



**ONE INDUSTRY  
THAT MAKES  
A POSITIVE  
IMPACT**

**EXECUTIVE SUMMARY**

**2020**

**SIZE AND IMPACT**

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The U.S. plastics industry is growing and demand for plastics is expected to continue for the foreseeable future.

# GROWTH IN PLASTICS

## EMPLOYMENT GROWTH 2012–2019



Plastics Manufacturing

**1.6%**



All Manufacturing

**1.0%**

## PLASTICS WORKERS IN MICHIGAN IN 2019



**16**

of every 1,000 non-farm  
jobs (most in U.S.)

## TOTAL PLASTICS INDUSTRY SHIPMENTS IN 2019



**\$432  
BILLION**

## REAL VALUE ADDED 2012–2019

**2.1%** Annual Growth



REAL SHIPMENTS  
2012–2019

**1.1%** Annual Growth

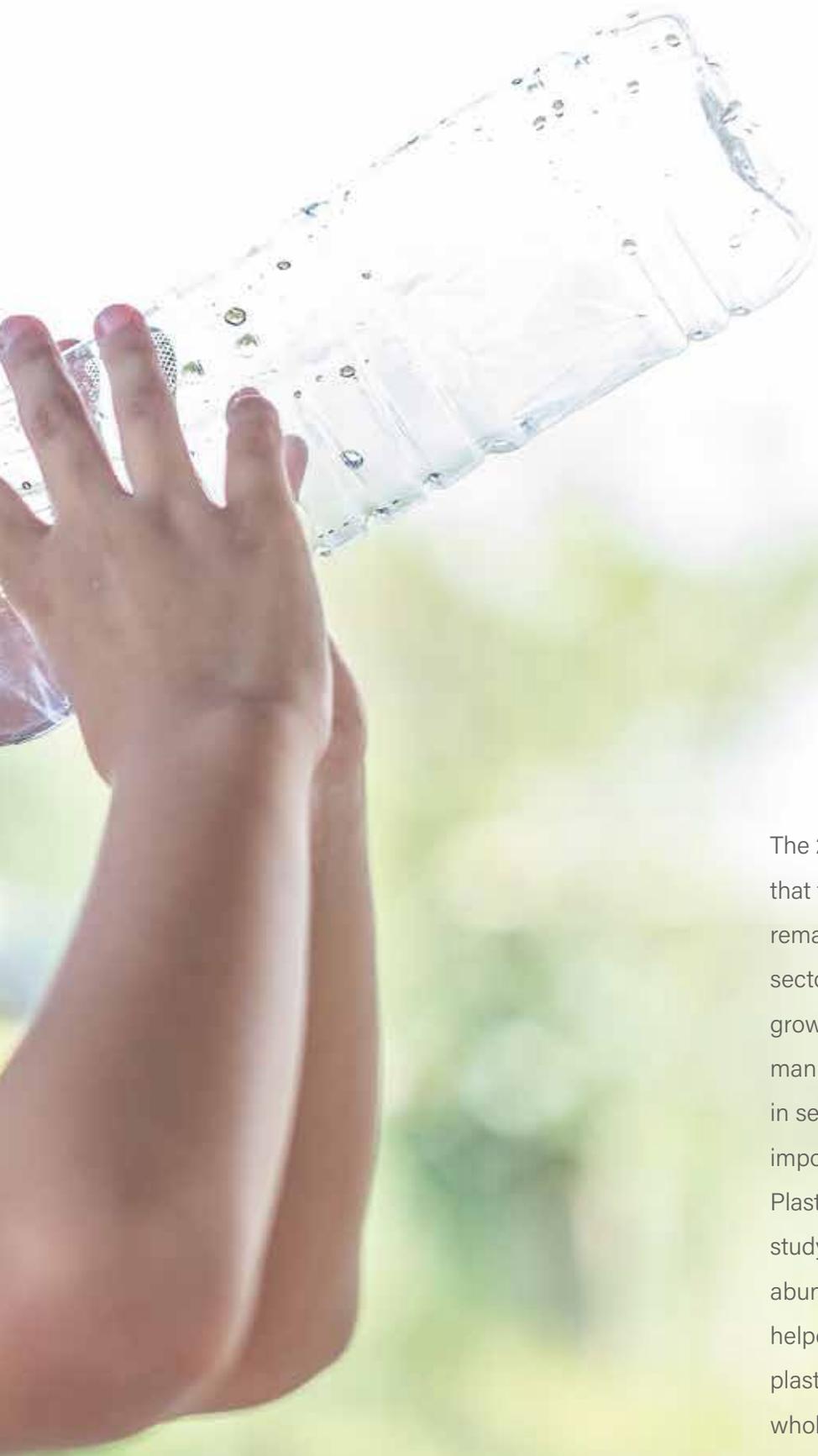
## PLASTIC PRODUCTS INDUSTRY



Largest U.S. Industry  
in 2019

# One industry that makes a positive impact





The 2020 Size and Impact Report indicates that the U.S. plastics industry not only remains one of the economy's largest sectors, but also that it continued to grow in 2019. Most plastics are used in manufacturing, although the use of plastics in services is becoming increasingly important. As can be seen from another Plastics Industry Association (PLASTICS) study, **2020 Global Trends Report**, abundant petrochemical feedstocks have helped U.S. exports and therefore U.S. plastics companies and the industry as a whole.

# EXECUTIVE SUMMARY

The plastics industry is one of the economy's largest and it's growing. Most plastics are used in manufacturing, although the use of plastics in services is becoming increasingly important.

This report is the story of the U.S. plastics industry in numbers. It answers several important questions, including:

- How big is the plastics industry?
- How does it compare with other industries?
- How fast is it growing?
- Where is it concentrated in the U.S.?
- How does it affect the rest of the economy?
- What is the outlook for the industry?

### The Numbers

- The U.S. plastics industry is large, accounting for more than one million jobs and \$432.0 billion in shipments in 2019.
- California has the most plastics industry employment (79,700).
- As a percentage of total non-farm employment, the plastics industry is most important to Michigan, where it accounts for 16.0 of every 1,000 non-farm jobs.
- Indiana is a very close second.
- When suppliers to the plastics industry are included, jobs grow to 1.55 million, and total shipments grow to \$549.5 billion.

- The plastic products portion of the industry was the eighth largest U.S. industry in 2018 (the latest year for which data are available).
- The plastic materials and synthetics portion of the plastics industry (including rubber and fiber) was the eighteenth largest industry in 2018.
- Plastics manufacturing employment grew 1.6% per year from 2012 to 2019.
