rates for products coming from the continental United States to Hawaii are not generally available in a ready-to-use form, but they can be calculated from publicly available and subscription data. The U.S. Department of Commerce keeps consolidated statistics on international trade to and from the Honolulu Customs District. In addition, PIERS provides detailed data by shipment and consignee from international ports to Hawaii, including the number of containers shipped, tonnage and value of the cargo.[17] These data can be used to determine the shipping method, such as containerized or bulk, for cargo in this trade.

Data from the U.S. Census Bureau provides information on total shipments to Hawaii from foreign ports. Foreign import data for the Honolulu customs district for the year 2017 was gathered from the USA Trade database, which is maintained by the bureau.[18] This database provides detailed data on the "CIF" value of cargo imported into Hawaii by "HTS" code and country of origin.

The term CIF means the cost of the goods (C), the insurance paid (I) and the freight paid (F). HTS refers to the Harmonized Tariff Schedule of the United States.

The average insurance rate for FAK, or freight of all kinds, is about 87 cents per $100.[19] Removing insurance from the CIF value provides an estimate of cost of the goods plus freight value.

The USA Trade database also provides the manifest value of the cargo – the C in CIF – and the difference between this value and the "cost plus freight" (CFR)[20] value provides an estimate of the average international freight cost per dollar of cargo; in effect, a percentage freight cost for each type of cargo on each trade route.

These data are averaged across countries and the commodities in the census data are aggregated into 212 separate IMPLAN industry categories based on a bridge between the four-digit HTS code, the North American Industry Classification System codes and the IMPLAN codes.

The 212 categories represent the industry associated with each type of cargo. For example, crude oil is associated with petroleum drilling and production, while T-shirts are associated with apparel production.

The use of IMPLAN codes provides a disaggregated and standardized way to code data from a range of sources, and also serves to assist in determining economic impacts from the differential costs. Only 212 of the 536 IMPLAN categories are utilized because the remainder represent either nonimport industries, such as government, or they represent industries where no products are imported into Hawaii, such as lime manufacturing. For these product categories, an international freight rate equal to the weighted average of the available data was utilized.

Inland U.S. freight costs are not included in this analysis as it is impossible to determine the origin of Hawaii-bound cargo with existing data. In order to calculate differences in final retail prices, inland transportation costs in Hawaii are included in the analysis through the use of transportation margins available from the BEA.[21]

Rates differ depending on whether products are shipped on containerships or bulk, break-bulk or RORO (roll-on roll off) vessels. The PIERS data provide detailed information on every international shipment, including the form of the cargo and even the vessels they are carried on. The ratio of containerized cargo to other shipment types from these international shipments is applied to the domestic shipments to provide a containerized/noncontainerized (generally bulk break) share, for each commodity type.[22]

Based on these data, international freight rates average about 3.8% of the value of the cargo shipped. The calculated rates range from virtually zero to as high as 151.2% of the value of the cargo, depending on the specific commodity-country pairing. The highest rate was estimated for 438 tons of cargo classified as "Miscellaneous nonmetallic mineral products manufacturing." Table 35 in the Appendix presents data on the estimated international freight rate by IMPLAN category.[23]

II. The Hawaii economy production model

In this analysis, differential shipping costs are calculated under each of the five scenarios.

Applying these differentials to all of the waterborne freight imported into Hawaii provides an estimated increase in shipping costs.

This figure represents solely the additional ocean freight charges. These charges are then passed through to truckers, wholesalers, manufacturers and service providers in Hawaii, increasing their cost of doing business. Using wholesale markups from the U.S. Department of Commerce, the additional costs for warehousing and inland transportation in Hawaii are applied to each of the 212 industry/product breaks.[24]

Wholesalers ship either to manufacturers and service providers or to retailers. Imported consumer products such as canned foods, apparel, toys and automobiles are assumed to go from wholesaling to retail, while industrial goods such as steel, cement or crude oil are assumed to go through a manufacturing process before going on to wholesale and retail.

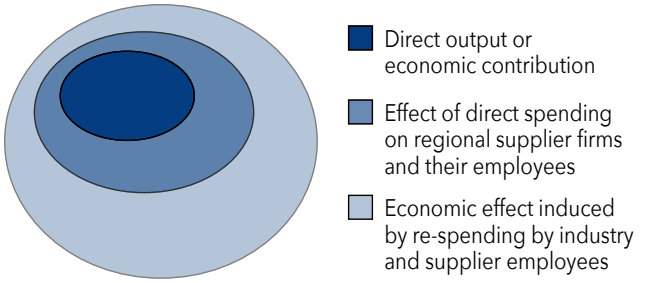
The IMPLAN "make tables" are used to generate the flows for each product group through the manufacturing process.[25] Then the wholesale and retail margins from the BEA are used to calculate the overall additional retailing cost to residents or businesses in Hawaii.

III. The input-output model and IMPLAN database

The higher costs brought on by the higher shipping rates due to the restrictions imposed by the Jones Act lead to significant negative effects on the Hawaii economy. These can be estimated through the use of an input-output model.

Economic activities are linked to other parts of the economy. Regional or indirect impacts occur when these activities require purchases of goods and services. Additional induced impacts occur when workers involved in direct and indirect activities spend their wages in the region. The ratio between total economic and direct impacts is termed the mul-

Figure 1: Economic impact model



tiplier. The framework in Figure 1 details this process.

While there are many ways to model the effect of changes in regulations on an economy, in this case the input/output framework is preferable because changes in shipping costs differ between individual products and industries. In effect, this analysis is a roll-up of 212 microeconomic models. Input/output models allow for an examination of how prices across all industries in Hawaii can be affected by changes in the cost of each of their material inputs. Other forms of analysis, such as general or partial equilibrium models, are based on macroeconomic functions rather than individual markets.

While this model allows the impact of local production activities to be quantified in terms of final demand, earnings and employment, like any model it is limited by its assumptions. In this case, the controlling assumption is that production functions are fixed. This means that changes in relative prices due to lower shipping costs would not affect the way goods and services are produced in Hawaii. For example, if a manufacturer requires 1 yard of cloth to produce a shirt under the limitations imposed by the Jones Act, that same manufacture would still require 1 yard of cloth if the shipping market were to be opened.

The model also assumes that changes in the cabotage laws would not change the local purchase percentages of goods and services. If a roaster in Hawaii purchases locally produced coffee now, they would continue to do so after reform of the Jones Act.

Another important assumption is that changes in demand for ocean freight services would not lead to additional pricing effects. Essentially the model assumes that sufficient capacity exists in an open market to serve Hawaii without demand effects on pricing.

Finally, the models assume that cost savings are contained in the Hawaii economy and would accrue to local consumers, workers and businesses owners.

Once the initial direct cost figures have been established, they are entered into a model linked to the IMPLAN database. The IMPLAN data are used to generate estimates of direct wages and output in each sector of the economy. The IMPLAN data and model closely follow the conventions used in the "Input-Output Study of the U.S. Economy," which was developed by the BEA.[26]

Data from the U.S. Department of Labor's ES-202 reports are used to provide annual average wage and salary establishment counts, employment counts and payrolls at the county level. Since this data covers only payroll employees, it is modified to add information on independent workers, agricultural employees, construction employees and certain government employees. Data are then adjusted to account for counties where nondisclosure rules apply. Wage data include not only cash wages but also health and life insurance payments, retirement payments and other noncash compensation. They include all income paid to workers by employers.

Total output is the value of production by industry in a given jurisdiction. It is estimated by IMPLAN from sources similar to those used by the BEA in its Regional Input/Output Modeling System series, or RIMS II.[27] Where no census or government surveys are available, IMPLAN uses models such as the U.S. Bureau of Labor Statistics' growth model[28] to estimate the missing output. The IMPLAN model includes information on income received by the federal, state and local governments.

At the federal level, it produces revenue estimates for corporate income, payroll, personal income, estate, gift and excise taxes, plus customs duties, fines, fees, etc.

State and local government revenue estimates include corporate profit, property, sales, severance, estate, gift and personal income taxes, plus licenses, fees and certain payroll taxes.

The IMPLAN "make matrix" represents the production of commodities by

Restrictions imposed by the Jones Act lead to significant negative effects on the Hawaii economy.

industry. The BEA benchmark input/output study of the U.S. "make table" forms the basis of the IMPLAN model. The benchmark make table is updated to current-year prices and rearranged into the IMPLAN sector format. The IMPLAN "use matrix" is based on estimates of final demand, value added by sector and total industry, and commodity output data as provided by government statistics or estimated by IMPLAN. The BEA benchmark "use table" is then bridged to the IMPLAN sectors. Once the re-sectoring is complete, the use tables can be updated based on the other data and model calculations of interstate and international trade.

In the IMPLAN model, as with any input-output framework, all expenditures are in terms of producer prices. This allocates all expenditures to the industries that produce goods and services. As a result, all data not received in producer prices is converted using margins derived from the BEA input-output model. Margins represent the difference between producer and consumer prices. As such, the sum of the margins for any good add up to 1. If, for example, 10% of the consumer price of a car is from the purchase of electricity, then the electricity margin would be 0.1.

Deflators account for relative price changes during different time periods and are derived from the BLS' growth model. The 224-sector BLS model is mapped to the 536 sectors of the IMPLAN model. Where data are missing, deflators from BEA's survey of current businesses are used.

Finally, the regional purchase coefficients – one of the most important parts of the IMPLAN model – must be calculated. The IMPLAN model is based on a national model that represents the "average" condition for a particular industry. Since national production functions do not necessarily represent particular regional differences, adjustments need to be made. These are called regional purchase coefficients. Regional trade flows are estimated based on multiregional input-output accounts, a cross-sectional database with consistent cross-interstate trade flows first developed in 1977. These data are updated and bridged to the 536 sector IMPLAN model.

The Hawaii IMPLAN model for 2016 is used to calculate the impact of the Jones Act on the state's economy in each of the examples. The figures in the following analyses are updated to reflect 2019 dollars.

Model scenarios

Over the past 50 years, scholars and government agencies have tried to calculate shipping rates for cargo moving to and from Hawaii. This might seem like a straightforward task, but it is actually a difficult exercise, since little is known about the shipping costs charged to companies transporting products to and from the state.

The carriers in this trade are not required to publish their shipping contracts, and published tariffs cover very few shipments. Freight forwarders also are reluctant to share any figures.

There is a significant amount of research on the effect of the Jones Act on shipping rates. Some base costs on the differential cost of operation between U.S.-flagged and international vessels; others examine survey data or limited published prices. Published tariffs can be examined to determine cost differentials, as well as public sources that report on generalized shipping costs. But none of these provide exact information, so this analysis examines four different scenarios, each based on different cost differential estimates, to present a multifaceted view of the act's impact on Hawaii's shipping rates. Cost differentials are equal to the percentage changes in shipping costs that would result if the Jones Act were reformed, i.e., shifting from Jones Act-related rates to an open-market rate.[29]

In addition, a dynamic model of Hawaii's economy is examined to determine how the reduction in costs would lead to new economic activity in Hawaii.

Scenario 1: Modeled shipping rates

General shipping rates are published by a number of online reference sources. One such source is World Freight Rates, an online shipping-rate calculator established by Paradigm Freight Holdings, Inc.[30] The data in this calculator is not completely up to date, but percentage comparisons should be reasonable since they likely reflect 2017 rates. There are other online data sources, but none has as many port-to-port rates as World Freight Rates.

Two shipments were compared based on data gathered from World Freight Rates data. The first was for a 40-foot container of household goods, essentially an FAK shipment valued at $10,000. No

insurance was added to the shipping costs, meaning that it was a CFR rate. As a proxy for bulk shipments, rates for 1,000 metric tons of timber valued at $100,000 were collected.

Shipment rates were gathered for each for port-to-port pair shown in Table 4.[31] Ports selected included some of the largest international ports, such as Sydney and Busan, Vancouver and Ensenada, and three of the major ports where domestic cargo to Hawaii originates. The mileage figures between ports are expressed in nautical miles (1,852 meters per mile).

Shipping cargo involves a number of processes, some of which are in the control of the shipping lines and some that are not. For example, the cost of loading cargo onto a ship would be based on the exporting port's tariff rates, while the cost of unloading cargo would be based on the rates in Honolulu. These port charges, as well as charges for dockage, stacking and moving containers or other freight, storage, etc., would generally be included in the freight rate charged by the steamship line or carrier.

It is important to note that since carriers do not report the actual rates charged for most shipments, there are no actual data available that break out these terminal handling charges (THC) based on shipment types or ports. Even information reported on individual bills of lading, which are used to calculate the total value of cargo shipped for customs purposes, do not necessarily break out THCs from other shipping charges. In addition, THCs may vary substantially depending on the time of year or type of shipment.

Table 4: Port pairs used

Origin	Destination	Container	Bulk	Distance
Foreign Ports				
Osaka	Honolulu	x	x	3,659
Busan	Honolulu	x	x	4,114
Hong Kong	Honolulu	x	x	4,837
Sydney	Honolulu	x	x	4,427
Vancouver B.C.	Honolulu	x	x	2,419
Ensenada Mex	Honolulu	x	x	2,292
Domestic Ports				
Los Angeles	Honolulu	x	x	2,231
Oakland	Honolulu	x	x	2,095
Seattle	Honolulu	x	x	2,403

Other fixed costs that do not vary by distance are also included in the rates charged by carriers. These may include heavy-lift, demurrage and delay charges, and bunker surcharges based on fuel costs. The expenses can be incurred on either end of a shipping transaction, at the point of export or import, but they generally are a fixed charge applied to a container or ton of cargo.

Since no actual data are available, there are many ways that these fixed costs per container might be calculated. Mathematically solving for the fixed costs based on the overall shipping rates from Paradigm Freight Holdings and the mileage between ports suggests a THC of about $520 per 40-foot-equivalent (FEU) container. This compares with a similar calculation for shipments to San Juan, Puerto Rico, from U.S. ports on the East Coast of just under $800.[32]

In a 2018 report produced by Reeve & Associates and Estudios Tecnicos Inc. for the American Maritime Partnership, the THC between the U.S. and ports in Puerto Rico was stated to be $350 per FEU.[33] In a 2002 study, the U.S. International Trade Commission reported a daily cost per 1,000 FEU ship of $82,550 for port handling charges.[34] This equals $82.55 per FEU per day.

According to one of the major U.S. Hawaii carriers, the transit time between Los Angeles and Honolulu is about five days, so the total would be $412.75 per container per trip.[35] Since these figures were calculated in 2002, using data from 1999, they need to be adjusted to 2019 dollars. Using the BLS urban consumer price index (CPI-U) adjusted for inflation, the total comes to about $619 in fixed costs per FEU.[36] On the higher end, a 1982 report conducted for Alaska found that the fixed costs per container were as high as $1,117 in today's dollars.[37] Table 5 shows the different estimates for these fixed costs from these various sources.

