



Maritime Data Program at MARAD: Using
Open Data and Open Source Software to
Determine Container Ship Trends in U.S. Ports
4th Biennial TRB-CMTS Research and Development
Conference

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- **U.S. Flag Fleet Data**
 - Monthly Update of the U.S.-Flag, Privately-Owned, Cargo-Carrying Fleet over 1,000 GT
 - Historical Merchant Marine Data from Vessel Inventory Reports
- **Trade Data**
 - Container Trade Data for U.S. Ports
 - Container Trade Data – Foreign Trading Partners
 - USA Trade Online is available for public use
- **Vessel Movements Data**
 - AIS Movement data to gauge vessel activity in the U.S.
 - 2013 – 2015 data is now online
- **Contribute to Departmental efforts/Multinational Exchanges**
 - Bureau of Transportation Statistics (BTS)
 - North American Transportation Statistics Interchange



- **MARAD Open Data Portal**
 - <http://www.marad.dot.gov/resources/data-statistics/>
- **Open Data**
 - Vessel Inventory Reports
 - Containerized Trade Reports
- **Upcoming Open Data Products**
 - Vessel Customs Entrance and Clearance
 - Suggestions? DATA.MARAD@DOT.GOV
- **Sources: PIERS, IHS Maritime, Clarksons**
- **North American Transportation Statistics Interchange**
 - <http://nats.sct.gob.mx/language/en/>
 - North American Transportation Statistics across modes in English, Spanish and French



North American Containership Trends

Introducing Data to the Noise

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“References to any non-Federal entities in this presentation are included for illustrative purposes only and do not imply U.S. Government, U.S. Department of Transportation, or the Maritime Administration (MARAD) endorsement of, or preference for, any product, service, or enterprise.”



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Evidence Based Decision Making?



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The Big Ship Era is here and PortMiami is Ready!



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MIAMIDADE
COUNTY



Currently Available Analysis to determine Containership Trends



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- World Fleet Sizes
- Order Books/Shipbuilder Data
- Maximum Size container ship deployed on a route
- Vessel Calls
- Media Reports



- **U.S. Customs and Border Protection Entrance/Clearance Data**
 - CBP Form 1300
 - Data publically available online at CBP or USACE
 - <http://www.navigationdatacenter.us/data/dataclen.htm>
 - Tied with other data sources
 - Manual entry from a form
- **Vessel Calls**
 - Proprietary from IHS Maritime
 - AIS Data within a polygon
 - Gauge types of activity/estimate of activity in a port
 - Tied with other data sources



