

# THE 2016 NATIONAL ECONOMIC IMPACT OF IMPORTED IRON AND STEEL PRODUCTS ON THE U.S. MARINE TRANSPORTATION SYSTEM AND THE U.S. ECONOMY



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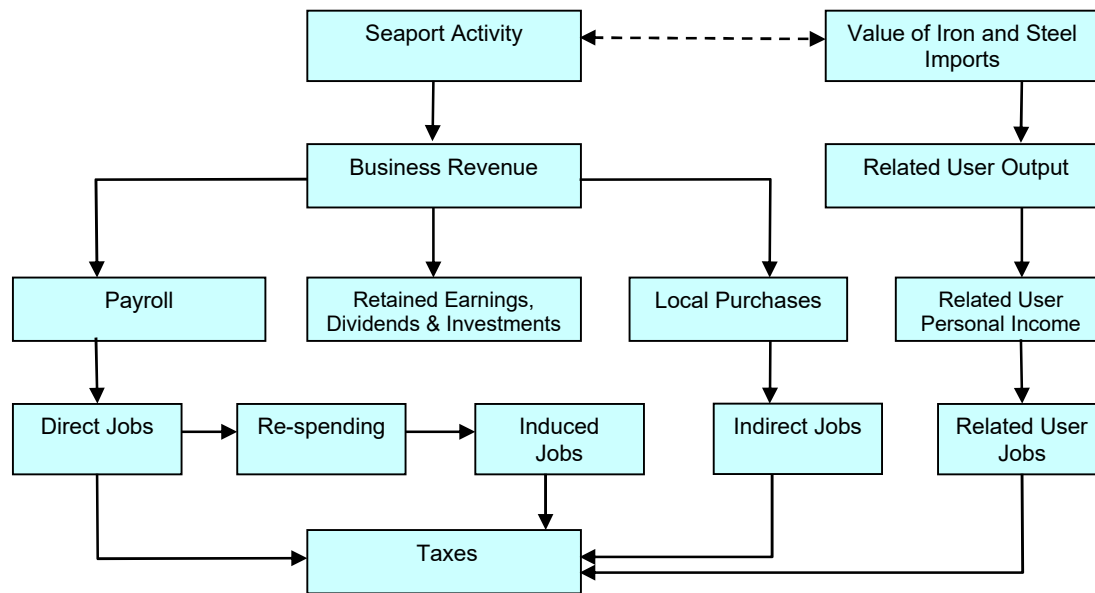
Over the past 31 years, Martin Associates has conducted more than 600 seaport economic impact studies for the majority of ports throughout the United States. The purpose of this study is to quantify the national economic impacts of imported iron and steel products moving through the nation's seaports and using the country's highways, rail and inland waterways to move the products from the seaports and inland waterways ports to the intermediate and final end users. These end users include the nation's auto and transportation equipment manufacturing industry, steel fabricators, as well as the construction industry. With the potential imposition of trade restrictions and quotas on imported iron and steel products being discussed in Washington by the current administration, it is critical that a defensible understanding be developed of the importance of imported iron and steel products to the ports and transportation logistics supply chains that are the conduit to deliver the products to the end users, as well as the domestic industries that are dependent on the use of imported iron and steel products. As a service to the American Institute for International Steel (AIIS), Martin Associates has prepared this study quantifying the economic impact of imported iron and steel products on the U.S. economy. The analysis is based on individual seaport impact models that Martin Associates has developed in the last three years for the major steel import ports in the U.S. These seaports include ports on the West Coast, Atlantic Coast, Gulf Coast and the Great Lakes. Detailed impact models have been developed for Houston; Mobile; the Delaware River ports of Philadelphia, Camden, Wilmington (DE), Chester (PA), and Paulsboro (NJ); New Orleans; Los Angeles; the Atlantic Coast ports of Baltimore, New York, Charleston, Norfolk and Savannah; Tampa; the Columbia River ports of Vancouver (WA), Kalama (WA), and Longview, (WA); and the Great Lakes ports of Cleveland, Chicago, and Burns Harbor (IN). The port specific models were developed based on detailed interviews with over 6,500 port service providers. The imported steel handled at these ports accounts for nearly 85% of the imported iron and steel products reported by the U.S. Bureau of Census. Using these models, Martin Associates developed an estimate of the economic impact of the 2016 imported iron and steel products on the U.S. economy. These models were used to estimate the economic impact of 85% of the 34.4 million tons of imported iron and steel products that moved via the nation's seaports in 2016. The model structures were then used to expand the impacts to cover the remaining 15% of the steel imports at other ports throughout the U.S.