The arithmetic average of these rates is $680, so the closest estimate to the average is the calculation

Table 5: Fixed-cost estimates

Source	Rate per FEU
JD&A from freight rates	$520.00
JD&A Puerto Rico	$795.00
Reeve Puerto Rico	$350.00
U.S. ITC calculation	$618.00
Alaska report	$1,117.00

based on the ITC report. This is also a documented government source, so it will be used in this analysis, meaning that no matter what port the cargo is shipped from, there will be a $619 charge plus whatever the line charges. This may differ from what shipping lines report on their bills of lading for cargo, but does standardize rates across different distances from Honolulu. With this controlled for, the data from world freight rates and the transit distance between each of the ports and Honolulu is used to calculate the cost per nautical mile charged by the shipping lines.

Hawaii has only a limited number of vessels available to carry cargo to and from the state.

Comparing the average per-mile rate from the selected international ports with the U.S. ports provides the estimated cost difference between shipping using a Jones Act carrier versus an international vessel. In this case the differential is just under 20.5%, after controlling for mileage and weight.

It is not possible to calculate fixed costs for bulk freight shipments directly since there are so many kinds of cargo included in this category – everything from large project cargo shipments to tankers and colliers. The container-shipment differential was therefore used to calculate the differential for bulk shipments. In this case, the container fixed cost per ton, assuming an average container weight of 23.8 tons, was calculated and then multiplied by the estimated tonnage being carried on the bulk carrier. This gives an estimated fixed cost of 4 cents per ton mile for international vessels and 7 cents per ton mile for Jones Act vessels – a 67.3% price differential.

As shown in Table 6, applying these differentials to all of the waterborne freight imported into Hawaii in 2017 gives an estimated increase in shipping costs of $654 million, representing a 1.6% increase over the actual cost of containerized cargo and a 3.3% increase over the cost of bulk cargo. This figure represents only the additional ocean freight charges. These freight charges are then passed through to truckers, wholesalers, manufacturers and service providers in Hawaii, increasing their cost of doing business. Using wholesale markups from the U.S. Department of Commerce, the additional cost for warehousing and inland transportation in Hawaii each year would be $25.5 million and for wholesalers $112.2 million.[38]

Wholesalers ship either to manufacturers and service providers or to retailers. Imported consumer products like canned foods, apparel, toys and automobiles are assumed to go from wholesale to retail, while other industrial goods such as steel, cement or crude oil are assumed to go through a manufacturing process before going on to wholesale and retail. For products sent directly to retail, applying the BEA retail margins suggests that the additional cost to residents or businesses in Hawaii each year is another $124.3 million, for a total increase in costs of $915.9 billion – a 2.5% cost increase overall.

For imports going through a manufacturing process, coefficients from the IMPLAN make tables showing component inputs for each manufacturing industry are used to calculate the overall additional cost to Hawaii businesses and residents, based on the cost differentials between Jones Act carriers and foreign-flagged ships.[39] Running the imports through the models at either the inland or wholesaling level leads to additional business costs as products like oil or steel work their way through manufacturing processes in the islands. As shown in Table 7, the additional annual costs to businesses and consumers in Hawaii exceed $1.3 billion or nearly $924 per resident. Nearly 62% of these costs fall on the state's manufacturing sector or on consumer and business purchases of manufactured goods.

Higher costs generally lead to reduced economic activity. In fact, there is nearly a dollar loss in the overall economy of Hawaii for each additional dollar spent on higher transportation costs.

Table 6: Excess costs to Hawaii due to Jones Act – modeled shipping rates

Estimated additional Cargo type	Water transportation	Land transportation	Wholesale	Retail	Total	Pct changed
Container	$362,929,321	$18,993,109	$82,132,436	$53,036,361	$517,091,226	2.1%
Bulk	$291,031,872	$6,488,533	$30,079,755	$71,225,415	$398,825,575	4.4%
Total	$653,961,193	$25,481,642	$112,212,191	$124,261,776	$915,916,801	2.5%

Based on these increased costs estimated across each of the 212 industry sectors operating in Hawaii, the overall economic impact of the Jones Act under these assumptions is more than $1.2 billion.[40] As a result of these higher costs, about 9,100 fewer jobs are supported in the state, and local tax revenues are as much as $64.5 million lower, as seen in tables 8 and 9.

The largest economic impact of the Jones Act falls on the business and personal services sector of the economy, with $369.8 million in reduced output and about 4,100 fewer jobs than there would be if the Jones Act provisions were eliminated. The manufacturing, real estate and tourism sectors have also been significantly affected.[41]

More details on the economic impact for specific sectors of the economy are presented later in this report.

Scenario 2: Operating cost studies

There have been dozens of studies prepared by government agencies, academics and other interested parties examining the cost of shipping products under the Jones Act. Nearly all of these studies suggest, as economic theory would assert, that costs for shipping under a cabotage system would be higher than prevailing rates.

There is a sizable amount of cross-referencing between the studies, but there are few independent assertions about the cost differentials for bulk cargo and containerized cargo.[42] This analysis does not examine and critique each of these earlier models, but rather uses the results from them as presented.

The 1982 study by Simat, Hellieson & Eichner prepared for the Alaska Statehood Commission presented detailed information on shipping costs for both containerized and bulk cargo to and from

Table 7: Additional cost impact, by sector – modeled shipping rates

Sector	Shipping	Inland	Wholesale	Retail	Total
Agriculture	$40,907,595	$527,514	$2,765,578	$5,057,955	$49,258,642
Business and Personal Services	$184,893,027	$6,307,053	$20,031,892	$1,552,097	$212,784,070
Construction	$16,036,183	$1,416,197	$1,955,360	$1,250,151	$20,657,891
Finance, Insurance and Real Estate	$4,878,700	$184,237	$470,571	$129,810	$5,663,317
Government	$211,926	$34,828	$28,587	$36,574	$311,915
Manufacturing	$615,202,085	$25,768,123	$78,402,251	$93,078,879	$812,451,338
Mining	$33,153,318	$958,676	$1,083,703	$14,501,810	$49,697,507
Retailing	$59,556,926	$459,928	$1,604,045	$6,337,173	$67,958,072
Transportation and Communication	$53,087,056	$2,188,554	$3,485,068	$1,594,714	$60,355,391
Travel and Entertainment	$24,559,204	$988,134	$5,203,262	$367,719	$31,118,320
Wholesaling	$218,724	$7,357	$31,773	$20,194	$278,048
Other	$864,201	$187,149	$53,845	$662,726	$1,767,921
Total	$1,033,568,945	$39,027,750	$115,115,935	$124,589,802	$1,312,302,432

Table 8: Economic losses to Hawaii due to Jones Act – modeled shipping rates

	Direct	Supplier	Induced	Total
Jobs	5,620	1,870	1,620	9,100
Wages	$235,457,360	$92,013,930	$76,484,690	$403,955,980
Economic output	$698,136,620	$286,293,630	$240,186,720	$1,224,616,980

	Federal	State and local	Total
Taxes	$83,698,444	$64,516,967	$148,215,411

Alaska.[43] The ITC and MARAD also have used operating costs as a proxy for determining shipping costs.[44]

Other reports also have examined vessel operating costs and have used these as a proxy for freight rates.[45] Still others simply repeat the information in the reports cited above.

Since little data on actual shipping costs is available, operating costs are one reasonable proxy to use in a comparative analysis. However, in a captive market like maritime transportation between Hawaii and mainland ports, carrier costs may not track closely with revenues. In this case, the two main shipping lines moving general cargo between the U.S. mainland and Hawaii have the opportunity to charge higher-than-average fees – what economists would call an economic rent – simply because lower-cost carriers are not able to compete and offer lower prices. This means that differential operating costs

Table 9: Economic losses to Hawaii due to Jones Act, by sector – modeled shipping rates

Sector	Jobs	Wages	Output
Agriculture	434	$8,246,200	$26,157,500
Business and Personal Services	4105	$194,329,100	$369,844,800
Construction	164	$12,165,200	$30,715,900
Finance, Insurance and Real Estate	408	$19,202,400	$140,667,400
Government	67	$6,095,500	$13,393,600
Manufacturing	893	$48,544,700	$302,339,900
Mining	158	$2,082,900	$17,554,900
Retailing	1065	$39,574,600	$95,028,000
Transportation and Communication	613	$35,985,700	$134,536,800
Travel and Entertainment	991	$25,786,100	$61,091,000
Wholesaling	169	$10,132,000	$32,498,200
Other	39	$1,811,700	$788,800
Total	9106	$403,956,100	$1,224,616,800

Table 10: Excess costs to Hawaii due to Jones Act – operating-costs studies

Cargo Type	Water transportation	Land transportation	Wholesale	Retail	Total	Pct changed
Container	$280,816,360	$14,695,908	$63,549,927	$41,036,855	$400,099,049	1.6%
Bulk	$416,277,253	$9,280,869	$43,024,558	$101,877,227	$570,459,907	6.4%
Total	$697,093,613	$23,976,777	$106,574,485	$142,914,082	$970,558,955	2.7%

Table 11: Studies used to determine operating-cost differentials

Study	Container	Bulk
Sinat, Hellieson & Eichner, Inc., "The Jones Act and Its Impact on the State of Alaska Vol. II," prepared for the Alaska Statehood Commission, July 1982.	1.133	1.348
"Comparison of U.S. and Foreign-Flag Operating Costs," U.S. Maritime Administration, September 2011.	1.212	2.04
"The Economic Effect of Significant U.S. Import Restraints: 3rd Update, Investigation No. 332-325," U.S. International Trade Commission, June 2002.	1.189	1.991
Puerto Rico Management and Economic Consultants, "A Study on the Impact of Repeal of the Jones Act on the Economy of Puerto Rico," prepared for Navieras de Puerto Rico, June 1994.	1.104	1.104
"The Economic Effect of Significant U.S. Import Restraints, Investigation No. 332-325, Publication 2699," U.S. International Trade Commission, November 1993.	1.1	2.47
Average	1.159	1.962

may underestimate price differences.

As Table 10 shows, taking the averages of the cost differentials across these studies gives an estimated shipping differential of 15.9% for containerized cargo and 96.2% for bulk cargo. This means that if a container costs $2,000 to ship using a Jones Act-authorized carrier, it would cost $1,726 to ship on an international ship.

Likewise, a bulk shipment costing $10,000 using one of the limited Jones Act-authorized tankers or bulk carriers would cost just $5,097 using a market-rate vessel. Table 11 outlines the studies that were used in this analysis.

These assumptions suggest that the Jones Act leads to a 2.7% increase in overall costs in Hawaii. Using the same methodology outlined under Scenario 1, the overall additional costs to Hawaii firms and consumers annually is over $1.4 billion, or roughly $990 per resident. About 61% of these costs fall on the state's manufacturing sector or on consumer and business purchases of manufactured goods.

Using the differentials calculated based on operating cost studies, the IMPLAN model for Hawaii was run to calculate the economic impact of the Jones Act on the state based on import data. The total cost by economic sector is shown in Table 12.

Based on these increased import costs estimated across each of the industry sectors operating in Hawaii, the overall economic impact of the Jones Act annually is $1.3 billion. About 9,200 fewer jobs are supported by the state's economy as a result of these higher costs, and state and local tax revenues are as much as $69.5 million lower, as shown in Table 13.

In terms of jobs, the largest impacts fall on the business and personal services sector, with $341.6 million in reduced output and about 3,770 fewer jobs than there would be if the Jones Act provisions were eliminated. In addition, as shown in Table 14, the state's

Table 12: Direct cost impact, by sector – operating-costs studies

Sector	Shipping	Inland	Wholesale	Retail	Total
Agriculture	$52,178,998	$418,083	$2,475,936	$6,353,064	$61,426,081
Business and Personal Services	$158,811,390	$6,422,219	$17,025,407	$1,763,802	$184,022,819
Construction	$17,524,676	$1,272,028	$1,935,796	$1,708,420	$22,440,919
Finance, Insurance and Real Estate	$6,577,397	$209,700	$548,745	$146,489	$7,482,332
Government	$239,914	$49,019	$29,637	$48,957	$367,528
Manufacturing	$656,856,133	$24,030,796	$74,931,745	$101,356,484	$857,175,158
Mining	$45,423,511	$1,180,078	$1,188,177	$20,199,224	$67,990,990
Retailing	$83,516,762	$567,444	$1,881,658	$8,283,073	$94,248,937
Transportation and Communication	$73,233,885	$2,979,777	$4,743,955	$2,107,430	$83,065,047
Travel and Entertainment	$20,464,871	$913,063	$4,279,529	$413,064	$26,070,527
Wholesaling	$213,038	$6,852	$29,942	$21,290	$271,122
Other	$668,675	$144,806	$41,662	$512,784	$1,367,928
Total	$1,115,709,250	$38,193,865	$109,112,189	$142,914,081	$1,405,929,388

retailing sector has nearly 1,400 fewer jobs and the manufacturing sector almost 940 fewer jobs.

Scenario 3: Shipbuilding cost differential

Many proponents of modifying or eliminating the Jones Act restrictions on domestic waterborne trade have suggested that it is simply not economically possible to build commercial vessels in the United States. According to Jones Act researcher Colin Grabow of the Cato Institute:

"Shipyards in the United States may be engaged in limited construction of oceangoing commercial ships – albeit at frightfully high costs that would be even higher absent their access to foreign components – but it is an open question just how truly American these ships are or how meaningful the practical difference is between manufacturing these ships in the United States versus buying them from foreign yards.[46]

Table 13: Economic losses to Hawaii due to Jones Act – operating-costs studies

	Direct	Supplier	Induced	Total
Jobs	5,670	1,870	1,670	9,220
Wages	$243,113,200	$93,545,570	$79,179,510	$415,838,280
Economic output	$714,486,450	$291,811,820	$248,651,040	$1,254,949,310
	Federal	**State and Local**		**Total**
Taxes	$86,701,233	$69,548,033		$156,249,266

Table 14: Economic losses to Hawaii due to Jones Act, by sector – operating-costs studies

Sector	Jobs	Wages	Output
Agriculture	389	$7,183,500	$23,011,800
Business and Personal Services	3770	$180,645,400	$341,563,600
Construction	178	$13,214,600	$33,414,500
Finance, Insurance and Real Estate	427	$20,078,800	$146,749,500
Government	75	$6,918,300	$14,631,700
Manufacturing	937	$53,326,400	$298,736,000
Mining	194	$2,663,900	$22,811,300
Retailing	1382	$51,497,500	$122,529,500
Transportation and Communication	773	$45,323,900	$162,082,800
Travel and Entertainment	889	$23,164,200	$56,698,600
Wholesaling	166	$9,946,600	$31,903,300
Other	40	$1,875,300	$816,700
Total	9220	$415,838,400	$1,254,949,300

In effect, the American-built requirement is one of the major reasons why Jones Act-qualified vessels are so expensive, and why operating these vessels is not cost-effective. Capital costs associated with maritime cargo transportation can be quite large, as vessels cost well into the hundreds of millions of dollars. Even if the Jones Act were repealed, it is likely that constructing vessels in American yards would continue to be cost-prohibitive, and commercial vessels would not be constructed in America without some form of subsidy. In effect, the Jones Act has failed in its purpose of encouraging shipbuilding in America.

