Shipping performance and economic contributions of Jones Act routes in the Caribbean

Prepared for the Transportation Institute

12 July 2022

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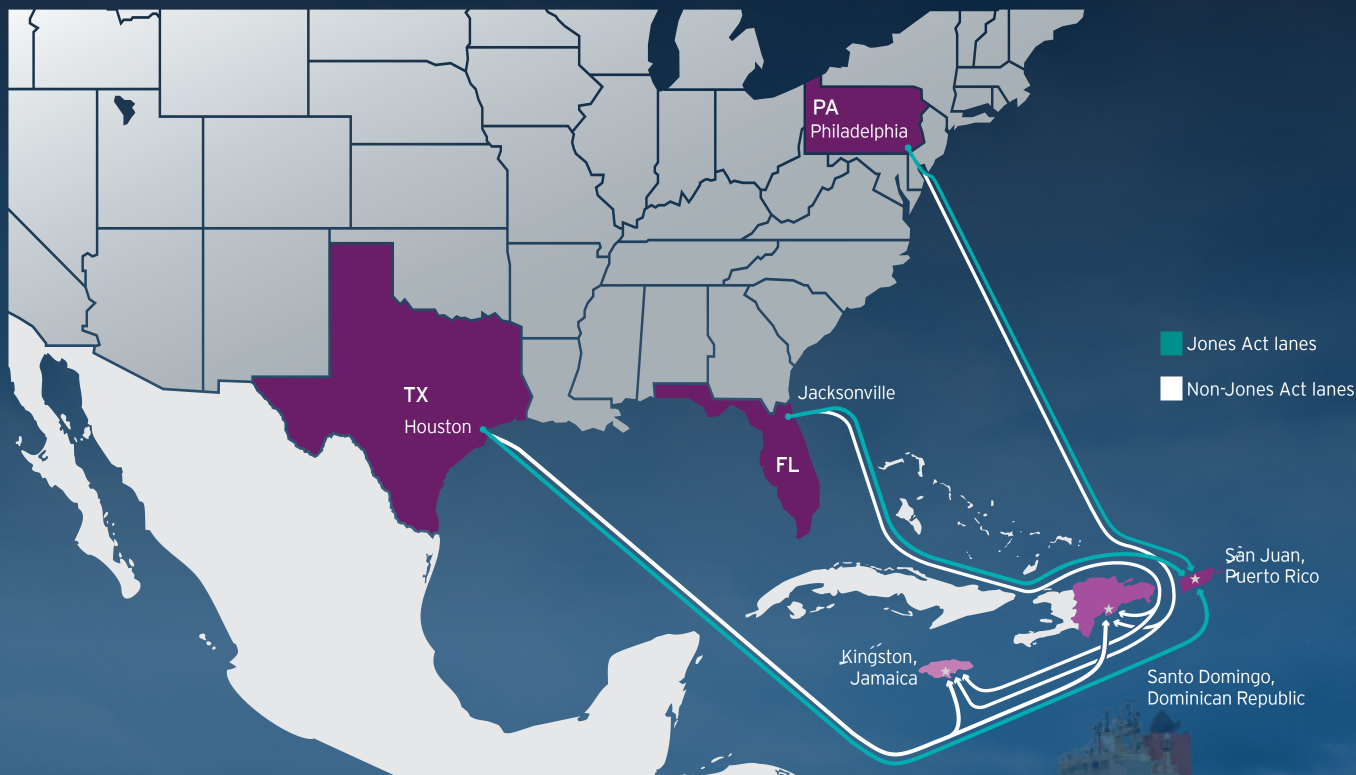
Key Jones Act and non-Jones Act routes in the Caribbean



Source: EY analysis of Caribbean shipping lanes

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Contents

Glossary

Bunker/Bunker Adjustment Factor (BAF). A freight surcharge to compensate for market fluctuations in fuel prices.

Cargo port throughput. The amount of cargo handled by a port over a period of time.

Container chassis (chassis). A trailer (or wheels) under the ocean container to haul the container.

Demurrage charges. A surcharge imposed on the shipper for the use of a container within a terminal beyond an established Period of Free time.

Detention charges. A surcharge imposed on the shipper for the use of a container outside of a terminal beyond an established Period of Free time.

Drayage. The movement of freight to/from a maritime port and shipper's/importer's facility or destination.

