

Made In America: Planes, Trains, and Not Just Automobiles

By Jessica R. Nicholson, Economist

Edited by Jane Callen

In 2012, shipments from the U.S. manufacturing sector totaled \$5.7 trillion. What do American manufacturing workers make? This series of manufacturing profiles by the U.S. Commerce Department’s Economics and Statistics Administration (ESA) will answer that question one industry at a time. This profile focuses on transportation equipment other than motor vehicles (cars and light trucks).¹ We previously analyzed [machinery](#) and [food, beverages and tobacco products](#).



Among other findings, this report shows that the transportation equipment industry created 687,000 jobs – the vast majority being in aerospace, which carries a significant wage premium. In addition, the U.S. exported \$114.8 billion in non-motor vehicle transportation equipment (primarily aerospace) in 2013.

Overview

Shipments of transportation equipment excluding motor vehicles totaled \$281 billion, or 4.9 percent of all manufacturing shipments in 2012. According to the official definition in the North American Industry Classification System (NAICS), the transportation equipment industry makes equipment to transport people and goods.² In addition to motor vehicles and auto parts, this industry group produces consumer items such as motorcycles and bicycles, but most of the output consists of (generally) non-consumer items such as airplanes, spacecraft, ships and boats, railroad equipment, tanks, missiles, and floating platforms used for oil and gas drilling (See Figure 1). Processes like forging, stamping, bending, forming, welding, machining, and assembling are used to manufacture transportation equipment.

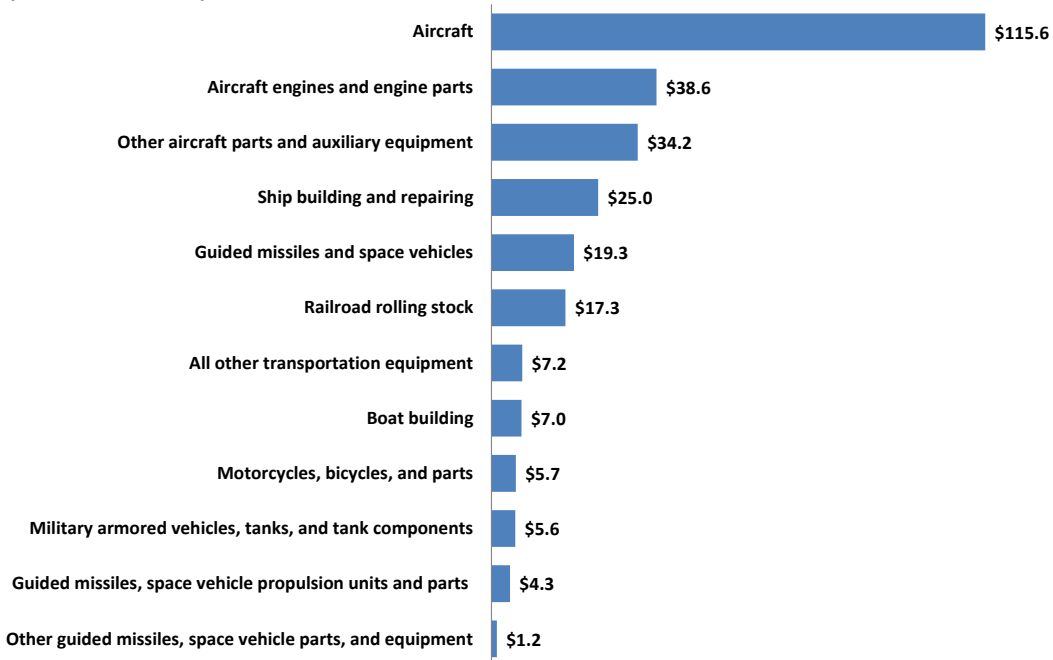
Figure 1. Non-Motor Vehicle Transportation Equipment Manufacturing as Classified by the North American Industrial Classification System (NAICS)

