

THE EVOLVING PANAMA CANAL ROUTE FOR CHEMICALS

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New era under way for the Panama Canal

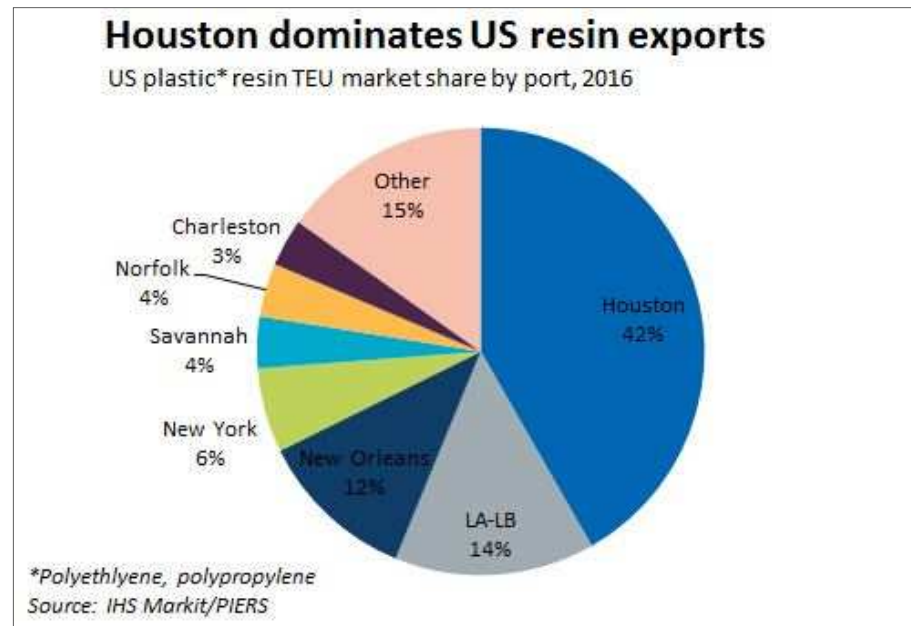
- Ten-year, roughly \$5.4 billion project to expand the Panama Canal culminated in new 3rd set of locks opening on June 26, 2016
- Third set of locks doubles capacity of the Canal and allows for passage of larger ships
- Panamax ships were limited by prior lock system which is 110 ft (33.53 m) wide and 1,050 ft (320.04 m) long, and 41.2 ft (12.56 m) deep
- The new locks are 80 ft (54.86 m) wide, 1,400 ft (426.72 m) long, and 60 ft (18.29 m) deep
- The 10,589 TEU Hapag-Lloyd Valparaiso Express is the largest container ship to transit the expanded locks thus far, on Dec. 20. Ships as large as 14,000 TEUs can transit
- The new locks allow for roughly 80% of all cargo-carrying vessels in operation globally to transit the canal, up from 45% prior to the expansion
- The on March 19 the 1,000th so-called "Neo-Panamax" ship transited the new locks, the 9,908-TEU MSC Anzu. Panamax-sized ships could carry a maximum of roughly 4,500 TEUs. Roughly 6 ships per day are transiting the new lock system
- Currently 53% of containership cargo transiting the waterway uses the new lock system, meaning significant easing of demand on the legacy lock system for smaller Panamax-class ships
- As of April 1, 15 container services utilizing the expanded locks will be in operation
- Panamax container ships being scrapped at a record rate

Lack of Panama Canal issues is against a backdrop of logistics concerns as US resins exports ramp up

