Assessment of Houston Commodity Flows for Supply Chain Analyses

This document provides an assessment of 29 commodity flows to assist with the identification of 10 supply chains for more detailed investigation as part of the Ports Area Mobility Study. The intent is to focus on the commodity flows that may have the largest impact on HGAC related traffic flows. The initial measures used to identify proposed commodity flows are 1) total waterborne tonnage and 2) containerized tonnage from U.S. Census Bureau trade data for the Ports of Houston, Galveston, Freeport and Texas City. The long list of 29 commodity flows are listed in following pages in three groups:

- 6 Bulk commodities
- 13 Industrial commodity groups
- 10 Consumer goods (largely containerized)

Bulk commodities such as crude oil and petroleum products dominate total waterborne tonnage. There is also considerable tonnage for domestic cargos for which data is available from the Army Corps of Engineers Waterborne Commerce statistics. However, this tonnage is also dominated by crude oil, petroleum products and chemicals, so the definition of the proposed commodity groups is not affected by the domestic data. The supply chain analyses should cover both international trade as well as domestic port movements.

Pages which follow include graphic profiles for each of the proposed 29 commodity flows. Each profile includes:

Port volumes for the HGAC ports. This gives a view of which ports handle the commodity group and a view of how these volumes have changed over time.

The share of total HGAC volumes represented by the commodity group, and how this has changed over time. Basically this represents how important the commodity is to HGAC traffic. This is focused on the predominant volume, imports or exports and container or non-container.

The share of total U.S. volumes represented by HGAC volumes.

The third factor is included because it may be important in choosing supply chains. The Houston region represents about 2 percent of total U.S. population. For commodity groups such as containerized consumer goods for which volumes are closely related to population, an HGAC port share much greater than 2 percent may indicate that HGAC region ports act as a gateway to other parts of Texas and the U.S. and that distribution to other regions will be part of HGAC supply chains. Conversely, a share much less than 2 percent may indicate that HGAC regional consumption may be supplied from other ports such as LA/Long Beach, and that HGAC supply chains may be much different for these commodities.

Many of the commodity groups are either import or export oriented. For most consumer goods imports are the predominant direction of trade flow.

The largest commodity group by far, for both imports and exports, is energy products (HS 27) which includes crude oil, petroleum products, gases, and bituminous substances. Given the large volumes for this commodity group it may make senses to split the group into more detailed pieces. It is important to note that the very large volumes for the energy sector are transported heavily by pipeline so the large volumes may significantly overstate the importance of these products to rail or truck volumes. There are, of course, product such as gasoline and fuels that are distributed to end markets by truck.

Plastics and Plastic Products is the dominant product group for container exports representing over a third of total containerized product weight. It may also be desirable to split this group into pieces, e.g. plastics in primary forms and plastic products.

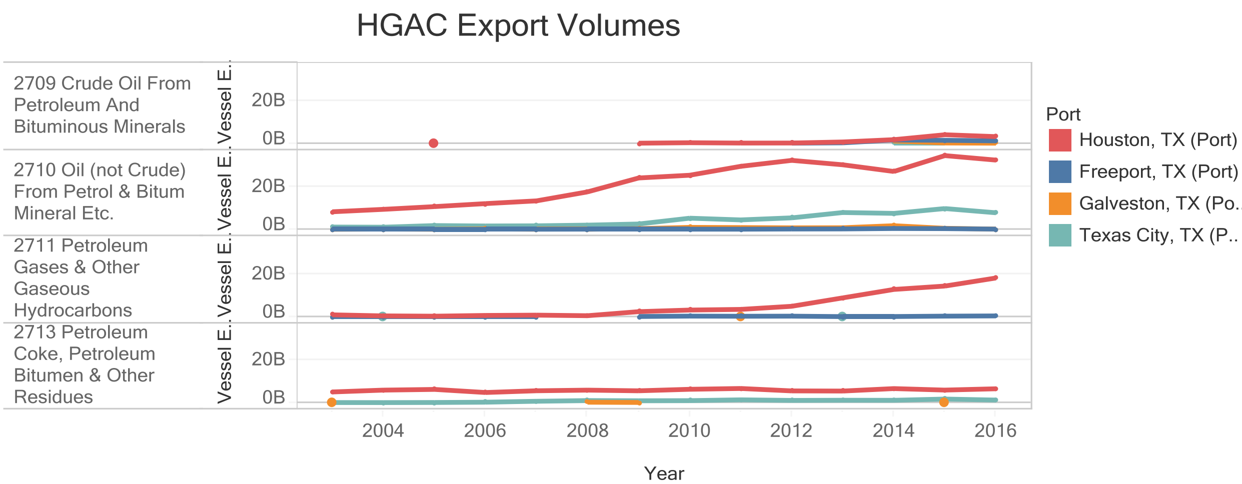
Next steps for developing supply chain analyses include:

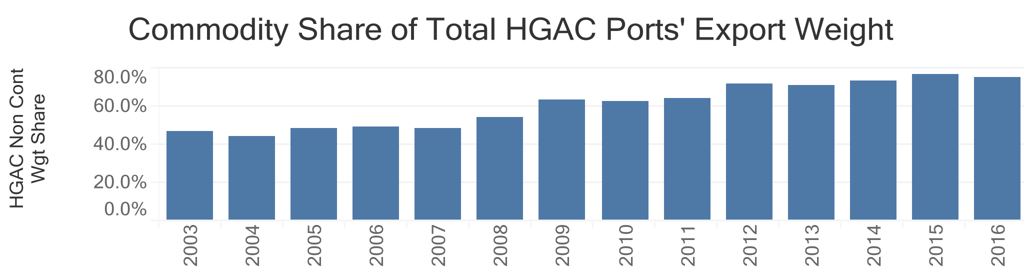
- Seeking feedback from HGAC and steering group members as to the potential short list.
- Reviewing and refining the supply chain definitions
- Adding domestic data from the Army Corps of Engineers
- Conducting industry interviews
- Developing supply chain flows e.g. natural gas to processing plants to crackers to pellet manufacturing
- Adding modal and location information from Transearch or other available data, including PIERS (if available)
- Developing traffic estimates (e.g. truckloads) from relevant product flows and volumes
  .

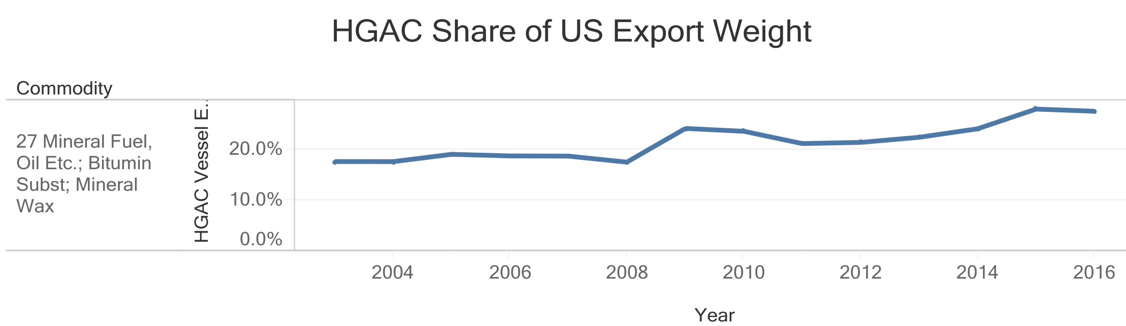
Bulk Products

HS 27 Mineral Fuel, Oil Etc.; Bitumin Subst; Mineral Wax: Exports

- Large and growing majority of HGAC ports' total export weight
- 67.3% of waterborne exports

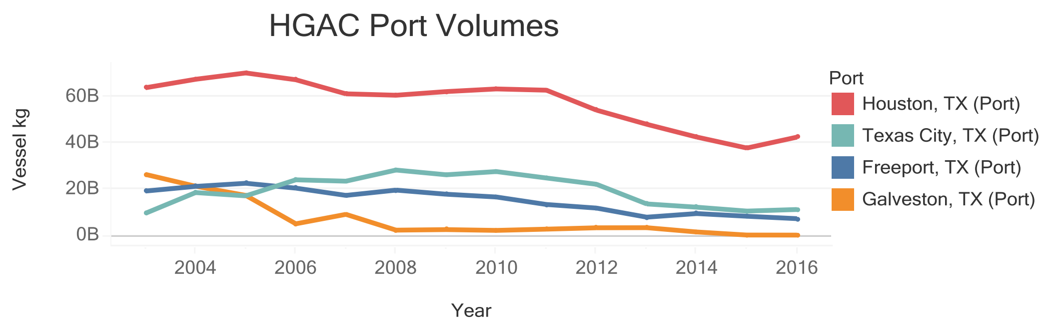


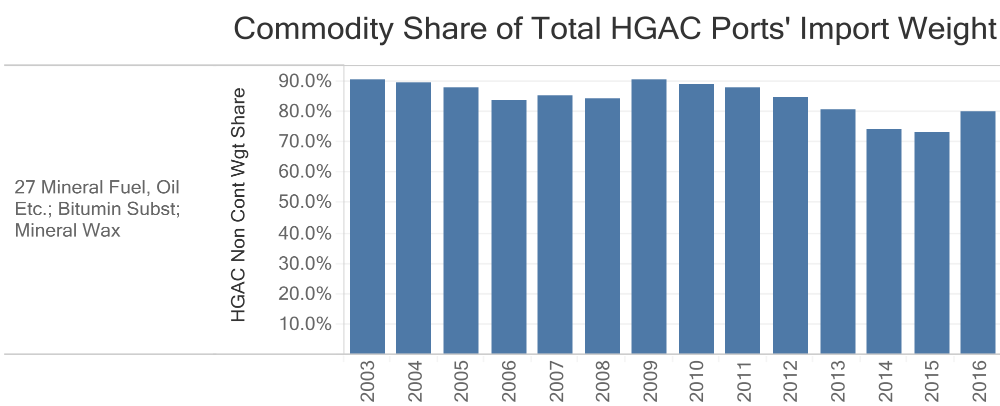


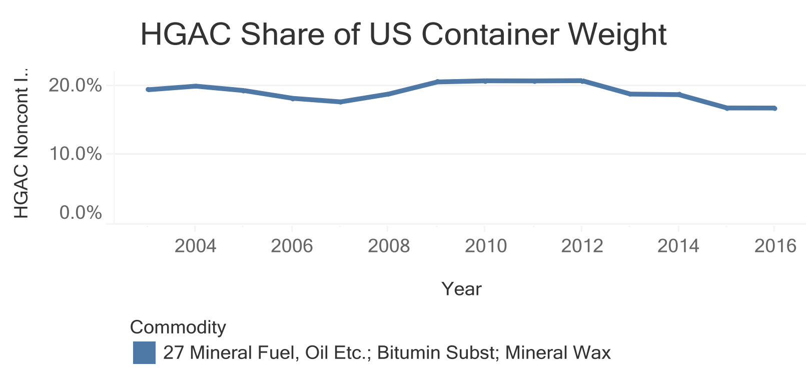


HS 27 Mineral Fuel, Oil Etc.; Bitumin Subst; Mineral Wax: Imports

- In contrast to exports, imports have been declining in volume, in the commodity group's share of total HGAC volumes, and in the HGAC share of total U.S. imports for the commodity category.

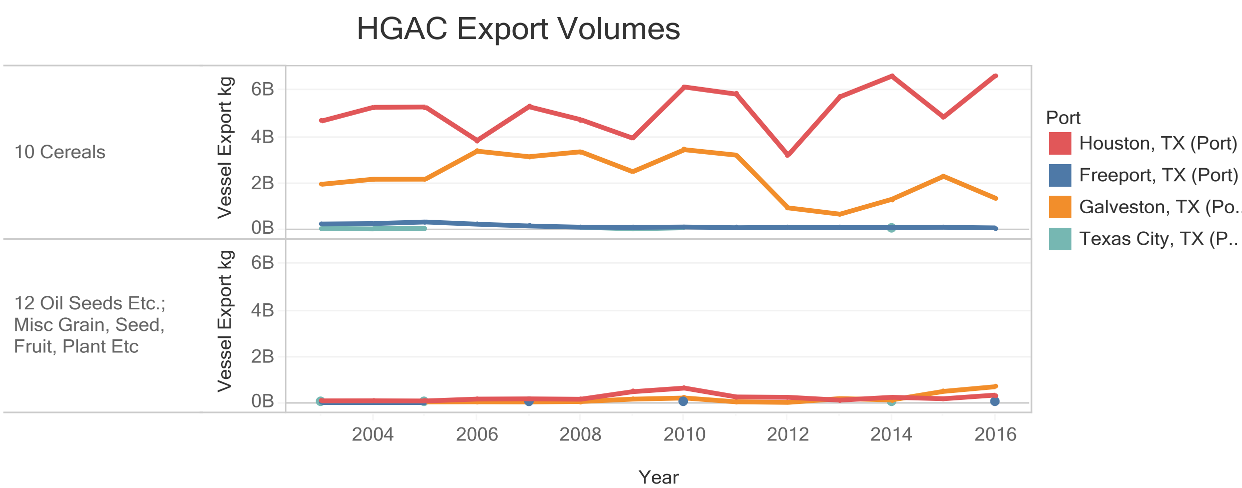


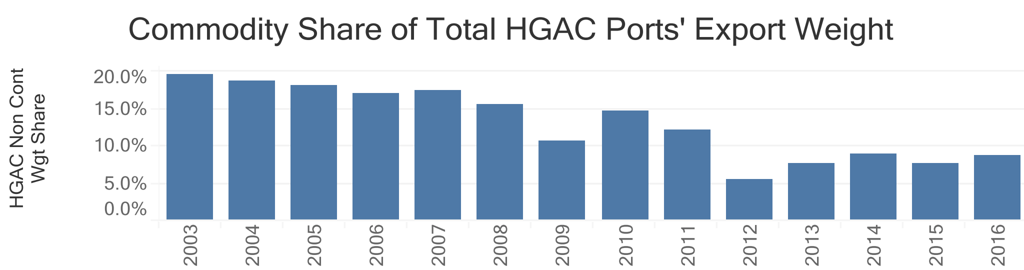


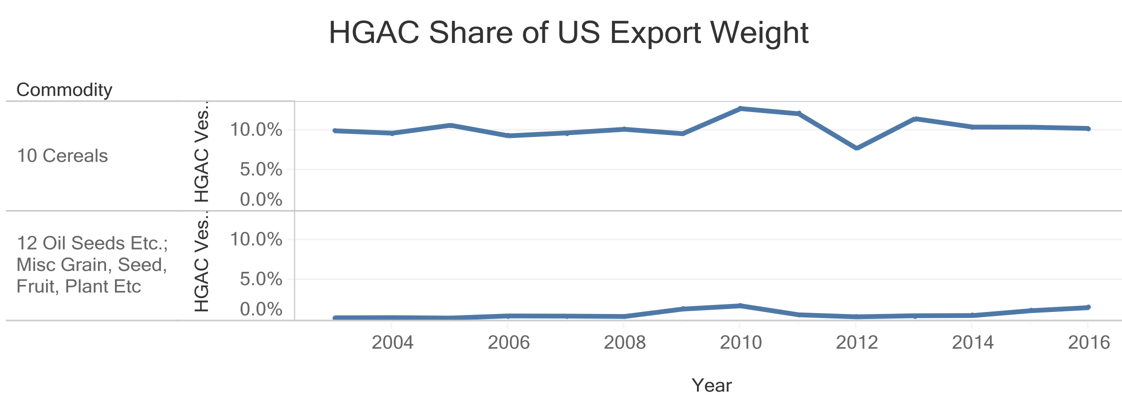


HS 10&12 Cereals and Oil Seeds

- Volumes are dominated by cereals
- Declining share of total HGAC port exports
- About a 10% HGAC share of U.S. total exports of cereals