The resulting economic impact models can be used for annual updates, as well as to test and evaluate the potential impacts of trade restrictions on imported iron and steel products. Similar models have been developed by Martin Associates that have been used to quantify the total economic impacts of the U.S. Coastal ports on the nation's economy, and to measure the impacts of port

shutdowns such as the 2002 West Coast port shutdown and the recent West Coast port slowdowns that occurred during the 2014-2015 contract negotiations.

Exhibit E-1 graphically demonstrates how seaport activity impacts the local, regional and national economies. As this Exhibit indicates, the marine cargo and vessel activity initially generate business revenue to the firms supplying marine services. This revenue is used to purchase employment (direct jobs) to provide the services, to pay stockholders and for retained earnings, and to purchase goods and services from local firms, as well as national and international firms (creating indirect jobs with these firms). Businesses also pay taxes from the business revenue.

Exhibit E-1  
Flows of Economic Impacts through the Economy



The employees hired by the firms receive wages and salaries (personal income), a portion of which is saved, while another portion is used to buy goods and services such as food, housing, clothing, health care, etc. These purchases create a re-spending impact throughout the economy, known as the personal income multiplier. As a result of these local purchases, additional jobs (known as induced jobs) are created in the local economy. Local purchases are also made by the firms directly dependent upon the seaports, including the terminal operators, steel mills, steel fabricators located on port property, truckers, railroads and barge companies transporting the steel

from the ports to the manufacturing and construction users, steamship lines and agents, and freight forwarders. The local purchases made by directly dependent firms create indirect jobs. Finally, taxes are paid by individuals employed with the firms providing the services to the marine terminals and by the firms directly dependent upon the Port.

In addition, domestic industries are the consumers of the imported iron and steel products, and this sector is referred to in the Exhibit as the related users. These related users include steel fabrication firms, transportation equipment manufacturers, appliance manufacturers, and the construction industry using the steel imported through the marine terminals. The related user impacts are not dependent upon the seaport marine terminals to the same extent as are the direct, induced and indirect jobs. It is the demand for the final product, i.e. steel products, that creates the demand for the employment with these shippers/consignees, not the use of a particular seaport or marine terminal. It is to be emphasized that the employment with firms counted as directly, induced and indirectly dependent upon the port activities are excluded from the related impacts to avoid double counting. Furthermore, should imported steel products be limited due to trade restrictions, it is possible that these users could use domestically produced steel, albeit at a higher cost of production, which could in turn reduce demand for products previously produced with lower cost imported steel.

As demonstrated, four types of impacts are measured:

- Jobs;
- Employee earnings;
- Business revenue;
- State, local and federal taxes.

With respect to jobs, four types of job impacts are measured. These are direct, induced, indirect and related jobs. The job impacts are defined as follows:

- Direct jobs are those jobs with local firms providing support services to the seaport. These jobs are dependent upon the imported iron and steel cargo and associated vessel calls, and would suffer immediate dislocation if the seaport activity were to cease. Seaport direct jobs include jobs with railroads, trucking companies and barge operators moving the imported iron and steel cargo from the marine terminals and private terminals, members of the International Longshoremen's Association (ILA), the International Longshore and Warehouse Union (ILWU) and non-ILA and non-ILWU dockworkers, steamship agents, freight forwarders, ship chandlers, warehouse operators, bankers, lawyers, terminal operators, and stevedores.

- Induced jobs are jobs created locally and throughout the national economy due to purchases of goods and services by those directly employed. These jobs are with grocery stores, the local construction industry, retail stores, health care providers, local transportation services, local and state government agencies providing public services and education to those directly employed, and businesses providing professional and business services in support of those directly employed.
- Indirect jobs are those jobs generated in the national economy as the result of local purchases by the firms directly dependent upon seaport activity. These jobs include jobs in local office supply firms, equipment and parts suppliers, maintenance and repair services, insurance companies, consulting and other business services. If steel imports were discontinued or reduced, these indirect purchases and the associated jobs and income would also be impacted adversely.
- Related jobs are with the users of the imported iron and steel products, including the steel distribution centers, manufacturing and fabrication operations using the imported iron and steel products, as well as the nation's construction industry. It is to be emphasized that the employment with firms counted as directly, induced and indirectly dependent upon the port activities handling the imported iron and steel are excluded from the related jobs to avoid double counting.