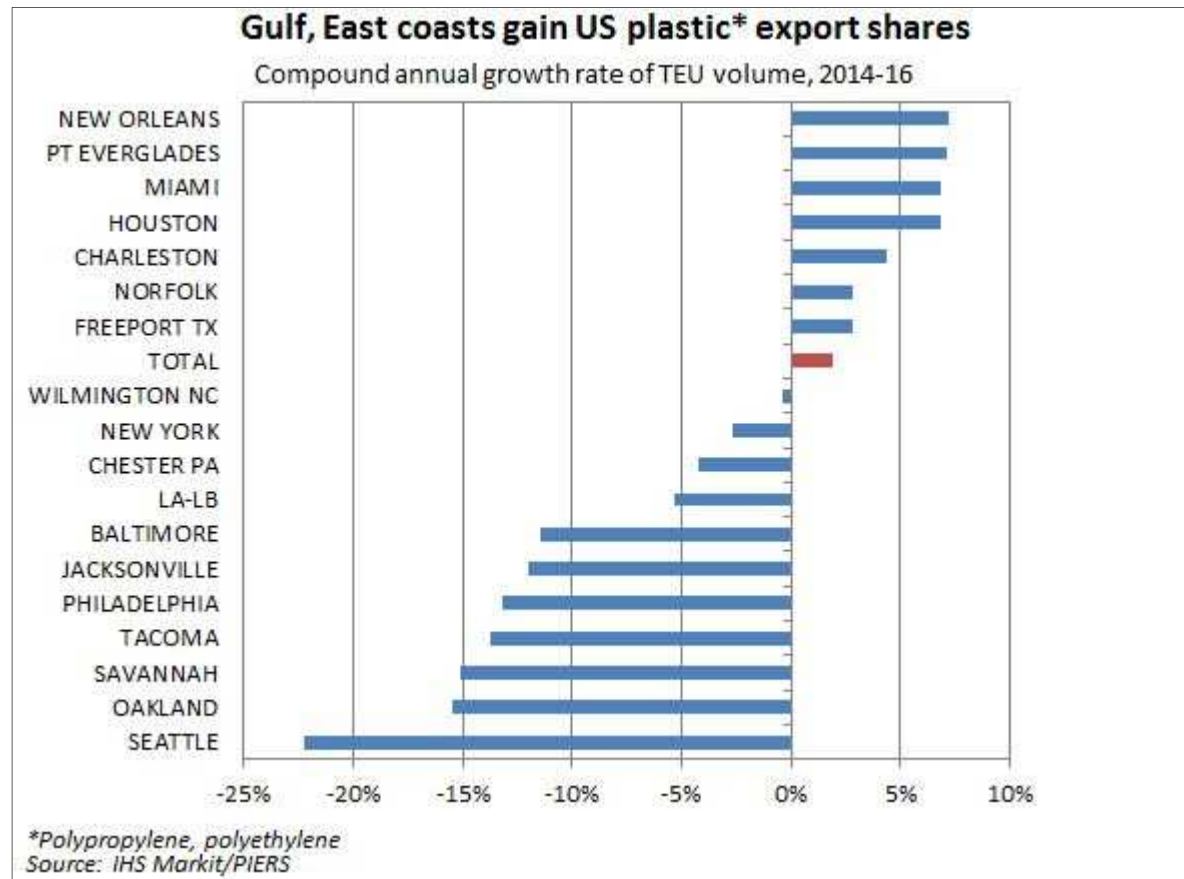
- Annual US containerized exports of synthetic resins are forecast to double to nearly 1 million twenty-foot-equivalent units (TEUs) during the next five-seven years
- Logistics constraints could cost US chemical producers \$79 billion in excess inventories, capital spending, and increased operating costs during the next decade- [PWC says](#)
- The 68 chemical companies surveyed by PwC expressed concern about looming problems in truck, rail, and ocean container transportation
- Rail delays could more than double by 2025 and add \$14 billion to inventory costs, with Baton Rouge, Corpus Christi, Houston, and New Orleans areas of particular concern
- Main competition to the Houston port for containerized exports will be intermodal rail via Dallas-Fort Worth to the West Coast, and to a lesser extent, the East Coast
- Considerations will include empty-container availability, vessel capacity and ability to load heavier boxes. Houston is currently served by three direct Asia services, one of which utilizes neo-Panamax tonnage. Resins are heavy cargo
- Containers can be loaded to 22-23 tons under current Texas road weight limits, but 27 tons on the rails or at other ports, which can make rail an attractive option
- With resins a heavy cargo interest is also growing interest in lightweight chassis
- Maersk at JOC/IHS Markit TPM event: "We don't see it as a question of either/or," regarding Gulf vs. West coast outlets. "When we talk with our customers, they're asking for flexibility."

Resins exports will tend to flow through the closest port, giving Gulf ports an advantage