There is a significant amount of research on the effect of the Jones Act on shipping rates.

The percentage of overall shipping costs due to capital inputs is clearly presented in the Simat, Hellieson & Eichner study and averages 28.2% for container ships and about 53.9% for bulk carriers.[47] Taking these percentages for the operating cost price differentials provides an estimated Jones Act effect of 4.5% for containerized cargo and 51.9% for bulk shipments. As Table 15 shows, the Jones Act's U.S.-build requirement leads to a 1.2% shipping cost increase in Hawaii.

Based on these additional costs, and the methodology used in Scenario 1, the total cost by economic sector is calculated and shown in Table 16. The $620.6 million added cost to the economy equates to about $437 per resident.

Based on these increased costs, the overall economic impact of the Jones Act in Hawaii, as shown in Table 17, is $531.7 million a year. About 3,860 fewer jobs are supported by the economy of Hawaii as a result of these higher costs, and state and local tax revenues are as much as $30.8 million lower.

As with the other scenarios, the largest impacts fall on business and personal services, as well as the manufacturing industry in the state, with $128.5 million in reduced output in services, and $122.2 million less output in manufacturing, as shown in Table 18.

Table 15: Excess costs to Hawaii due to Jones Act – shipbuilding cost differential

Estimated additional

Cargo Type	Water transportation	Land transportation	Wholesale	Retail	Total	Pct changed
Container	$79,400,826	$4,155,268	$17,968,742	$11,603,171	$113,128,006	0.5%
Bulk	$224,498,323	$5,005,172	$23,203,144	$54,942,389	$307,649,028	3.4%
Total	$303,899,149	$9,160,440	$41,171,886	$66,545,560	$420,777,034	1.2%

Table 16: Economic losses to Hawaii due to Jones Act, by sector – shipbuilding cost differential

Sector	Shipping	Inland	Wholesale	Retail	Total
Agriculture	$26,441,482	$123,966	$888,713	$3,301,534	$30,755,696
Business and Personal Services	$54,173,945	$2,705,291	$5,666,630	$813,287	$63,359,153
Construction	$7,944,271	$467,809	$793,094	$897,246	$10,102,419
Finance, Insurance and Real Estate	$3,454,524	$99,524	$258,349	$67,155	$3,879,552
Government	$112,060	$27,033	$12,805	$25,388	$177,286
Manufacturing	$289,956,142	$9,140,824	$29,195,672	$45,054,073	$373,346,710
Mining	$23,943,695	$579,571	$533,591	$10,729,150	$35,786,007
Retailing	$44,626,428	$286,143	$890,013	$4,230,857	$50,033,441
Transportation and Communication	$38,852,468	$1,570,954	$2,485,582	$1,084,063	$43,993,068
Travel and Entertainment	$6,804,410	$346,893	$1,351,716	$188,633	$8,691,651
Wholesaling	$88,139	$2,642	$11,460	$9,185	$111,426
Other	$189,068	$40,944	$11,780	$144,990	$386,782
Total	$496,586,632	$15,391,594	$42,099,405	$66,545,561	$620,623,191

Table 17: Economic losses to Hawaii due to Jones Act, by sector – shipbuilding cost differential

	Direct	Supplier	Induced	Total
Jobs	2,370	780	710	3,860
Wages	$103,449,870	$39,476,330	$33,687,640	$176,663,840
Economic output	$302,282,390	$123,603,270	$105,791,230	$531,676,890
	Federal	**State and Local**		**Total**
Taxes	$36,976,074	$30,821,968		$67,798,042

Scenario 4: Recent Jones Act price-effects study

The last scenario analyzed is based on a study conducted recently by William Olney, a research fellow at the University of Hawai'i Economic Research Organization.[48] This study suggests that consumer prices are as much as 2.6% higher in "coastal states," including Hawaii, than they would be if the Jones Act cabotage requirements were eliminated and sufficient waterborne shipping capacity were available.

Table 18: Total economic losses to Hawaii due to Jones Act, by sector – shipbuilding cost differential

Sector	Jobs	Wages	Output
Agriculture	146	$2,592,900	$8,554,900
Business and Personal Services	1409	$68,513,000	$128,526,700
Construction	80	$5,944,900	$15,051,200
Finance, Insurance and Real Estate	185	$8,691,200	$63,232,400
Government	34	$3,206,900	$6,564,300
Manufacturing	407	$24,102,800	$122,244,700
Mining	96	$1,348,900	$11,664,500
Retailing	704	$26,285,400	$62,183,200
Transportation and Communication	388	$22,678,500	$78,683,300
Travel and Entertainment	324	$8,442,700	$21,606,200
Wholesaling	68	$4,058,700	$13,018,000
Other	17	$797,800	$347,500
Total	3858	$176,663,700	$531,676,900

Olney based his analysis on detailed data from the U.S. Bureau of Transportation Statistics. Beginning with the JDA model of the effects of the Jones Act (Scenario 1), and setting the average increase in price to 2.6% by adjusting both containerized and noncontainerized cargo price differentials by the same factor, the average price differential across all shipment types between Jones Act and market or non-Jones Act carriers would be 30.1%.[49]

Taking this estimate of the Jones Act effect means that prices would increase by 3.1% for containerized cargo and 2% for bulk shipments. Table 19 outlines these shipping cost increases, which are just under $944 per person in Hawaii a year.

As with the other scenarios used in this analysis, and as shown in Table 20, the increases fall most heavily on the manufacturing sector in the state. Overall, 63.4% of the cost difference, $851.0 million, is borne by manufacturers in Hawaii. Almost $43.4 million falls on sectors serving the state's tourists.

Using these costs, the IMPLAN model for Hawaii was run to calculate the total economic impact of the Jones Act on the state based on the cost differentials between Jones Act carriers and foreign-flagged

Table 19: Excess costs to Hawaii due to Jones Act – price-effects study

Estimated additional

Cargo Type	Water transportation	Land transportation	Wholesale	Retail	Total	Pct changed
Container	$533,442,168	$27,916,524	$120,720,212	$77,954,108	$760,033,012	3.1%
Bulk	$130,256,635	$2,904,061	$13,452,744	$31,878,237	$178,501,677	2.0%
Total	$663,698,803	$30,820,585	$134,172,956	$109,832,345	$938,534,689	2.6%

ships. Based on these assumptions, the Jones Act is costing Hawaii's economy well over $1.3 billion a year and is leading to 10,160 fewer jobs than would be available in the state if shipping costs were normalized to international rates. As shown in Table 21, the model suggests that the State of Hawaii and its localities are losing over $65.2 million in tax revenues per year as a result of the Jones Act.

These impacts are broad-based, but as Table 22 shows, the largest effects are seen in the services sector, with $462.8 million in reduced output and over 5,170 fewer jobs. Manufacturers in the state have almost $350 million in reduced output and 948 fewer jobs. Agriculture, real estate and sectors serving tourism have also been significantly affected.

Scenario 5: Dynamic model

The impacts outlined in the four prior scenarios are static in nature, in that the effects of the Jones Act on Hawaii's economy based on a reduction in shipping costs only. Production in each sector is held constant.

More likely, if costs were reduced, those cost savings would be passed on to Hawaii business owners in terms of increased profits, Hawaii workers in terms of increased wages and Hawaii consumers through reduced prices. Each of these would effectively increase the disposable income of Hawaii residents.

The IMPLAN methodology discussed above can be used to determine the first-stage dynamic effects of these benefits, assuming that they all accrue to Hawaii entities.

Based on Scenario 1, the overall added costs for Hawaii corporations and consumers due to the shipping-price differential between Jones Act carriers and market-based shipping is $1.3 billion a year, with most of that coming from higher costs for shipping bulk products to the islands. This is the result of a

Table 20: Direct cost impact, by sector – price-effects study

Sector	Shipping	Inland	Wholesale	Retail	Total
Agriculture	$28,947,739	$760,428	$3,544,421	$2,759,003	$36,011,591
Business and Personal Services	$250,124,224	$7,007,888	$27,067,937	$1,404,986	$285,605,035
Construction	$16,227,154	$1,848,594	$2,257,654	$683,665	$21,017,067
Finance, Insurance and Real Estate	$3,052,737	$180,828	$404,189	$119,106	$3,756,860
Government	$205,356	$22,669	$31,333	$21,596	$280,954
Manufacturing	$634,939,774	$31,742,925	$93,149,823	$91,135,382	$850,967,904
Mining	$18,193,803	$732,019	$1,059,760	$7,336,614	$27,322,196
Retailing	$29,972,198	$376,672	$1,360,429	$4,052,715	$35,762,014
Transportation and Communication	$29,417,111	$1,272,335	$1,934,876	$983,970	$33,608,292
Travel and Entertainment	$34,533,895	$1,254,605	$7,253,194	$340,356	$43,382,050
Wholesaling	$264,782	$9,205	$38,360	$20,863	$333,210
Other	$1,270,233	$275,076	$79,142	$974,091	$2,598,532
Total	$1,047,149,006	$45,483,244	$138,181,118	$109,832,347	$1,340,645,705

Table 21: Economic losses to Hawaii due to Jones Act – price-effects study

	Direct	Supplier	Induced	Total
Jobs	6,300	2,120	1,740	10,160
Wages	$255,051,270	$102,393,780	$82,055,250	$439,500,300
Economic output	$766,427,930	$318,134,030	$257,676,500	$1,342,238,460
	Federal	**State and local**		**Total**
Taxes	$89,912,699	$65,228,924		$155,141,623

2.5% shipping cost surcharge on Hawaii over market prices. If these costs were eliminated, it would be the same as an increase in income for Hawaii residents, via profits, wages, prices, etc.

As shown in Table 23, these benefits would be distributed broadly across income groups, with wages and price savings accruing more to lower- and middle-income households, and higher profits accruing to wealthier individuals. In the case of this model, benefits would be distributed equally across households.

The higher income and lower prices would affect the sale of goods and services in Hawaii. Economists use calculated ratios called elasticities to determine how price changes affect demand. In the case of this analysis, it would be prohibitively difficult to calculate elasticities for hundreds of separate products. Instead, a different statistic, the marginal propensity to consume, was used. The MPC is a ratio of the percent of a dollar one spends for each dollar one gains.

The MPC was calculated using two data sets: per capita income over the last 20 years and personal consumption expenditures in Hawaii, which is the total amount of earnings spent by all Hawaii residents on goods and services.[50]

This data was then smoothed using a three-year moving average to remove volatility and to smooth consumption over time. The annual differences in both data sets were calculated and then an elasticity – expenditure change per year divided by the corresponding change in income – was calculated.

Table 23: Distribution of benefits, by income group – dynamic model

Income level	Percent of households	Benefit	Additional spending
Less than $15,000	3.7%	$47,927,782	$18,468,202
$15,000 to $30,000	6.0%	$78,775,116	$30,354,728
$30,000 to $40,000	4.8%	$62,574,273	$24,111,993
$40,000 to $50,000	5.1%	$66,479,275	$25,616,722
$50,000 to $70,000	11.8%	$154,926,634	$59,698,494
$70,000 to $100,000	18.4%	$241,698,401	$93,134,603
$100,000 to $150,000	23.8%	$312,390,262	$120,374,578
$150,000 to $200,000	12.9%	$169,310,182	$65,240,963
Over $200,000	13.6%	$178,220,508	$68,674,415
Total	100.0%	$1,312,302,433	$505,674,698

Table 22: Economic losses to Hawaii due to Jones Act, by sector – price-effects study

Sector	Jobs	Wages	Output
Agriculture	569	$11,092,600	$34,309,100
Business and Personal Services	5174	$241,344,000	$462,752,300
Construction	166	$12,331,000	$31,049,300
Finance, Insurance and Real Estate	436	$20,512,400	$150,285,000
Government	63	$5,630,500	$13,236,400
Manufacturing	948	$47,733,400	$349,061,800
Mining	122	$1,457,400	$11,684,600
Retailing	708	$26,077,700	$64,444,400
Transportation and Communication	452	$26,255,200	$110,222,800
Travel and Entertainment	1283	$33,280,900	$76,366,400
Wholesaling	197	$11,841,200	$37,980,200
Other	41	$1,944,100	$846,200
Total	10159	$439,500,400	$1,342,238,500

Table 24: Dynamic economic benefit due to removal of Jones Act, by sector – dynamic model

Sector	Jobs	Wages	Output
Agriculture	34	$682,100	$1,546,500
Business and Personal Services	1471	$79,344,400	$140,077,600
Construction	33	$2,494,800	$6,450,900
Finance, Insurance and Real Estate	359	$16,813,100	$152,457,200
Government	47	$3,763,300	$11,343,800
Manufacturing	35	$1,833,200	$17,773,300
Mining	1	$49,000	$220,300
Retailing	515	$18,225,400	$48,936,000
Transportation and Communication	140	$9,388,700	$51,988,900
Travel and Entertainment	502	$15,255,800	$41,883,100
Wholesaling	93	$5,582,600	$17,906,100
Other	80	$3,813,200	$1,636,900
Total	3310	$157,245,600	$492,220,600

According to this calculation, Hawaii residents would spend about 38.5% of the windfall on additional goods and services in the state. This would amount to over $505.7 million in additional spending. The IMPLAN model was used to calculate the impact of this spending based on purchase patterns of each different income class in Hawaii. The results are presented in Table 24.

Adding these dynamic effects to the impacts calculated in Scenario 1 provides an estimate of the total dynamic impact on the economy in Hawaii from the elimination of the Jones Act. Overall, as shown in Table 25, if all shipments by water into the islands were able to be carried out at market rates, the state would see 12,420 additional jobs paying about $561.2 million in wages. The economy would be $1.7 billion larger, and the state and its localities would receive $100.2 million more in tax revenues.

The following section presents a series of seven brief case studies, examining the effect of the removal of Jones Act provisions on different parts of the economy.

Table 25: Full economic benefit to Hawaii due to removal of Jones Act – dynamic model

	Direct	Supplier	Induced	Total
Jobs	5,620	1,870	4,930	12,420
Wages	$235,457,360	$92,013,930	$233,726,750	$561,198,040
Economic output	$698,136,620	$286,293,630	$732,407,240	$1,716,837,490
	Federal	**State and Local**		**Total**
Taxes	$121,345,292	$100,235,213		$221,580,505

Economic impact: seven case studies

The model of the impact of the Jones Act on Hawaii's economy developed for this analysis contains detailed information on all of the 536 sectors of the IMPLAN input/output model. The benefits of each of the five scenarios examined can be calculated for each of these sectors, as well as for specific combinations of industries.