The employee earnings consist of wages and salaries and include a re-spending effect and local consumption impact (purchases of goods and services by those directly employed), while business revenue consists of total business receipts by firms providing services in support of the handling of the imported iron and steel cargo. State, local and federal taxes include taxes paid by individuals, as well as firms dependent upon the imported iron and steel cargo and vessel activity.

The study is based on interviews with more than 6,500 firms providing services to the imported iron and steel cargo and associated vessels handled at the nation's marine terminals.

***SUMMARY OF IMPACTS GENERATED BY THE IMPORTED IRON AND STEEL ON THE U.S. MARINE TRANSPORTATION SYSTEM AND THE NATION'S ECONOMY***

In 2016, 34.4 million tons of iron and steel products valued at \$35.4 billion were imported the nation's seaports, according to the U.S. Bureau of Census, USA Trade OnLine. These iron and steel products had a significant impact on the U.S. economy, including the nation's marine transportation system as well as domestic users of the imported iron and steel products. The economic impacts generated by the import iron and steel products are summarized in Exhibit E-2.

Exhibit E-2

Summary of the National Economic Impacts Generated by the Imported Iron and Steel Products on the National Marine Transportation System and Domestic Users

IMPACT CATEGORIES	TOTAL
<b>JOBS</b>	
Port Sector	
Direct	26,432
Induced	33,182
Indirect	24,338
Subtotal	83,952
Importers/Exporters	
Direct/Induced/Indirect	1,216,863
<b>TOTAL JOBS</b>	<b>1,300,814</b>
<b>WAGES/SALARIES (Millions)</b>	
Port Sector	
Direct	\$1,422
Re-spending/Consumption	\$4,824
Indirect	\$1,182
Subtotal	\$7,428
Importers/Exporters	
Direct/Induced/Indirect	\$55,237
<b>TOTAL PERSONAL INCOME AND CONSUMPTION (Millions)</b>	<b>\$62,665</b>
<b>BUSINESS REVENUE AND ECONOMIC OUTPUT (Millions)</b>	
Port Sector	
Direct	\$4,230
Importers/Exporters	
Value of Output	\$230,695
<b>TOTAL BUSINESS REVENUE AND OUTPUT (Millions)</b>	<b>\$234,925</b>
<b>TAXES (Millions)</b>	
Port Sector	
Direct	\$441
Re-spending/Consumption/Indirect	\$1,862
Subtotal	\$2,303
Importers/Exporters	
Direct/Induced/Indirect	\$17,123
<b>TOTAL TAXES (Millions)</b>	<b>\$19,426</b>
<b>TOTAL ECONOMIC VALUE (Millions)</b>	
Port Sector	
Direct Business Revenue	\$4,230
Induced Income and Personal Consumption	\$4,824
Subtotal	\$9,054
Importer/Exporters	
Economic Output Value to the Importers/Exporters	\$230,695
<b>TOTAL ECONOMIC VALUE (Millions)</b>	<b>\$239,749</b>

Totals may not add due to rounding

Specifically, the imported iron and steel products handled at the U.S. seaports created the following economic impacts in 2016.

***1.3 million jobs in the United States were supported by the imported iron and steel moving via the nation's seaports.***

- Of the 1.3 million jobs, **26,432 jobs are directly** generated by the iron and steel cargo and vessel activity.
- As the result of local and regional purchases by those 26,432 individuals holding the direct jobs, an additional **33,182 induced jobs** are supported in the national economy.
- **24,338 indirect jobs** are supported by \$1.9 billion of local and national purchases by businesses supplying services at the marine terminals handling the imported iron and steel products, and by businesses dependent upon the cargo and vessel activity.
- **1.2 million jobs are with related importers and users** of the imported iron and steel moving through the nation's seaports.