Dwell time. The amount of time it takes for a ship at port to load or discharge cargo.

Employment contributions. Full-and part-time employees

Flags of convenience. The registration of commercial ships under a flag that does not match the nationality of the vessel owner.

Forty-foot equivalent units (FEU). A unit of cargo capacity container with a length of 40 feet or the equivalent of two TEUs.

Fifty-three foot (53's). A unit of cargo capacity container with a length of 53 feet or the equivalent of 2.65 TEUs.

Gross economic output. Sum of value-added and intermediate supplier purchases. This is typically equivalent to an industry's revenue.

Labor income. Salaries, wages and benefits of employees and proprietor income

Roll-on/roll-off (RO/RO). A freight vessel where cargo is "rolled-on and rolled-off" such as vehicle transport.

Twenty-foot equivalent units (TEU). A unit of cargo capacity container with a length of 20 feet.

Value added. Labor income plus indirect business taxes, consumption of fixed capital (depreciation), and mixed income.

Executive summary

The Jones Act is a United States coastwise or cabotage statute that was enacted as part of the 1920 Merchant Marine Act to promote a strong maritime industrial base. It requires all merchandise cargo transported by water between US points be shipped on vessels that are US-built, US-citizen owned, and crewed by US citizens. Passenger vessels are covered by the Passenger Vessel Act. The Jones Act has dual aims to provide economic security by ensuring that essential services between domestic ports are led and managed by US carriers as well as promoting national security by allowing for the crews of Jones Act carriers to support military sealift during a national crisis or emergency.

In view of the disruption to the international shipping industry during the COVID-19 pandemic, the Transportation Institute commissioned EY to evaluate potential stability benefits associated with Jones Act. Specifically, EY assessed whether there were observable differences in the extent to which rates, delivery times and reliability of service since the onset of the pandemic varied for Jones Act carriers versus other carriers and/or in Jones Act protected markets/routes versus unprotected markets/routes in the Caribbean. EY collected primary information via surveys and interviews with companies operating in the Caribbean to evaluate changes in freight rates, service reliability and customer satisfaction from April 2019 to April 2022.

EY was also commissioned to collect information from Jones Act shippers regarding their employment, payroll, operating and capital expenditures in Puerto Rico. This information was used to estimate the Jones Act carriers' macroeconomic impacts for Puerto Rico using the IMPLAN economic model. These estimates include the carriers' direct, indirect, and induced effects on GDP, employment, personal income, and economic gross output. Please see Section 1 for descriptions of the survey and economic contributions' methodologies.

Study highlights

1 Customer experience

Shippers were about twice as likely to associate better carrier performance during the COVID-19 pandemic with Jones Act carriers than non-Jones Act ones.

2 Stability in freight rates

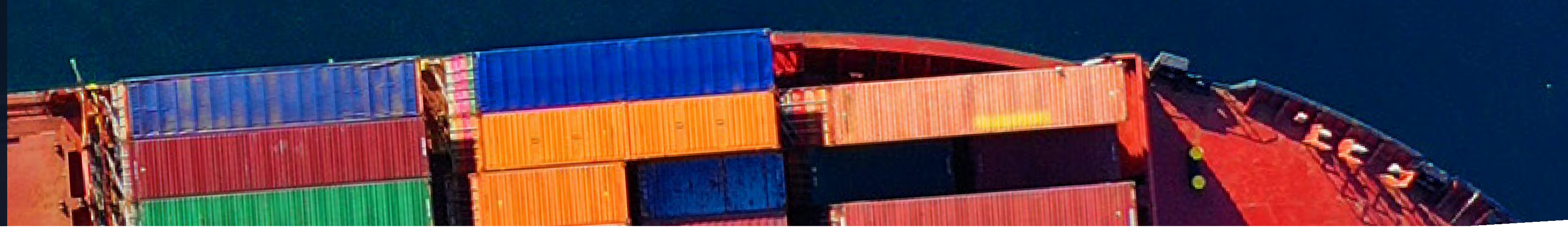
Freight price increases in the Caribbean were more stable during the pandemic than the global average, and rate increases on Jones Act lanes were comparable with the rest of the region.