336400 Aerospace products and parts manufacturing
336411 Aircraft
336412 Aircraft engines and engine parts
336413 Other aircraft parts and auxillary equipment
336414 Guided missiles and space vehicles
336415 Guided missiles and space vehicle propulsion units and propulsion unit parts
336416 Other guided missile and space vehicle parts and auxillary equipment
336500 Railroad rolling stock manufacturing
336510 Railroad rolling stock
336600 Ship and boat building
336611 Ship building and repairing
336612 Boat building
336900 Other transportation equipment manufacturing
336991 Motorcycles, bicycles, and parts
336992 Military armored vehicles, tanks, and tank components
336999 All other transportation equipment

Source: Census Bureau

Shipments

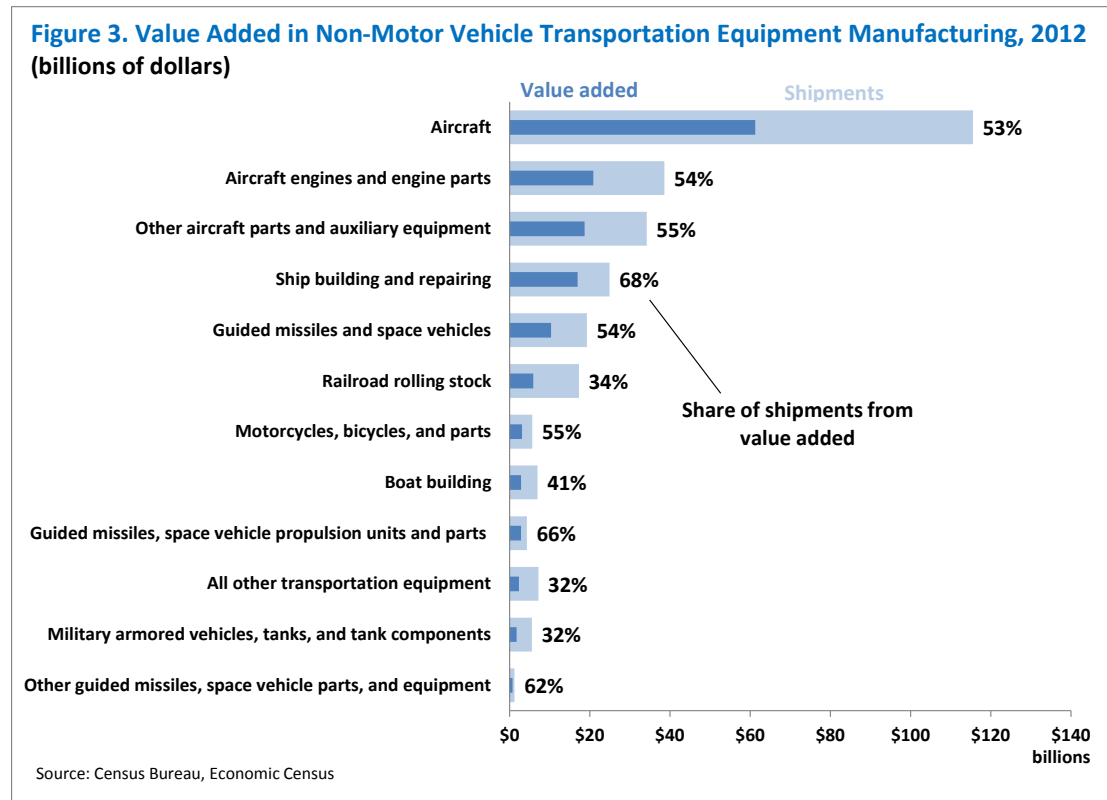
Figure 2. Shipments in Non-Motor Vehicle Transportation Equipment Manufacturing, 2012 (billions of dollars)