***In 2016, imported iron and steel activity generated about \$239.8 billion of total economic activity, or about 1.3% of the nation's \$18.9 trillion Gross Domestic Product in 2016.*** The \$239.8 billion economic activity of the nation's coastal ports consists of:

- **\$4.2 billion of direct business revenue** received by the firms providing services to the imported iron and steel and associated vessels calling at the nation's seaports. From this \$4.2 billion of direct business revenue, the firms use a portion, \$1.4 billion, to pay the salaries of 26,432 direct job holders. This equates to an average annual income of \$53,796. In addition to the direct salary paid from the \$4.2 billion of direct business revenue, \$1.9 billion was used for purchases of goods and services by the firms providing the direct business services to the imported iron and steel cargo and vessel activity.
- Another component of the \$239.8 billion total economic value is the re-spending effect that occurs due to consumption purchases by the direct jobs holders. This is not included in the direct business revenue as it occurs from the portion of the direct income that is used by individuals for purchases of goods and services. **In 2016, the**

**re-spending and local consumption impact generated by the imported iron and steel is estimated at \$4.8 billion.**

- **The remaining \$230.7 billion represents the value of the output to the national economy** that is created due to the iron and steel cargo moving via the U.S. ports. This includes the value added at each stage of production for the firms using imported iron and steel products that flow via the marine terminals, as well as the value of the output to the construction industry using the imported steel.

*A total of \$19.4 billion of total federal, state, and local taxes were generated by the imported iron and steel cargo handled at the nation's ports in 2016, including \$2.3 billion of direct, induced and indirect federal, state and local tax revenue, and an additional \$17.1 billion of federal, state and local tax revenue which were created as a result due to the economic activity of the importers using the imported steel that passed through the nation's marine transportation system.*

As demonstrated in this report, the 34.4 million tons of imported iron and steel products have a significant impact on the nation's marine transportation system, and further on key domestic industries using the imported iron and steel products.

In addition to the economic impacts generated by the imported iron and steel products, it is important to emphasize that the majority of the ocean vessels carrying imported steel into the Gulf Coast ports such as New Orleans, as well as the Great Lakes ports, provide the backhaul vessel capacity to move export grain from the U.S. to overseas destinations. Should import restrictions be imposed on the imported iron and steel products, not only will the 1.3 million jobs be at risk, but the ocean cost to export grain from the U.S., particularly from the Lower Mississippi River, will increase due to the restricted number of vessels that will be available to carry grain exports (as a result of the restricted steel import volumes). This in turn will have a ripple effect into the nation's agricultural sector. In 2016, according to the USA Trade OnLine, about 47 million tons of grain were exported via the Lower Mississippi River. Using the Martin Associates grain export model, this export generated 10,830 direct, induced and indirect jobs and supported about 39,000 jobs in the nation's agricultural industry. With the imposition of import restrictions on iron and steel products, these jobs in the U.S. agricultural sector are at risk due to increased ocean costs due to a restricted supply of ocean vessels under trade restrictions imposed on iron and steel products.

The models developed in this study will provide an updated framework to estimate the economic impacts that could occur should trade restriction be imposed on imported iron and steel products. A similar analysis was conducted by Martin Associates in 2006 to assess the impacts of



the Section 201 imported steel restrictions. On March 5, 2002, a select group of imported iron and steel products were subject to import restrictions under Section 201 of the Trade Act of 1974. The purpose of these measures was to impose a temporary safeguard to assist America's steel industry and its workers to make a positive adjustment to import competition with respect to certain steel products. While the initial period of coverage extended from March 2002 to March 2005, the measures were removed at the end of 2003. During this period, March 2002 through December 2003, steel imports were reduced significantly, with implications on the economic health of the nation's Marine Transportation System. Based on the statistical analysis conducted by Martin Associates, in each month that the restrictions were in effect, 424,000 tons per month of imported iron and steel products were lost from the nation's marine transportation system. Over the 22 months that the restrictions were in force, a total of 9.3 million tons of steel products were excluded from moving via the U.S. port system. In other words, other factors impacting the level of iron and steel imports held constant, the nation's ports experienced a loss of 9.3 million tons of imported steel due to the imposition of the Section 201 restrictions. This loss of imported steel products in turn had an impact on the economic health of the nation's Marine Transportation System, and the overall economy. Based on the previous analysis conducted by Martin Associates in 2001 and 2006, the imposition of the Section 201 steel restrictions cost the economy 22 million person hours over the 22 month period, \$77.3 million of federal taxes and \$391 million of personal income and consumption expenditures.<sup>1</sup>

In summary, prior to imposing trade restrictions on imported iron and steel products, it is necessary that the potential negative impacts on the Marine Transportation System and the national economy be considered, as such trade restrictions will put at risk nearly 84,000 direct, induced and indirect jobs that are now generated by the handling and transport of the imported iron and steel products, and further potentially impact more than 1.2 million jobs with users of the imported iron and steel products.