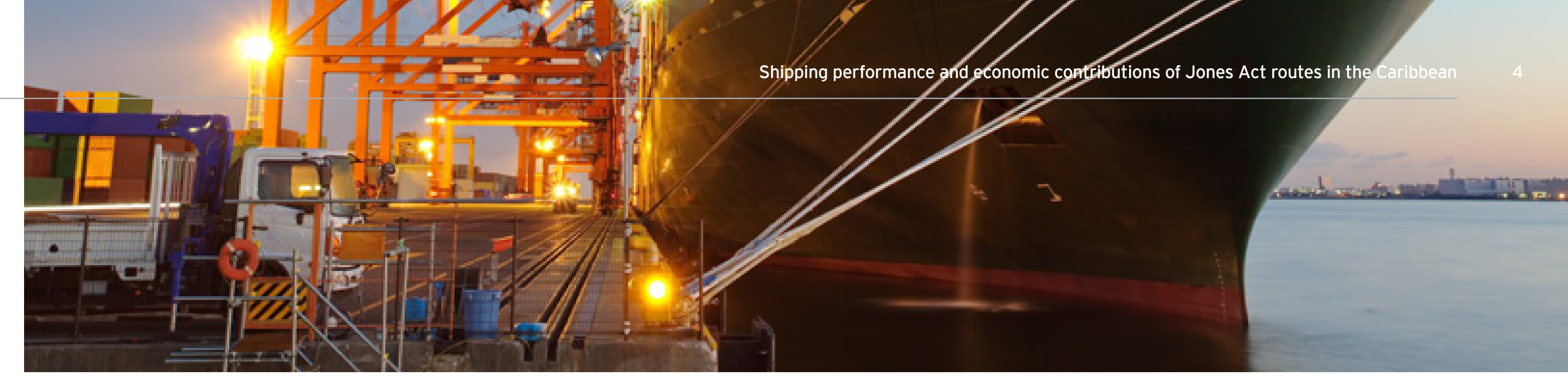
3 Schedule reliability of routes

Dwell times for domestic lanes were lower than international lanes during the pandemic; availability of chassis and containers were also more reliable on domestic trade lanes.

4 Economic contributions of Jones Act shipping activity in Puerto Rico

The Jones Act shipping industry contributes to Puerto Rico's economy by supporting 2,027 total jobs, $96 million of labor income, $130 million in value added (GDP) contributions and $221 million of annual gross economic outputs.





Key performance metrics since January 2019

	Caribbean region	Global average
Container price increases	+19%	+522%
Number of days for vessels delayed	<1 day	8 days

	Jones Act	Non-Jones Act
Overall shipper satisfaction*	81%	43%
Dwell time increases+	+24%	+38%
Issues finding container availability**	16%	29%

Source: EY market analysis and survey of shippers and business representatives. *Shipper satisfaction with carrier performance refers to the percentage of shippers or business representatives who answered "very" or "mostly" satisfied. Simple averages across across four questions. + EY analysis of Marine Traffic data. ** denotes analysis of Caribbean ports only. Jones Act refers to the Port of San Juan.

Current shipping industry landscape

The COVID-19 pandemic has led to volatility in the shipping industry. The global shipping industry has faced sustained pressure from a sudden rebound in maritime trade, a rebalancing of consumer demand away from services toward material goods, logistical challenges from labor and port equipment shortages, lengthy port delays, new geopolitical tensions, and surging freight costs.

This supply chain disruption has occurred against a backdrop of rapid consolidation of the global shipping industry over the past decade.[1] Three alliances consisting of nine international maritime carriers now control approximately 80% of the world's shipping container capacity, which is up from only 30% in 2011, according to data by S&P Global Platts.[2] For some shipping lanes, such as between the US West Coast and China, these alliances control more than 95% of all freight.

In view of their market concentration, the global alliances often shift operations to the highest volume ports to meet contractual obligations, which contributes to uncertainty and volatility for shippers at smaller ports.[3] Even before the pandemic, on-time vessel reliability on lower volume trade lanes such as from Europe to the Caribbean often only reached 50-60% as the global carriers made schedule adjustments based on market dynamics.[4]

The supply chain challenges during the COVID-19 pandemic have accentuated the differential effects of international and domestic carrier performance. Following the onset of the COVID-19 pandemic in March 2020, the volume of maritime trade plunged as importer/exporters cancelled orders. The three largest container shipping alliances cancelled more than 1,000 voyages in the first six months of 2020. In May 2020, more than 20% of global sailings were cancelled, according to eeSea's Blank Sailings Tracker.[5]

In the second quarter of 2020, ocean freight carriers and port operators faced new challenges of reprioritizing shipments as demand for personal-protective equipment (PPE) increased. Many global carriers struggled to identify priority cargo contributing to the delays at port.