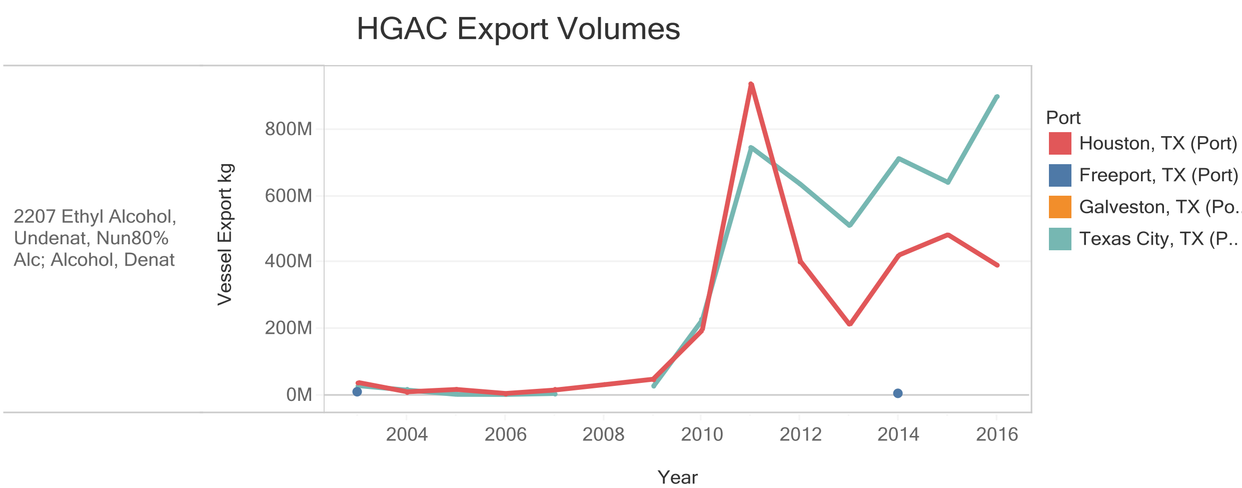


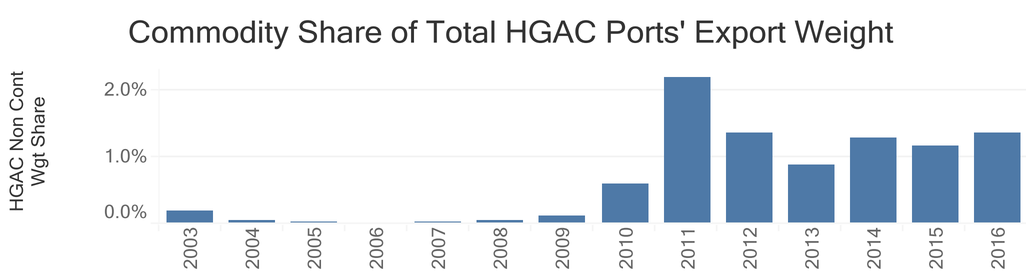


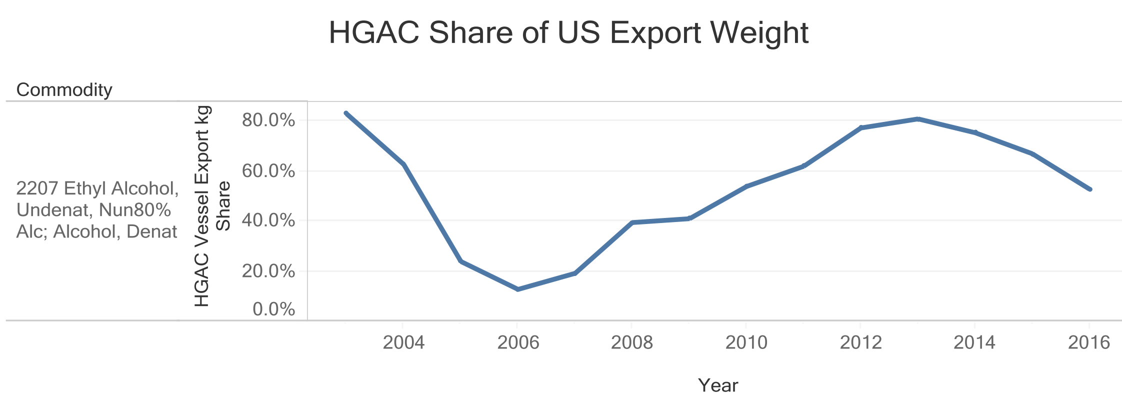


HS 2207 Ethyl Alcohol

- Rapid growth in HGAC exports in 2011 through 2016
- About 1.0% of non-container HGAC exports
- Dominant but fluctuating shares of total U.S exports