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<sup>1</sup> The Economic Impact of the Section 201 Steel Import Restrictions on the Marine Transportation System, Prepared for the American Institute for International Steel, November, 1, 2006, by Martin Associates

## METHODOLOGY

This chapter provides an overview of the methodology used by Martin Associates to develop the economic impacts of imported iron and steel products.

### 1. IMPACT STRUCTURE

The four types of economic impacts are created throughout various business sectors of the state and local economies. Specifically, four distinct economic sectors are impacted as a result of imported iron and steel cargo and vessel activity at the marine terminals. These are the:

- Surface Transportation Sector;
- Maritime Services Sector;
- Shippers/Consignees using the imported iron and steel products;
- Port Authority.

Within each sector, various participants are involved. Separate impacts are estimated for each of the participants. A discussion of each of the economic impact sectors is provided below, including a description of the major participants in each sector.

#### 1.1 The Surface Transportation Sector

The surface transportation sector consists of the railroad, trucking and tug and barge industries. The trucking firms, railroads and barges are responsible for moving the imported iron and steel products from the marine terminals and the inland origins and destinations.

#### 1.2 The Maritime Services Sector

This sector consists of numerous firms and participants performing functions related to the following maritime services:

- Cargo Marine Transportation;
- Vessel Operations;
- Cargo Handling;
- Federal, State, and Local Government Agencies

A brief description of the major participants in each of these four categories is provided below:

- Cargo Marine Transportation - Participants in this category are involved in arranging for inland and water transportation for import iron and steel. The freight forwarder/customhouse broker is the major participant in this category. The freight forwarder/customhouse broker arranges for the imported iron and steel to be delivered between the terminals and inland destinations, as well as the ocean transportation.
- Vessel Operations - This category consists of several participants. The steamship agents provide a number of services for the vessel carrying the iron and steel products as soon as it enters the port; the agents arrange for pilot services and towing, for medical and dental care of the crew, and for ship supplies. The agents are also responsible for vessel documentation. In addition to the steamship agents arranging for vessel services, those providing the services include:
  - Chandlers - supply the vessels with ship supplies (food, clothing, nautical equipment, etc.);
  - Towing firms - provide the tug service to guide the vessel to and from port; Also, these firms perform linehaul towing services.
  - Pilots - assist in navigating the vessels along the ship channel to and from the public and private marine terminals;
  - Bunkering firms - provide fuel to the vessels;
  - Marine surveyors - inspect the vessels and the cargo;
  - Shipyards/marine construction firms - provide repairs, either emergency or scheduled as well as marine pier construction and dredging.

- Cargo Handling - This category involves the physical handling of the imported iron and steel cargo at the terminals between the vessel and the marine terminal. Included in this category are the following participants:
  - Longshoremen - include members of the International Longshoremen's Association (ILA) and the International Longshore and Warehouse Union (ILWU), as well as non-ILA and non-ILWU dockworkers that are involved in the unloading of the imported iron and steel cargo from the vessels, as well loading onto barges for the journey of the iron and steel products along the nation's inland waterways.
  - Stevedoring firms - manage the longshoremen and cargo-handling activities.
  - Terminal operators - are often stevedoring firms who operate the maritime terminals where iron and steel cargo is off-loaded.
  - Warehouse operators - store the iron and steel cargo after discharge and consolidate cargo units into shipment lots.
- Government Agencies - This service sector involves Federal, state and local government agencies that perform services related to cargo handling and vessel operations at the Port., U.S. Customs and Border Protection, U.S. Department of Labor, U.S. Department of Agriculture, U.S. Coast Guard, the Army Corps of Engineers, and U.S. Department of Commerce employees are involved.