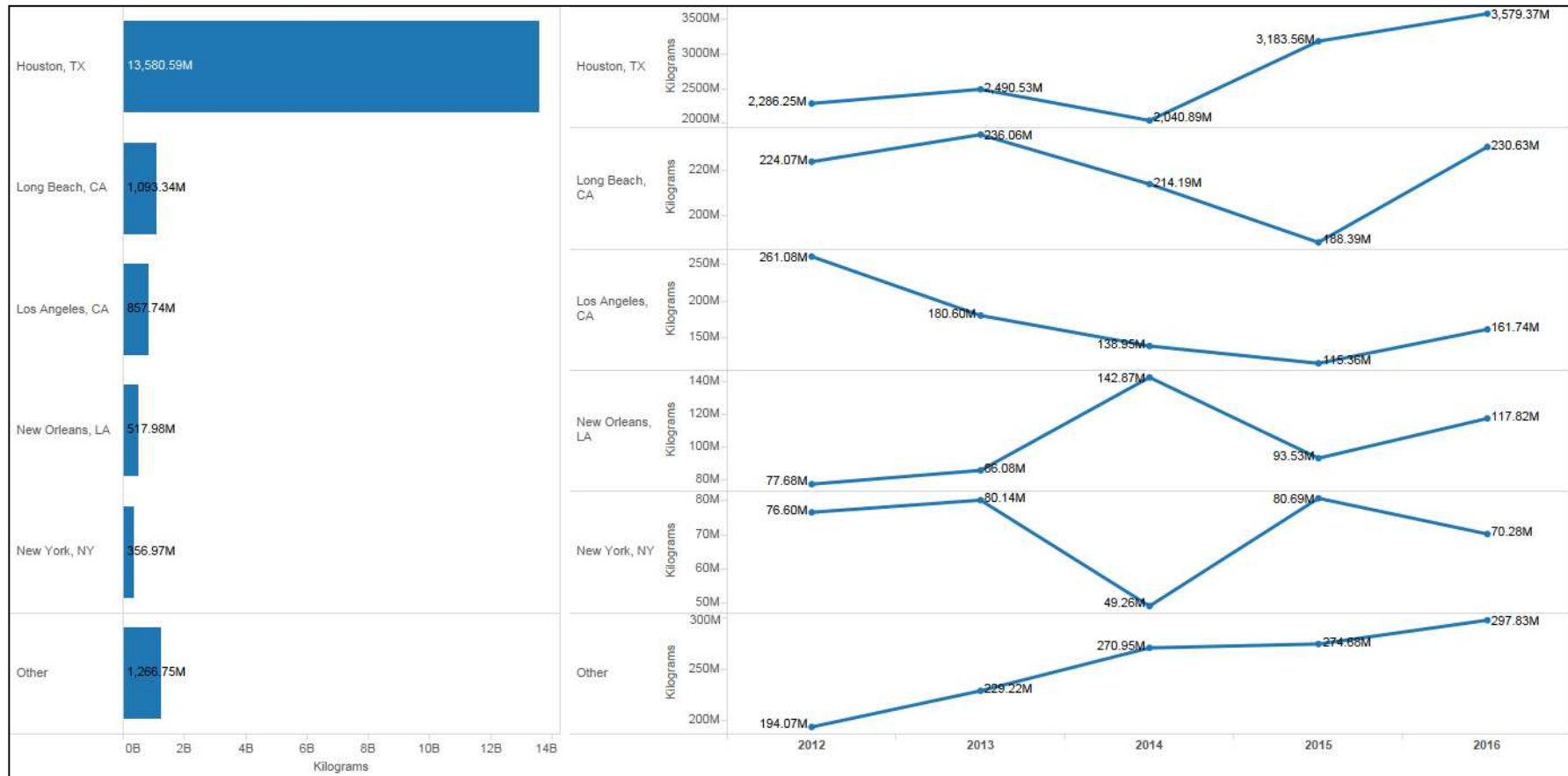
- Houston is the dominant port for resins exports and has been steadily growing its share over several years as Gulf-region production has ramped up
- Houston's share of US containerized resins exports grew from 28% to 45% over the past decade
- LA-LB and East Coast markets are served by rail
- "You don't want to put everything in one basket," - Seana Fairchild, senior director, international intermodal sales, at Union Pacific Railroad.
- Many producers put the resins in covered hoppers and send it to third-party transloading centers for bagging, palletizing, and stuffing into containers



Gulf and Southeast ports seeing the majority of recent gains in containerized resins exports

