



2021

PACKAGING INDUSTRY

ECONOMIC IMPACT STUDY

2021 PACKAGING INDUSTRY ECONOMIC IMPACT STUDY

EXECUTIVE SUMMARY

As the recent pandemic has demonstrated, packaging is an essential service that plays a key role in ensuring the health and safety of people and products as those products are manufactured and shipped and stored and consumed. The U.S. packaging industry, as it manufactures and distributes those products, also strives to play a key role in environmental protection, resource conservation and sustainability. However, an underlying value of packaging that is rarely explored is its economic impact on the U.S. domestic economy. This report explores the U.S. packaging industry's role in the economy, including ways the industry contributes to the post-pandemic recovery.

AMERIPEN – the American Institute for Packaging and the Environment – retained the independent economic consulting firm of John Dunham & Associates to analyze and help us better understand the size and scope of the U.S. packaging industry and document its significant contribution to the U.S. economy in 2021 in terms of direct, indirect and induced employment, tax generation and overall economic benefit and output at the national and state levels. In fact, the packaging industry alone accounts for nearly 1 out of every 100 existing jobs in the U.S.

The packaging industry is defined in this study to comprise a wide range of packaging materials and substrates, including plastic, aluminum/steel, pulp/paper/fiber, multi-material¹, polystyrene, urethane and glass. Products including containers, boxes, box boards and partitions, molded pulp products, packaging using for food service, cans, bottles, bags, foam packaging, products labels, packing material (packing peanuts, bubble wraps, etc.) and packing envelopes. Product fulfillment and converter companies in other industries are analyzed in the study, and it also includes data on the impact of the production of compostable and reusable packaging materials. Industrial and transport packaging (i.e.,

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pallets and drums), foodservice utensils (forks, spoons, etc.), as well as napkins and bags, foodservice converters (workers), general packing paper, letter envelopes, envelope labels, and grocery bags are not included in the analysis.

The packaging industry is a dynamic part of the U.S. economy, accounting for about \$537.91 billion in total economic output, equivalent to roughly 2.50 percent of GDP.² The U.S. is the largest producer of packaging in the world, home to 7 of the top 10 largest packaging companies by market cap and value,³ and with the compound annual growth rate (CAGR) for sustainable packaging expected to expand 9.25% between 2020-2026,⁴ the U.S. packaging industry is poised to expand its influence even more.

Packaging product manufacturers touch firms in all 544 sectors of the U.S. economy through their production and distribution linkages and the industry directly or indirectly supports approximately 1,689,811 American jobs in 2021. These workers earn over \$117.73 billion in wages and benefits, and members of the industry and their employees pay \$43.46 billion in direct federal, state and local taxes, not including state and local sales taxes imposed on packaging products.

	DIRECT	SUPPLIER	INDUCED	TOTAL
Output	\$242,657,224,900	\$175,663,491,200	\$119,591,615,500	\$537,912,331,600
Jobs	489,440	540,554	659,817	1,689,811
Wages	\$37,974,486,100	\$41,832,640,100	\$37,918,402,200	\$117,725,528,400
Taxes				\$43,459,983,300

¹ Multi-material packaging products are packages with unique barrier and mechanical properties that are composed of two or more materials joined together. For example, this includes flexible packaging created by layering different materials together, sealed packaging, etc.

² Based on GDP of \$21,542.54. See: Gross Domestic Product, 1st Quarter 2021 (Second Estimate); Corporate Profits, 1st Quarter 2021 (Preliminary Estimate), US Department of Commerce, Bureau of Economic Analysis, May 27, 2021.

³ Top 10 Packaging Companies in the World by Market Cap and Value 2020 (<https://www.packaging-labelling.com/articles/top-10-packaging-companies-in-the-world-by-market-cap-and-value-2020>)

⁴ Modor Intelligence "Sustainable Packaging Market - Growth, Trends, COVID-19 Impact, and Forecasts (2021-2026)" (www.modorintelligence.com/industry-reports/sustainable-packaging-market)

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DIRECT JOBS AND ECONOMIC IMPACT

All told, packaging industry firms, large and small, directly employ 489,440 people and create \$242.66 billion in economic output in 2021. These are good jobs, offering average wages and benefits of more than \$77,000 a year per employee. This is significantly higher than the national average. This includes about 301,000 direct packaging manufacturing jobs and another 188,000 jobs resulting from fulfillment operations at other manufacturers and retailers.⁵ These jobs require a mix of educational requirements, providing above average wages to high school, secondary and post-secondary school graduates.

The packaging industry directly creates more jobs than the oil and gas extraction industry (479,670 jobs) and nearly as many as the data processing and hosting industry (495,432 jobs) or the motion picture industry (498,638 jobs).