As Table 26 shows, Hawaii is particularly dependent on the government for its economic activity. This is due in part to the unique nature of the state and its large military presence. Hawaii is a fairly small state in terms of population, but it has relatively large state and local government sectors. In addition, Hawaii is extremely dependent on real estate and tourist-dependent industries such as hotels, motor coach tours and air transportation.

The following case studies will apply the five previously discussed scenarios to seven areas of economic life in Hawaii: housing and commercial real estate, banking and finance, department stores, automobile expenses, engineering, average households and exports.

Table 26: Top economic sectors in Hawaii, by employment and economic output (2018)

Sector	FTE jobs	Pct. of total	Sector	Economic output	Pct. of total
Federal government military	59,634	6.42%	Owner-occupied dwellings	$9,246,931,641	6.17%
State government education	44,030	4.74%	Federal government military	$8,521,753,906	5.69%
Full-service restaurants	38,919	4.19%	Other real estate	$7,905,702,148	5.28%
Other real estate	32,948	3.55%	Air transportation	$4,446,550,781	2.97%
Federal government nonmilitary	28,141	3.03%	Hotels and motels, including casino hotels	$4,337,669,922	2.89%
Hotels and motels, including casino hotels	27,965	3.01%	Federal government nonmilitary	$4,195,917,480	2.80%
Limited-service restaurants	24,969	2.69%	Petroleum refineries	$3,902,232,178	2.60%
State government noneducation	23,489	2.53%	Hospitals	$3,359,944,092	2.24%
Employment services	20,089	2.16%	Tenant-occupied housing	$3,252,806,152	2.17%
Hospitals	17,016	1.83%	State government education	$3,172,139,893	2.12%
All other food and drinking places	15,601	1.68%	Electric power generation – Fossil fuel	$2,980,275,879	1.99%
Retail – Food and beverage stores	14,307	1.54%	Full-service restaurants	$2,950,772,461	1.97%
Retail – General mechandise stores	14,026	1.51%	Insurance carries, except direct life	$2,743,187,012	1.83%
Services to buildings	13,548	1.46%	State government noneducation	$2,293,137,207	1.53%
Local government noneducation	12,695	1.37%	Limited-service restaurants	$2,047,177,490	1.37%
Retail – clothing and clothing accessories stores	12,670	1.36%	Employment services	$2,004,022,095	1.34%
Indvidual and family services	11,247	1.21%	Offices of physicians	$1,919,097,168	1.28%
Other personal services	11,073	1.19%	Monetary authorities and depository credit intermediation	$1,832,786,255	1.22%
Retail – Miscellaneous store retailers	10,510	1.13%	Scientific research and development services	$1,810,894,165	1.21%
Scenic and sightseeing transportation and support activities for transportation	10,288	1.11%	Management of companies and enterprises	$1,739,626,953	1.16%

I: Housing and commercial real estate

Overall, real estate is one of the largest sectors of the economy in Hawaii, accounting for 19.9% of economic activity and 11.3% of jobs in the state.[51]

The costs imposed by the Jones Act are particularly problematic for this sector of the economy, because it is a major user of noncontainerized cargo such as sand, cement, gypsum, steel and even bricks. Due to the severe limitation of Jones Act vessels that can carry this type of cargo, prices are especially high in Hawaii, and almost all supply must come from foreign countries, many of which are subject to tariffs.[52]

Higher costs lead to fewer jobs as consumers and businesses purchase fewer services or less property. In this case, it is estimated that the Jones Act currently adds between $54.4 million and $255.9 million annually to the cost of real estate and construction services in Hawaii. This leads to the loss of between 228 and 785 jobs in these sectors of the Hawaii economy, as shown in Table 27.

Table 27: Jones Act impact on housing and commercial real estate

	Construction		Real estate services		Real estate		Total	
	Cost	Jobs	Cost	Jobs	Cost	Jobs	Cost	Jobs
Scenario 1	$30,715,943	164	$57,851,443	350	$32,309,443	11	$120,876,829	525
Scenario 2	$33,414,516	178	$59,124,449	349	$33,635,311	11	$126,174,276	538
Scenario 3	$15,051,176	80	$24,944,258	143	$14,391,771	5	$54,387,205	228
Scenario 4	$31,049,272	166	$63,502,770	399	$34,414,324	12	$128,966,366	577
Scenario 5	$61,431,886	198	$101,635,779	554	$92,840,069	33	$255,907,734	785
Average	$34,332,559	157	$61,411,740	359	$41,518,184	14	$137,262,482	531

Table 28: Jones Act impact on banking and finance

	Banking		Other financial services		Total	
	Cost	Jobs	Cost	Jobs	Cost	Jobs
Scenario 1	$13,570,845	63	$10,575,080	69	$24,145,925	132
Scenario 2	$14,095,447	65	$11,173,182	73	$25,268,629	138
Scenario 3	$6,080,418	28	$4,890,746	32	$10,971,164	60
Scenario 4	$14,713,415	68	$11,147,728	73	$25,861,143	141
Scenario 5	$13,570,845	118	$23,989,064	146	$37,559,909	264
Average	$12,406,194	68	$12,355,160	79	$24,761,354	147

II: Banking and finance

Closely associated with real estate is banking and finance. The financial industry is more concentrated in states like California and New York, but in Hawaii it still provides almost 21,000 job. However, higher shipping costs reduce demand in other sectors, reducing financial transactions that might be handled by Hawaii's financial sector.

Higher import costs brought on by the Jones Act work their way through to Hawaii's service industries. This is not just because of higher import prices for goods, but also because imports are converted into other products that are used by service industries such as banking. For example, petroleum is used to generate electricity in Hawaii, and higher petroleum import prices lead to higher electricity costs that flow through to the finance industry, leading to higher costs for banking services that would eventually be passed through to customers.

As shown in Table 28, it is estimated that the Jones Act adds between $11 million and $37.6 million a year to the cost of banking and other financial services in Hawaii. This leads to an estimated loss of between 60 to 260 jobs in these sectors.

III: Department stores

Higher import costs resulting from the Jones Act also affect Hawaii's retail sector. This is because import prices work their way through the process of wholesaling and retailing. This means that annual costs for retail stores on the islands, based on the five scenarios, average about $54.3 million higher simply because of the Jones Act restrictions.

For department stores such as Walmart and Target, where many of Hawaii's resident's shop, costs are $11.2 million higher.

All goods react differently to higher costs, but on aggregate the lost sales resulting from these higher prices translates to nearly 624 fewer retail jobs, including about 104 at these department stores, as shown in Table 29.

Table 29: Jones Act impact on department stores

	All retailing		Department stores	
	Cost	Jobs	Cost	Jobs
Scenario 1	$55,775,495	570	$9,028,194	84
Scenario 2	$67,343,253	685	$9,697,582	91
Scenario 3	$32,709,006	332	$4,290,787	40
Scenario 4	$45,370,674	467	$9,288,150	86
Scenario 5	$70,213,783	1,067	$23,466,482	218
Average	$54,282,442	624	$11,154,239	104

IV: Automobile expenses

Owning and driving a car is expensive in Hawaii. This is due not only to Hawaii imposing both the fifth-highest fuel taxes in the 50 states and District of Columbia and high, weight-based registration fees, but also Jones Act restrictions that make it more expensive to import vehicles as well as petroleum and gasoline from refineries located on the mainland.[53]

Looking at vehicle expenses, it costs an additional $4.3 million to $9.7 million a year for cars sold in the state than it would if they could be shipped from domestic ports using market-rate services. Gasoline is between $19.1 million and $55.2 million more expensive due to the Jones Act, and even repair services are as much as $12.7 million greater because of the added shipping costs.

In total, it costs between $24.9 million and $63.2 million more per year for Hawaii's drivers to own and operate their vehicles because of how the Jones Act limits the ability to import products from the U.S. mainland. In addition, there are as many as 780 fewer jobs in the automotive sector of Hawaii's economy as a result of these higher costs, as shown in Table 30.

Table 30: Jones Act impact on automobile expenses

	Auto retailers		Gas stations		Auto repair		Total	
	Cost	Jobs	Cost	Jobs	Cost	Jobs	Cost	Jobs
Scenario 1	$9,028,194	84	$39,252,521	495	$6,802,986	69	$55,083,701	648
Scenario 2	$9,697,582	91	$55,186,243	696	$8,047,832	83	$72,931,657	870
Scenario 3	$4,290,787	40	$29,474,209	372	$3,847,779	40	$37,612,774	453
Scenario 4	$9,288,150	86	$19,073,732	241	$5,784,582	56	$34,146,464	383
Scenario 5	$9,028,194	218	$40,689,073	513	$12,654,468	123	$62,371,736	855
Average	$8,266,581	104	$36,735,156	463	$7,427,529	74	$52,429,266	642

V: Engineering firms

Currently Hawaii spends over $1.7 billion a year on public primary and secondary education.[54] Millions of dollars go toward funding for science, technology, education and mathematics training.But while the state is spending to create engineers, the Jones Act is helping eliminate those jobs.

Based on the five scenarios used in this analysis, the engineering sector of Hawaii's economy experiences between $2.2 million and $6.1 million in costs annually due to Jones Act restrictions. These higher costs reduce demand for engineers in Hawaii, costing the sector as many as 42 jobs, as shown in Table 31.

Table 31: Jones Act impact on engineering firms

	Engineering firms	
	Cost	Jobs
Scenario 1	$5,291,632	31
Scenario 2	$5,324,580	32
Scenario 3	$2,240,823	13
Scenario 4	$6,062,230	36
Scenario 5	$5,291,632	42
Average	$4,842,179	31

VI: Average households

Based on BLS data, the average American family spends about $61,200 per year on everything from housing to food to Social Security. This equates to about $167.77 per day. These data are not adjusted for the different costs of living in each state, but they do give a rough idea of what the average family in Hawaii spends on goods and services over the course of the year.

Based on these data, Table 32 provides the spending in dollars for the average family in Hawaii – in effect, a day in the average family's life. As the table shows, a family's major expenses are housing, insurance, food, healthcare and transportation.

The Jones Act makes everything in Hawaii more expensive, as higher shipping costs are passed on to consumers through retailers, utility companies and service providers.

Based on the first four scenarios examined,[55] costs for the average family in Hawaii work out to between $2.35 and $4.91 per day.[56] While this may not sound like a lot, it needs to be put into context. Hawaii families are spending as much as $5 every day to help subsidize businesses that make it more difficult to live and work in the islands. These funds instead could be going toward improving the quality of life for families, providing public services in the islands or increasing savings that would help send children to college or pay for unexpected healthcare costs.

Table 32: Jones Act impact on average households

Expense	Daily Spending	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Housing	$36.355	$1.066	$1.041	$0.509	$1.007
Insurance including Social Security	$19.988	$0.586	$0.572	$0.280	$0.553
Food and beverage stores	$13.800	$0.404	$0.395	$0.193	$0.382
Motor vehicle and parts	$10.890	$0.319	$0.312	$0.152	$0.302
Restaurants	$9.460	$0.277	$0.271	$0.132	$0.262
Health insurance	$9.328	$0.273	$0.267	$0.131	$0.258
Entertainment	$8.832	$0.259	$0.253	$0.124	$0.245
Vehicle expenses	$7.828	$0.229	$0.224	$0.110	$0.217
Gas stations	$5.777	$0.169	$0.165	$0.081	$0.160
Furniture and appliance stores	$5.543	$0.162	$0.159	$0.078	$0.153
Charity	$5.172	$0.152	$0.148	$0.072	$0.143
Clothing and accessory stores	$5.105	$0.150	$0.146	$0.071	$0.141
Electricity	$4.432	$0.130	$0.127	$0.062	$0.123
Health and personal care stores	$3.896	$0.114	$0.011	$0.055	$0.108
College	$3.855	$0.113	$0.110	$0.054	$0.107
Telecommunications/cable	$3.254	$0.095	$0.093	$0.046	$0.090
Miscellaneous retailers	$2.719	$0.080	$0.078	$0.038	$0.075
Medical care	$2.489	$0.073	$0.071	$0.035	$0.069
Storage	$2.242	$0.066	$0.064	$0.031	$0.062
Personal services	$1.682	$0.049	$0.048	$0.024	$0.047
Construction	$1.681	$0.049	$0.048	$0.024	$0.047
Natural gas	$1.123	$0.033	$0.032	$0.016	$0.031
General merchandise stores	$0.950	$0.028	$0.027	$0.013	$0.026
Wireless phone service	$0.601	$0.018	$0.017	$0.008	$0.017
Shipping and postal services	$0.361	$0.011	$0.010	$0.005	$0.010
Hobby and book stores	$0.296	$0.009	$0.008	$0.004	$0.008
Total	$167.660	$4.914	$4.801	$2.347	$4.643

VII: Exports

It's well established that because of its effects on imports, the Jones Act makes it more expensive to do business in Hawaii. But it also makes the state's exports more expensive. In general, Hawaii is not a large producing state with numerous export markets. But it still suffers a disadvantage relative to other state economies because of its isolation and dependency on waterborne transportation.[57]

Based on a model similar to that used for imports, Hawaii faces higher shipping costs for its exports to the contiguous 48 states and Alaska than it would without Jones Act restrictions. Using the four cost scenarios, these higher costs lead to a reduction in exports from Hawaii of between $17.1 million and $38 million, as shown below in Table 33.[58]

Some of these exports, particularly those involving petroleum and petroleum products, might no longer be practical if the Jones Act restrictions were removed nationwide. If the exemptions applied to only Hawaii, the state could profitably import oil from overseas and refine it for sale to states where refined products are particularly expensive, including California.

Fundamentally, a removal of Jones Act restrictions would most benefit the import market, simply because there is little industry in the state. Production costs are high in the islands for reasons that go beyond the Jones Act. The sugar industry, for example, recently stopped production in Hawaii despite the fact that the U.S. market is protected from less-expensive foreign sources of the sweetener. Hawaii's high land and labor costs played a huge role in the demise of sugar, but the extra costs imposed by the Jones Act didn't help.

