

The Case for Autonomous Ports

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Situation

Issues in the supply chain process across the world led to a plethora of issues in all of its facets:

- 80,000 vacant positions in the trucking industry
- Lack of warehouse and port container yards space
- Supply chain issues have had a projected contribution of 3.4% rise in inflation



Port Issues

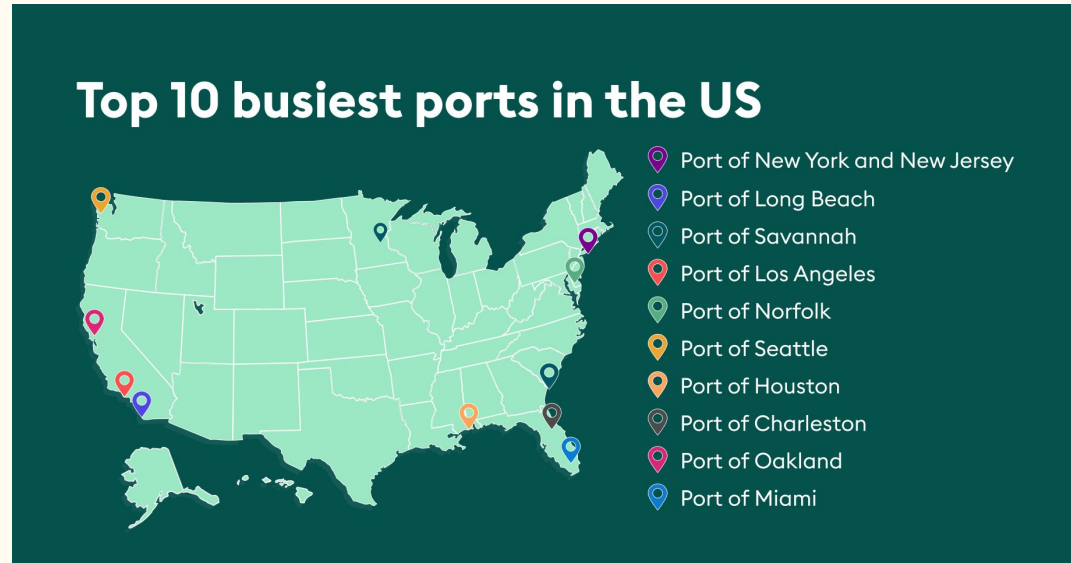
- Weeklong averages of ships waiting at sea on west coast ports.
- Lack of yard space for containers due to trucking shortage
- Low standards of ports in terms of processing efficiency



Domestic Port Rankings

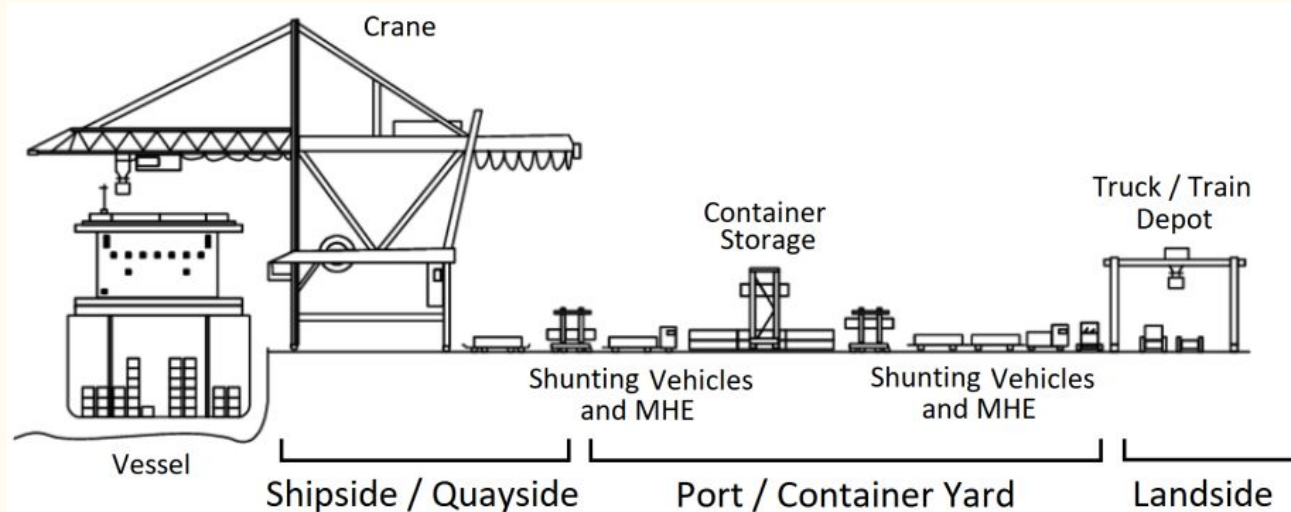
U.S. ports perform poorly in the World Bank's metrics based rankings of port efficiency. The following list details rankings of the largest ports in the U.S. in 2021:

- Miami: 34th
- Houston: 121st
- Charleston: 159th
- New York/New Jersey: 251st
- Oakland: 360th
- Savannah: 367th
- Los Angeles: 370th
- Long Beach: 370th



What are autonomous ports?

Autonomous systems include the use of automated crane terminals (ACT), which automate the cranes that transport containers from ships to container yards. Other uses can include Automated Guided Vehicles (AGV) and other AI uses.



Why Autonomous Ports?

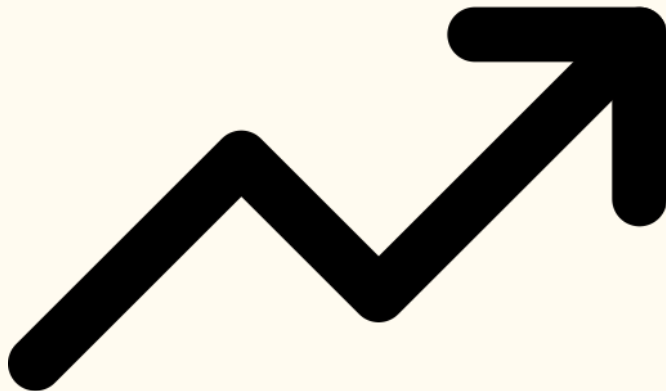
Research shows the increased efficiency that autonomous systems have in processing containers.

- Rotterdam's autonomous terminal cranes versus Oakland's manual cranes processes nearly 2 times as many twenty foot equivalent container units (TEUs).
- McKinsey & Company and port organization leaders predict that port automation can cut expenses by 25-55% and increase productivity by 10-35%

Port Rankings with Autonomous Terminals

These are some of the top ranking ports globally in which have implemented autonomous systems within some of their terminals and how they rank in the CPPI in 2021:

- Barcelona: 21st
- Port of Virginia: 25th
- Singapore: 31st
- Antwerp: 87th
- Rotterdam: 300th



Section 3501 of the National Defense Authorization Act

“None of the amounts authorized to be appropriated for port infrastructure development activities...may be used to provide a grant to purchase fully automated cargo handling equipment that is remotely operated or remotely monitored with or without the exercise of human intervention or control, if the Secretary of Transportation determines such equipment would result in a net loss of jobs within a port or port terminal.”



**International Longshore
& Warehouse Union**

Influence of Labor Unions

Average Salaries (LA/Long Beach):