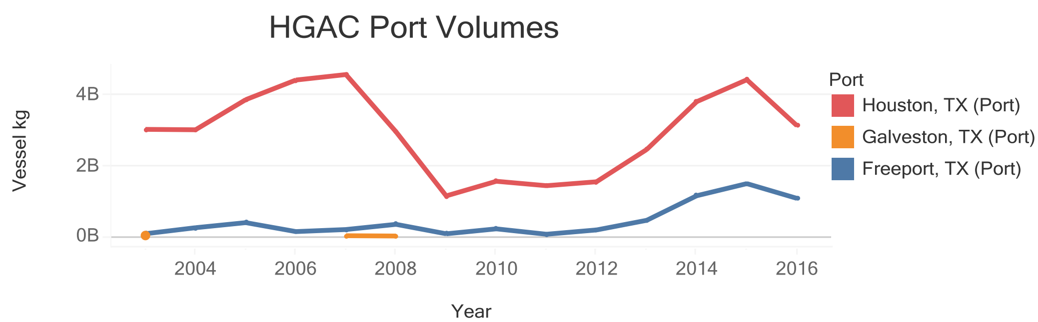


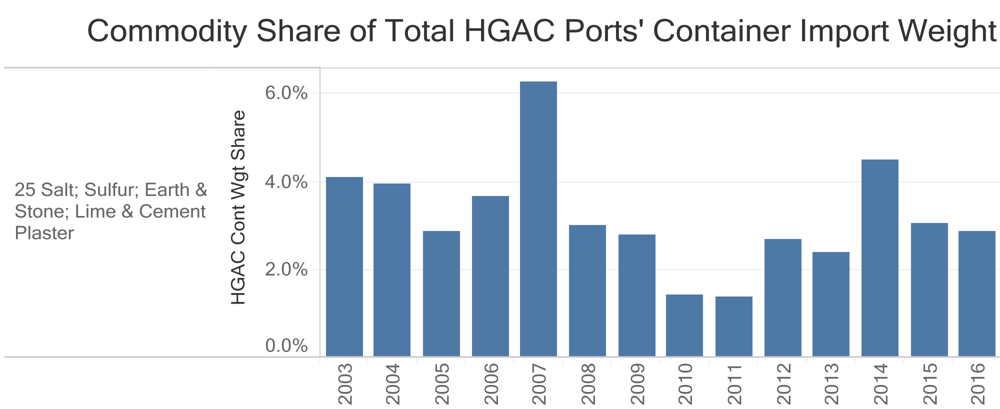


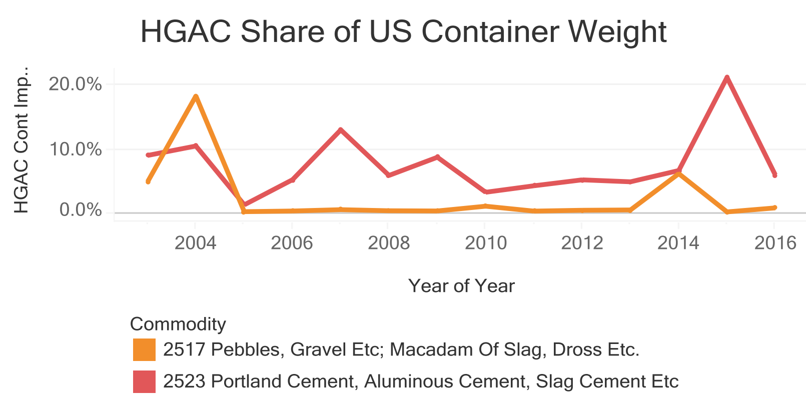


HS 2517, 2523 Stone and Cement

- 5.2% of waterborne imports in 2016

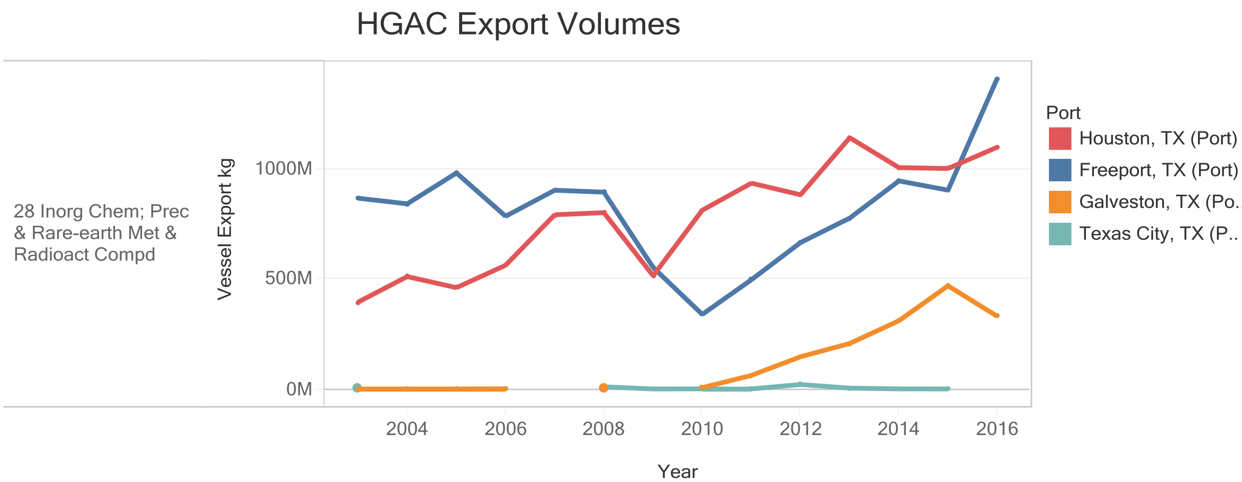


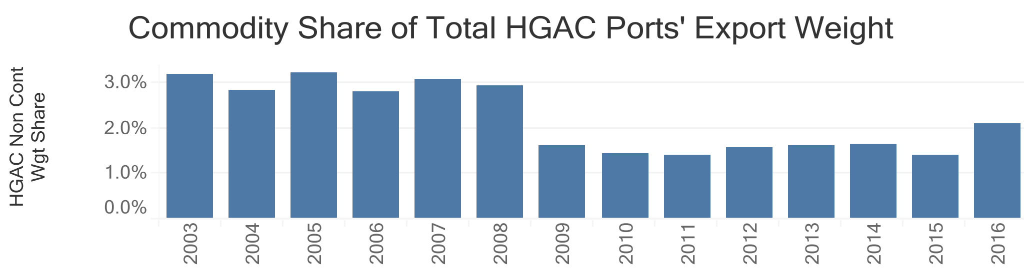


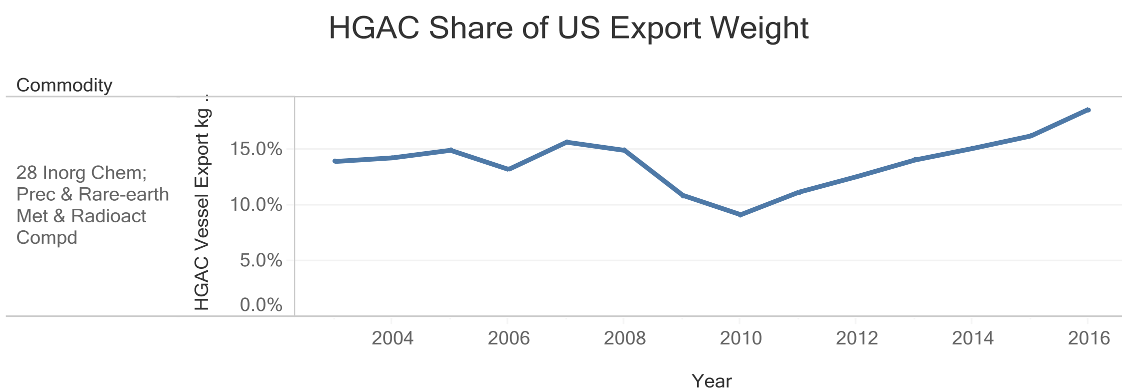


HS 28 Inorganic Chemicals

- Growing export volumes
- Growing share of U.S. export volumes

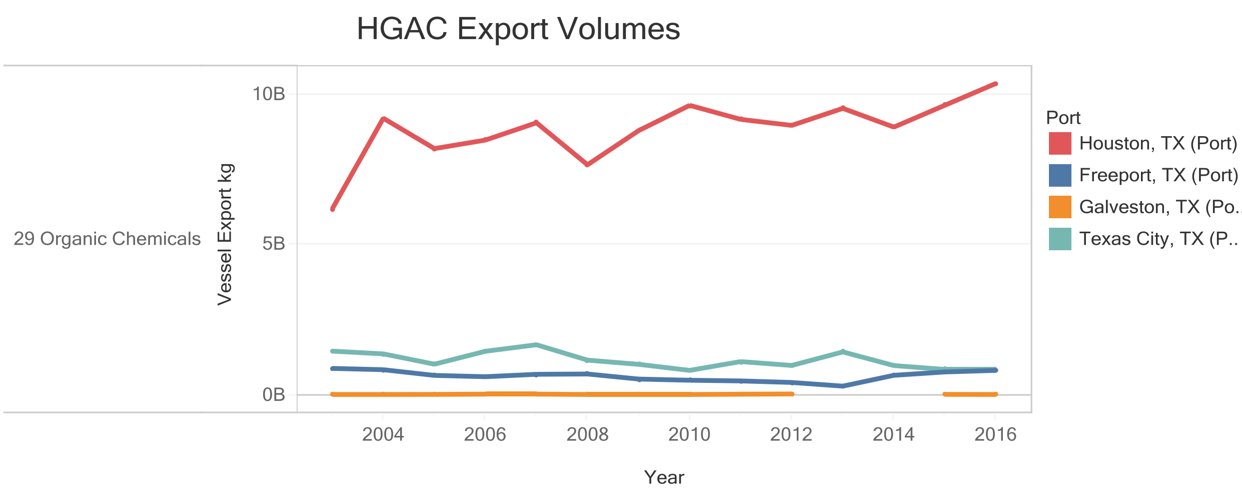


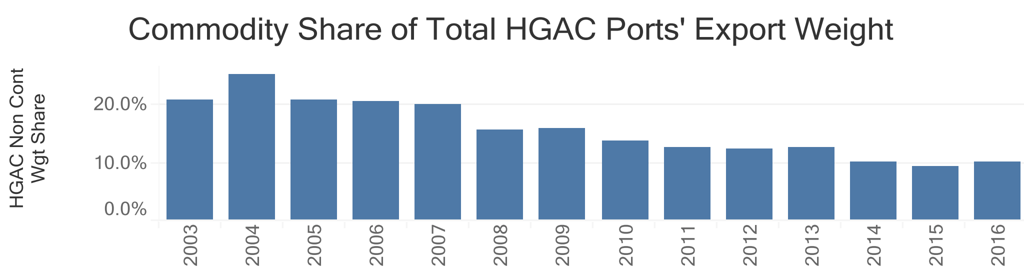


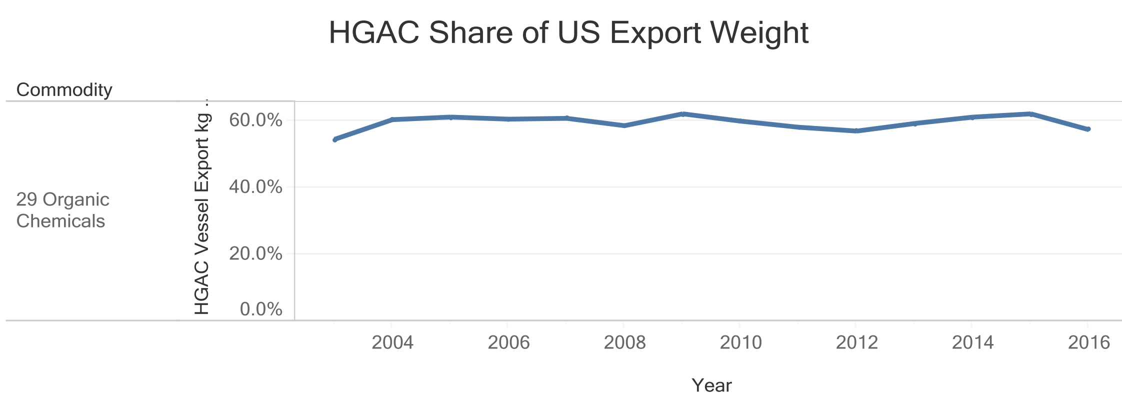


HS 29 Organic Chemicals

- Steadily growing export volumes
- Decline in share of total export volumes
- Dominant 60% share of U.S. total exports



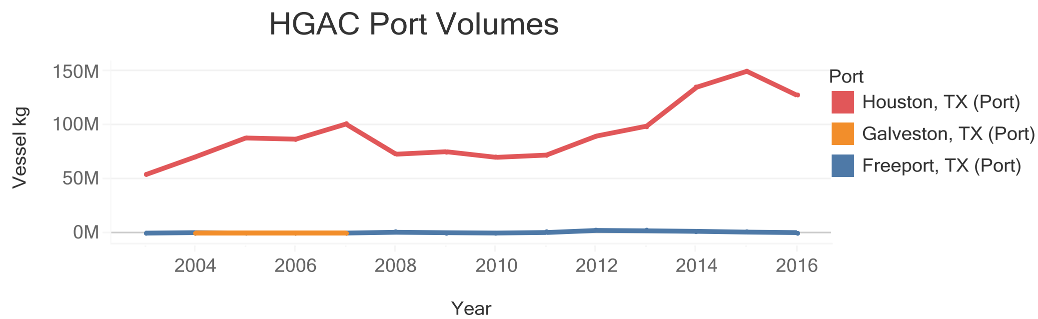


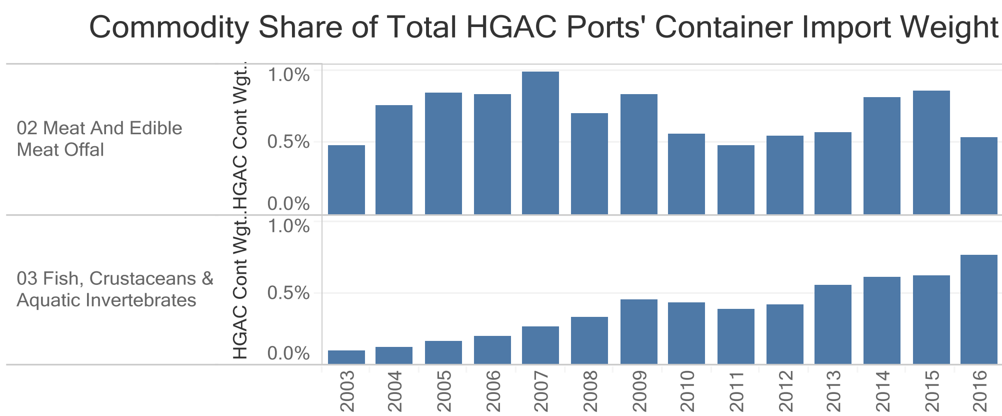


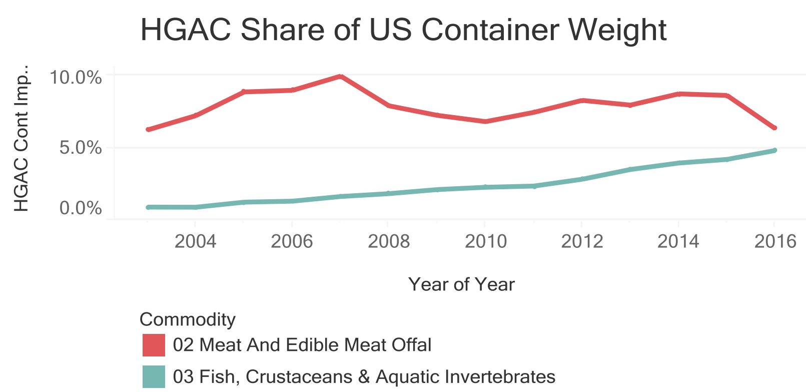
Consumer Goods: Import Container

HS 02&03 Meat and Fish

- 1 plus % of container imports
- Meat, split between beef and chicken

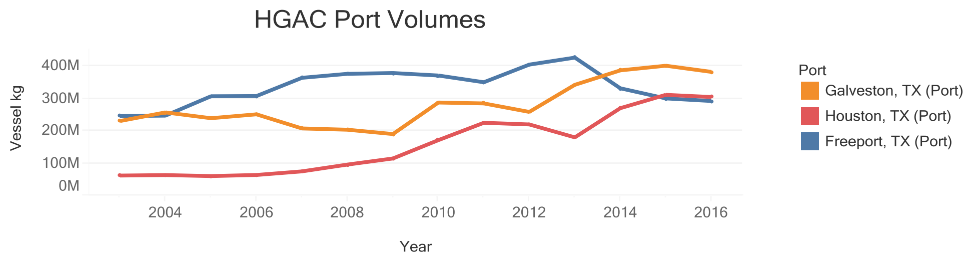


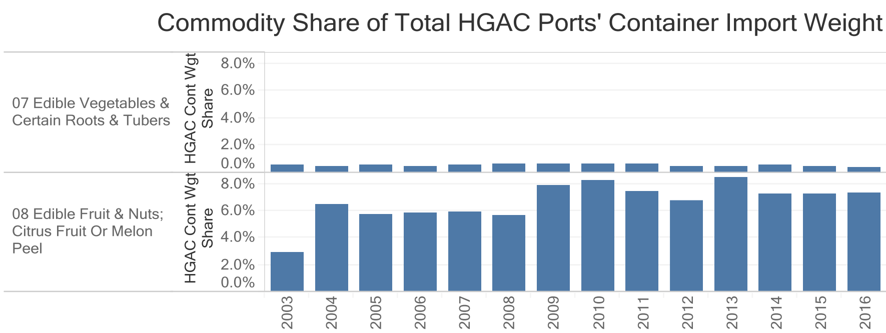


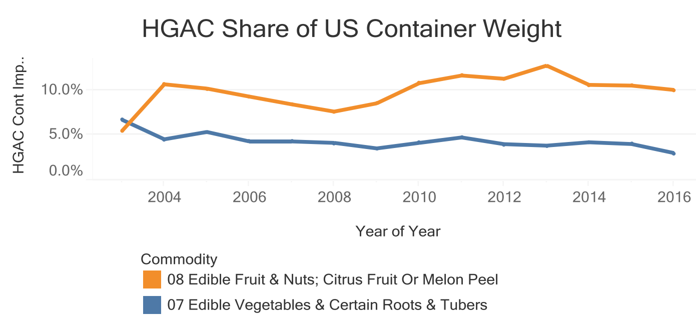


HS 07&08 Fresh Fruit and Vegetables

- 7.3 % of container imports, bananas, pineapple, melons
- 1.2 % of container exports

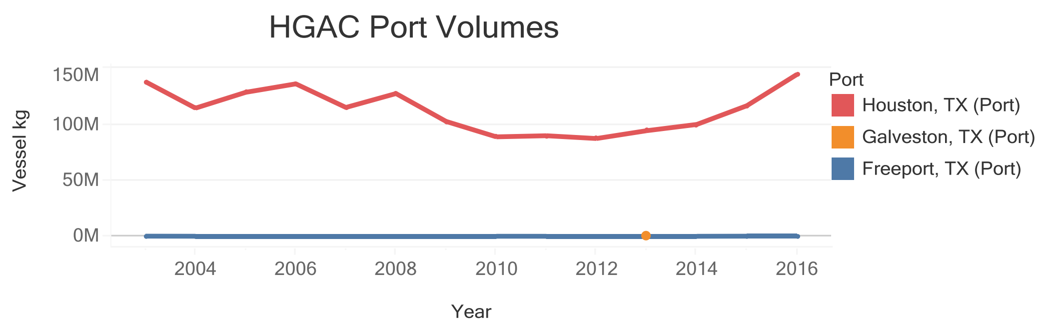


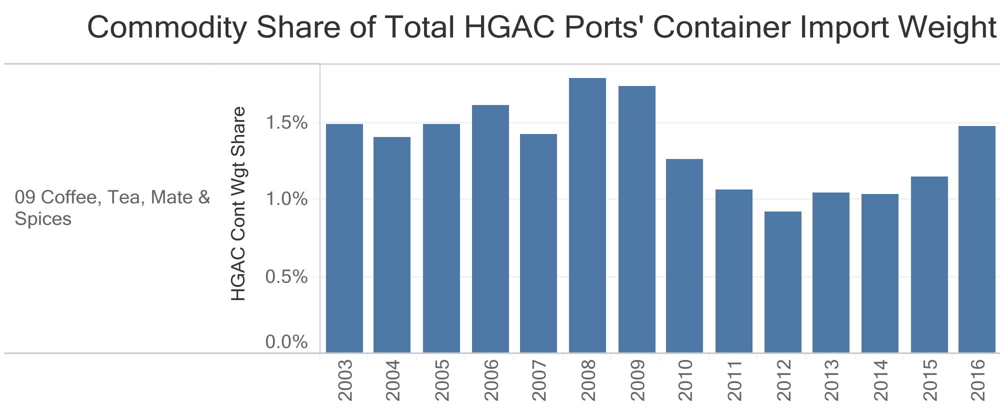


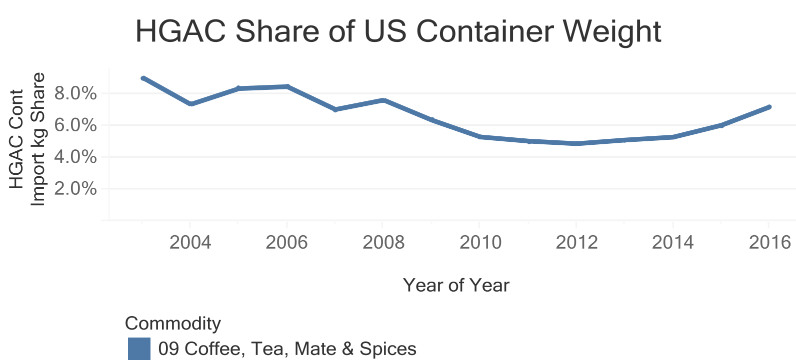


HS 09 Coffee

- 1.5 % of HGAC container import weight
- Larger 7% share of U.S. total container imports