### 1.3 Shippers/Consignees

Two categories of shippers and consignees are considered in the analysis: those that are totally dependent on the public and privately-owned marine terminals handling the iron and steel and those located throughout the regional economy whose business is only related to the port in terms of using the imported iron and steel products. Those in the first category, such as steel fabricators or mills using imported steel slab and located on the port property (or operating their own terminals) would most likely shut down operations if the marine terminals were not available for their use. Those in the second category would receive domestic materials, albeit at a higher cost, and would be subject to dislocation should the cost of steel products increase and result in a decline in demand for the products.

#### 1.4 [Port Authority](#)

The Port Authority sector includes those individuals employed by the public ports whose purpose is to oversee port activity at the marine terminals owned and operated by the public ports.

## 2. [SUMMARY OF METHODOLOGY](#)

The purpose of this section is to provide a summary of the methodological approach used to estimate the economic impacts of the vessel and cargo activity.

### 2.1 [Data Collection](#)

The cornerstone of the Martin Associates approach is the collection of detailed baseline impact data from firms providing services at the marine terminals. To ensure accuracy and defensibility, the baseline impact data was collected from interviews with more than 6,500 firms in the nation's maritime community.

### 2.2 [Direct Jobs, Income and Revenue Impacts](#)

The results of these interviews were then used to develop the baseline direct job, revenue and income impacts for the economic sectors and job categories associated with imported iron and steel products. Direct tax impacts are estimated at a federal, state, county and local level based on tax burdens published by the Tax Foundation.

### 2.3 [Induced Impacts](#)

Induced impacts are those generated by the purchases of the individuals employed as a result of handling the imported iron and steel products. For example, a portion of the personal earnings received by those directly employed due to the imported iron and steel activity at the marine terminals is used for purchases of goods and services, both regionally, as well as out-of-the region. These purchases, in turn, create additional jobs in which each port is classified as induced. To estimate these induced jobs, the national personal earnings multiplier for marine transportation was developed from the Bureau of Economic Analysis, Regional Input-Output Modeling System (RIMSII). This personal earnings multiplier is used to estimate the total personal earnings generated nationally due the activity at the public and private marine terminals. A portion of this total personal earnings impact is next allocated to specific purchases, as developed from the U.S. Bureau of Labor Statistics, Consumer Expenditure Survey. These purchases are next converted into induced jobs in the national economy.

## 2.4 [Indirect Jobs](#)

Indirect jobs are generated in the local economy as the result of purchases by firms that are directly dependent upon the imported iron and steel cargo and vessel activity at the marine terminals, including the dependent shippers/consignees with terminals located along the shipping channels and on port property. These purchases are for goods and services such as office supplies and equipment, maintenance and repair services, communications and utilities, transportation services and other professional services. To estimate the indirect economic impact, the amount purchases, by type of purchase, were collected from each of the firms interviewed. These purchases were then combined with employment to sales ratios in local supplying industries, developed from the U.S. Bureau of Economic Analysis Regional Input-Output Modeling System for the national economy. The indirect job ratios also account for the spin-off effects from multiple rounds of supply chains that are required to provide the nationally purchased goods and services.

## 2.5 [Related Impacts](#)

Related impacts measure the jobs with consignees importing the iron and steel products through the public and private terminals. These jobs are estimated based on the value per ton of the steel products imported via the each of the seaports and the associated jobs to value of output ratios for the respective consuming industries located throughout the United States, such as automobile and truck manufacturing, metal fabrication, appliance manufacturing, and construction. The value per ton of each of the key commodities moving via the ports was developed from USA Trade OnLine, a data base developed by the U.S. Bureau of Census. The average value per ton for imported iron and steel moving over the marine terminals at each of the ports was then multiplied by the respective tonnage moved in 2016. Ratios of jobs to value of output for the corresponding consuming industries were developed by Martin Associates from the U.S. Bureau of Economic Analysis, Regional Input-Output Modeling System, and the U.S. Bureau of the Census, 2012 Economic Census. These jobs to value coefficients include the spin-off impacts that would occur in order to use the imported iron and steel commodities in production. Similarly, the respective income and output multipliers were used to estimate the related personal income impact as well as the total value of economic output and federal, state and local taxes generated by the imported iron and steel products. It is to be emphasized that care was taken to control for double counting of the direct, induced and indirect impacts.