Table 33: Changes in Hawaii exports to U.S. mainland, by scenario ((not including Scenario 5)

	Scenario 1		Scenario 2		Scenario 3		Scenario 4	
Grain farming	$158,342	3.13%	$122,517	2.42%	$34,642	0.68%	$232,735	4.60%
Greenhouse, nursery and floriculture production	$211,721	10.69%	$163,819	8.27%	$46,320	2.34%	$311,193	15.72%
Sugarcane and sugar beet farming	$994,538	2.60%	$1,422,537	3.72%	$767,174	2.01%	$445,124	1.16%
Animal production, except cattle and poultry and eggs	$3,725,408	3.29%	$2,882,532	2.55%	$815,036	0.72%	$5,475,694	4.84%
Forestry, forest products and timbertract production	$42,176	3.33%	$32,633	2.58%	$9,277	0.73%	$61,991	4.90%
Commercial fishing	$48,417	1.05%	$37,463	0.81%	$10,593	0.23%	$71,165	1.54%
Support activities for agriculture and forestry	$416,664	1.36%	$595,975	1.95%	$321,409	1.05%	$186,486	0.61%
Stone mining and quarrying	$3,263,598	15.78%	$2,525,207	12.21%	$714,002	3.45%	$4,796,914	23.19%
Other nonmetallic minerals	$1,124,500	35.43%	$1,607,201	50.64%	$866,393	27.30%	$505,200	15.92%
Soybean and other oilseed processing	$48,678	1.67%	$37,664	1.29%	$10,650	0.36%	$71,547	2.45%
Confectionary manufacturing from purchased chocolates	$1,057,393	1.62%	$1,512,442	2.31%	$815,660	1.25%	$47,356	0.72%
Fluid milk manufacturing	$19,126	0.48%	$14,799	0.37%	$4,184	0.11%	$28,112	0.71%
Rendering and meat byproduct processing	$15,651	0.46%	$12,110	0.36%	$3,424	0.10%	$23,005	0.68%
Bread and bakery product, except from frozen, manufacturing	$237,332	0.50%	$183,635	0.38%	$51,923	0.11%	$348,836	0.73%
Cookie and cracker manufacturing	$1,496,566	1.63%	$2,140,613	2.33%	$1,154,432	1.26%	$669,816	0.73%
Roasted nuts and peanut butter manufacturing	$377,548	0.49%	$292,127	0.38%	$82,599	0.11%	$554,929	0.72%
Coffee and tea manufacturing	$2,608,274	1.48%	$2,018,151	1.14%	$570,632	0.32%	$3,833,703	2.17%
All other food manufacturing	$2,410,289	1.45%	$1,864,959	1.12%	$527,317	0.32%	$3,542,700	2.13%
Bottled and canned soft drinks and water	$1,908,649	2.57%	$1,476,816	1.99%	$417,570	0.56%	$2,805,378	3.77%
Manufactured ice	$30,023	0.50%	$23,230	0.39%	$6,568	0.11%	$44,128	0.73%
Broadwoven fabric mills	$1,085,716	2.11%	$840,072	1.63%	$237,530	0.46%	$1,595,812	3.10%
Textile bag and canvas mills	$107,126	0.91%	$82,889	0.71%	$23,437	0.20%	$157,457	1.34%
Other apparel knitting mills	$19,989	1.20%	$15,466	0.92%	$4,373	0.26%	$29,380	1.76%
Engineering wood member and truss manufacturing	$91,205	1.94%	$70,570	1.50%	$19,954	0.43%	$134,056	2.86%
Petroleum refineries	$10,044,182	1.28%	$14,365,749	1.83%	$7,747,164	0.99%	$4,496,922	0.57%
Petrochemical manufacturing	$480,737	0.71%	$371,970	0.55%	$105,175	0.15%	$706,599	1.04%
Industrial gas manufacturing	$51,919	1.08%	$40,173	0.84%	$11,359	0.24%	$76,312	1.60%
Medicinal and botanical manufacturing	$69,717	1.75%	$99,719	2.51%	$53,779	1.35%	$31,203	0.79%
Ready mix concrete manufacturing	$644,936	1.52%	$922,484	2.18%	$497,496	1.17%	$288,653	0.68%
Plate work manufacturing	$5,880	0.45%	$4,550	0.37%	$1,286	0.11%	$8,643	0.71%
Storage battery manufacturing	$617	0.01%	$478	0.01%	$135	0.00%	$907	0.00%
Motion picture and video Industries	$1,500,760	1.48%	$2,146,612	2.11%	$1,157,668	1.14%	$671,693	0.66%
Scrap	$76,576	17.84%	$76,491	17.82%	$31,263	7.28%	$85,712	19.96%
Total	$34,374,253	1.71%	$38,003,653	1.89%	$17,120,424	0.85%	$32,339,361	1.63%

The unintended consequences of the Jones Act

U.S. Sen. Wesley Jones sponsored the Jones Act allegedly to promote national defense and encourage foreign and domestic trade. But he also represented Washington state, and evidence shows that his sponsorship of the Merchant Marine Act of 1920 was likely due to his parochial desire to promote the shipbuilding industry in Seattle and ensure that the then-territory of Alaska was dependent on cargo shipped through the port of Seattle.[59]

Looking first at the goal of the law, an article by Jones published in 1922 stated that not protecting shipping would "overlook the terrible experience that came to us at the beginning of the world war." [60]

"When the war came," he wrote, "this lack of shipping cost us hundreds of millions of dollars in higher freight rates or business losses and hundreds of millions of waste in the hasty building of ships to meet the emergency that threatened the overthrow of civilization, and today the papers are filled with stories of waste, corruption and inefficiency that was the inevitable result of the conditions and the situation that confronted us."

He continued, "We do desire to build up a merchant marine ample to do the major part of our own ocean-carriage and that part of the world's carrying commensurate with our wealth, power and standing among the nations of the world. This is necessary for our commercial growth, our national defense and national independence, and it is necessary for the world's peace and safety. If one nation dominates the shipping of the world it holds the destinies of all peoples in its grasp."

Based on such sentiments, Congress enacted the provisions of the Jones Act with the expectation that they were doing something that would help build a stronger merchant marine, one that would have sufficient capacity to handle wartime needs and the capacity to carry a significant part of the world's international cargo.

However, rather than enhance shipping, shipbuilding and the merchant marine in the United States, application of the Jones Act over the past century has coincided with the dismantling of the industry in all those categories.

When the Jones Act was enacted in 1920, 2,839 merchant ships of 1,000 gross registered tons or more sailed under the U.S. flag.[61] Today that number is down to just 99 Jones Act-eligible vessels.[62] The total gross registered tonnage of ships constructed in 1920 in the U.S. was 3,880,630; in 2018, that total was 201,678, a 94.8% decrease.[63]

In 2018, only 0.35% of the world's oceangoing ship capacity was constructed in the United States. According to MARAD, the U.S. flag fleet carries just 1.5% of all international waterborne freight,[64] a far cry from Jones' call for the American merchant marine to be carrying "that part of the world's carrying commensurate with our wealth, power and standing among the nations of the world."

Meanwhile, the number of shipyards in America capable of constructing large oceangoing ships is down from 30 over 67 years ago to just four today.[65] Jones Act researcher Colin Grabow wrote that, "One of those four, the Philly Shipyard, currently has no ships on its order book and as of July 2019 had seen its employment reduced to approximately 80 people."[66] In addition, the parent companies of several of the largest shipyards, including Philly Shipyard, VT Halter and Keppel AmFELS, are not even wholly owned by U.S. companies; they share ownership with foreign companies.[67]

The reasons behind this are simple: costs and prices. According to MARAD, the average daily operating costs for American vessels in 2010 were about three times higher than comparable vessels in other countries.[68] Drewry Maritime Research found in 2013 that Jones-compliant vessels cost roughly four times as much to build as comparable foreign ships.[69] This is why nearly all U.S.-based carriers have left the Jones Act trade.

In addition to being a costly support for a shipping industry that has shrunk dramatically due to market forces, the Jones Act has had other unanticipated consequences. For example, a flour mill might find it cheaper to import grain from other countries than to buy from U.S. farmers, thus hurting U.S. granaries and farmers.[70] Another example: Even with the United States exporting record amounts of natural gas internationally, not a single U.S.-flagged ship currently transports bulk shipments of liquid natural gas, essentially excluding Hawaii as an LNG market for U.S. producers.

More important, the Jones Act itself has changed the transportation system of Hawaii in a number of ways. With limited waterborne shipping options, more cargo must travel interisland by air. This leads to more congested airports, more fuel use and more pollution. In addition, people are not able to efficiently travel by water between the islands except on small vessels.

Past literature and analyses

Issues surrounding the Jones Act have been discussed in literature since as early as 1930, when scholars at The Brookings Institution stated, "American coastwise shipping laws are a handicap to Porto Rican trade." [71] This, they said, was because "Porto Rican imports and exports alike carry somewhat higher shipping rates than would be the case were Porto Rican traders free to utilize the cheaper carriers of other countries."

The Brookings analysts did not specifically document the size of the shipping cost differential, but their comments do show that even 90 years ago there were discussions about how America's cabotage laws resulted in higher shipping costs – and that those costs were burdensome.

By the mid-1960s, researchers were beginning to make estimates of the cost of the Jones Act on shipping rates. The models generally took two forms. The first examined the cost of operating vessels under a U.S. flag versus a flag of convenience.[72] The second type examined the limited publicly available data on freight rates and compared those, controlling for mileage.[73]

Most of the studies cross-referenced the others, and few made independent assertions about the cost differentials for bulk cargo and containerized cargo. In fact, the study previously mentioned produced by Simat, Hellieson, & Eichner Inc. in 1982 for the Alaska Statehood Commission appears to be the original source for most other studies examining containerized cargo, while research originally conducted by the ITC is likely the basis for most analyses of bulk cargos such as sand, cement, petroleum or grain.[74] Very few studies have analyzed any form of actual data on shipping rates or tried to derive shipping rates from available information.

The ITC has conducted a number of studies examining the cost of the Jones Act on the U.S. economy based on a weighted average of wet cargo and dry cargo shipping rates. Its differential of 105% for wet cargo – which is basically petroleum – was the difference between the average U.S. price for shipping Alaskan North Slope crude petroleum to the U.S. West Coast, $0.00447 per ton-mile, and the average world price for a comparable tanker shipment transported an equal distance, $0.00218 per ton-mile.[75] Its 10% differential for dry cargo came indirectly

from Simat, Hellieson & Eichner, which based all of its estimates on ship operating costs, meaning that the ITC report provided an independent, data-based differential for only "wet cargo."[76]

More recently, the Cato Institute has begun a comprehensive research project looking into the effects of the Jones Act. One Cato study cited a statement by the CEO of the Overseas Shipping Group that the cost of hiring a Jones Act ship for crude service is about three to four times higher than using a foreign-flagged vessel.[77] This is due in part to the lack of available vessels, but also because very little freight in the United States travels by sea – just 2%. Another study shows that in the European Union, where cabotage among the member states is generally not restricted, the figure is 40%, while another shows that freight rates in New Zealand fell by 20% to 25% after a relaxing of that country's cabotage restrictions.[78]

A new study of Jones Act costs, issued initially by the The Economic Research Organization at the University of Hawai'i, examined the prevalence of waterborne shipping versus other modes across states and concluded that consumer prices are 2.6% higher in coastal states, including Hawaii, than they would be if the Jones Act cabotage requirements were eliminated and sufficient waterborne shipping capacity were available.[79]

A 2013 study examined carrier financial statements and found that without the Jones Act in place, coastal water transport in the United States would be approximately 61% less expensive.[80] In 2016, a doctoral candidate in Puerto Rico used survey data to examine the effect of the Jones Act on that island territory's agribusiness supply chain.[81]

As with the studies examining operating costs, all the aforementioned studies used various proxy data to estimate actual freight rates. Interestingly, except for one study conducted for the carriers, the studies' authors suggested that the differential for containerized general cargo between Jones Act carriers and foreign-flagged ships would be between 40% and almost 100%.[82]

None of the studies conducted suggest that the Jones Act has led to lower shipping costs. In fact, the way that markets work ensures that it is impossible for supply restrictions to lead to lower prices. This is the reason governments control prices for monopolies such as electricity and water supply. There are many examples of how supply restrictions, including stringent zoning laws, certificate-of-need laws, occupation licensure, livery medallions and liquor licenses, lead to higher prices and often poor service, even when the rates are controlled by government, and especially true when members of the monopoly themselves are granted pricing authority.

Conclusion

The Jones Act was enacted into law 100 years ago and has been a bane to Hawaii's economy and business environment ever since. Rather than achieving any of the goals set forth for it in 1920, the Jones Act has severely hampered the development of the merchant marine and shipbuilding industries in the United States, reduced waterborne coastwise trade, increased prices, harmed the environment and, over time, measurably harmed the economies of both Hawaii and the nation – if not as well the broader global economy.

Because of the Jones Act, firms in Hawaii have limited shipping options, leading consignees in the state to purchase more from foreign sources. This not only affects prices for consumers, but also economic activity throughout the state.

Dozens of studies have attempted to document these costs; however, the lack of public data sources has impeded the ability of researchers to fully examine how the Jones Act has affected Hawaii.

This analysis used a model of international shipping costs for 212 different commodities, both containerized and noncontainerized, and compared them against five different estimates of U.S.-flag shipping cost differentials ranging from a high of 96.2% to a low of just 4.5%, as shown in Table 34.. On average, based on the models examined, the average cost differential for shipping containerized cargo was found to be 15.7%, and for non-standard or bulk cargos, 59.3%.

These higher costs affect not only importers in Hawaii but flow throughout the economy as a whole,

Table 34: Total shipping cost differentials to Hawaii resulting from the Jones Act – by scenario

	Containerized	Bulk
Scenario 1	20.5%	67.3%
Scenario 2	15.9%	96.2%
Scenario 3	4.5%	51.9%
Scenario 4	21.8%	21.8%
Scenario 5*	20.5%	67.3%
Average	15.7%	59.3%

* Not included in average

including manufacturers, businesses and consumers, as shown in Table 35.

Based on the scenarios examined, the higher shipping costs lead to between 3,860 and 10,160 fewer jobs in Hawaii, and between $531.7 million and $1.3 billion in reduced economic activity.

The Jones Act also costs the average individual consumer between $296 and $683 annually and reduces tax revenues generated in the state by as much as $156.2 million.

When first-stage dynamic effects on production in Hawaii are taken into account, the impact rises to 12,420 jobs lost and over $1.7 billion in reduced economic activity. Under this scenario, taxes fall by $221.6 million.

The Jones Act does not affect Hawaii's exports to the continental United States to the same extent as it does its imports. This is because there is not much manufacturing, mining or agricultural production in the state, outside of just a few sectors. The largest modeled impacts were on petroleum exports; however, these would likely not grow if the cabotage provisions of the Jones Act were to be removed nationwide.

Overall, the model suggests that if the Jones Act were reformed, the annual shipments of goods from Hawaii to the continental United States would increase by between $17.1 million and $38 million.