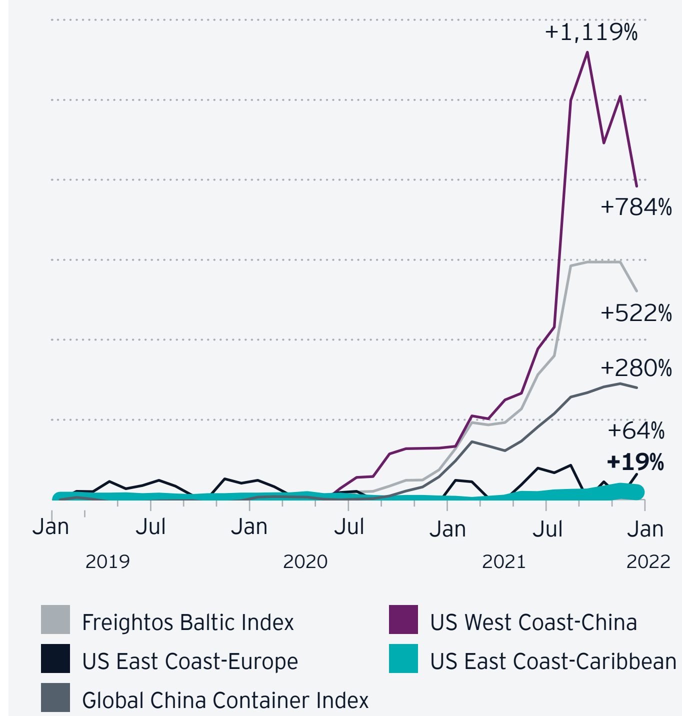
Rolling government lockdowns have restricted the capacity of port workers for loading and discharging cargo. During the early months of the pandemic, many countries temporarily closed their ports after any port workers tested positive for COVID-19. Other countries mandated temporary port closures for foreign-flagged vessels contributing to disruption for global shipping. In contrast, domestic freight carriers faced fewer logistical hurdles when ports were closed to international carriers.

Moreover, the massive rebalancing of consumption created new maritime supply chain challenges, particularly for the global alliances. A surge in imports led to disruption on port logistics, with US ports processing more than 2.34m TEU containers in March 2022 compared with 1.4 million containers in March 2020.[6] Moreover, US demand for containerized goods from Asia exceeded demand for US exports to Asia leading to a widespread misallocation of containers. Difficulties with container availability were exacerbated by contractual obligations for global carriers to reposition equipment for US importers. The sudden surge in demand created competing demands for the same empty containers.[7] For example, upwards of 35 percent of all containers exported to the U.S. remained empty by the end of 2020, according to one report.[8]

As depicted in Figure 1, the sudden rebound in ocean container trade and the associated shipping capacity challenges led to significant increases in containerized freight rates, particularly on East-West routes. According to Freightos, the weekly index price to ship a container globally increased 522% from January 2019 to December 2021. For some lanes such as from the US West Coast to China, container prices have surged more than 1,100% from January 2019 to mid-2021. While prices from the US West Coast dropped by the end of the 2021 to 784%, prices between China and the rest of world are still more than 280% of the prices in 2019.

As a region, freight price increases between US East Coast and the Caribbean have been more stable, increasing only by an average 19% from January 2019 to December 2021 compared with the dramatic increases seen on East-West routes. The increase in Caribbean ocean container prices is less than third of the increase from the US East Coast to Europe.

Figure 1. Trends in container price indexes from January 2019 to December 2021 by shipping lane

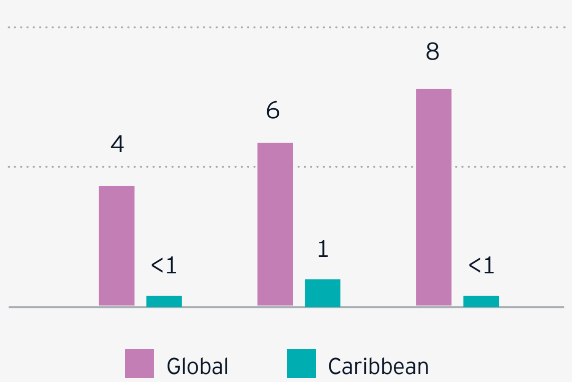


Source: EY analysis of Freightos Baltic Index, China Containerized Freight Indexes, and Container Trade Statistics Caribbean Price Index.