- This outpaced manufacturing as a whole, which saw employment grow only 1.1% per year during the same period.
- Real (inflation-adjusted) plastics manufacturing shipments grew at a 1.1% annual rate from 2012 to 2019, while real value added grew 2.1% annually.
- Plastics industry growth reflected the strength of the U.S. economy through 2019.

### Industry Size

Table S-1 summarizes the plastics industry by dividing it into categories named: Plastics Manufacturing, Plastics Wholesale Trade, Captive Plastic Products Manufacturing, and Upstream



**“When suppliers to the plastics industry are included, jobs grew to 1.55 million, and total shipment grew to \$549.5 billion.”**

## Industry Size

Table S-1 summarizes the plastics industry by dividing it into categories named: Plastics Manufacturing, Plastics Wholesale Trade, Captive Plastic Products Manufacturing, and Upstream Impacts. Captives are plastic processing activities located in establishments, such as automobile assembly and milk bottling plants, which are not classified by the government, or by most economists, as being part of the plastics industry. The first three categories comprise what the authors call the plastics industry.

The following conclusions can be drawn from Table S-1:

- The U.S. plastics industry, as documented by U.S. Government data, operated 15,746 manufacturing establishments, employed 795,000 people and made shipments worth \$364 billion in 2019. This excludes establishments producing captive plastic products or supplying goods and services to the plastics industry.
- When captives are included in their definition of the plastics industry, the number rose to just over one million people in 2019. Another 545 thousand people were employed by upstream industries that supplied the industry, which brought the total year 2019 employment total to 1.55 million—1.0% of the U.S. non-farm workforce.
- The plastics industry generated \$432 billion in shipments in 2019. Another \$118 billion was generated by upstream supplies to industries, bringing the total shipments of the plastics industry to \$550 billion.
- Table S-1 does not include downstream impacts on industries that use plastics, or on the consumers who buy the products containing plastics..

## Comparisons with Other Industries

In order to rank plastics among other industries, the authors considered 82 manufacturing industries defined by the 4-digit North American Industry Classification (NAICS) system. Data were available through 2018.

- Plastic Products (NAICS 3261), which accounted for most of the plastic processing industry, was the eighth largest U.S. manufacturing industry in terms of shipments in 2018.
- Resin, Synthetic Rubber and Artificial & Synthetic Fibers & Filament (NAICS 3252), which includes the Plastic Materials and Resins Industry, was the 18th-ranked manufacturing industry in 2018.