Table 35: Economic impact of Jones Act on imports, by scenario

	Increased shipping costs	Total increased costs	Cost per resident	Lost jobs	Lost wages	Lost economic activity	Lost taxes
Scenario 1	$653,961,193	$915,916,801	$645	9,106	$403,956,100	$1,224,616,800	$148,215,411
Scenario 2	$697,093,613	$970,558,955	$683	9,220	$415,838,400	$1,254,949,300	$156,249,266
Scenario 3	$303,899,148	$420,777,034	$296	3,858	$176,663,700	$531,676,900	$67,798,042
Scenario 4	$663,698,803	$938,534,689	$661	10,159	$439,500,400	$1,342,238,500	$155,141,623
Scenario 5*	$653,961,193	$915,916,801	$645	12,420	$561,198,040	$1,716,837,490	$221,580,505

* Not included in average

About

Grassroot Institute of Hawaii

The Grassroot Institute of Hawaii is a nonprofit 501(c)(3) public policy think tank founded in 2001 that seeks, in the spirit of "E hana kakou" ("Let's work together"), to educate people about the value of individual liberty, economic freedom and accountable government, with the goal of achieving a better economy, better governance and better society.

John Dunham & Associates

John Dunham & Associates is a nationally recognized economic research and consulting firm based in New York. Among its clients are many businesses and trade groups, including some of the largest Fortune 500 companies in America.

John Dunham is a professional economist with over 25 years of experience. He has worked as a manager and an analyst in both the public and private sectors, conducting cost-benefit modeling, industry analysis, transportation analysis, economic research, and tax and fiscal analysis. He also has served as an economist with the Port Authority of New York and New Jersey, the Philadelphia Regional Port Authority and the City of New York's Department of Ports & Trade.

In February 2019, John Dunham & Associates produced a report for the Puerto Rico Food Marketing, Industry and Distribution Chamber about the economic impact of the Jones Act on Puerto Rico.

Appendix

I. Defining the "Jones Act"

It is helpful to define what is meant when using the term "Jones Act." Here it is restricted to the wording of Section 27 of the Merchant Marine Act of 1920, which might more accurately be labeled the "Jones Act cabotage" laws.

The term "Jones Act" also is used commonly to refer to the following:

- Section 33 of the Merchant Marine Act of 1920 – the seaman's rights section and the basis for what has come to be known as "Jones Act personal injury law."
- The entire Merchant Marine Act of 1920, as amended.
- All U.S. maritime cabotage laws and regulations that apply to the domestic waterborne trades of the United States, known formally as the "coastwise laws of the U.S."
- The entire body of U.S. shipping laws and regulations, including for commercial shipping in both the domestic and foreign trades of the United States, commercial fisheries and government-owned ships.
- The kind of national legal regime for domestic shipping known worldwide as "maritime cabotage"

II. Calculation of international freight rates

Table 36: Calculation of international freight rates

				Per short ton
Commodity	Sector	International rate	Domestic surcharge	Excess cost
Institutional furniture manufacturing	Manufacturing	$5,288.07	$1,083.29	$204,350
Dental equipment and supplies manufacturing	Manufacturing	$4,651.16	$952.81	$50,482
Aircraft manufacturing	Manufacturing	$4,203.02	$861.01	$20,198
Potash, soda and borate mineral mining	Mining	$2,574.65	$527.43	$21,450
Pharmaceutical preparation manufacturing	Manufacturing	$2,190.97	$448.83	$11,844
Miscellaneous nonmetallic mineral products manufacturing	Manufacturing	$1,918.41	$392.99	$172,161
Printing ink manufacturing	Manufacturing	$1,835.43	$376.00	$4,913
Womens and girls cut and sew apparel manufacturing	Manufacturing	$1,631.23	$334.17	$657,954
Power boiler and heat exchanger manufacturing	Manufacturing	$1,551.44	$317.82	$611,218
Fiber optic cable manufacturing	Manufacturing	$1,541.37	$315.76	$1,487
Other aircraft parts and auxiliary equipment manufacturing	Manufacturing	$1,377.32	$282.15	$7,699
Gasket, packing and sealing device manufacturing	Manufacturing	$1,295.53	$265.40	$25,884
Optical instrument and lens manufacturing	Manufacturing	$1,248.77	$255.82	$16,381
Capacitor, resistor, coil, transformer and other inductor manufacturing	Manufacturing	$1,176.95	$241.10	$1,453
Greenhouse, nursery and floriculture production	Agriculture	$1,155.13	$236.63	$2,976
Knit fabric mills	Manufacturing	$1,087.41	$222.76	$16,280
Other apparel knitting mills	Manufacturing	$1,041.36	$213.33	$43,826
Mens and boys cut-and-sew apparel manufacturing	Manufacturing	$1,041.04	$213.26	$233,329
Small electrical appliance manufacturing	Manufacturing	$1,015.09	$207.95	$305,903
Computer terminals and other computer peripheral equipment manufacturing	Manufacturing	$1,001.02	$205.06	$239
Glass container manufacturing	Manufacturing	$994.07	$203.64	$431,876
Nonferrous metal (excluding aluminum) smelting and refining	Manufacturing	$947.06	$194.01	$55,417
Forestry, forest products and timber tract production	Agriculture	$944.82	$193.55	$14,006
Hosiery and sock mills	Manufacturing	$933.22	$191.17	$6,190
Support activities for printing	Manufacturing	$924.10	$189.31	$3,880
Overhead cranes, hoists and monorail systems manufacturing	Manufacturing	$815.64	$167.09	$2,063
Curtain and linen mills	Manufacturing	$776.19	$159.01	$464,405
Narrow fabric mills and schiffli machine embroidery	Manufacturing	$772.94	$158.34	$157,824
Sawmill, woodworking and paper machinery	Manufacturing	$747.12	$153.05	$27,475
Paint and coating manufacturing	Manufacturing	$724.45	$148.41	$20,672
In-vitro diagnostic substance manufacturing	Manufacturing	$690.08	$141.37	$57,268
Air purification and ventilation equipment manufacturing	Manufacturing	$651.68	$133.50	$89,439

Table 36: Calculation of international freight rates (cont.)

Commodity	Sector	International rate	Domestic surcharge	Excess cost
				Per short ton
Ferrous metal foundries	Manufacturing	$646.35	$132.41	$65,128
Turned product and screw, nut and bolt manufacturing	Manufacturing	$638.57	$130.81	$882,434
Other miscellaneous chemical product manufacturing	Manufacturing	$636.47	$130.38	$275,215
Footwear manufacturing	Manufacturing	$631.65	$129.40	$231,344
Cutlery, utensil, pot and pan manufacturing	Manufacturing	$616.87	$126.37	$233,733
Lighting fixture manufacturing	Manufacturing	$608.62	$124.68	$77,086
Packaging machinery manufacturing	Manufacturing	$596.33	$122.16	$8,902
Other electronic component manufacturing	Manufacturing	$583.66	$119.56	$15,373
Other leather and allied product manufacturing	Manufacturing	$579.63	$118.74	$11,625,893
Food product machinery manufacturing	Manufacturing	$563.04	$115.34	$23,162
Aluminum sheet, plate and foil manufacturing	Manufacturing	$558.46	$114.40	$8,377
Electronic computer manufacturing	Manufacturing	$550.83	$112.84	$13,462
Air conditioning, refrigeration and warm air heating equipment manufacturing	Manufacturing	$549.84	$112.64	$45,171
Fasteners, buttons, needle and pins manufacturing	Manufacturing	$547.64	$112.19	$65,230
Meat processed from carcasses	Manufacturing	$541.77	$110.99	$231,008
Metal barrels, drums and pails manufacturing	Manufacturing	$529.62	$108.50	$24,305
Ship building and repairing	Manufacturing	$529.54	$335.83	$7,090,826
Musical instrument manufacturing	Manufacturing	$525.16	$107.58	$31,794
Nonferrous metal foundries	Manufacturing	$521.57	$106.85	$61,730
Hand tool manufacturing	Manufacturing	$520.50	$106.63	$27,354
Motor vehicle gasoline engine and engine parts manufacturing	Manufacturing	$514.44	$105.39	$89
Sign manufacturing	Manufacturing	$502.40	$102.92	$2,432
Printing machinery and equipment manufacturing	Manufacturing	$501.88	$102.81	$32
Surgical and medical instrument manufacturing	Manufacturing	$492.06	$100.80	$15
All other miscellaneous manufacturing	Manufacturing	$491.53	$100.69	$51,764
Scales, balances and miscellaneous general purpose machinery manufacturing	Manufacturing	$488.40	$100.05	$12,390
Other plastics product manufacturing	Manufacturing	$488.34	$100.04	$552,612
Lawn and garden equipment manufacturing	Manufacturing	$484.33	$99.22	$3,271
Electricity and signal-testing instruments manufacturing	Manufacturing	$480.48	$98.43	$2,248
Other commercial service industry machinery manufacturing	Manufacturing	$479.74	$98.28	$25,871
Other cut-and-sew apparel manufacturing	Manufacturing	$470.28	$96.34	$112,020
Mining machinery and equipment manufacturing	Manufacturing	$465.07	$95.27	$40
Switchgear and switchboard apparatus manufacturing	Manufacturing	$464.78	$95.21	$13,554
Apparel accessories and other apparel manufacturing	Manufacturing	$456.44	$93.50	$113,032
Other basic inorganic chemical manufacturing	Manufacturing	$452.64	$92.72	$671,910

Table 36: Calculation of international freight rates (cont.)

				Per short ton
Commodity	**Sector**	**International Rate**	**Domestic surcharge**	**Excess cost**
Fluid power cylinder and actuator manufacturing	Manufacturing	$451.13	$92.42	$1,238
All other industrial machinery manufacturing	Manufacturing	$446.72	$91.51	$15,132
Sporting and athletic goods manufacturing	Manufacturing	$445.21	$91.20	$410,084
Telephone apparatus manufacturing	Manufacturing	$435.17	$89.15	$42,752
Other communications equipment manufacturing	Manufacturing	$432.77	$88.66	$692
Carbon and graphite product manufacturing	Manufacturing	$422.22	$86.49	$3,511
Glass product manufacturing made of purchased glass	Manufacturing	$419.39	$85.91	$81,194
Paper bag and coated and treated paper manufacturing	Manufacturing	$419.37	$85.91	$1,158,341
Animal production, except cattle and poultry and eggs	Agriculture	$417.63	$85.55	$149,967
Distilleries	Manufacturing	$413.83	$84.78	$15,204
Fiber, yarn and thread mills	Manufacturing	$402.95	$82.55	$2,563
Electromedical and electrotherapeutic apparatus manufacturing	Manufacturing	$399.55	$81.85	$3,504
Carpet and rug mills	Manufacturing	$393.64	$80.64	$28,088
Heating equipment (except warm air furnaces) manufacturing	Manufacturing	$374.55	$76.73	$5,011
Wood container and pallet manufacturing	Manufacturing	$373.71	$76.56	$207,601
Valve and fittings, other than plumbing, manufacturing	Manufacturing	$372.67	$76.34	$8,752
* Not an industry (Scrap)	Other	$372.02	$100.08	$889,831
Photographic film and chemical manufacturing	Manufacturing	$371.85	$76.18	$258
Ornamental and architectural metal work manufacturing	Manufacturing	$369.21	$75.63	$21,027
Ice cream and frozen dessert manufacturing	Manufacturing	$368.37	$75.46	$54,481
Motor vehicle electrical and electronic equipment manufacturing	Manufacturing	$368.34	$75.46	$80
Chocolate and confectionery manufacturing from cacao beans	Manufacturing	$361.39	$74.03	$7,916
Office supplies (except paper) manufacturing	Manufacturing	$353.30	$72.37	$24,767
Other engine equipment manufacturing	Manufacturing	$352.53	$72.22	$12,841
Conveyor and conveying equipment manufacturing	Manufacturing	$347.96	$71.28	$5,378
Air and gas compressor manufacturing	Manufacturing	$346.41	$70.96	$5,524
Plastics packaging materials and unlaminated film and sheet manufacturing	Manufacturing	$345.06	$70.69	$584,698
Plumbing fixture fitting and trim manufacturing	Manufacturing	$344.12	$70.49	$82
Doll, toy and game manufacturing	Manufacturing	$342.17	$217.82	$33,323,708
Metal cans manufacturing	Manufacturing	$338.97	$69.44	$92
Soap and other detergent manufacturing	Manufacturing	$338.57	$69.36	$22,218
Paperboard container manufacturing	Manufacturing	$334.68	$68.56	$944,154
Other textile product mills	Manufacturing	$329.60	$67.52	$60,510
Primary battery manufacturing	Manufacturing	$328.39	$67.27	$118,967
Nonwoven fabric mills	Manufacturing	$327.32	$67.05	$20,374
Motor and generator manufacturing	Manufacturing	$325.27	$66.63	$4,648

Table 36: Calculation of international freight rates (cont.)

Commodity	Sector	International rate	Domestic surcharge	Excess cost
				Per short ton
Printing	Manufacturing	$315.99	$64.73	$201,634
Pump and pumping equipment manufacturing	Manufacturing	$315.53	$64.64	$1,378
Coffee and tea manufacturing	Manufacturing	$314.43	$64.41	$145,156
Surgical appliance and supplies manufacturing	Manufacturing	$313.41	$64.20	$17,123
Fabric coating mills	Manufacturing	$312.59	$64.04	$11,645
All other miscellaneous wood product manufacturing	Manufacturing	$312.09	$63.93	$176,912
Industrial process variable instruments manufacturing	Manufacturing	$311.41	$63.79	$458
Synthetic dye and pigment manufacturing	Manufacturing	$305.08	$62.50	$14,167
Toilet preparation manufacturing	Manufacturing	$302.64	$62.00	$118,152
Heavy duty truck manufacturing	Manufacturing	$302.32	$61.93	$38,643
Motorcycle, bicycle and parts manufacturing	Manufacturing	$302.31	$61.93	$63,035
Vegetable and melon farming	Agriculture	$298.03	$61.05	$187,337
Ground or treated mineral and earth manufacturing	Manufacturing	$282.44	$57.86	$2,858
Other fabricated metal manufacturing	Manufacturing	$279.30	$57.22	$26,461
Other communication and energy wire manufacturing	Manufacturing	$278.27	$57.00	$142
Industrial gas manufacturing	Manufacturing	$274.92	$56.32	$13,316
Engineered wood member and truss manufacturing	Manufacturing	$272.71	$55.87	$58,802
All other miscellaneous electrical equipment and component manufacturing	Manufacturing	$272.43	$169.29	$1,423,274
Broom, brush and mop manufacturing	Manufacturing	$271.96	$55.71	$14,782
All other converted paper product manufacturing	Manufacturing	$270.52	$55.42	$84,985
Stone mining and quarrying	Mining	$261.74	$53.62	$445,812
Railroad rolling stock manufacturing	Manufacturing	$260.40	$53.34	$431
Travel trailer and camper manufacturing	Manufacturing	$259.07	$53.07	$2,065
Mechanical power transmission equipment manufacturing	Manufacturing	$257.62	$52.77	$15
Aircraft engine and engine parts manufacturing	Manufacturing	$257.51	$52.75	$53
Printed circuit assembly (electronic assembly) manufacturing	Manufacturing	$257.08	$52.66	$3,180
Unlaminated plastics profile shape manufacturing	Manufacturing	$256.71	$52.59	$4,133
Motor vehicle metal stamping	Manufacturing	$255.02	$52.24	$1,657
Unknown	Other	$253.53	$147.27	$55,304,975
Plate work manufacturing	Manufacturing	$253.16	$51.86	$123
Machine tool manufacturing	Manufacturing	$252.35	$51.69	$10,953
Tire manufacturing	Manufacturing	$250.70	$51.36	$146,122
Seafood product preparation and packaging	Manufacturing	$250.29	$51.27	$146,900
Textile and fabric finishing mills	Manufacturing	$247.80	$50.76	$9,659
Nonferrous metal, except copper and aluminum, shaping	Manufacturing	$246.14	$50.42	$7,239
Copper rolling, drawing, extruding and alloying	Manufacturing	$245.15	$50.22	$24,554

Table 36: Calculation of international freight rates (cont.)