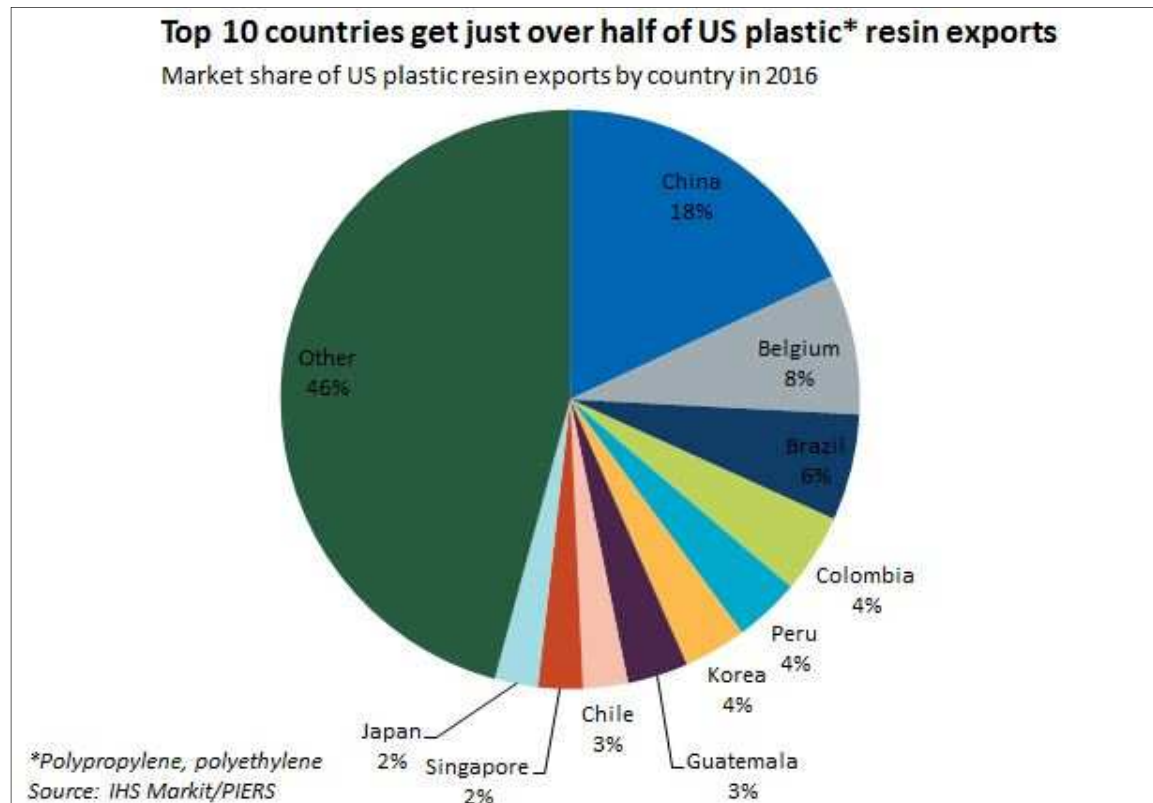


2012 – 2016 Top 5 US Port Exports of HDPE/LDPE

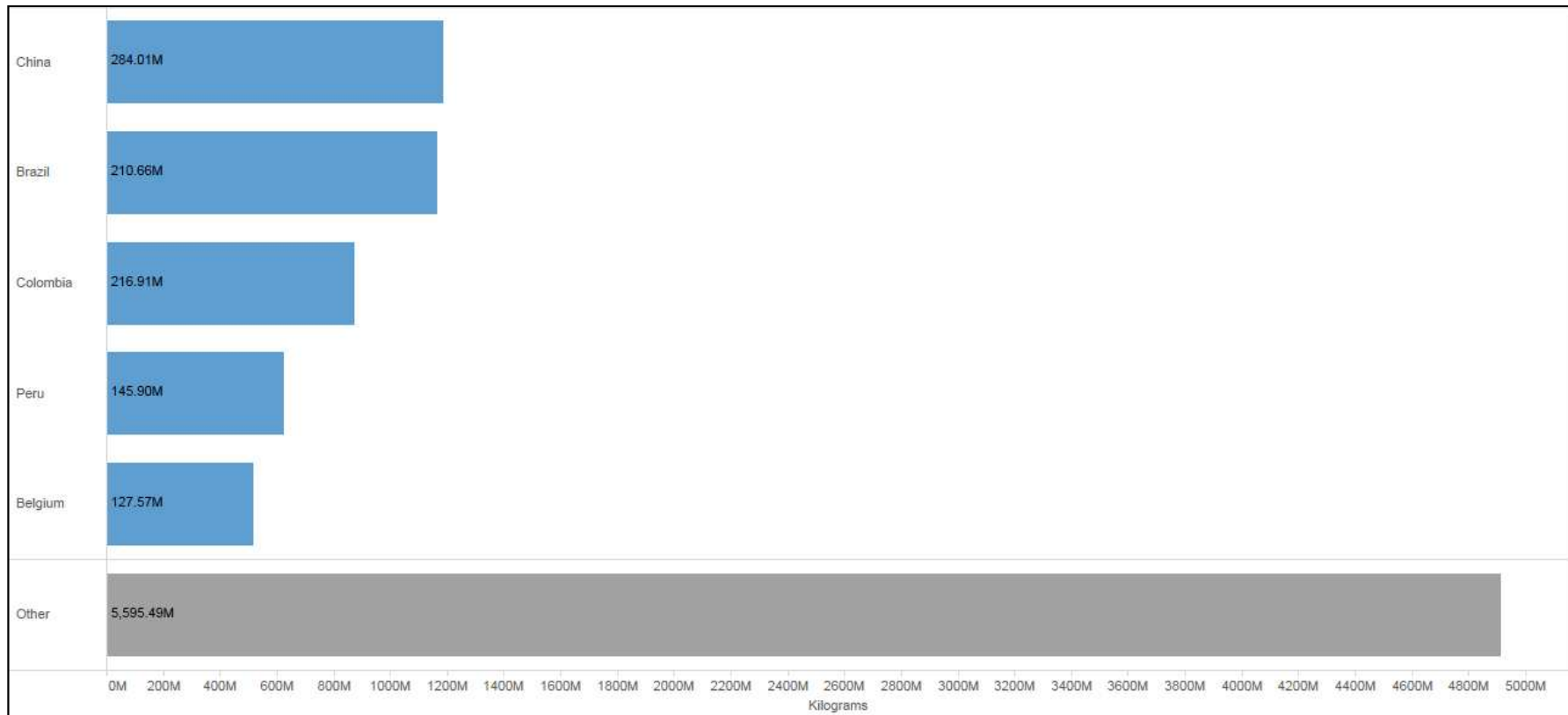


Source: IHS Markit/Global Trade Atlas, in millions of kilograms

China as the largest destination market for resins illustrates demand for Houston/Panama routing