**TABLE S-1**

### PLASTICS INDUSTRY IMPACTS, 2019

	Number of Establishments	Employees (Thousand)	Value of Industry Shipments (\$Mill)
<b>Plastics Manufacturing</b>			
NAICS 325211 Plastics Materials and Resins	1,126	72.6	94,182.1
NAICS 325991 & 3261 Plastics Products	10,641	662.1	216,380.2
NAICS 3332491 Plastics Working Machinery	410	11.7	3,541.2
NAICS 33351105 Molds for Plastics	639	16.4	3,045.1
Plastics Manufacturing Totals	12,816	762.8	317,148.6
<b>Plastics Wholesale Trade</b>			
NAICS 424610 Wholesale Trade for Plastics Materials, Forms and Shapes	2,930	32.0	47,127.1
<b>Government-Documented Plastics Industry</b>	15,746	794.9	364,275.7
<b>Captive Plastic Products</b>	#N/A	208.2	67,696.2
<b>Plastics Industry</b>	#N/A	1,003.0	431,971.9
<b>Upstream Impacts</b>	#N/A	544.8	117,568.6
<b>Full Impact *</b>	#N/A	1,547.8	549,540.5

\*Excluding downstream impacts

## Rate of Growth

- Over the last 22 years, plastics industry employment, real shipments and real value added fared better than manufacturing as a whole. This is because plastics are still relatively new compared to other materials and methods of manufacture.
- Employment in the plastics manufacturing industry fell 1.0% per year between 1997 and 2019. This is better than employment in all of U.S. manufacturing, which fell 1.4% per year during the same period.
- Real value added in the plastics manufacturing industry grew 2.1% per year from 2012 to 2019. The real value of shipments by this industry grew 1.1% per year.
- Productivity in plastics manufacturing, defined as real shipments per employee, declined 0.5% per year from 2012 to 2019. Such productivity declines were typical for the macroeconomy during this period, as investment was low and large numbers of new workers were added.
- The number of plastics industry establishments continue to drift downward slowly as the industry consolidates and becomes more efficient.
- Employment fell from 2000 through 2009 and then began rising. The decline mirrored what happened to the rest of manufacturing except that plastics manufacturing were more volatile, falling faster during the recession and recovering faster after it ended.
- Abundant natural gas, gas liquid feedstocks and a growing economy boosted the plastics industry.
- The U.S. plastics industry thrives in a free trade environment. The COVID-19 pandemic is hurting all industries in 2020.

**TABLE S-2**

### COMPARATIVE GROWTH RATES, 1997-2019

	Plastics Manufacturing	All Manufacturing
Employment	-1.0%	-1.4%
Real Shipments	0.3%	0.1%
Real Value Added	0.6%	0.0%
Productivity Growth	1.3%	1.5%

## Location

- The plastics industry spans all 50 states. As can be seen from Table S-3, California had the most plastics industry employees in 2019, followed by Ohio, Texas, Michigan, Pennsylvania, Illinois, Indiana, Wisconsin, North Carolina and New York.

**TABLE S-3**

### TOP STATES FOR PLASTICS EMPLOYMENT (PLASTICS INDUSTRY, 2019)

Rank	State	Plastics Employment Thousands
1	California	79.7
2	Ohio	74.5
3	Texas	71.4
4	Michigan	71.1
5	Pennsylvania	53.6
6	Illinois	53.2
7	Indiana	50.6
8	Wisconsin	43.4
9	North Carolina	38.7
10	New York	32.5
	U.S. Total	1,003.0

**“Abundant natural gas, gas liquid feedstocks and a growing economy are boosting the plastics industry.”**

- California is the most populous state and has the most plastics workers. An alternative measure, plastics industry employees per thousand non-farm employees, indicates how concentrated the plastics industry is in a given state or how much that state specializes in plastics. Using this measure, Table S-4 shows that Michigan has the largest number of plastics industry employees per thousand non-farm employees, followed very closely by Indiana (a virtual tie), and then by Wisconsin, Ohio, Kentucky, South Carolina, Tennessee, Alabama, Pennsylvania and Iowa.