Port logistical hurdles combined with labor shortages have led to a 22% year-over-year increase in truckload rates, drayage, and a shortage of equipment including chassis in the US.[9] Moreover, international vessel reliability has plummeted from 75% on-time reliability just prior to the pandemic to fewer than 20% according to Metro Shipping.[10] This has led to a shifting of maritime and transport resources to alleviate the backlog of ships at multiple West Coast ports. For example, the US East Coast has seen a 25% year-over-year increase in vessel capacity at the start of 2022.

Despite facing similar market dynamics, Caribbean ports and Puerto Rico, specifically, have on average performed better in terms of port operations and vessel availability than the global average. Globally, the average delay for late vessel arrivals has approximately doubled from 4 to 8 days from December 2019 to December 2021. While a third of shippers experienced some delays on Caribbean routes during the pandemic, delays were generally shorter in the Caribbean than the global average and consistently less than a day as depicted in Figure 2.

Figure 2. Average delay in days for late vessel arrivals from December 2019 to December 2021

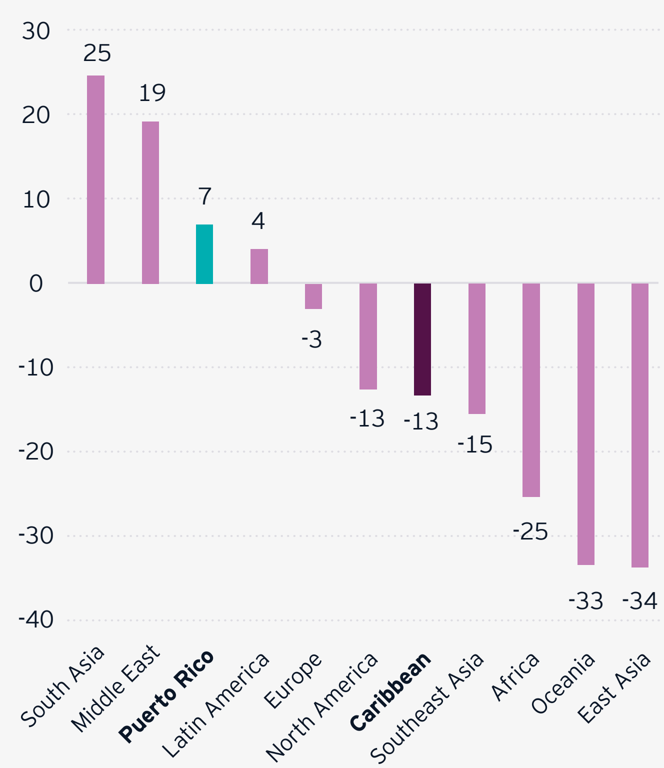


Source: EY analysis of Sea-Intelligence Schedule Reliability and interviews with shippers and business representatives.

In terms of overall container port operations, the Port of San Juan in Puerto Rico has outperformed many of its global peers during the pandemic. According to the World Bank and S&P Global Intelligence's Global Container Port Performance Index – a measure of time vessels needed to spend at port to complete workloads -- the Port of San Juan was able to increase its ranking by seven places year-over-year to 157th out of 370 ports in 2021. When compared to regional averages, Puerto Rico's growth in the rankings outperformed all regions, save for South Asia and the Middle East as depicted in Figure 3.

Despite these changes, isolating the effects of the Jones Act on freight prices, container and equipment availability, and port operations requires analyzing differences between domestic and international lanes within a single region.

Figure 3. Rank changes in Global Container Port Performance Index from 2020 to 2021



Source: EY analysis of World Bank and S&P Global Intelligence's Global Container Port Performance Index

Main findings in the Caribbean Region

EY evaluated the distinguishing features of the Jones Act during the COVID-19 pandemic and its implications for freight rates, container availability, port congestion, and carrier performance. Estimating the effects of Jones Act within a single region allows for a structured comparison between Jones Act and non-Jones Act routes, which can hold constant characteristics of shippers, route distances, and economic dynamics. The Caribbean is an appropriate region to isolate the impact of the Jones Act, because it offers the opportunity to approximately "match" shipping distances and economic characteristics across several destinations (Puerto Rico, Santo Domingo, and Jamaica) while varying whether the route is subject to the Jones Act. The differences attributable to the Jones Act outlined in the report are only relevant to Caribbean region within the time frame from April 2019 to April 2022 and should not be extrapolated to other Jones Act-protected routes without further analysis.