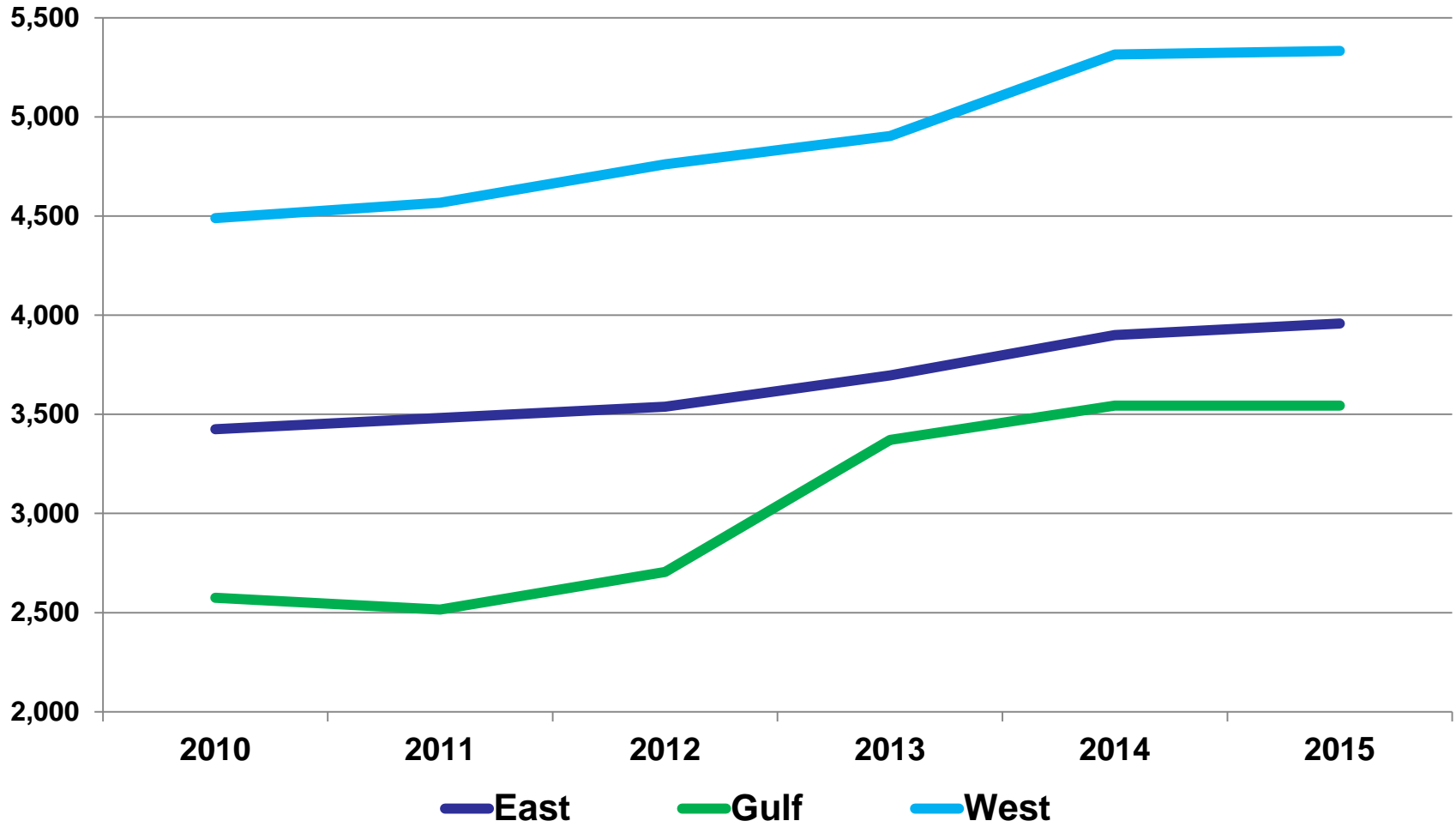
- Pre-March 2016 – Microsoft Access & Excel
- Post-March 2016 – Microsoft SQL Server
- Data Analytics Course with General Assembly
- Open Source SQL Server and Open Data to Compute
 - PostgreSQL (PgAdmin III)
 - Amazon Web Services



Average Container Ship Capacity by Coast (2010 – 2015)