Source: Census Bureau, Economic Census

- In 2012, shipments from non-motor vehicle transportation manufacturing industries equaled \$281 billion or 4.9 percent of all manufacturing shipments. Together, these industries produced over half as much as U.S. motor vehicle and parts manufacturers, whose shipments totaled \$507 billion.
- The aircraft, aircraft engines and engine parts, and other aircraft parts and auxiliary equipment industries led non-motor vehicle transportation equipment manufacturing with a combined \$188.4 billion in shipments (67 percent of total shipments).³
- Many of the products produced by these transportation manufacturing industries are used by the government for national defense—some aircraft, engines, and parts, ships and boats, guided missiles, and military armored vehicles are examples. In 2012, investment by the government for national defense accounted for 22 percent of final demand for transportation equipment excluding motor vehicles.
- Net exports (exports minus imports) accounted for the majority, 34 percent, of final demand. Business investment accounted for another 30 percent of final demand.⁴ Personal consumption, by households, accounted for only 8 percent.

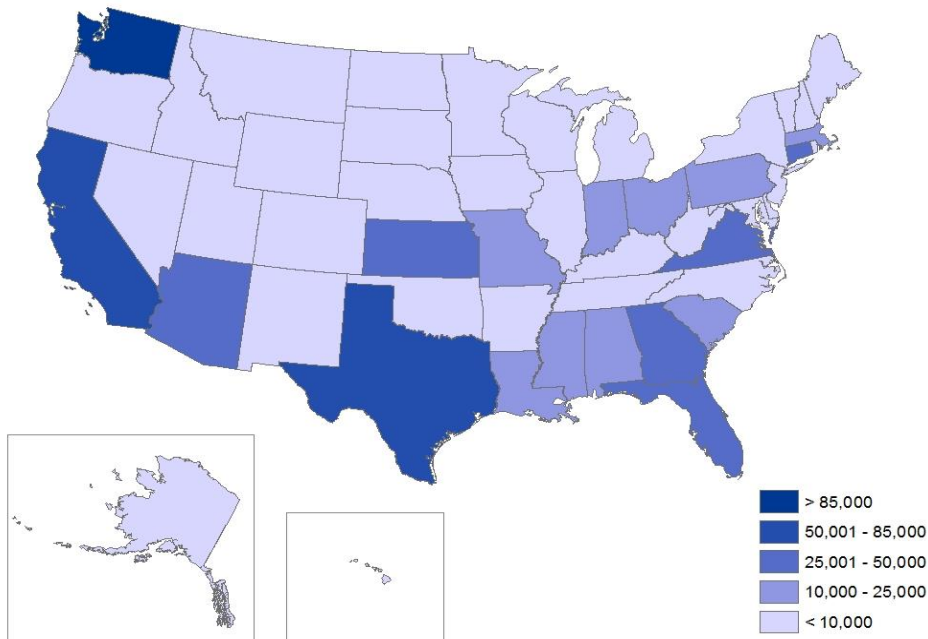
Value added



- In 2012, value added accounted for 39 percent of the total value of non-motor vehicle transportation equipment manufacturing, compared to U.S. manufacturing as a whole at 34 percent. Among industries that produce this equipment, value added as a share of shipments was highest in the ship building and repairing industry (68 percent) and lowest in the military, armored vehicles, and tanks industry (32 percent).⁵
- Compensation of employees accounted for 60 percent of the value added in non-motor vehicle transportation equipment manufacturing. This compares to 43 percent for motor vehicle manufacturing and 46 percent for the manufacturing sector overall.
- The aerospace product and parts industries require a great deal of technical knowledge and that knowledge carries a premium. Overall, in aerospace product and parts manufacturing, the median hourly wage as of May 2013 was \$31.97, or 76 percent higher than for the manufacturing sector as a whole (\$18.12).⁶ Excluding aerospace products and parts, jobs in industries that make non-motor vehicle transportation equipment are more similar in pay to the manufacturing sector as a whole. The median hourly wages in the railroad rolling stock and ship and boat building industries were \$18.59 and \$22.24 in 2013, respectively.