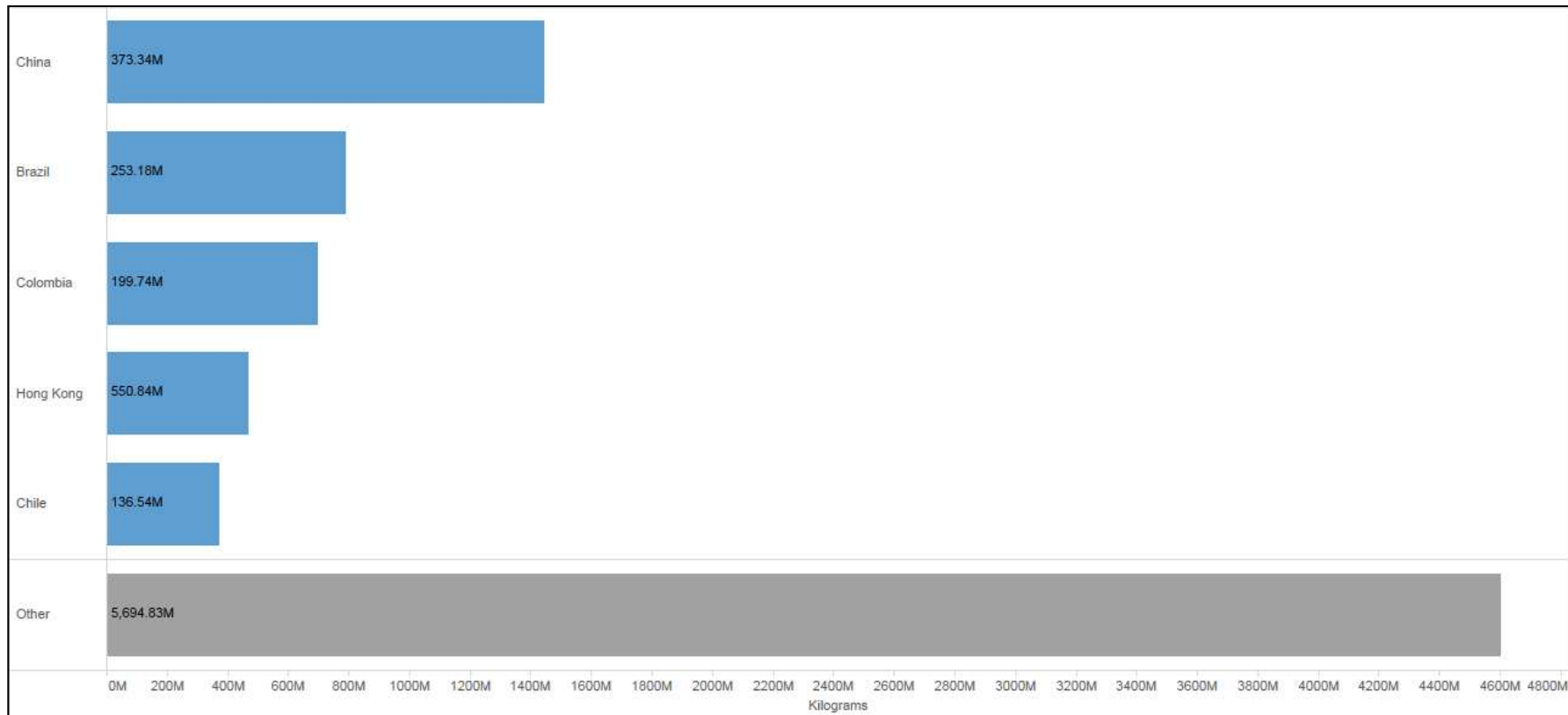


Top 5 US Export Markets, US Exports HDPE 2012-2016, high dependence on the Panama Canal