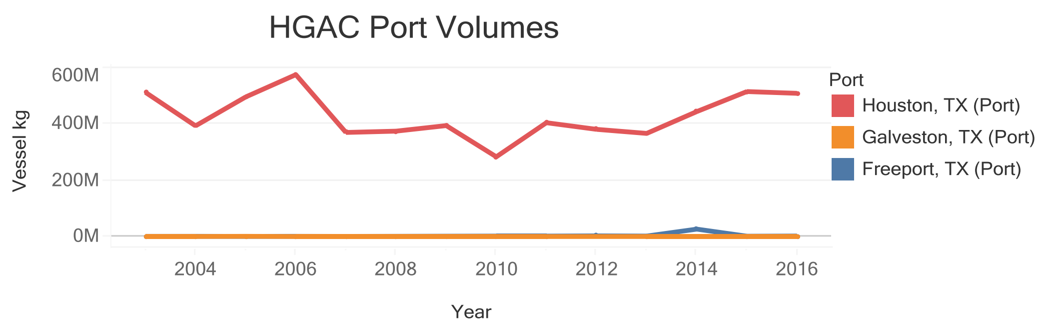


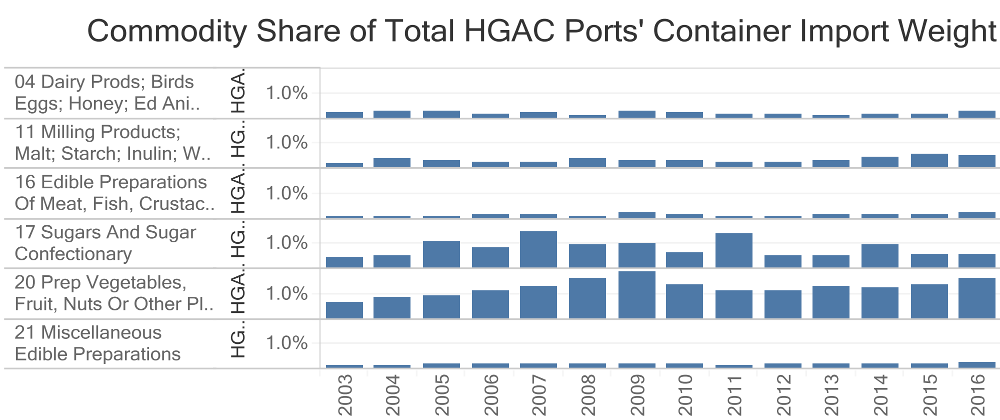


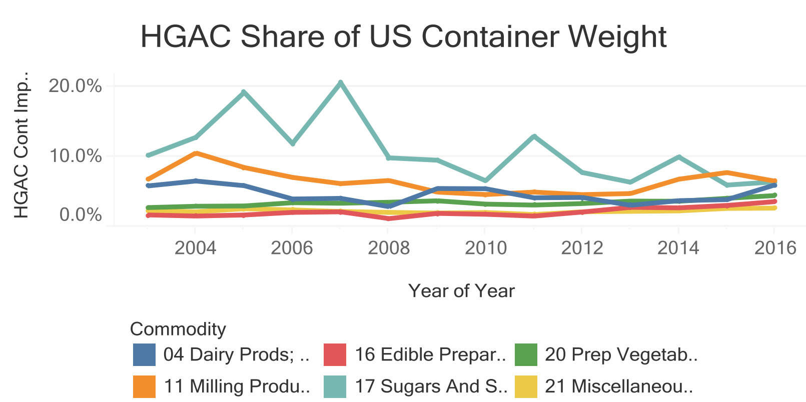


Prepared Foods

- 3.6% of HGAC container import weight in 2016

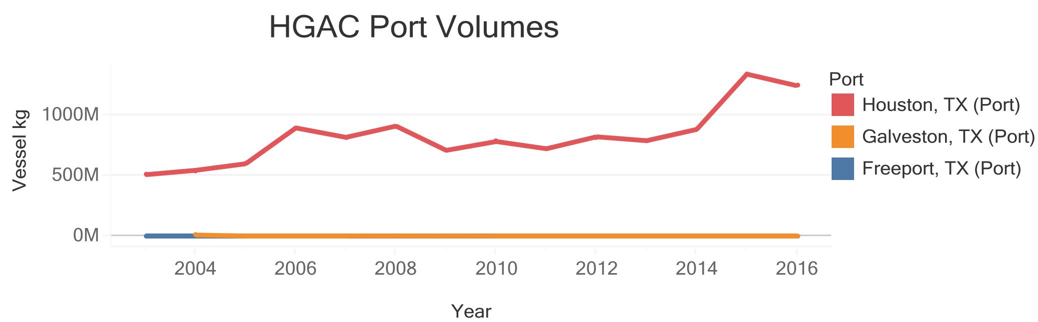


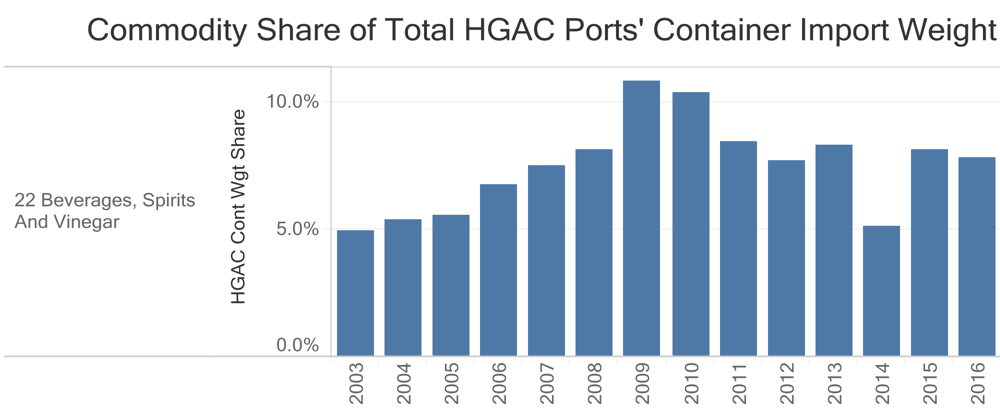


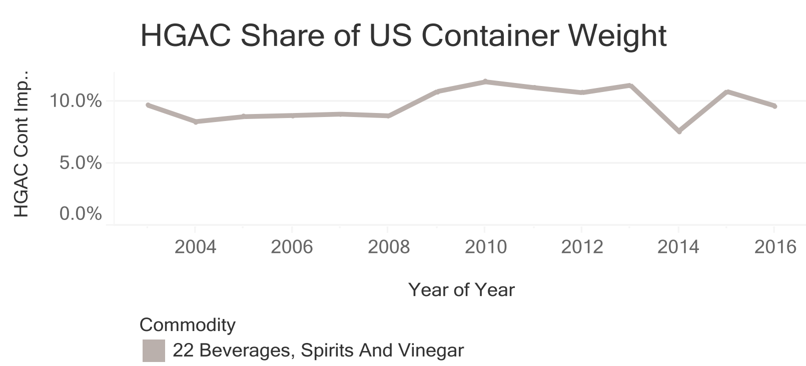


HS 22 Beverages

- Alcoholic beverages, 5.1 % of HGAC container imports
- Waters 2.2% of HGAC container imports
- About 10% of U.S. import container volumes

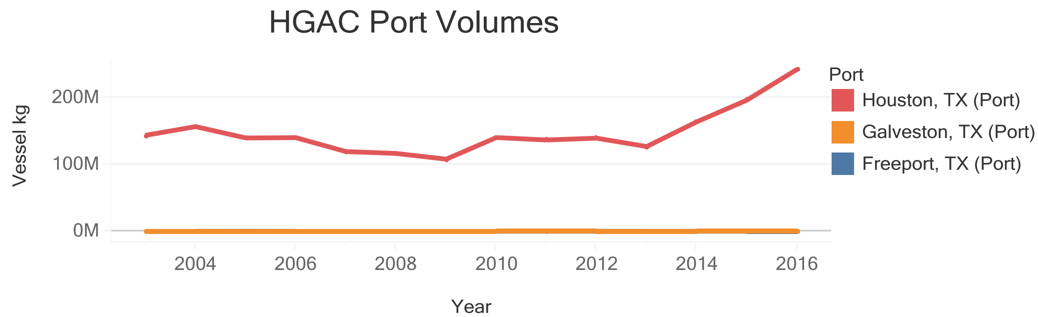


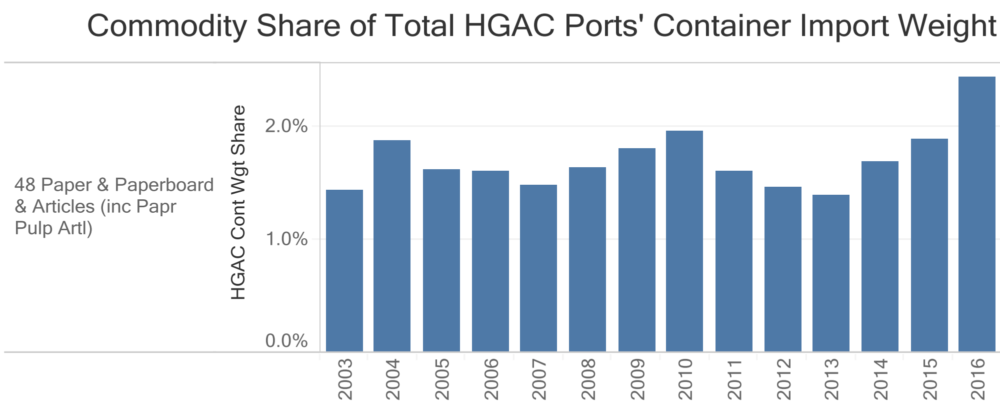


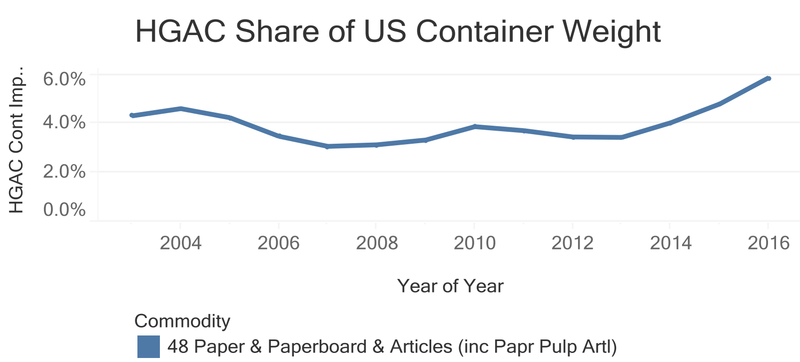


HS 48 Paper, Paper Products

- Growing share of ports' container imports weight (over 2%)
- Over 5 % of U.S. container import weight

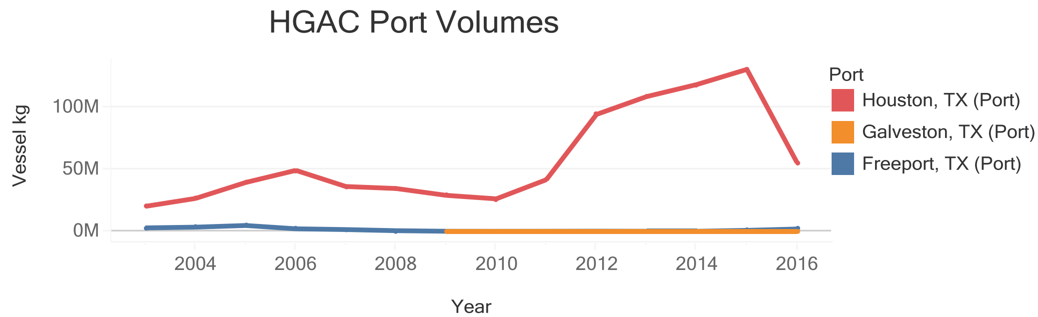


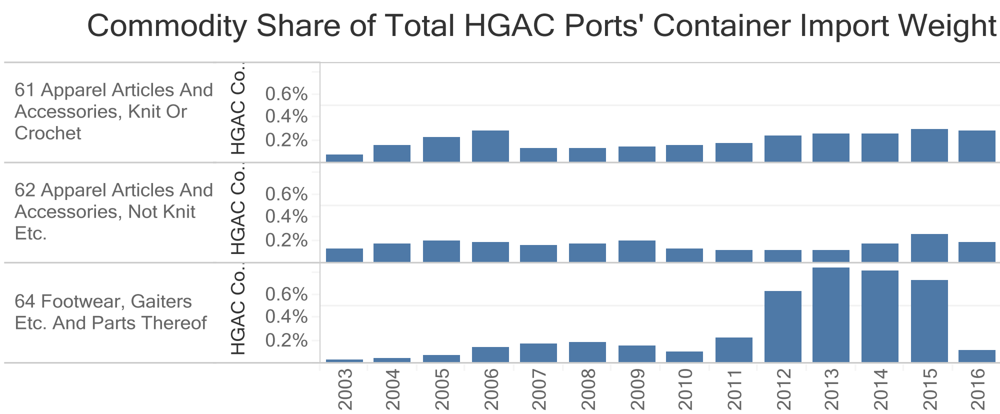


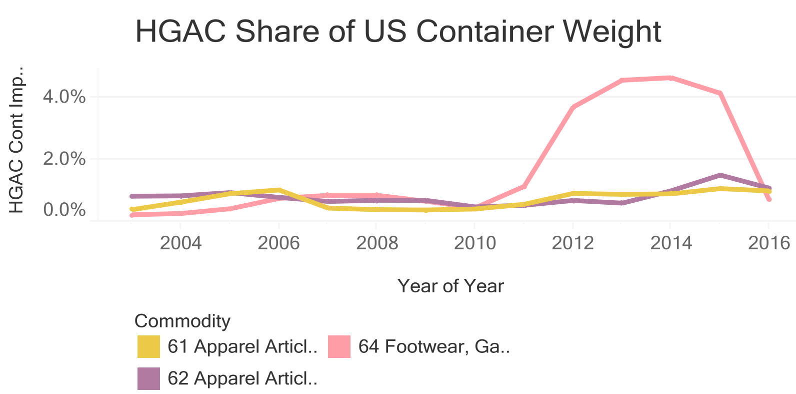


HS 61, 62 & 65 Apparel and Footwear

- Apparel, small container import volumes, a very small share of a large U.S. import category
- Footwear, tiny share of a large U.S. import category