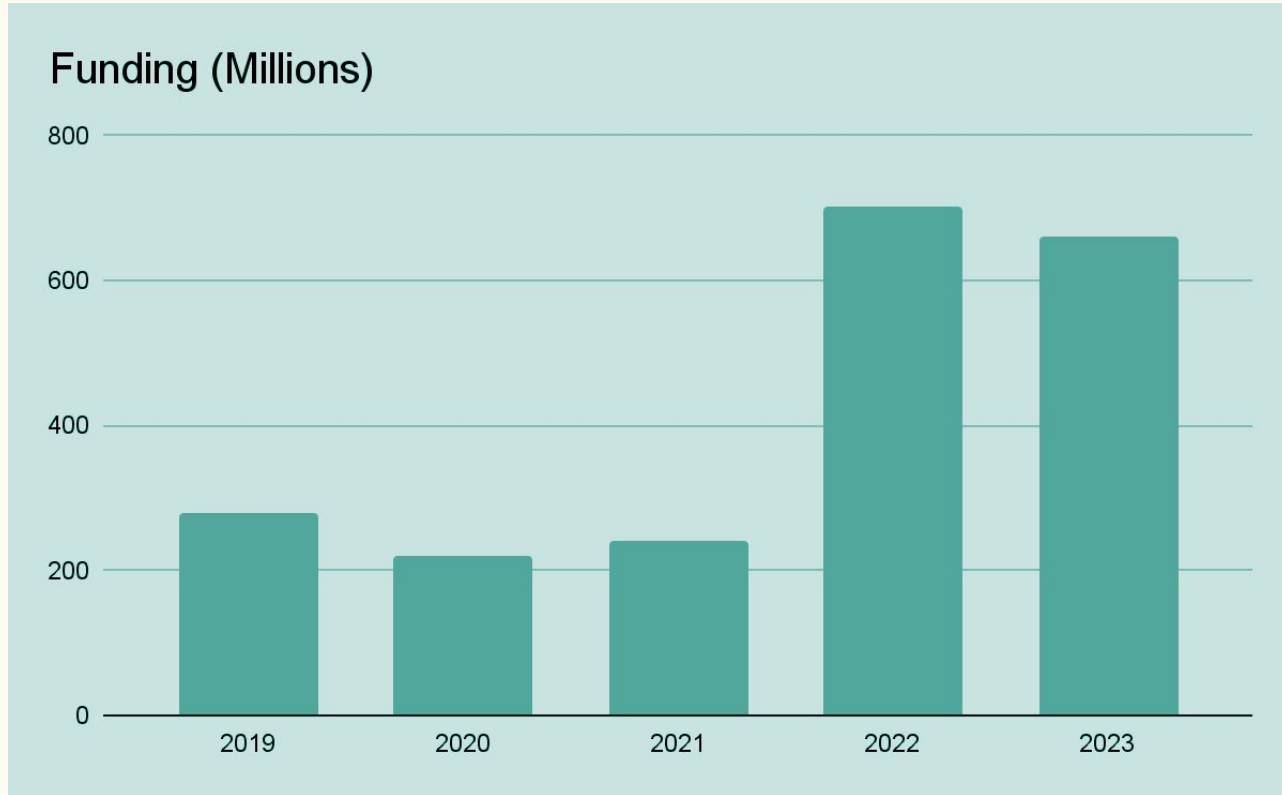
- Port Clerks: \$194,000
- Foreman: \$282,000

International Longshore and Warehouse Union:

- Labor Union that has blocked port modernization efforts during labor negotiations.

PLUS Act of 2022: Seeks to prohibit labor union efforts to block port modernization

Port Infrastructure Development Program



Findings

Current Legislation:

- The Resilient Ports Act: Expanding upon Port Infrastructure Development Program (PIDP) funding
- U.S. Supply Chain Security Review Act of 2023: Research into foreign ownership of port terminals

Implementation of Autonomous Systems:

- Europe and Asia account for 36/64 of autonomous terminals
- McKinsey & Company estimated \$15 billion to be invested in autonomous ports in 2018 and since 2010, near 100 articles have been published on the topic.

Policies

The recommendations that should be taken go as follows:

- Congress should fund research into the efficiency benefits of autonomous port terminals and outlines for how to mitigate job loss to amend Section 3501 of the NDAA
- Encourage standards and governmental organizations to investigate best standards towards safety, investment and implementation.



Summary

- Covid-19 Pandemic Impact on Supply Chains
- The effects on ports and the interest in autonomous terminals
- Labor issues have inhibited the growth of this technological advancement
- Research into this area can get the U.S. on the ground floor of mitigating job loss and advancing these technologies.



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Questions?