As the most significant destination for US shipments to the Caribbean, Puerto Rico is a good case for testing the stabilizing effects of the Jones Act on shipping between the continental United States and the Caribbean. Of total trade shipments to the Caribbean from the United States, Puerto Rico constitutes about 41% of total trade with the region.[11] Jacksonville to San Juan is the highest volume trade route. Several carriers serve the market, with four main cargo carriers operating north and southbound routes between the continental US and San Juan providing sufficient capacity to meet demand for goods.

Key findings from the study are summarized below and in the table ES-1.

Customer experience

- **Shippers and business representatives are significantly more satisfied with Jones Act carriers' ability to navigate the COVID-19 pandemic than non-Jones Act carriers between 2020 and the spring of 2022.** Nearly 9 in 10 shippers (88%) indicated that they were "very" or "mostly" satisfied with the Jones Act carriers' "ease of booking" and "customer service" functionality, whereas only around half of shippers expressed similar levels of satisfaction with non-Jones Act carriers.
- **Caribbean shippers were more satisfied with the level of service and resiliency provided in domestic trade lanes.** The Caribbean's region history with natural disasters such as Hurricane Maria and other emergencies have tested the resiliency of shipping carriers. Among shippers, nearly three-fourths said they were "very" or "mostly" satisfied with Jones Act carriers' ability to meet "urgent change orders" and adapt to "major crisis situations". Only 42% of the same shippers expressed similar levels of satisfaction with carriers operating on non-protected lanes, and less than one-third of shippers thought that non-Jones Act carriers' crisis performance was satisfactory.

Freight rates and stability

While past studies have suggested that freight rates on Jones Act carriers may be higher than non-Jones Act carriers for shipping the same good across various distances,[12] EY's survey of companies does not directly assess price level differences between Jones Act and non-Jones Act routes. Rather, shippers reported year-over-year freight price changes across Jones Act and non-Jones Act routes from April 2019 to April 2022. As such, this report's analysis focuses only on stability in prices from a pre-pandemic baseline rather than a comparison in price levels between Jones Act and non-Jones Act carriers.

- **Within the Caribbean region, EY's survey indicates rate increases on domestic routes the prior three years are comparable to rate increases on other Caribbean routes.** According to EY's survey of 49 shippers, company representatives indicated that they generally did not experience higher prices on Jones Act-protected lanes than international routes in the Caribbean, either prior to or during the pandemic.
- **Jacksonville to San Juan is the highest volume Jones Act lane for Puerto Rico.** For this Jones Act route, rate increases were marginally lower than other comparable Caribbean rate increases. For the Jacksonville to San Juan route, shippers on average reported a 19% increase in freight rates (including fuel and accessorial fees) over the April 2019 to April 2022 period, compared to a 20% increase to Kingston and a 27% increase to Santo Domingo. Since companies generally negotiate two- or three-year contracts with Jones Act carriers, shippers attributed most of the freight rate increases to higher fuel or bunker costs.
- **For other Jones Act lanes, price increases were generally similar to other Caribbean routes.** Freight rate increases from Philadelphia and Houston have been similar to San Juan, Santo Domingo, and Kingston. For example, shippers from Philadelphia to San Juan reported a 27% increase in rates since the pandemic, which was lower than a 33% increase in Santo Domingo. However, southbound rates from Philadelphia rose more steeply to San Juan (27%) than to Kingston (20%).

Port congestion and availability of chassis and containers

- **Dwell times for domestic lanes were lower than international lanes during the pandemic.** While there has been an overall general decline in service reliability during the pandemic, the impact of port congestion on turnaround time has not been uniform across ports in the Caribbean and dwell time for container ships on non-Jones Act protected routes have grown more rapidly than Jones Act routes. For example, median days in port increased by 40% in Kingston compared with 35% in Santo Domingo and 24% in San Juan between January 2019 and July 2021.
- **Availability of chassis and containers were more reliable in domestic trade lanes than in international lanes. Representatives identified more issues on non-Jones Act lanes, with more than 1 in 3 shippers to Santo Domingo experiencing trouble getting containers compared to 1 in 4 shippers to Kingston.** By contrast, fewer than 1 in 7 shippers to San Juan experienced issues with containers or chassis.
- **Underscoring the difficulty with rotating containers on trans-Atlantic and trans-Pacific routes, non-Jones Act carriers serving the three continental US ports had the largest issues with both containers and chassis.** More than 60% respondents said they experienced trouble finding available containers from Jacksonville, with 58% of businesses shipping out of Philadelphia and 45% out of Houston citing container availability as a problem.