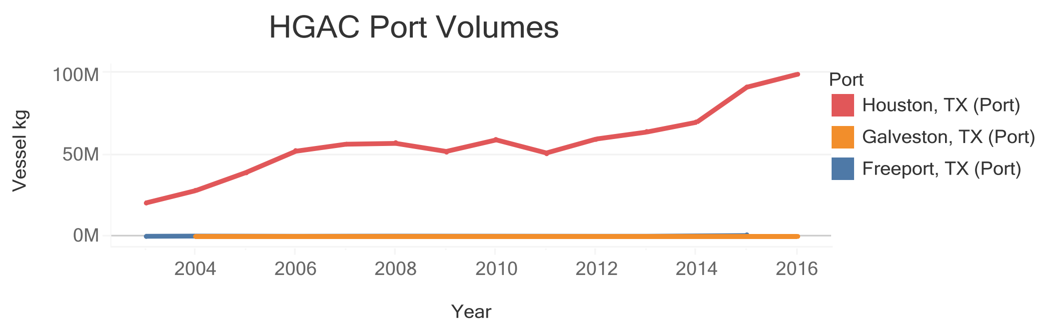


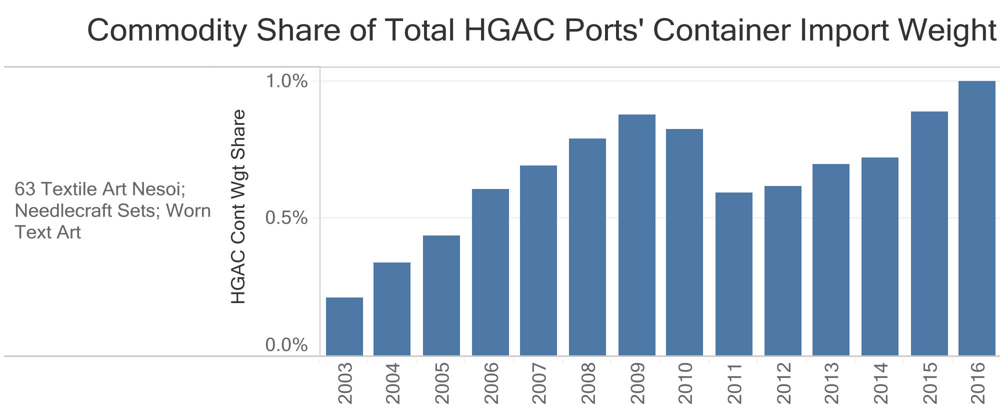


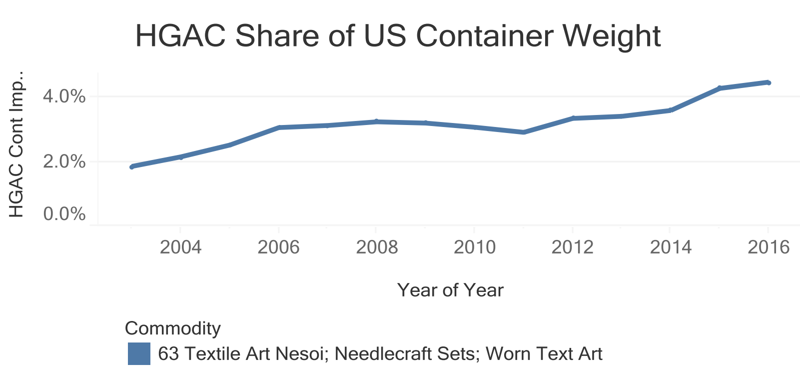


HS 63 Textile Articles, Other

- Growing container imports, to 1% of HGAC import weight in 2016
- Growing share of U.S. container import weight, to 4.4$ in 2017

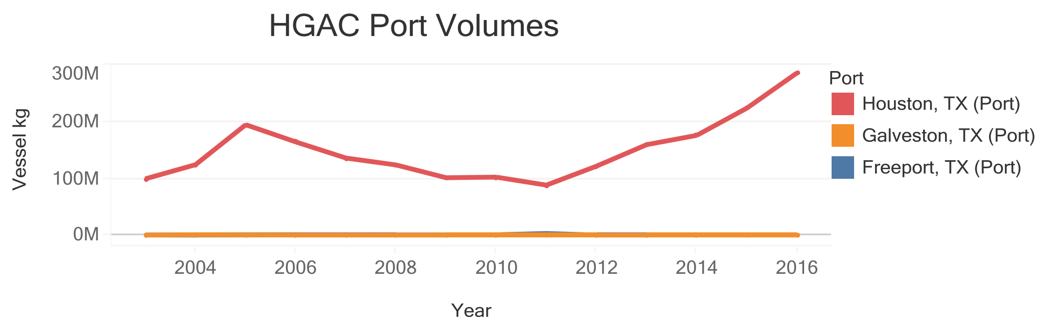


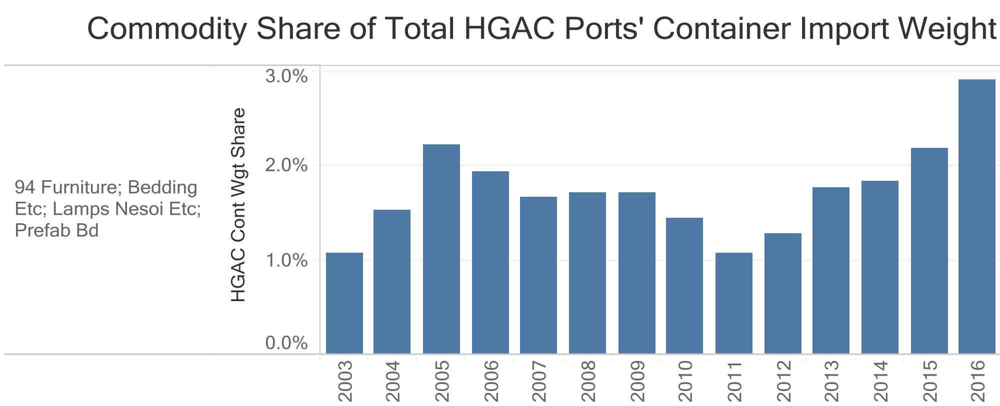


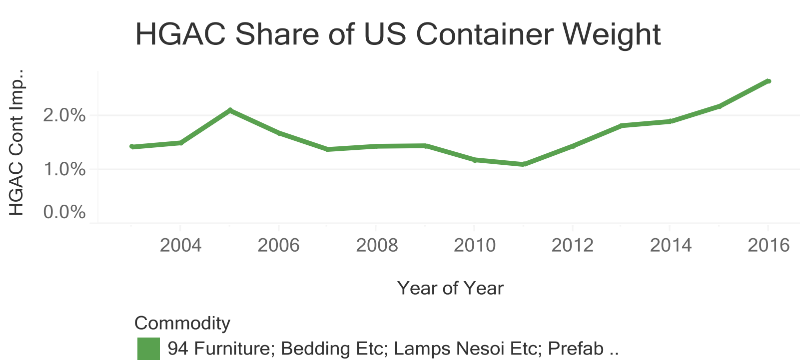


HS 94 Furniture and Lighting

- This commodity group is one of the largest for U.S. container imports but only in the past two years has the HGAC share of total U.S. imports risen above 2%

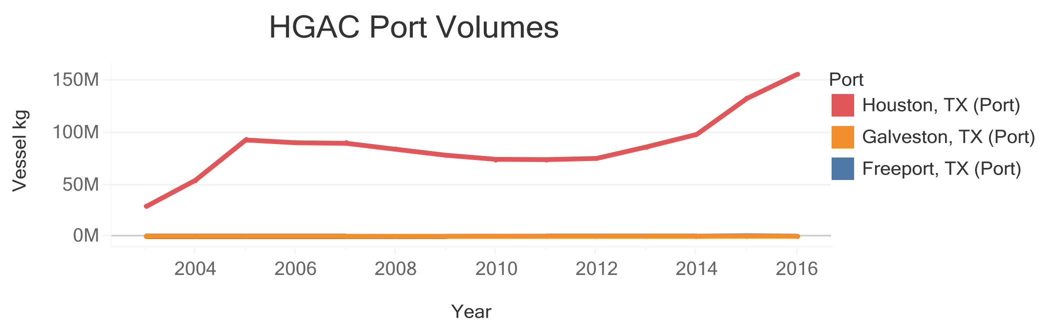


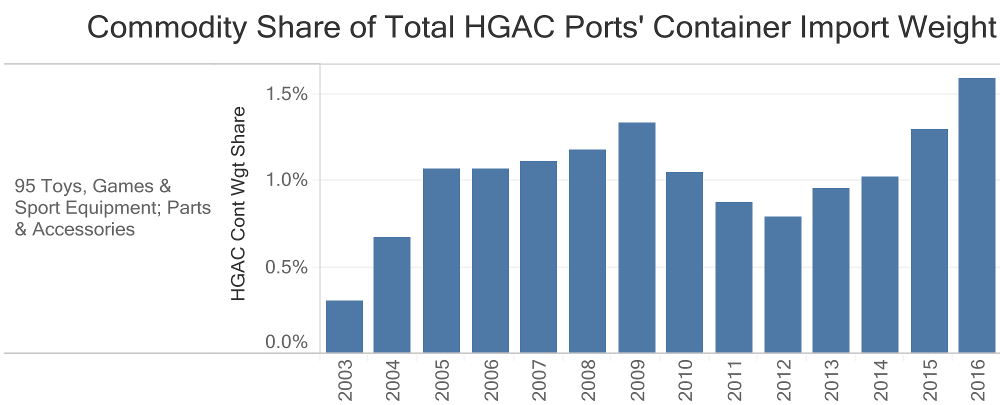


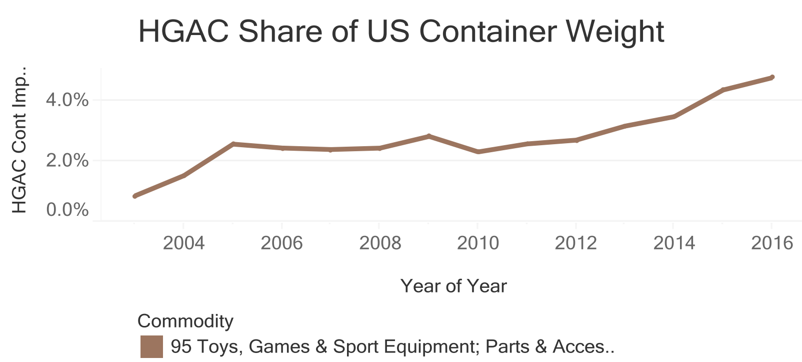


HS 95 Toys. Games, Sporting Equipment

- Rapid increases to 1.5% of HGAC ports' container import weight
- Nearing 5% of U.S. container weight



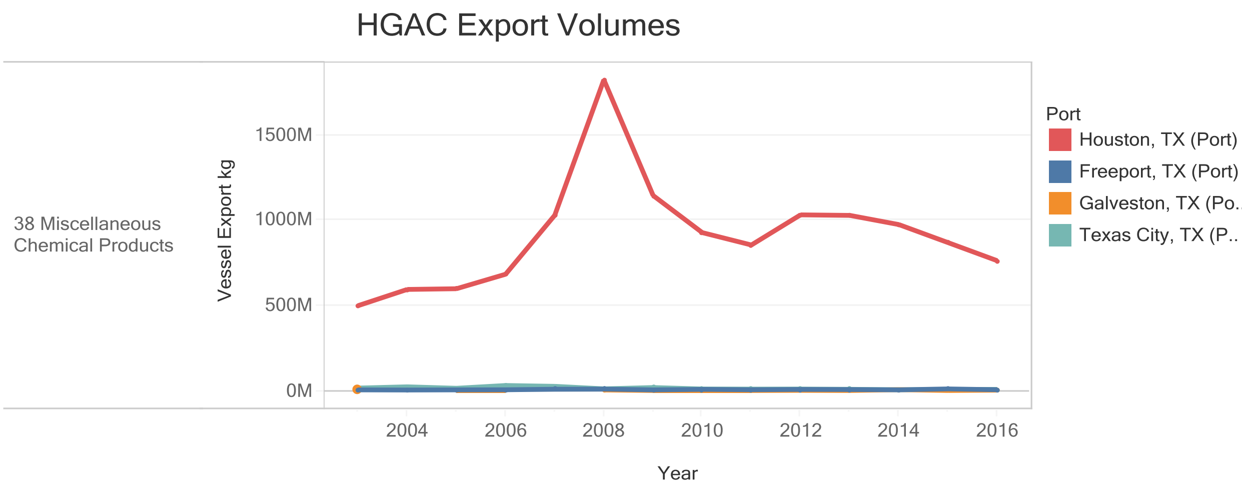


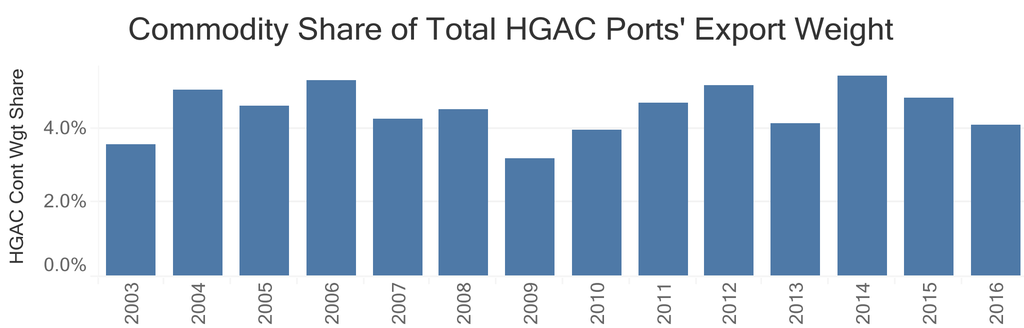


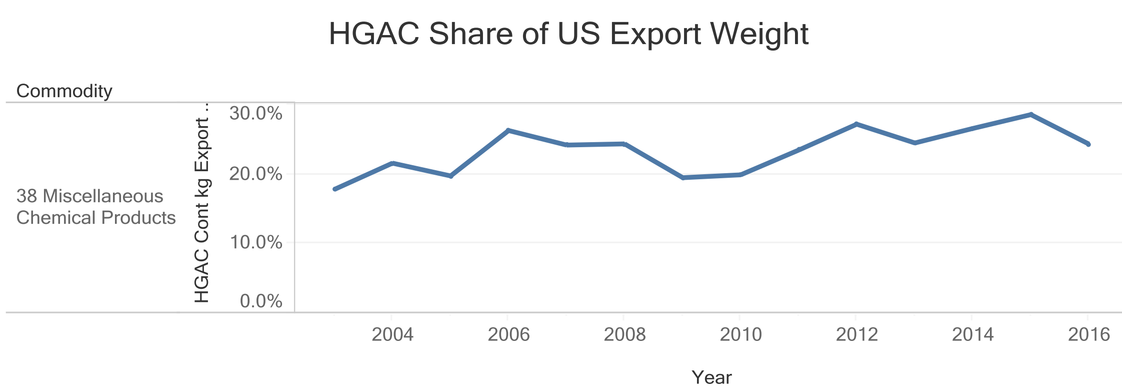
Industrial Container Products

HS 38 Misc. Chemical Products

- HGAC container exports have represented 25-30% of the U.S. total in recent years.
- The commodity group accounts for about 4% of HGAC container exports
- Major product is HS 3811 Antiknock Preps & Other Additives For Mineral Oils