Employment in Non-Motor Vehicle Transportation Equipment⁷

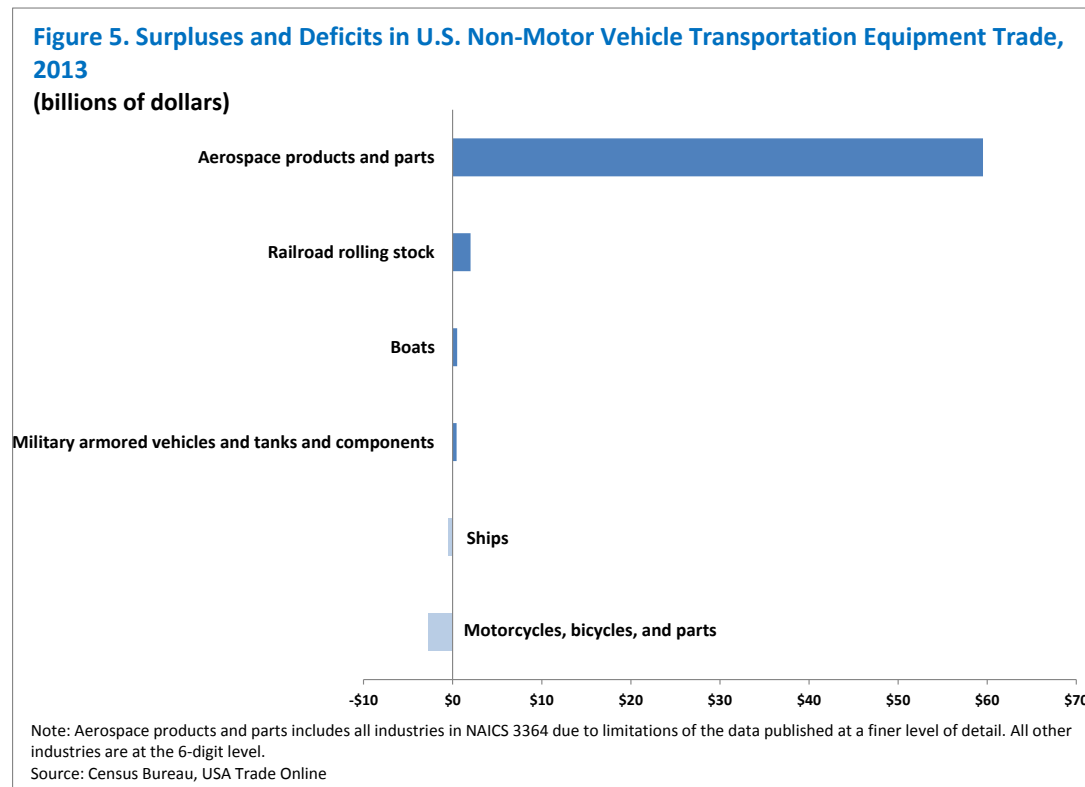
Figure 4. Annual Average Employment in Non-Motor Vehicle Transportation Equipment Manufacturing, 2013



Note: This map covers 96 percent of employment in non-motor vehicle transportation equipment manufacturing. The remaining 4 percent of is comprised of employment for which data was not available at the state and industry level due to disclosure limitations.
Source: Bureau of Labor Statistics, Quarterly Census of Employment and Wages

- In 2013, there were 687,000 jobs in non-motor vehicle transportation equipment industries. Of these, 72 percent were in aerospace product and parts manufacturing. Ship and boat manufacturing accounted for another 19 percent.
- Overall, Washington had the most jobs in transportation equipment excluding motor vehicles, accounting for over 100,000 jobs in these industries. California, Texas, Kansas, Florida, Virginia, Connecticut, Arizona, and Georgia each contributed over 50,000 additional jobs.
- The nearly half a million jobs in aerospace product and parts manufacturing were widespread throughout the country; the states that recorded the highest number of these jobs were: Washington (19 percent); California (14 percent); Texas (9 percent); Kansas (6 percent); and Connecticut (6 percent).
- Virginia is an important ship and boat manufacturing state, home to 21 percent of the 132,000 U.S. jobs in this industry in 2013. Other states contributing a large share of the industry's job count are: Mississippi (10 percent of the national total); Louisiana (8 percent), and Florida (7 percent).
- In railroad rolling stock manufacturing, Pennsylvania dominated the industry, home to 30 percent of the 25,000 industry jobs in 2013.