				Per short ton
Commodity	Sector	International rate	Domestic surcharge	Excess cost
Other pressed and blown glass and glassware manufacturing	Manufacturing	$244.71	$50.13	$109,871
Cut-and-sew apparel contractors	Manufacturing	$243.32	$49.84	$62,461
Textile bag and canvas mills	Manufacturing	$238.54	$48.87	$132,135
Electric lamp bulb and part manufacturing	Manufacturing	$235.78	$48.30	$772
Ball and roller bearing manufacturing	Manufacturing	$231.55	$47.43	$4,480
Manufactured home (mobile home) manufacturing	Manufacturing	$229.68	$47.05	$5,368
Pesticide and other agricultural chemical manufacturing	Manufacturing	$229.05	$46.92	$15,324
Elevator and moving stairway manufacturing	Manufacturing	$227.72	$46.65	$41,672
Rope, cordage, twine, tire cord and tire fabric mills	Manufacturing	$225.71	$46.24	$67,860
Stationery product manufacturing	Manufacturing	$224.01	$45.89	$42,653
Beet sugar manufacturing	Manufacturing	$223.42	$45.77	$5,000
Other major household appliance manufacturing	Manufacturing	$223.12	$45.71	$2,301
Spice and extract manufacturing	Manufacturing	$222.94	$45.67	$14,821
Industrial truck, trailer and stacker manufacturing	Manufacturing	$219.55	$44.98	$24,310
Reconstituted wood product manufacturing	Manufacturing	$213.90	$43.82	$40,836
Broadwoven fabric mills	Manufacturing	$213.55	$43.75	$4,009,156
Fabricated structural metal manufacturing	Manufacturing	$210.25	$43.07	$413,085
Welding and soldering equipment manufacturing	Manufacturing	$206.37	$42.28	$842
Nonchocolate confectionery manufacturing	Manufacturing	$203.70	$125.82	$6,791,791
Canned specialties	Manufacturing	$203.25	$41.64	$35,506
Small arms ammunition manufacturing	Manufacturing	$200.08	$40.99	$4,165
Rubber and plastics hoses and belting manufacturing	Manufacturing	$199.96	$40.96	$6,452
Metal tank (heavy gauge) manufacturing	Manufacturing	$199.87	$76.90	$2,192,324
Cut stone and stone product manufacturing	Manufacturing	$193.47	$39.63	$730,501
Iron and steel mills and ferroalloy manufacturing	Manufacturing	$188.01	$38.51	$355,911
Household refrigerator and home freezer manufacturing	Manufacturing	$186.98	$38.30	$4,300
Semiconductor and related device manufacturing	Manufacturing	$186.81	$38.27	$604,312
Construction machinery manufacturing	Manufacturing	$183.87	$37.67	$447,988
Metal window and door manufacturing	Manufacturing	$183.41	$37.57	$8,193
Frozen specialties manufacturing	Manufacturing	$181.06	$37.09	$533,032
Cheese manufacturing	Manufacturing	$180.56	$36.99	$11,180
Beef cattle ranching and farming, including feedlots and dual-purpose ranching and farming	Agriculture	$179.85	$36.84	$8,009
Other aluminum rolling, drawing and extruding	Manufacturing	$175.16	$35.88	$5,309
All other crop farming	Agriculture	$170.98	$35.03	$17,466
Breakfast cereal manufacturing	Manufacturing	$170.04	$34.83	$65,788
Secondary smelting and alloying of aluminum	Manufacturing	$169.74	$34.77	$2,190

Table 36: Calculation of international freight rates (cont.)

Per short ton

Commodity	Sector	International rate	Domestic surcharge	Excess cost
Pottery, ceramics and plumbing fixture manufacturing	Manufacturing	$168.58	$34.54	$143,686
Ophthalmic goods manufacturing	Manufacturing	$167.36	$34.28	$406
All other transportation equipment manufacturing	Manufacturing	$166.27	$34.06	$1,451
Prefabricated wood building manufacturing	Manufacturing	$163.59	$33.51	$72,874
Artificial and synthetic fibers and filaments manufacturing	Manufacturing	$162.97	$33.39	$2,854
Iron and steel forging	Manufacturing	$158.53	$95.78	$84,949
Plastics pipe and pipe fitting manufacturing	Manufacturing	$157.39	$32.24	$1,795
Dry, condensed and evaporated dairy product manufacturing	Manufacturing	$156.44	$32.05	$1,625
Commercial fishing	Agriculture	$155.69	$31.89	$408,291
Upholstered household furniture manufacturing	Manufacturing	$155.41	$31.84	$4,445
Truck trailer manufacturing	Manufacturing	$155.19	$31.79	$158
Abrasive product manufacturing	Manufacturing	$149.65	$30.66	$1,528
Tobacco product manufacturing	Manufacturing	$148.94	$30.51	$360
Flat glass manufacturing	Manufacturing	$145.91	$29.89	$14,023
Hardware manufacturing	Manufacturing	$145.05	$29.71	$13,406
Dog and cat food manufacturing	Manufacturing	$144.96	$29.70	$948
Steel wire drawing	Manufacturing	$143.82	$29.46	$34,148
Semiconductor machinery manufacturing	Manufacturing	$142.40	$29.17	$18,189
All other food manufacturing	Manufacturing	$141.08	$28.90	$2,103
Plastics material and resin manufacturing	Manufacturing	$140.79	$28.84	$330,958
Crown and closure manufacturing and metal stamping	Manufacturing	$138.93	$28.46	$5,561
Grain farming	Agriculture	$137.49	$28.17	$76,994
Canned fruits and vegetables manufacturing	Manufacturing	$136.56	$27.97	$394,988
Frozen fruits, juices and vegetables manufacturing	Manufacturing	$136.00	$27.86	$348,864
Plastics bottle manufacturing	Manufacturing	$134.20	$27.49	$18,824
Office furniture, except wood, manufacturing	Manufacturing	$133.31	$27.31	$883
Household laundry equipment manufacturing	Manufacturing	$133.22	$27.29	$824
Breweries	Manufacturing	$132.37	$27.12	$206,607
Soybean and other oilseed processing	Manufacturing	$131.43	$26.92	$179,246
Flour milling	Manufacturing	$129.02	$26.43	$102,089
Industrial mold manufacturing	Manufacturing	$127.65	$26.15	$3,026
Poultry processing	Manufacturing	$123.85	$25.37	$5,510
Other rubber product manufacturing	Manufacturing	$122.40	$25.07	$7,286
Household cooking appliance manufacturing	Manufacturing	$121.86	$24.96	$1,844
Other household nonupholstered furniture manufacturing	Manufacturing	$120.23	$24.63	$2,624
Mayonnaise, dressing and sauce manufacturing	Manufacturing	$115.58	$23.68	$32,823
Fruit farming	Agriculture	$111.96	$22.93	$179,976

Table 36: Calculation of international freight rates (cont.)

				Per short ton
Commodity	Sector	International rate	Domestic surcharge	Excess cost
Motor vehicle seating and interior trim manufacturing	Manufacturing	$111.30	$22.80	$15,177
Other basic organic chemical manufacturing	Manufacturing	$110.70	$22.68	$61,217
Mattress manufacturing	Manufacturing	$110.51	$22.64	$11,609
Wood windows and door manufacturing	Manufacturing	$108.32	$22.19	$14,604
Photographic and photocopying equipment manufacturing	Manufacturing	$105.86	$21.69	$1,899
Mineral wool manufacturing	Manufacturing	$104.66	$21.44	$1,963
Brick, tile and other structural clay product manufacturing	Manufacturing	$104.00	$21.31	$336,710
Spring and wire product manufacturing	Manufacturing	$102.08	$20.91	$37,670
Bottled and canned soft drinks and water	Manufacturing	$101.62	$20.82	$22,675
Veneer and plywood manufacturing	Manufacturing	$101.17	$20.73	$28,163
Wood office furniture manufacturing	Manufacturing	$100.25	$20.54	$73
Audio and video equipment manufacturing	Manufacturing	$98.69	$20.22	$880
Nonupholstered wood household furniture manufacturing	Manufacturing	$97.62	$20.00	$159,843
Wineries	Manufacturing	$97.02	$19.88	$155,689
Farm machinery and equipment manufacturing	Manufacturing	$96.92	$19.85	$81,428
Jewelry and silverware manufacturing	Manufacturing	$96.24	$19.72	$14,788
Other chemical and fertilizer mineral mining	Mining	$93.46	$19.15	$8,964
Totalizing fluid meter and counting device manufacturing	Manufacturing	$90.77	$18.59	$111
Animal, except poultry, slaughtering	Manufacturing	$89.10	$18.25	$167,276
Bread and bakery product, except frozen, manufacturing	Manufacturing	$85.15	$17.44	$2,071
Phosphatic fertilizer manufacturing	Manufacturing	$84.82	$17.38	$24,940
Nitrogenous fertilizer manufacturing	Manufacturing	$84.44	$17.30	$33,261
Roasted nuts and peanut butter manufacturing	Manufacturing	$78.27	$16.03	$9,290
Sawmills	Manufacturing	$77.55	$15.89	$117,680
Synthetic rubber manufacturing	Manufacturing	$77.39	$15.85	$1,723
Paper mills	Manufacturing	$75.87	$15.54	$294,874
Alumina refining and primary aluminum production	Manufacturing	$75.48	$15.46	$8,239
Other nonmetallic minerals	Mining	$74.50	$49.93	$3,279,708
Dehydrated food products manufacturing	Manufacturing	$74.14	$15.19	$8,432
Dry pasta, mixes and dough manufacturing	Manufacturing	$74.08	$15.18	$17,408
Automobile manufacturing	Manufacturing	$73.09	$41.64	$2,184,265
Fats and oils refining and blending	Manufacturing	$68.13	$13.96	$358,420
Tobacco farming	Agriculture	$67.74	$13.88	$13
Oilseed farming	Agriculture	$64.55	$13.22	$24,546
Sanitary paper product manufacturing	Manufacturing	$62.07	$12.72	$34,762
Polish and other sanitation goods manufacturing	Manufacturing	$61.57	$12.61	$3,216
Surface active agent manufacturing	Manufacturing	$58.32	$11.95	$361

Table 36: Calculation of international freight rates (cont.)

				Per short ton
Commodity	**Sector**	**International rate**	**Domestic surcharge**	**Excess cost**
Cotton farming	Agriculture	$58.09	$11.90	$493
Sand and gravel mining	Mining	$55.68	$37.46	$20,038,214
Other animal food manufacturing	Manufacturing	$53.90	$11.04	$1,100
Adhesive manufacturing	Manufacturing	$46.47	$9.52	$557
Wet corn milling	Manufacturing	$44.30	$9.08	$11,949
Petrochemical manufacturing	Manufacturing	$42.96	$8.80	$529
Poultry and egg production	Agriculture	$42.31	$8.67	$55
Gypsum product manufacturing	Manufacturing	$40.50	$8.30	$61
Broadcast and wireless communications equipment manufacturing	Manufacturing	$37.51	$7.68	$1,765
Rice milling	Manufacturing	$32.77	$6.71	$77,885
Search, detection and navigation instruments manufacturing	Manufacturing	$31.69	$6.49	$14
Other concrete product manufacturing	Manufacturing	$29.73	$6.09	$3,819
Rendering and meat byproduct processing	Manufacturing	$28.22	$5.78	$12,620
Tree nut farming	Agriculture	$27.27	$5.59	$6,732
Watch, clock and other measuring and controlling device manufacturing	Manufacturing	$24.93	$5.11	$689
Fluid milk manufacturing	Manufacturing	$20.26	$4.15	$320
Pulp mills	Manufacturing	$19.60	$4.02	$973
Wood preservation	Manufacturing	$19.47	$3.99	$84
Turbine and turbine generator set units manufacturing	Manufacturing	$19.29	$3.95	$1,633
Automatic environmental control manufacturing	Manufacturing	$18.84	$3.86	$71
* Not an industry (Used and secondhand goods)	Other	$18.62	$3.81	$1,168
Sugar cane mills and refining	Manufacturing	$18.06	$3.70	$129
Extraction of natural gas and crude petroleum	Mining	$17.76	$11.95	$147,631,392
Commercial logging	Agriculture	$17.01	$3.48	$2,126
Boat building	Manufacturing	$16.29	$3.34	$6
Paperboard mills	Manufacturing	$15.92	$3.26	$5,197
Cement manufacturing	Manufacturing	$14.20	$9.55	$8,320,202
Extraction of natural gas liquids	Mining	$13.72	$9.17	$1,317,719
Petroleum refineries	Manufacturing	$12.02	$8.08	$19,319,430
Manufactured ice	Manufacturing	$6.11	$1.25	$5,383
Asphalt paving mixture and block manufacturing	Manufacturing	$5.59	$1.15	$191
Storage battery manufacturing	Manufacturing	$3.90	$0.80	$407
Coal mining	Mining	$3.67	$2.47	$4,193,214
Iron ore mining	Mining	$1.17	$0.79	$57,056