**TABLE S-4**

**TOP STATES FOR PLASTICS CONCENTRATION  
(PLASTICS INDUSTRY, 2019)**

Rank	State	Plastics Employees per 1,000 Non-Farm Employees
1	Michigan	16.0
2	Indiana	16.0
3	Wisconsin	14.6
4	Ohio	13.3
5	Kentucky	13.2
6	South Carolina	12.6
7	Tennessee	9.8
8	Alabama	9.7
9	Pennsylvania	8.8
10	Iowa	8.8
	U.S. Average	6.7

- The states with the highest concentrations of plastics industry employees tend to have the highest concentrations of manufacturing activity, which is consistent with the fact that most plastic products go into manufactured goods.

**Upstream (Supplier) Impacts**

- Jobs are created in the plastics industry and also created in the industries that provide supply goods and services to the plastics industry. These industries supply fuel, spare parts, office supplies, accounting services, transportation services, etc. As discussed in connection with Table S-1, employment and shipments from upstream industries contribute significantly to the impact of plastics on the economy.
- During 2019, upstream industries accounted for 545,000 jobs in order to supply goods and services to the plastics industry—0.54 upstream jobs for every job in the industry itself.
- During 2019, upstream businesses generated \$117.6 billion in shipments to supply goods and services to the plastics industry.

**Downstream (User) Impacts**

- Some plastic products, such as toys and wastebaskets, are final goods, ready for use. Most are intermediate goods, which are associated with services or sent for additional manufacturing processes before becoming a final good. Virtually all plastic products wind up as part of a final good or service.
- In 2019, an impressive 23.7% of the final consumption of plastic products wound up in some form of service, including healthcare, food services and drinking places, retail and wholesale trade, and other services.
- Construction accounted for 8.5% of final plastic products.
- A large share (29.1%) went into non-durable goods: food, tobacco and spirits (8.0%); plastic products (15.0%); and other non-durables (6.1%).
- Durable goods accounted for the remaining 24.0% share: transportation equipment (13.0%); furniture and related (2.4%); and other durables (8.6%).
- The proportion of those buying plastics-containing goods and services in 2019 were as follows: 78.5% went to personal consumption by households, 29.5% went into private fixed investment, and 13.3% was used by state, local and federal government agencies.<sup>s1</sup>
- The most intense final user of plastic products in 2019, in terms of the value of plastic products per dollar of final product or service, was the plastic products industry itself, followed by: soft drinks and ice; mattresses, blinds and shades; snack foods; sign manufacturing; and seasonings and dressings.

<sup>s1</sup> These percentages add up to more than 100% because the 21.2% that was provided by imports (net of exports)—not supplied by domestic producers—was not deducted. The deduction would be required if National Income and Product Account (NIPA) accounting was used.

## Forecasts

- In the final section of this report, Perc Pineda, Ph.D., Chief Economist with the Plastics Industry Association (PLASTICS), offers his outlook for the plastics industry and numerical forecasts for employment and shipments.
- Growth in the plastics industry is currently facing serious challenges as the global economy slows due to the coronavirus pandemic. Thus far, demand has slowed at a higher rate than supply.
- The U.S. domestic plastics market is expected to sustain uneven growth, as aggregate demand shocks seem to have had different impacts on plastics end-markets.
- The uncertainty of recovery from the great economic disruption of the COVID-19 pandemic has underscored weaknesses in durable goods demand such as autos and light trucks.
- Tailwinds will likely come from sustained manufacturing of consumer essentials such food and packaging, personal and healthcare, and electronics—all of which use plastics materials extensively—against the backdrop of stable hydrocarbon feedstock supplies in the U.S.
- The plastics industry supports manufacturing and will continue to shift toward states with new manufacturing facilities. While there are discussions on reshoring manufacturing, the risks from the uncertainty of the pace of economic recovery outweigh the justification to shift manufacturing into the U.S.
- U.S. plastics industry employment is expected to slow this year as some plastics manufacturing sectors have fallen by 0.2% in 2020. Skilled labor shortages will continue to be a major challenge in the years ahead.
- Because of labor shortages, all manufacturing facilities, including those involved with plastics, are expected to increase their investments in labor-saving equipment and technology. However, uncertainty over the pace of economic recovery will limit capital expenditure in the near-term.
- Real plastics industry shipments are expected to decrease in 2020 and recover at rates that depend on different scenarios. The most optimistic outcome would be that real plastics shipments bounce back in 2020 and thereafter revert back to the 2.3% annual growth observed since 2010.

In the sections that follow, the authors provide data, discuss definitions and methodology, and develop the conclusions just discussed.

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# 2020

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