Satisfying Demand for Non-Motor Vehicle Transportation Equipment Here and Abroad



- The United States exported \$114.8 billion of non-motor vehicle transportation equipment in 2013. Aerospace products and parts accounted for the vast majority (93 percent).
- The United States imported \$55.5 billion of non-motor vehicle transportation equipment in 2013, resulting in a trade surplus of \$59.2 billion. This was, by far, the largest trade surplus among manufacturing industries in that year.⁸
- Aerospace product and parts accounted for 9 percent (\$106.4 billion) of total exports of manufactured goods in 2013, considerably higher than its 3 percent share of total manufacturing shipments.
- More than half, 56 percent, of the value of all transportation equipment excluding motor vehicles purchased by U.S. consumers and businesses in 2012 was domestically made.⁹ The remaining portion consisted of foreign-made components of final goods produced in the United States (like a foreign-made engine in a U.S. produced aircraft) or final goods that are imported ready for consumption (a foreign-made aircraft).

As we continue to profile the various manufacturing industries, we will deepen our understanding of what is made in America and how it affects the economy as a whole.

Endnotes

1. For additional information about how to measure what is made in America and for further explanation of concepts used in this report, see Economics and Statistics Administration, “What is Made in America?” available at: <http://www.esa.doc.gov/Reports/what-made-america>.
2. The other (or non-motor vehicle) transportation equipment manufacturing industry is classified by the Bureau of Economic Analysis as 3364OT. This corresponds to industries 3364 through 3369 as classified by the North American Industry Classification System (NAICS). Industry definition available at: <https://www.census.gov/cgi-bin/sssd/naics/naicsrch?code=336&search=2012%20NAICS%20Search>. For full classification structure, see: <http://www.census.gov/cgi-bin/sssd/naics/naicsrch?chart=2012>.
3. The value of shipments of aircraft engines and other parts is counted again in the value of shipments in the aircraft industry to the extent that domestic producers purchased their parts from American producers.
4. Final demand is the result of the expenditure approach of measuring GDP. Final demand is equal to household consumption plus business investment plus government purchases plus net exports.
5. Value added considers only the new production completed at each stage of the manufacturing process—i.e., the labor and capital applied by each firm to the purchased inputs produced elsewhere. This measure of manufacturing activity is derived in the Economic Census by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning and end of year inventories.
6. For more detail on the occupations and wages in the transportation equipment manufacturing industries, refer to the Occupational Employment Statistics (OES) program of the Bureau of Labor Statistics. Available at: http://www.bls.gov/oes/current/naics3_336000.htm. Data at the 6-digit NAICS level are not available from OES, so data at the 4-digit level are presented here.
7. Employment estimates are annual averages for 2013 from the Bureau of Labor Statistics (BLS) Quarterly Census of Employment and Wages. The data is reported for 4-digit NAICS industries. Data for some states in non-motor vehicle transportation industries is not reported because it does not meet BLS or state agency disclosure standards.
8. Manufacturing industries are according to the BEA industry classification. The industries correspond approximately to the 3-digit manufacturing industries as classified by NAICS. As noted in endnote 2, the other (non-motor vehicle) transportation equipment manufacturing industry is an exception. NAICS 336 (including motor vehicles and all other transportation equipment) had a trade deficit of \$91.8 billion in 2013.
9. Economics and Statistics Administration, “What is Made in America?” See Figure 8 and associated discussion.