Endnotes

1 See Appendix II.
2 "46 USC App 861: Purpose and policy of United States," United States Code, Office of the Law Revision Council.
3 "Shipping Under the Jones Act: Legislative and Regulatory Background," Congressional Research Services, Report 45725, updated Nov. 21, 2019, p. 5.
4 "Cabotage Laws of the World," American Maritime Partnership, September 2018.
5 1920 data includes all vessels of 1,000 gross registered tons or more. See: "Fourth Annual Report of The United States Shipping Board, Fiscal Year Ended June 30, 1920," U.S. Government Printing Office, 1920, p. 48, Table I., number of sail and steam vessels over 1,000 gross tons on June 30, 1920.
6 "United States Flag Privately-Owned Merchant Fleet Report: Oceangoing, Self-Propelled Vessels of 1,000 Gross Tons and Above that Carry Cargo from Port to Port," U.S. Maritime Administration, Dec. 12, 2019, (7,319,373 - 10,846,102) divided by 10,846,102) = 32% decrease.) MARAD recently removed earlier statistics from its publicly accessible data. See also "Table I., number of sail and steam vessels over 1,000 gross tons on June 30, 1920."
7 "46 USC Subtitle V: Merchant Marine, §55101: Application of coastwise laws," and "§55104: Transportation of passengers between Puerto Rico and other ports in the United States."
8 "46 USC Subtitle V: Merchant Marine, §55121: Transportation of merchandise and passengers on Canadian vessels."
9 "Waivers of Jones Act Shipping Requirements," EveryCRSReport.com, Sept. 29, 2017. See further, "PUBLIC LAW 109–304 — OCT. 6, 2006: Section 12111: Registry endorsement," 109th Congress, p. 10.
10 "Shipping Under the Jones Act: Legislative and Regulatory Background," Congressional Research Service, Nov. 21, 2019, p. 25.
11 In some limited cases air cargo data has been used.
12 "Freight Analysis Framework Version 4 User's Guide for Release 4.0," U.S. Bureau of Transportation Statistics, May 20, 2017.
13 "2018 State to State Commodity Tonnages Public Domain Database in EXCEL," Waterborne Commerce Statistics Center, U.S. Army Corps of Engineers.
14 Ibid.
15 Twenty-eight of these ships are either containerships or roll-on/roll-off vessels. See "United States-Flag Privately-Owned Merchant Fleet Report Oceangoing, Self-Propelled Vessels of 1,000 Gross Tons and Above that Carry Cargo from Port to Port," U.S. Maritime Administration, Jan. 15, 2020, p. 6.
16 A third carrier announced that it would serve Hawaii in 2017, but quickly reversed its decision less than a year later. See Joseph Bonney, "TOTE halts plans for Hawaii expansion, new ships," Jan. 26, 2018, www.joc.com/maritime-news/container-lines/tote-halts-plans-hawaii-expansion-new-ships_20180126.html.
17 "Bill of Lading Database, Import Export Data: PIERS," IHS Markit.
18 USA Trade Online, U.S. Census Bureau.
19 "Basic Coverage Insurance Rates for International Shipments (Outside US & Canada)" (coverage for general cargo), Cargo Insurance Center, 2003-2015, accessed Nov. 15, 2018.
20 Under cost and freight terms, the seller is required to clear the goods for export, deliver them onboard the ship at the port of departure and pay for transport of the goods to the named port of destination. The buyer is responsible for any insurance.
21 "Use Tables/After Redefinitions/Margin Details: 2007, 2012," U.S. Bureau of Economic Analysis.
22 Break bulk cargo is general cargo not shipped in a container. It could be palletized, burlap bags or any other format that is not lifted out of the hold by gantry cranes, driven out of the hold, to be sucked out by a mechanical conveyer system.
23 IMPLAN was originally developed by the U.S. Forest Service, the Federal Emergency Management Agency and the U.S. Bureau of Land Management. It was converted to a user-friendly model by the Minnesota IMPLAN Group (MIG Inc.) in 1993. This model uses the input-output tables for 2016.
24 "Use Tables/After Redefinitions/Margin Details: 2007, 2012."
25 The IMPLAN model is based on a series of national input-output accounts known as RIMS II. These data are developed and maintained by the BEA as a policy and economic decision-analysis tool. The make tables identify all of the inputs that go into the production of each dollar of output by a specific industry.
26 For information on the BEA input-output accounts see Karen Horowitz and Mark Planting, "Concepts and Methods of the U.S. Input-Output Accounts," U.S. Bureau of Economic Analysis, September 2006, updated April 2009.
27 "RIMSII: An essential tool for regional developers and planners," U.S. Bureau of Economic Analysis.
28 For more information see "Handbook of Methods," U.S. Bureau of Labor Statistics.
29 Proponents of the existing cabotage laws have suggested that studies reporting lower costs are not taking into account costly regulations that could be imposed on foreign shipping companies, were they allowed to enter competition for shipping services between U.S. ports. See for example: "Examination of Recent Reports Contesting the

Value of the Jones Act to Puerto Rico," Reeve & Associates prepared for: The American Maritime Partnership, April 29, 2019. While this could occur, it is speculative at best. Changes in the cabotage law could just as well lead to reduced regulations for both U.S.-flagged and foreign-flagged ships. Even today, vessels serving U.S. ports are subject to safety, security and environmental regulations, no matter what flag they are flying. Eliminating the Jones Act would reduce costs for U.S.-flagged carriers and, in and of itself, would more likely positively affect foreign carriers by opening up potential markets for them.

30 World Freight Rates, Paradigm Freight Holdings Inc. ceased operation in September 2017.

31 Mileage obtained from Sea-Distances.org.

32 John Dunham & Associates, "The Jones Act: A Legacy of Economic Ruin," produced for the Food Marketing, Industry and Distribution Chamber of Puerto Rico, February 2019, page 17.

33 Reeve & Associates and Estudios Tecnicos Inc., "Impact of the U.S. Jones Act on Puerto Rico," prepared for the American Maritime Partnership, July 2018, p. 13.

34 Data for a U.S.-flagged ship from "The Economic Effects of Significant U.S. Import Restraints Third Update 2002," Investigation No. 332-325, Publication 3519, U.S. International Trade Commission, June 2002, p. 121.

35 "Estimated Pasha Hawaii Vehicle Transit Days," Pasha Hawaii.

36 Using the online "CPI Inflation Calculator," an inflation rate of 1.50 is used in this calculation representing the change in CPI-U (consumer price index – urban) from December 2009 to January 2019. Since actual data on port handling charges is not available, CPI-U was used as a proxy. The inflation rate for transportation services during this same period was slightly higher, at 1.67. However, this includes many sectors that are not related to ocean freight, including passenger air transportation and gasoline. Other inflation indexes, such as the producer price index, could also be used to adjust these figures, however each has its own issues. As such, it seems appropriate to use the most common measure of inflation in this particular instance. See "CPI Inflation Calculator," U.S. Bureau of Labor Statistics.

37 Simat, Hellieson & Eichner Inc., "The Jones Act and Its Impact on the State of Alaska, Volume II: Final Report," prepared for the Alaska Statehood Commission, July 1982.

38 "Use Tables/After Redefinitions/Margin Details: 2007, 2012," U.S. Bureau of Economic Analysis.

39 The IMPLAN model is based on a series of national input-output accounts known as RIMS II. These data are developed and maintained by the U.S. Bureau of Economic Analysis as a policy and economic-decision analysis tool. This analysis utilizes the 2016 IMPLAN tables.

40 The economic impact is the change in economic output in the state and may be higher or lower than the actual cost increase.

41 Neither IMPLAN nor government statistics contain an economic sector known as tourism. In this case, the tourism sector is defined as the industries presented in Table 9 as "Travel and Entertainment." These include arts and sporting operations, museums, parks and amusement parks, gaming, personal sports, accommodations and food service.

42 There were about 45 different studies examined that looked at the costs of the Jones Act on either the U.S. economy or those of Alaska, Hawaii and Puerto Rico. Some of these studies did not provide any data to support their conclusions. Many others referenced earlier reports as the source for their estimates, while still others simply presented a total cost difference rather than a way to calculate a percentage change.

43 Simat, Hellieson & Eichner Inc., "The Jones Act and Its Impact on the State of Alaska."

44 See for example, "The Economic Effects of Significant U.S. Import Restraints," Investigation No. 332-325: Publication 2699, U.S. International Trade Commission, November 1993,; "The Economic Effects of Significant U.S. Import Restraints: Third Update 2002," Investigation No. 332-325, Publication 3519, U.S. International Trade Commission, June 2002,; and "Comparison of U.S. and Foreign-Flag Operating Costs," U.S. Maritime Administration, September 2011.

45 For example, see Puerto Rico Management & Economic Consultants Inc., "A Study on the Impact of Repeal of the Jones Act on the Economy of Puerto Rico," prepared for Navieras de Puerto Rico, June 1994,; and Clinton H. Whitehurst, "American Domestic Shipping in American Ships: Jones Act Costs, Benefits, and Options," American Enterprise Institute, 1985.

46 Colin Grabow, "Rust Buckets: How the Jones Act Undermines U.S. Shipbuilding and National Security," Cato Institute, Nov. 12, 2019.

47 Simat, Hellieson & Eichner Inc., "The Jones Act and Its Impact on the State of Alaska," pgs. 42, 43, 46, 49.

48 William Olney, "Cabotage Sabotage? The Curious Case of the Jones Act," Working Paper 2019-6, The Economic Research Organization at the University of Hawai'i, Sept. 9, 2019. This paper is also posted as "Cabotage Sabotage? The Curious Case of the Jones Act," Department of Economics Working Papers 2019-03, Department of Economics, Williams College, Williamsport, Massachusetts, Dec. 2, 2019.

49 This was calculated using the Microsoft Solver add-in program.

50 "Consumption Expenditures: Goods for Hawaii," U.S. Bureau of Economic Analysis via FRED Economic Data at the Federal Reserve Bank of St. Louis, and "Per Capita Personal Income in Hawaii," U.S. Bureau of Economic Analysis via FRED Economic Data at the Federal Reserve Bank of St. Louis.

51 Including construction and building services; based on the 2016 IMPLAN economic impact data tables.

52 For example, the 10% tariff on aluminum and basic aluminum products and the 25% tariff on steel. See Ben Moselle, ed., "2017 National Building Cost Manual, 41st Edition," Craftsman Book Co., pp. 7-8. Hawaii has the highest Area Modification Factors for building costs in the country.

53 Janelle Cammenga, "State Gasoline Tax Rates as of July 2019," The Tax Foundation, July 31, 2019.
54 This category includes libraries. See "State of Hawaii: The FB 2019-21 Executive Biennium Budget: Budget in Brief," prepared by Hawaii Department of Budget and Finance, Dec. 17, 2018, p. 10.
55 "Table 1300: Age of reference person: Annual expenditure means, shares, standard errors, and coefficients of variation, Consumer Expenditure Survey — 2018," U.S. Bureau of Labor Statistics, September 2019.
56 Scenario 5, the dynamic scenario, is not included as the costs are the same as in Scenario 1.
57 "Hawaii Statewide Freight Plan," State of Hawaii Department of Transportation, Highways Division, December 2018, p. 9.
58 Scenario 5 is not included as the effects from exports would be the same as in Scenario 1.
59 Kenton, Will, "The Jones Act," Investopedia, Sept. 3, 2019.
60 Wesley L. Jones, "The Merchant Marine Act of 1920," Proceedings of the Academy of Political Science in the City of New York, Vol. IX, 1920-1922, Columbia University, New York, 1922, pp. 240-241.
61 "Fourth Annual Report of the United States Shipping Board, Fiscal Year Ended June 30, 1920," U.S. Government Printing Office, 1920, p. 48.
62 "United States Flag Privately-Owned Merchant Fleet Report: Oceangoing, Self-Propelled Vessels of 1,000 Gross Tons and Above that Carry Cargo from Port to Port: Summary of Changes from 2016 Onward," U.S. Maritime Administration, Dec. 12, 2019.
63 "Ships built by country of building: 2014-2018," UNCTADSTAT, United Nations Conference on Trade and Development.
64 Statement by Mark Buzby, administrator of the U.S. Maritime Commission, before the Committee on Transportation and Infrastructure, Subcommittee on Coast Guard and Maritime Transportation, U.S. House of Representatives, Jan. 17, 2018. See "The State of the U.S. Flag Maritime Industry," U.S. Department of Transportation.
65 "The Decline of U.S. Shipbuilding." See also Colin Grabow, "Rust Buckets: How the Jones Act Undermines U.S. Shipbuilding and National Security."
66 Ibid.
67 Bryan Riley, "Are Jones Act ships really 'Made in the USA?' Well, sort of," The Hill, June 7, 2016. See also, "Keppel Corporation," Wikipedia.
68 "Comparison of U.S. And Foreign-Flag Operating Costs," U.S. Maritime Administration, September 2011, p. 4.
69 Drewry Maritime Research, "U.S. Cabotage Protection Gets More Expensive," in Michael Hansen, "Respected maritime authority calls Jones Act an 'expensive luxury,'" Grassroot Institute of Hawaii, Nov. 21, 2013.
70 "Puerto Rico: Characteristics of the Island's Maritime Trade and Potential Effects of Modifying the Jones Act," Report GAO-13-260, U.S. Government Accountability Office, March 2013, p. 5.
71 Victor Clark, et al., "Porto Rico and Its Problems," The Brookings Institution, 1930.
72 The term "flag of convenience" refers to registering a ship in a sovereign state different from that of the ship's owners. This is done to take advantage of reduced regulation and lower administrative fees. See "What is a Flag of Convenience?" HG.org Legal Resources.
73 See for example E.G. Frankel & Associates, "Study of the Economic Impact of Cabotage, and Alternative Strategies to Cabotage in US Trade," prepared for the Government Development Bank of Puerto Rico,; and Jaison Abel, et al., "Report on the Competitiveness of Puerto Rico's Economy," Federal Reserve Bank of New York, June 29, 2012.
74 "The Economic Effects of Significant U.S. Import Restraints," U.S. International Trade Commission, November 1993, p. 43.
75 Ibid.
76 Simat, Hellieson & Eichner Inc., "The Jones Act and Its Impact on the State of Alaska."
77 Colin Grabow, "For Lower Gas Prices, Scrap the Jones Act," Cato Institute, May 24, 2018.
78 Colin Grabow, Inu Manak and Daniel J. Ikenson, "The Jones Act: A Burden America Can No Longer Bear," CATO Policy Analysis, Cato Institute, June 28, 2018.
79 Olney, "Cabotage Sabotage? The Curious Case of the Jones Act."
80 Justin Lewis, "Veiled Waters: Examining the Jones Act's Consumer Welfare Effect," Issues in Political Economy, Vol. 22, 2013. Lewis writes: "In this paper, I estimate how the price level of domestic cabotage services would differ if the Jones Act were not in place. The difficulty in this effort lies in the nature of the act itself. Since foreign unregulated competition in U.S. cabotage is prohibited, there is no preexisting set of 'free market' prices in this market to serve as a basis of comparison. In addition, the price of unregulated, foreign-flag transport in the world market is essentially unobservable due to a series of peculiar characteristics unique to the maritime shipping industry, and attempting to estimate it is one of this paper's primary tasks."
81 William Suarez-Gomez and Jorge Ayala-Cruz, "Maritime cabotage in Puerto Rico's agribusiness supply chain," doctoral dissertation, Universidad ICESI, Aug. 11, 2016.
82 Reeve & Associates and Estudios Tecnicos Inc., "Impact of the U.S. Jones Act on Puerto Rico."

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