Source: IHS Markit/Global Trade Atlas

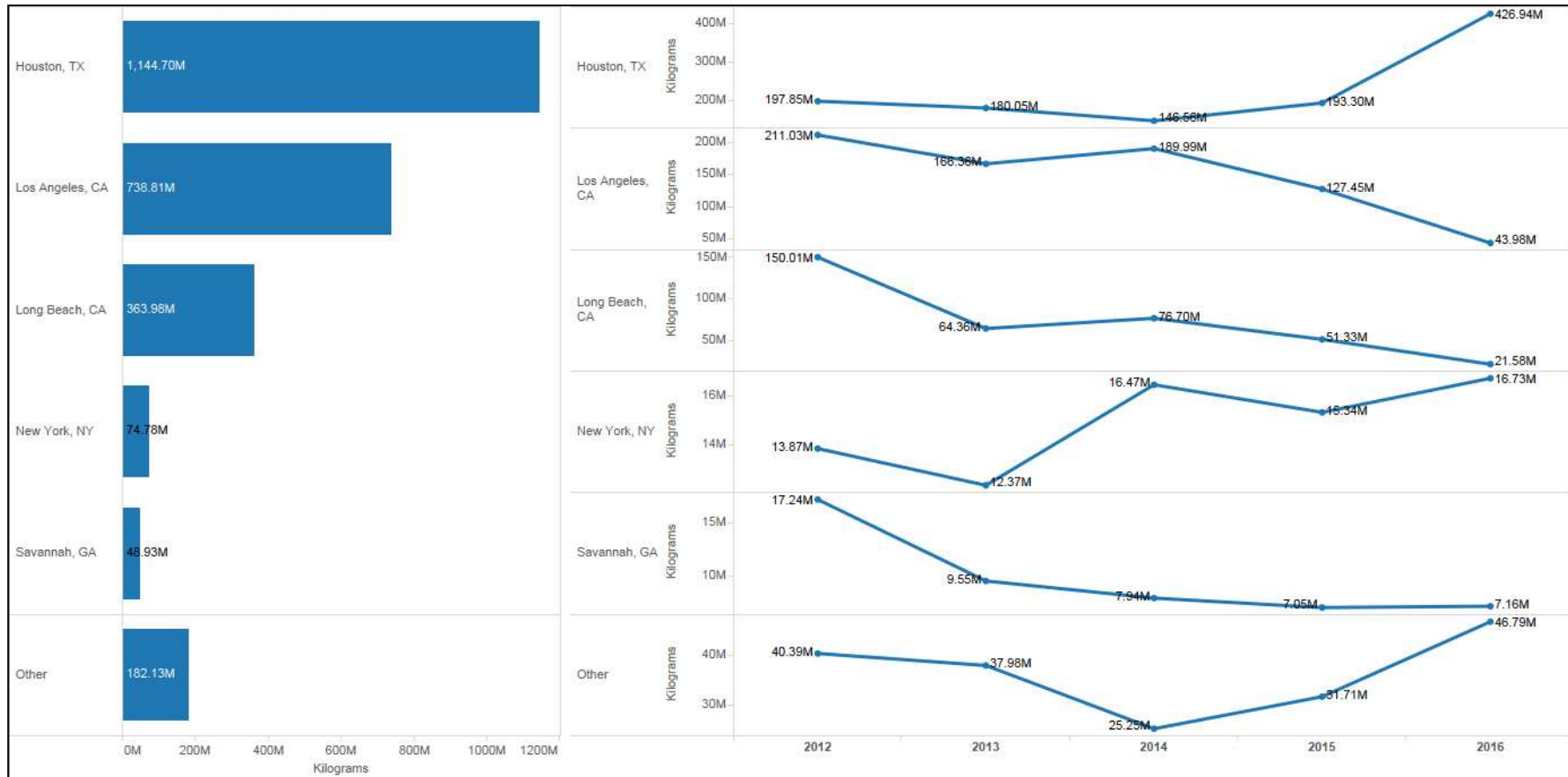
Top 5 Export Markets; US Exports LDPE 2012-2016, similar story