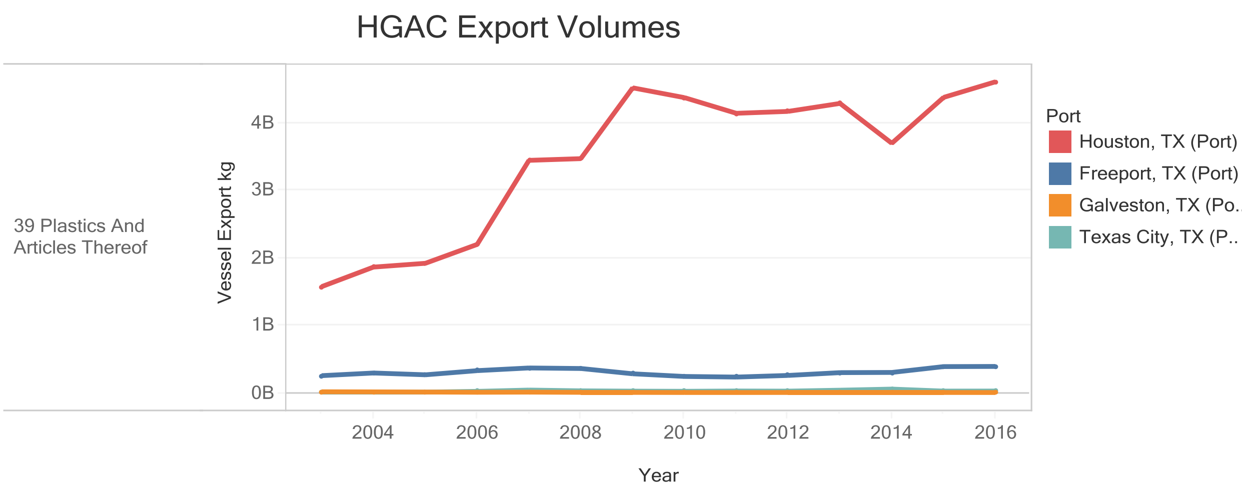


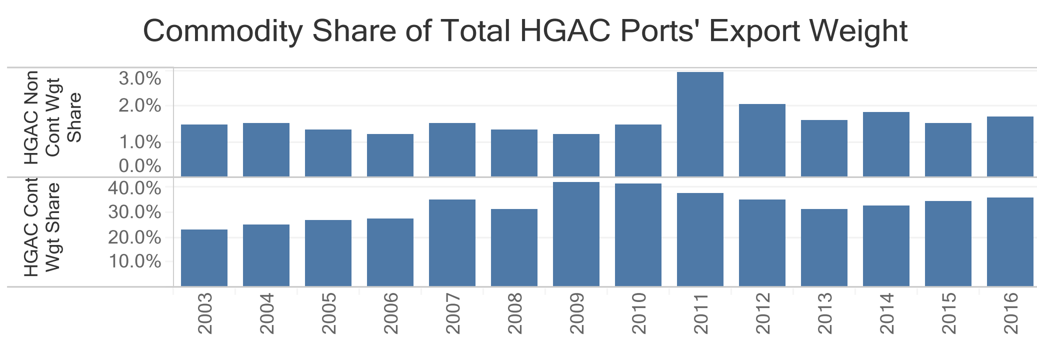


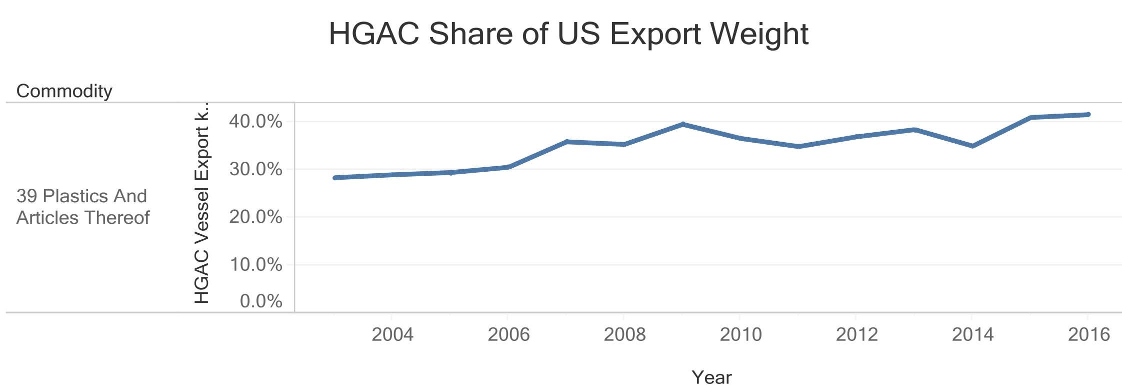


HS 39 Plastics, Plastic Products

- Total HGAC export volumes have been relatively steady from 2010 through 2016
- Commodity group represents a large 30% plus share of HGAC container export volumes and total U.S. export tons

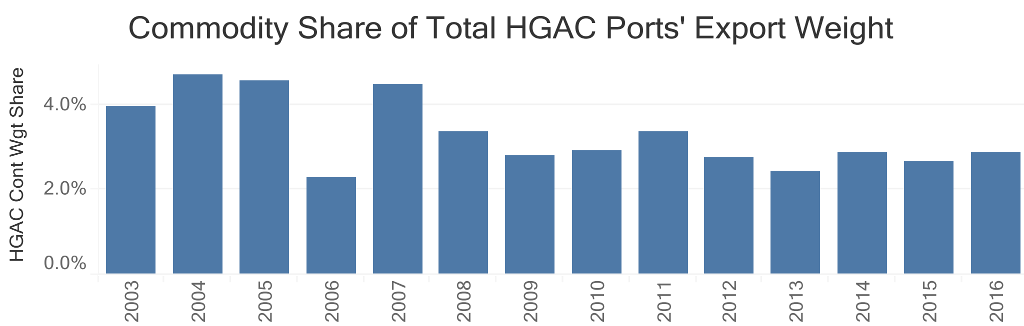


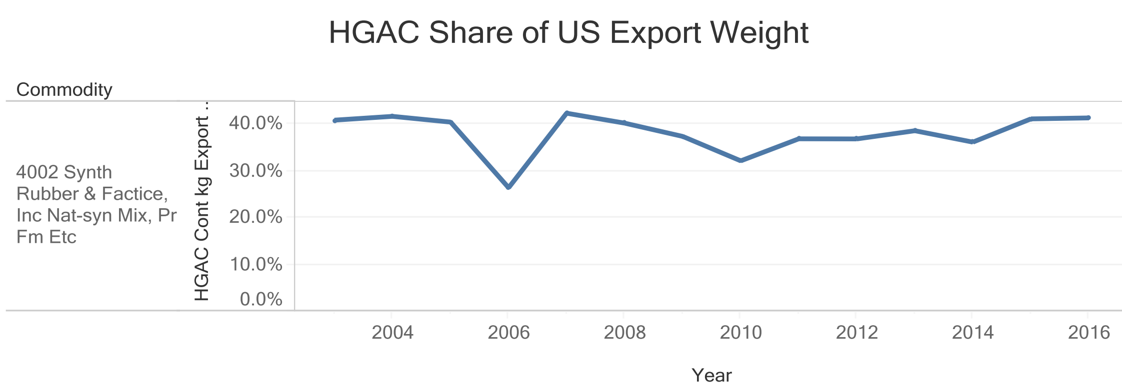




HS 4002 Synthetic Rubber

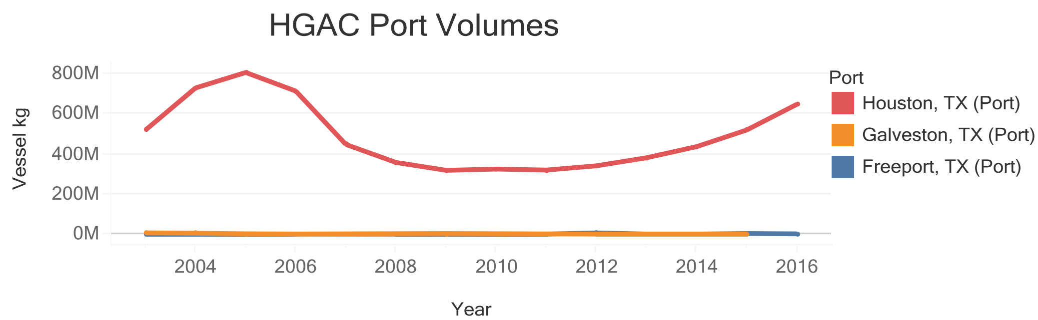
- Commodity represented 2.9% of HGAC container exports in 2016
- Could be combined with plastics

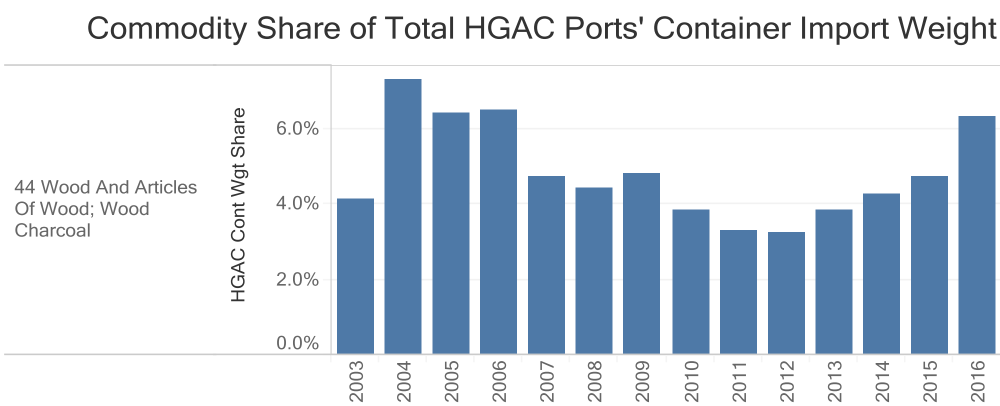


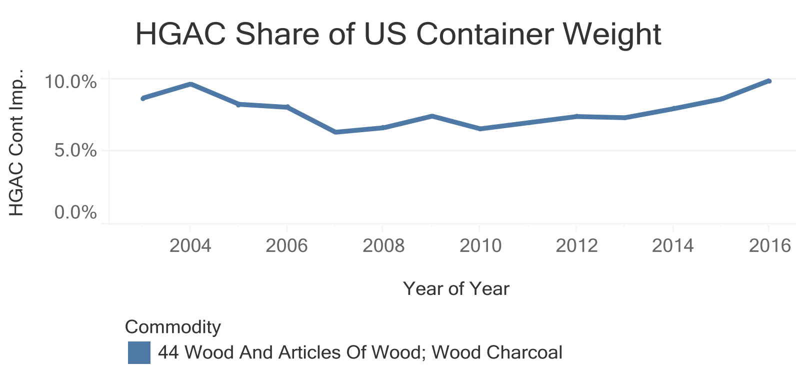


HS 44 Wood Products

- Wood product import volumes are heavily cyclical, tied to building construction
- Wood products have rebounded to 6.0% of HGAC container imports in 2016 and 10% of the U.S. total.