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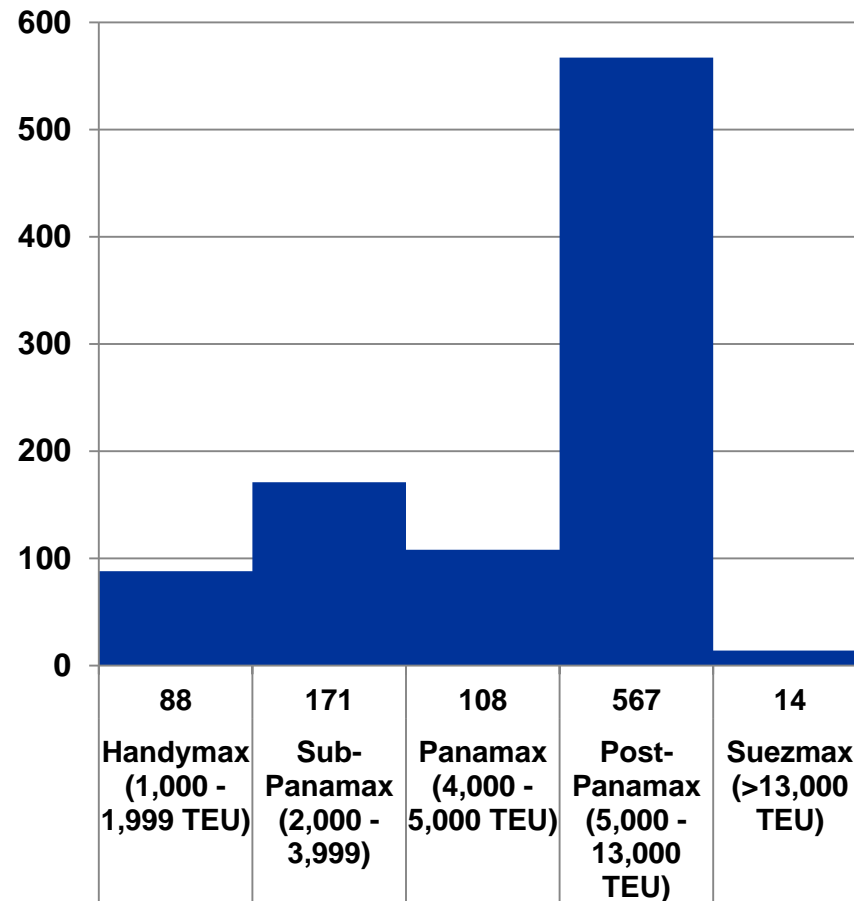
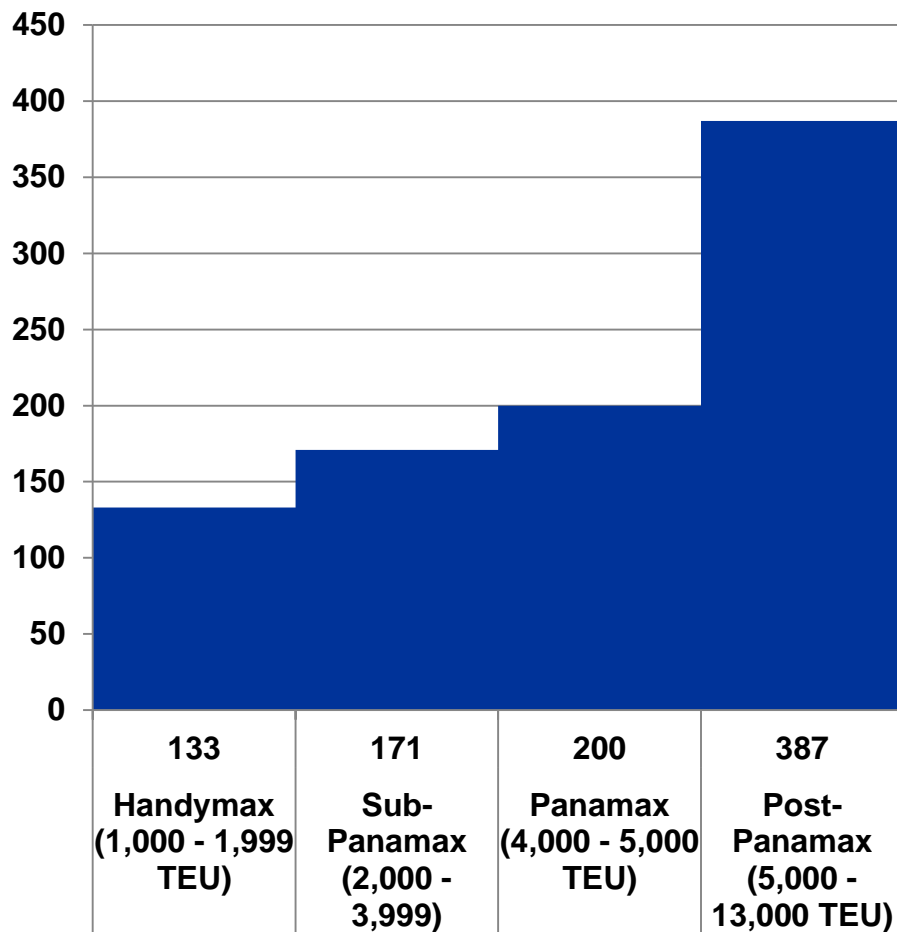


Source: U.S. Customs and Border Protection Vessel Clearance Data & U.S. Army Corps of Engineers

2010 & 2015 Port of Long Beach Container Ship Entrances Distribution Comparison



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What we would like to achieve with this data?

- Data provides us a reliable, historical baseline to base analysis and research
- Comparison of Pre and Post-Panama Canal Expansion trends
- Measure Effects of a channel deepening project, drop in fuel prices, change in alliance or port infrastructure project
- Consistent across ports, can be applied around the world