Source: IHS Markit/Global Trade Atlas

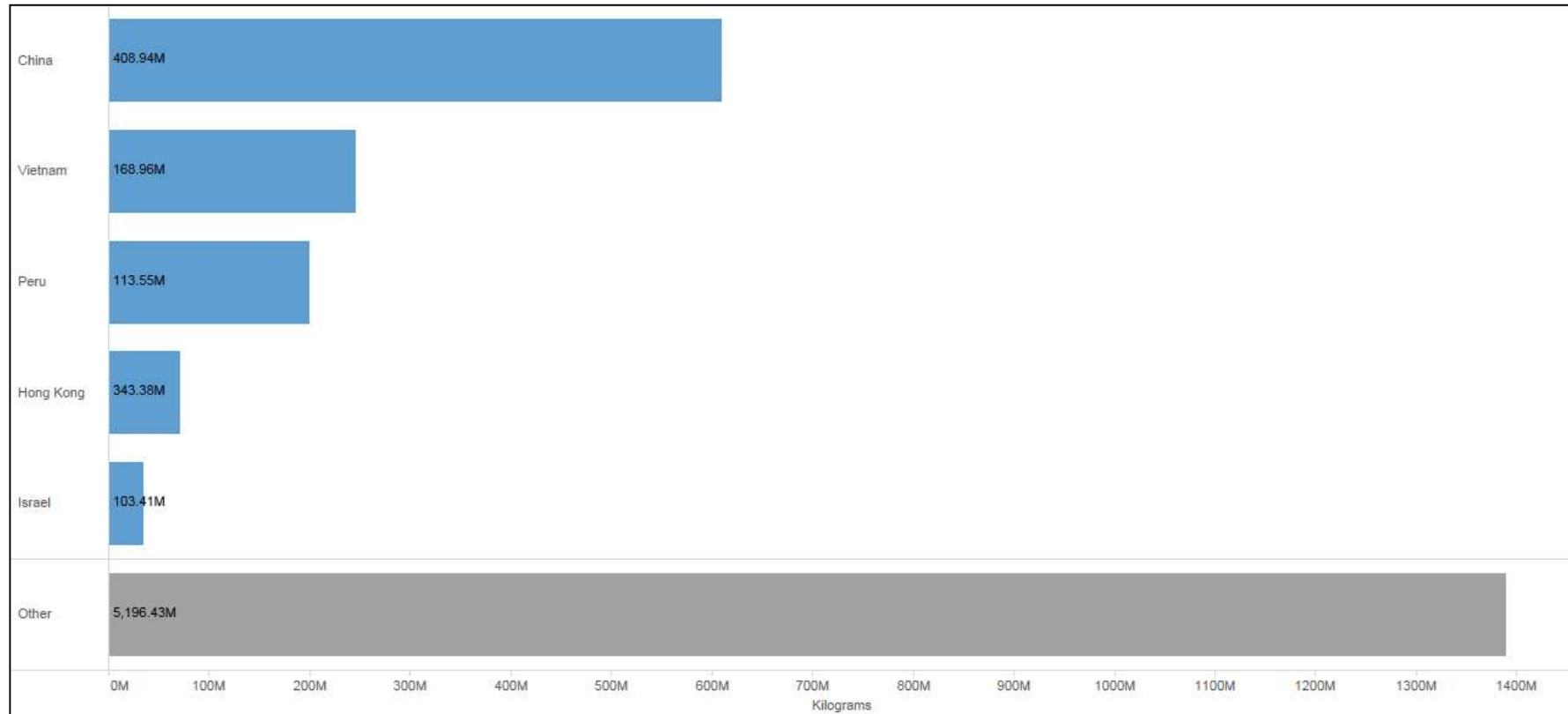
2012 – 2016 Top 5 US Port Exports of PP

Shows Houston as the major port of export for PP shipments



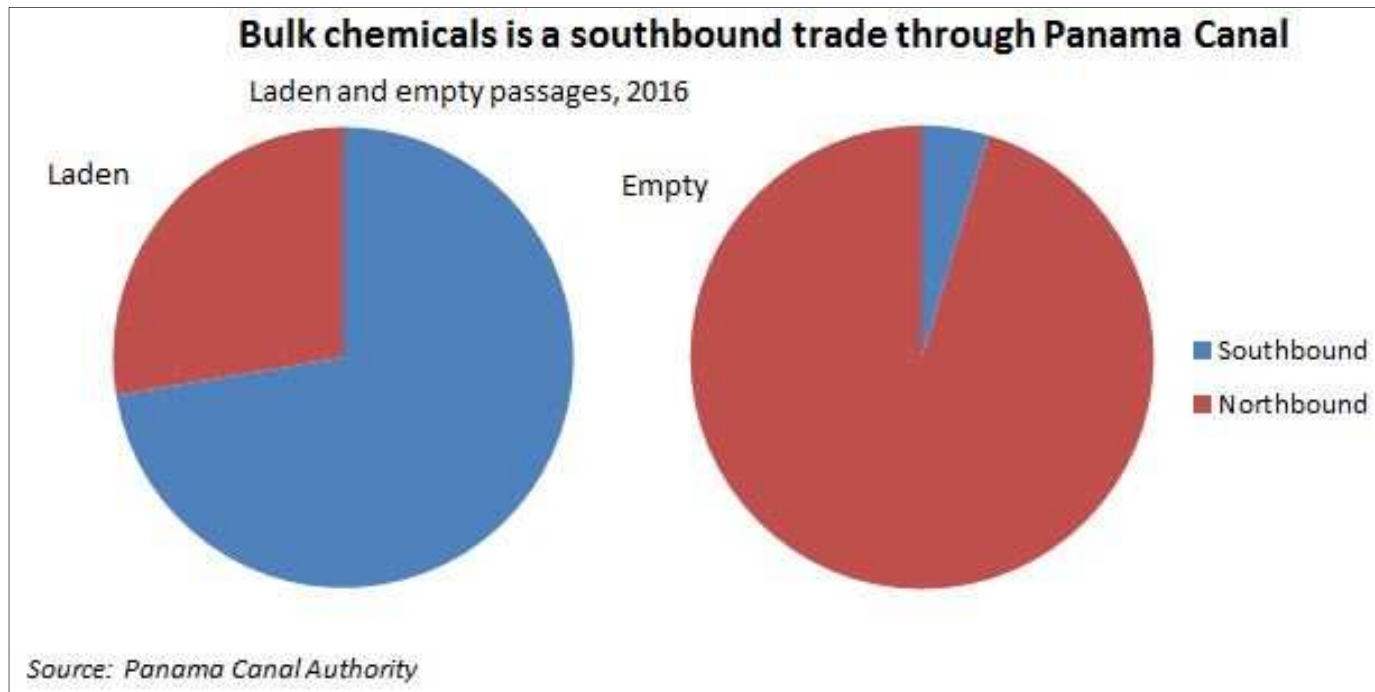
Source: IHS Markit/Global Trade Atlas

Top 5 Export Markets – US Exports of PP 2012-2016

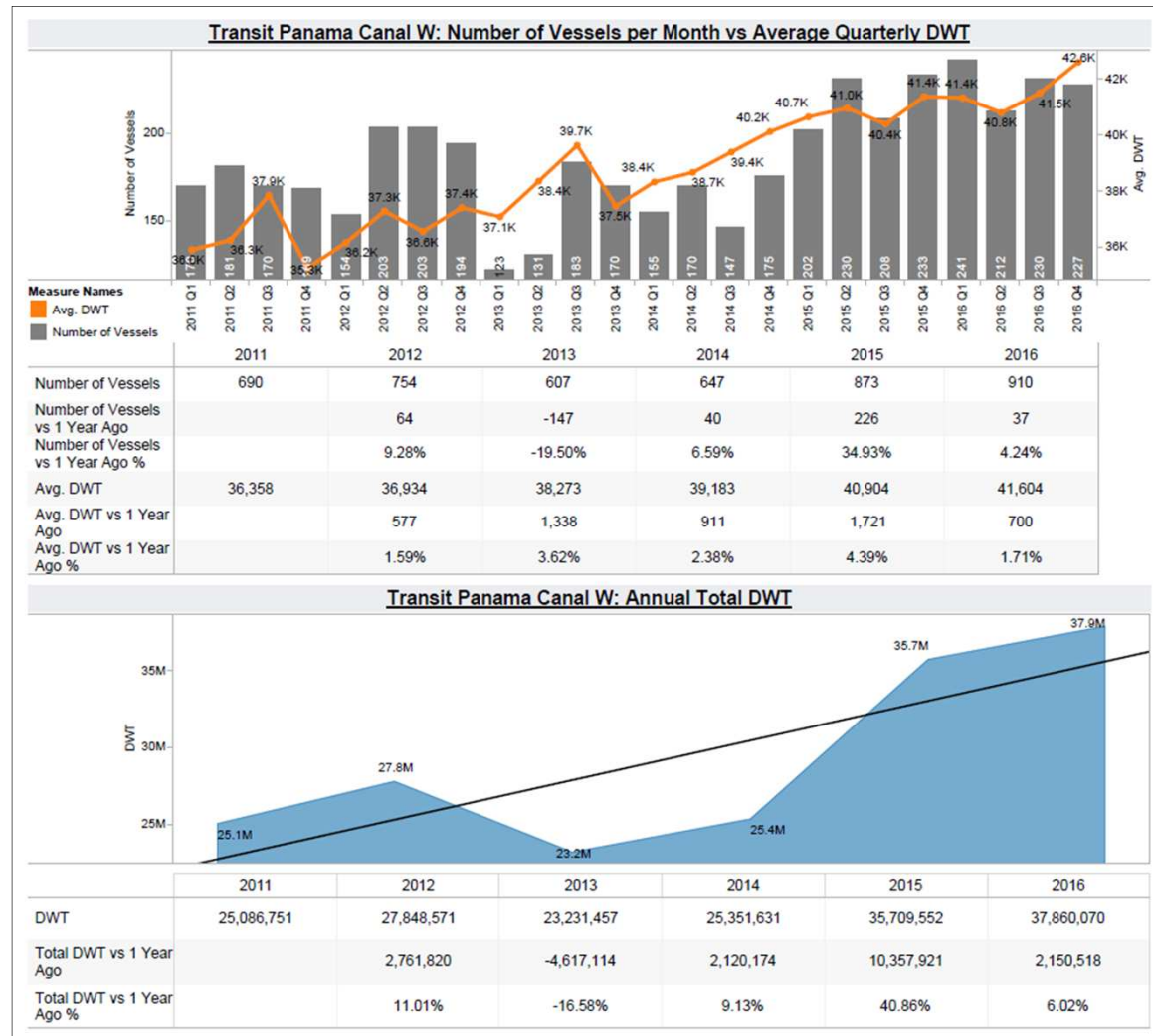


Source: IHS Markit/Global Trade Atlas

Bulk (non-containerized) chemicals: a heavily one-way, Southbound trade through the Panama Canal



Chemical ships transiting the Canal have been getting larger but are still Panamax-sized



Issues around Chemical tankers' use of the Panama Canal

- Chemical tanker operators are facing similar market challenges that are being seen in other sectors: too much capacity chasing too little cargo
- 30% of the fleet is on order, a larger percent showing extent of approaching overcapacity overhang
- The oldest chemical tanker was built in 1995, making it only 22 years old
- Very little chemical tonnage being scrapped as complications in materials disposal and workplace lead shipbreaking yards to avoid such tonnage
- Scrapyards have enough bulkers, container ships, and general cargo ships to not need tankers
- Pakistan, after two serious accidents, will no longer consider chemical tankers for scrapping
- Chemical tankers tend to be small so the larger locks will be of relatively little use to them; Panama Canal has made no reference to use of expanded locks by chemicals tankers
- But it means there is less congestion for chemical tankers when transiting the Canal; Panama Canal congestion has been an issue for this sector in prior years
- No need or interest for building tankers of a new-Panamax size considering that the sector is severely over-tonnaged already

Thank you

If you would like more information please contact:

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