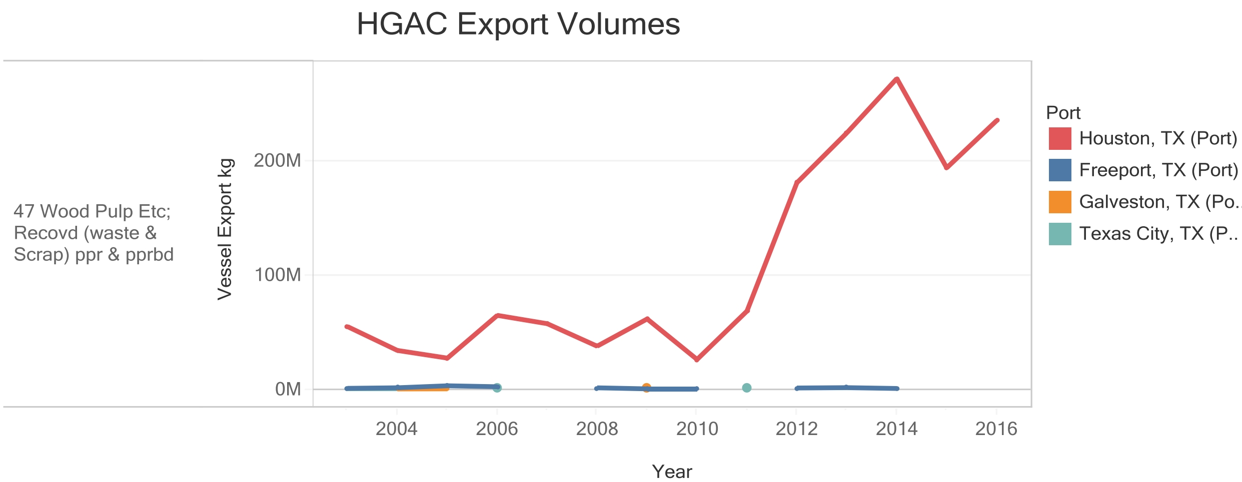


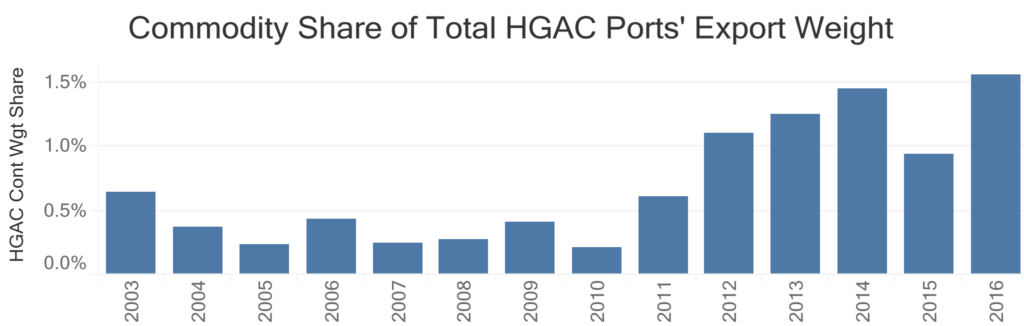


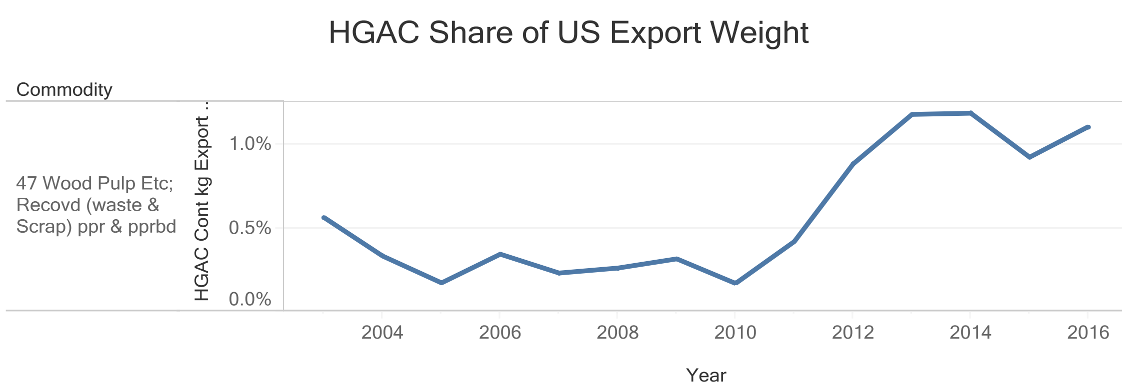


HS 47 Wood Pulp and Waste Paper

- Commodity group is primarily waste paper
- Exports have grown rapidly in 2011-2016 to 1.5% of container exports in 2016

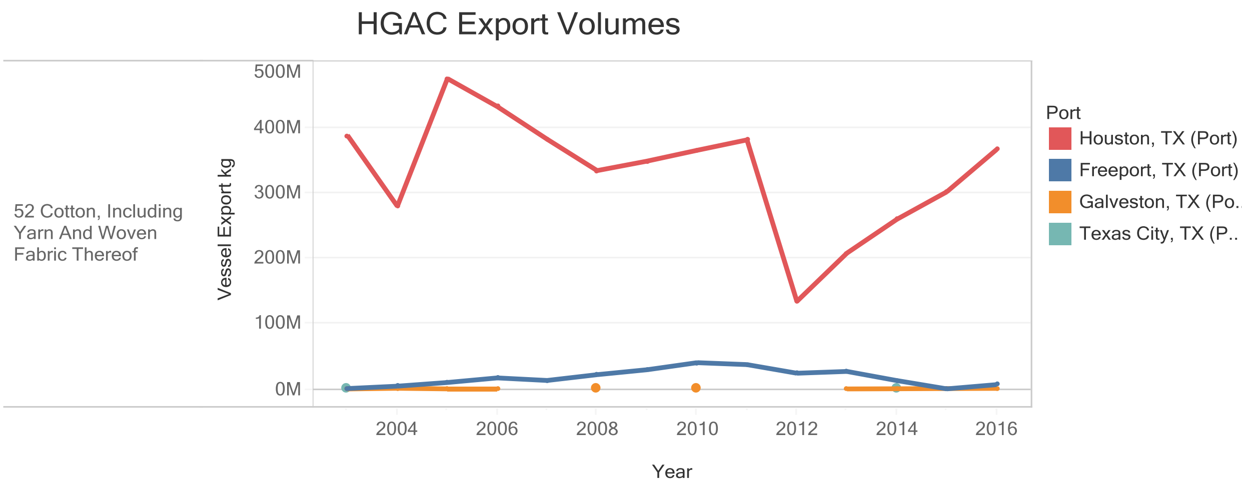


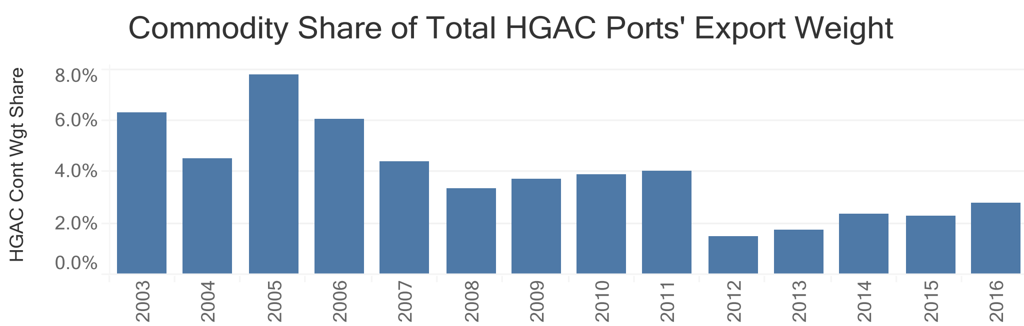


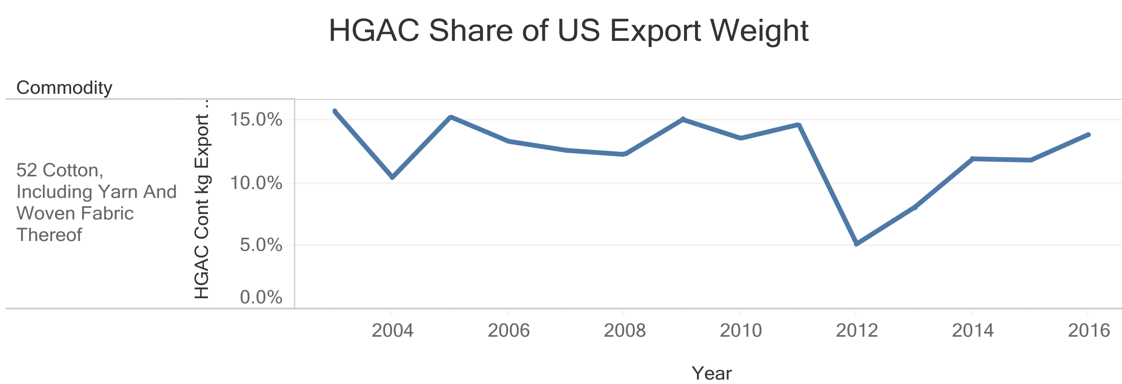


HS 52 Cotton

- Volumes have trended down, but cotton represents just under 3% of HGAC container exports
- HGAC container exports were 14% of the U.S. total in 2016

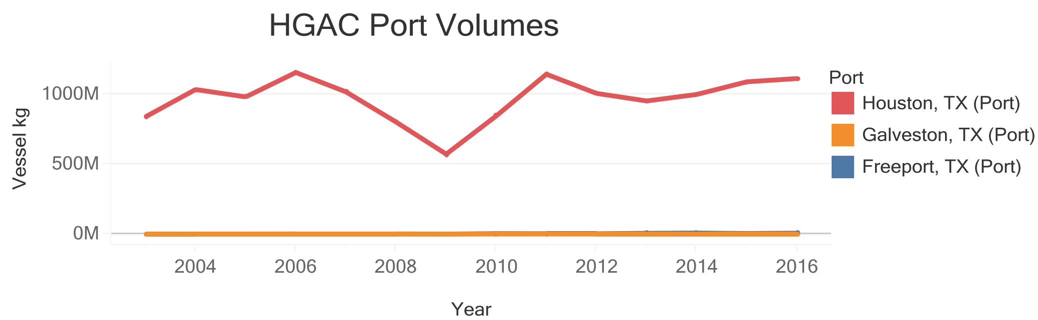


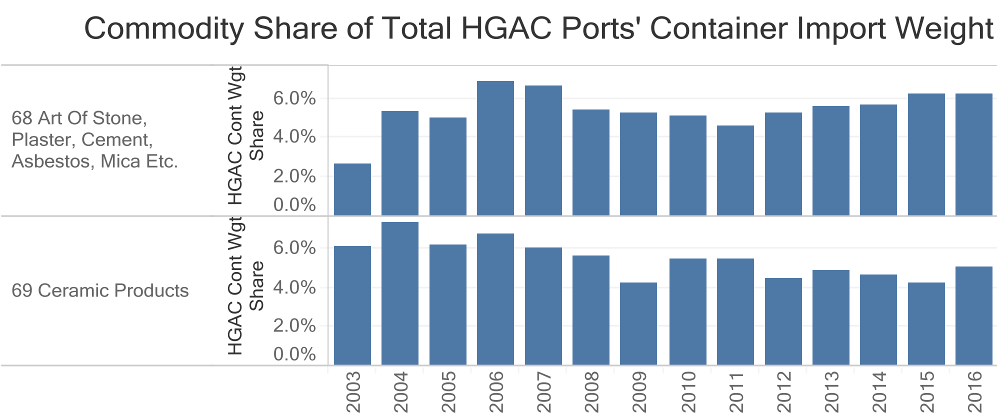


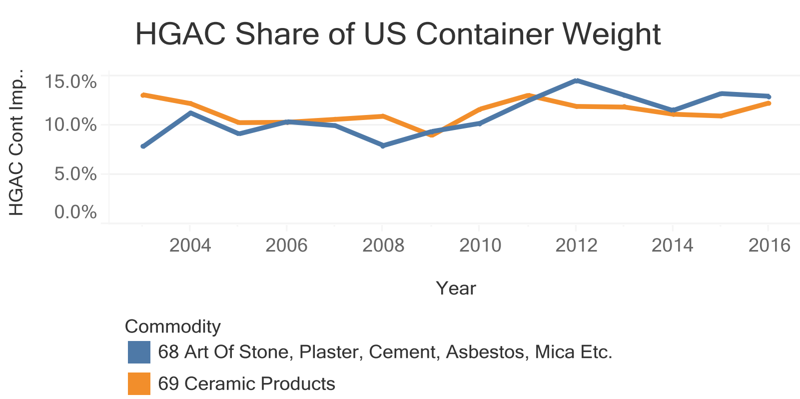


HS 68&69 Stone, Cement and Ceramic Products

- Used heavily in construction and buildings
- Commodity group represented 10.6% of HGAC container imports in 2016 and about 12% o f the U.S. total for the commodity group

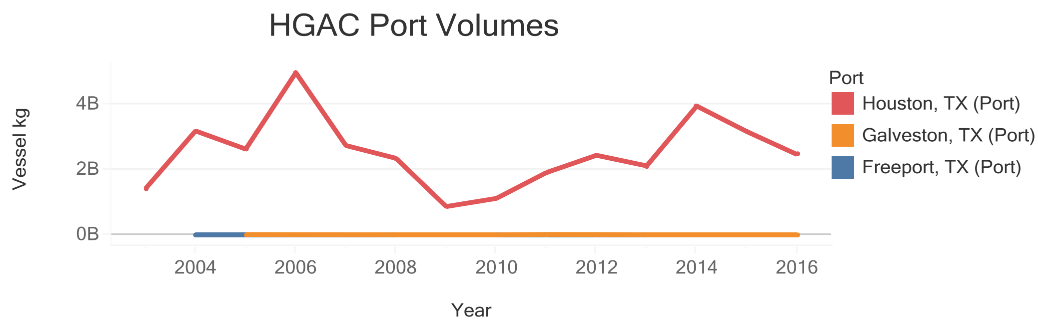


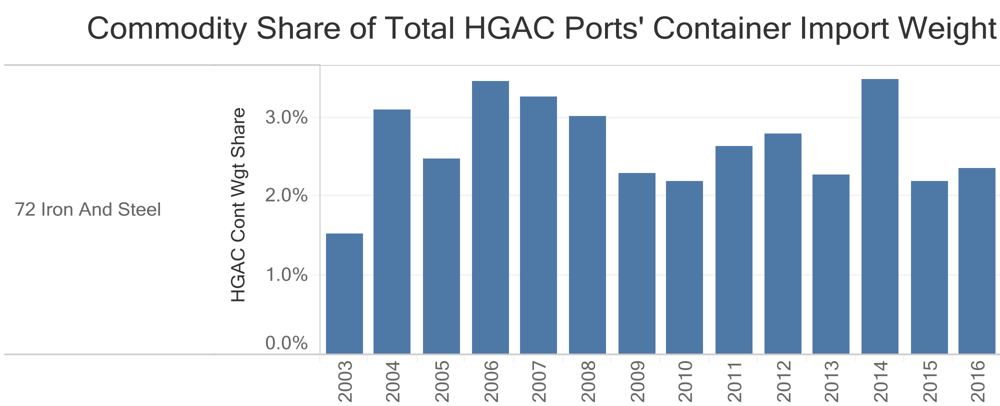


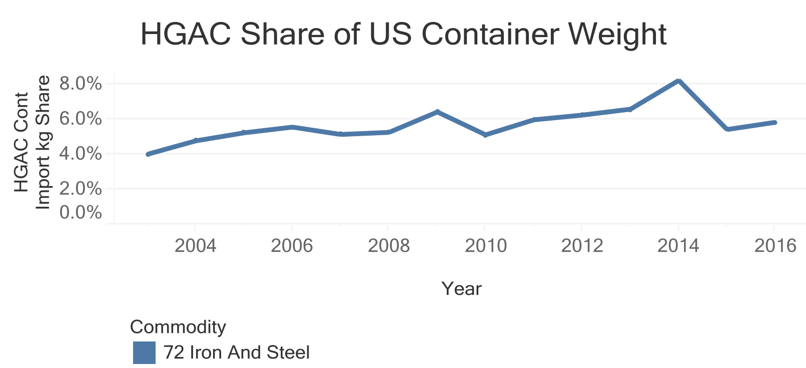


HS 72 Iron and Steel

- Imports include tubes, pipes, wire, and fasteners
- Volumes were 2.6% of HGAC container imports in 2016 and have generally represented about 6% of U.S. total container volumes for the commodity group