Table ES-1. Summary of Jones Act versus Non-Jones Act shipping industry pricing, reliability, and performance from survey

	Jones Act shipping routes	Non-Jones shipping routes
Carrier performance		
Shipper satisfaction with "Ease of Booking"	88%	54%
Shipper satisfaction with "Customer Service"	88%	46%
Shipper satisfaction with "Urgent Change Orders"	74%	42%
Shipper satisfaction with "Major Crisis Situations"	73%	31%
Dwell time increases+	24%	38%
Shippers experiencing delays	30%	32%
Shippers experiencing difficulties finding container availability*	16%	29%
Freight rate increases	21%	24%

Source: EY analysis of survey responses, N=49. Simple averages across Jones and non-Jones Act Shipping lanes. + EY analysis of Marine Traffic data. * denotes analysis of Caribbean ports only. Carrier performance refers to the percentage of shippers or business representatives who answered "very" or "mostly" satisfied.

Economic contributions due to Jones Act shipping industry operations in Puerto Rico

EY performed an economic contributions analysis of the Jones Act shipping industry in Puerto Rico. Data describing the Jones Act shipping industry was provided by cargo carriers on their operations and capital investments in Puerto Rico between 2019 and 2021. US Bureau of Labor Statistics (BLS) employment and payroll data through June of 2021 was obtained for industries related to water transportation in Puerto Rico and provide the basis of the direct employment and labor income estimates for the entire shipping industry, which was then apportioned to Jones Act routes.

Payroll, operating and capital expenditures by Jones Act carriers are affected by multiple factors, which may be unrelated to the Jones Act. The economic contributions analysis provides the direct and indirect effects of the carriers' expenditures and the analysis does not measure the level of carrier or shipper activity that is attributable to the Jones Act.

As shown in Table ES-2, estimated economic contributions of the Jones Act shipping industry include:

- Annual operations of the Jones Act shipping industry in Puerto Rico in 2021 directly supported an estimated 1,055 workers with payroll of $53 million, value added of $62.2 million and direct economic output of nearly $120 million.
- Jones Act shipping supported jobs in other industries as purchases were made from Puerto Rican suppliers and shipping workers spent money at restaurants, grocery stores, and other businesses in Puerto Rico. The Jones Act shipping industry is associated with an additional 972 jobs in other sectors of the Puerto Rican economy.
- Including indirect and induced contributions, the total annual economic contributions of the Jones Act shipping industry in Puerto Rico is estimated at 2,027 total jobs supported, nearly $96 million of labor income, $130 million in value added (GDP) contributions and $221 million of annual gross economic output.
- The two largest Jones Act carriers have invested nearly $1 billion to serve Puerto Rico trade since 2014, including major capital investments in the world's first LNG-powered containerships and related assets and infrastructure. Between 2019 and 2021, capital expenditures of $18 million by the cargo carriers in buildings and equipment supported an estimated 58 jobs each year in Puerto Rico. Workers earned an estimated $8.6 million in labor income and supported $11.7 million of total value added and $19.8 million in economic output.

Table ES-2. Estimated economic contributions due to Jones Act shipping industry operations in Puerto Rico

Actual employment; 2022 dollars in millions

	Direct	Indirect and induced	Total
Operations (Annual)			
Employment	1,055	972	**2,027**
Labor income	$53.0	$42.9	**$95.9**
GDP	$62.2	$68.6	**$130.8**
Economic output	$119.6	$101.6	**$221.1**
Capital investments (One-time)			
Average annual employment	37	21	**58**
Labor income	$5.9	$2.7	**$8.6**
Value added	$6.5	$5.2	**$11.7**
Economic output	$12.0	$7.8	**$19.8**

Source: EY analysis of data from the US Bureau of Labor Statistics, cargo shippers, and 2019 IMPLAN model of Puerto Rico