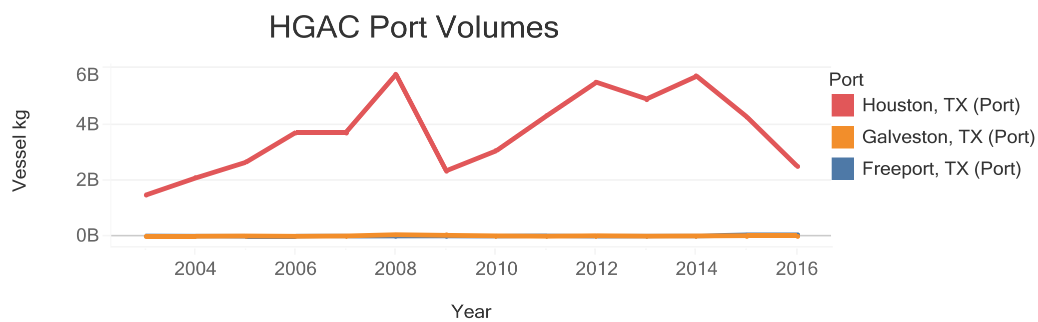


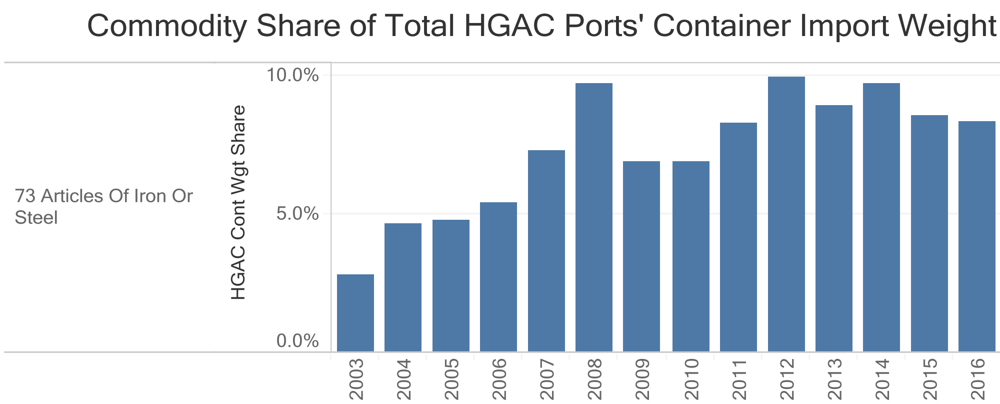


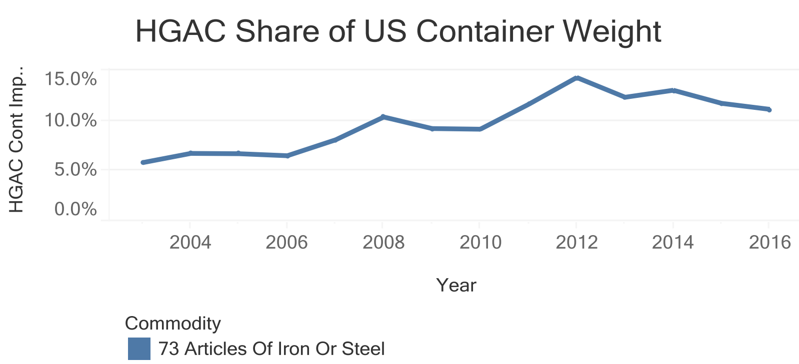


73 Iron and Steel Articles

- Volumes were 8.4% of HGAC container imports in 2016
- HGAC volumes were 11% of the U.S. total for the commodity group in 2016

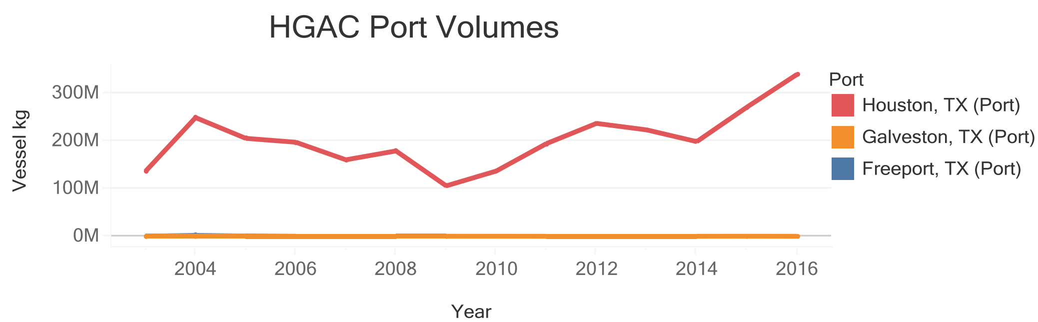


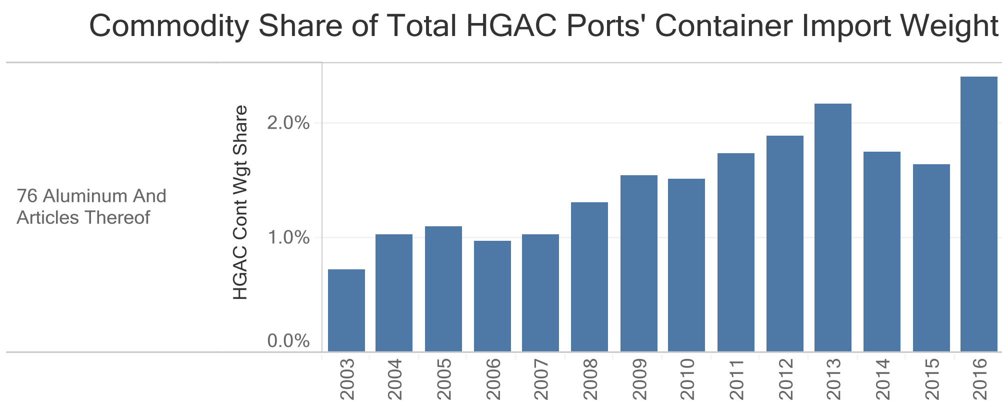


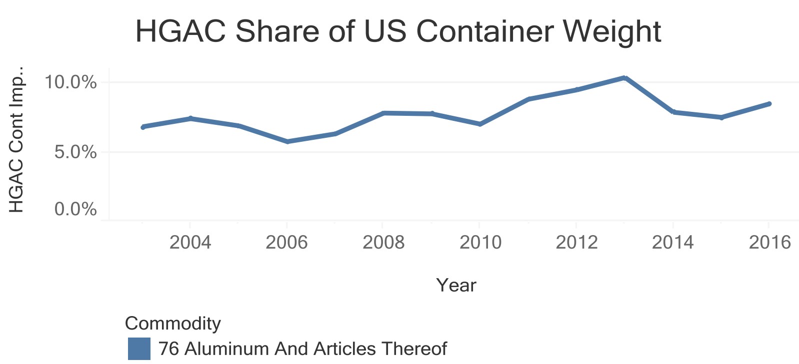


HS 76 Aluminum and Articles

- Volumes have grown to 2.4% of HGAC container imports in 2016
- Imports have represented about 8% of the U.S. total for the commodity group in recent years.

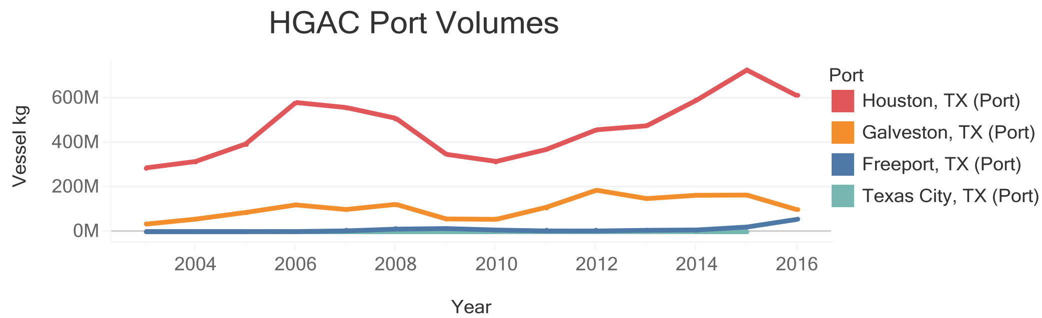


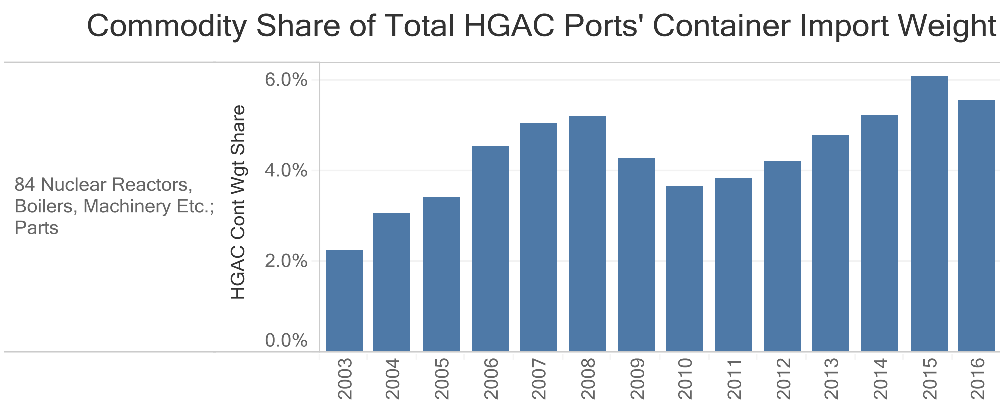


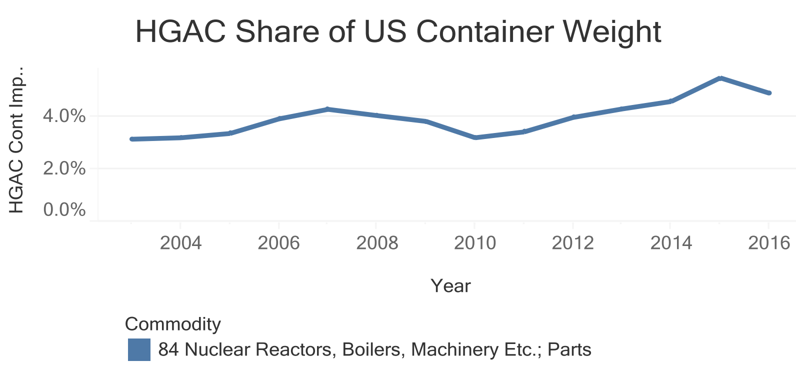


HS 84 Machinery

- Total port volumes have increased since the recession to 5.6% of HGAC container imports

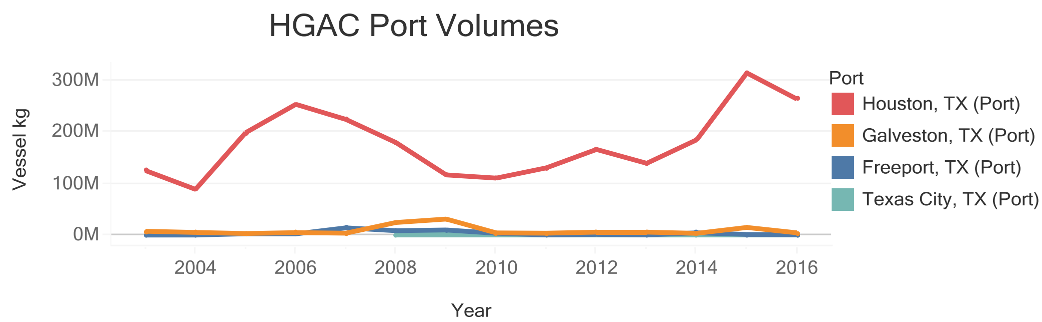


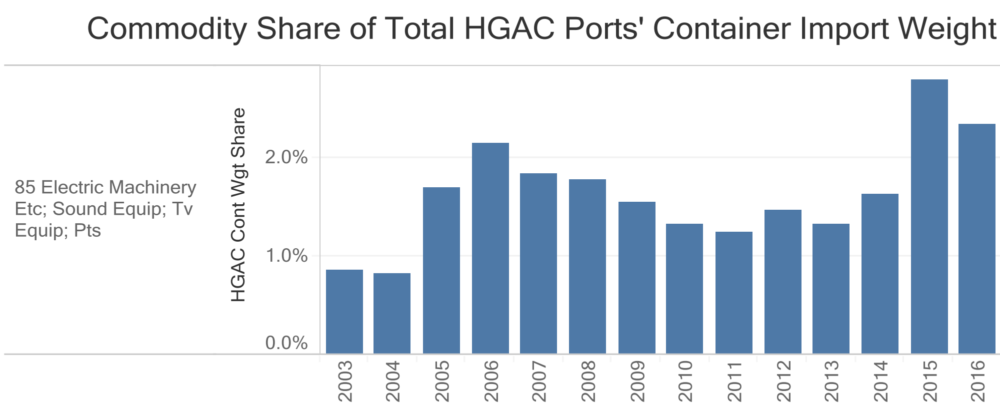


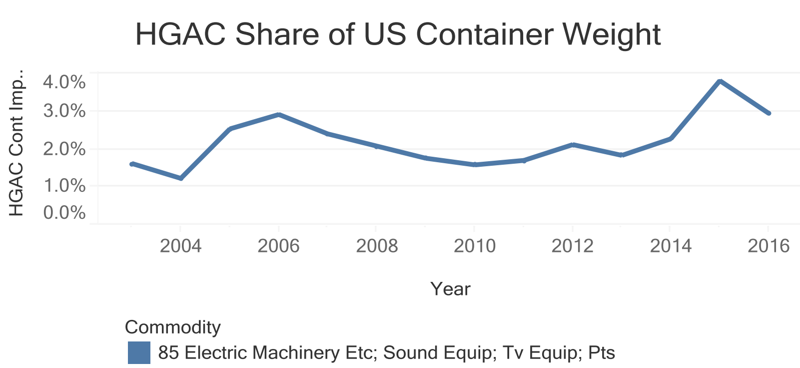


HS 85 Electrical Machinery

- Growth in import volumes has led to the commodity group representing 2.3% of HGAC container imports







HS 87 Vehicles (and parts)

- Automotive imports are relatively small representing less than 1% of HGAC totals.
- 0.9% of container exports