INDIRECT SUPPLIER JOBS AND ECONOMIC IMPACT

Other firms are indirectly related to the packaging industry as suppliers. These firms produce, sell and provide a broad range of items, including raw material, tools or machinery used in the production process, transportation, warehousing, logistics or sales. In addition, supplier firms provide a broad range of services, including personnel services, financial services, advertising services, or consulting services. A number of people are also employed in government enterprises responsible for the regulation of the packaging industry. All told, we estimate that the packaging industry is responsible for 540,554 supplier jobs. These firms generate an additional \$175.66 billion in total economic activity in the U.S.

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The **induced impact of the industry** is nearly \$119.59 billion and **generates 659,817 jobs**, for a multiplier of 0.49.

INDUCED JOBS AND ECONOMIC IMPACT

This economic analysis of the packaging industry takes additional linkages into account. Daily spending by employees of the packaging industry, and those of supplier firms whose jobs are directly dependent on packaging product sales and production, should surely be included. This spending on everything from housing to food to educational services and medical care makes up what is traditionally called the "induced impact" or multiplier effect of the packaging industry. In other words, this flow of money, and the jobs it creates, is induced by the production and distribution of containers, boxes, cans, bottles, bags, packing envelopes and other related products included in the definition of the packaging industry. We estimate that the induced impact of the industry is nearly \$119.59 billion, and generates 659,817 jobs, for a multiplier of 0.49.⁶

Consider that the industry employs 31,300 full-time equivalent people in agriculture and nearly 91,000 full-time equivalent people in the hard-hit retail sector. The industry indirectly creates jobs for over 12,000 artists and entertainers and more than 14,000 government workers. These are all real jobs, held by a wide range of people from retail clerks to truck drivers to press operators to artists. All of these people depend in one way or another on the products produced by the packaging industry for their employment.

FEDERAL, STATE AND LOCAL TAX REVENUES

The study also estimates taxes paid by the industry and its employees, as an important part of an impact analysis is the calculation of the contribution of the industry to the public finances of the community. Federal taxes include industry-specific excise and sales taxes, business and personal income taxes, FICA, and unemployment insurance. State and local tax systems vary widely. Direct retail taxes include state and local sales taxes, license fees, and applicable gross receipt taxes. The packaging industry also pays real estate and personal property taxes, business

⁵ Fulfillment in this study represents the amount of money spent on packaging materials, including packaging occurring within a consumer products manufacturing or retail setting. Examples of fulfillment would be someone assembling and filling a box for shipment of on-line order or filling a bag, box or can with product at a food manufacturing facility. Fulfillment in this study also includes those consumer product companies employing packaging designers and engineers.

⁶ Often, economic impact studies present results with very large multipliers – as high as 4 or 5. These studies invariably include the firms supplying the supplier industries as part of the induced impact. John Dunham & Associates believes that this is not an appropriate definition of the induced impact and as such limits this calculation to only the effect of spending by direct and supplier employees.

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The traditional **direct taxes** paid by packaging industry firms and their employees provide nearly **\$43.46 billion in revenues** to the federal, state and local governments.

income taxes, and other business levies that vary in each state and municipality. All entities engaged in business activity generated by the industry pay similar taxes.

In the case of the packaging industry, the traditional direct taxes paid by the firms and their employees provide nearly \$43.46 billion in revenues to the federal, state and local governments. These figures do not include state and local sales taxes paid on packaging goods purchases themselves.

GEOGRAPHIC IMPACT

Because packaging is so closely tied to other products, the packaging industry tends to locate facilities next to or near key resources or customers. The industry's economic impact does therefore vary across states. We see the greatest presence of the packaging industry in the mid-western states of Indiana, Ohio and Michigan. State population also plays a role in attracting packaging employment, with California and Texas closely following the mid-western states with high packaging industry employment and economic impact numbers. North Carolina and South Carolina, home to several packaging firms, indicates proximity to packaging schools and research that may also influence packaging employment and plant locations. Understanding where employment for packaging exists can help states design economic development strategies as we begin to consider post-pandemic economic recovery.

STUDY METHODOLOGY

This study estimates the economic contributions made by the various components of the packaging industry to the U.S. economy in 2021. John Dunham & Associates conducted this research that was funded by **AMERIPEN**. This work used standard econometric models first developed by the U.S. Forest Service, and now maintained by IMPLAN, Inc. Data came from industry sources, government publications and DataAxle.

The study begins with an accounting of the direct employment in the domestic manufacture of packaging products and packaging

fulfillment activities. The data comes from a variety of government and private sources. It is sometimes mistakenly thought that initial spending accounts for all the impact of an economic activity or a product. For example, at first glance it may appear that consumer expenditures for a product are the sum total of the impact on the local economy. However, one economic activity always leads to a ripple effect whereby other sectors and industries benefit from this initial spending. This inter-industry effect of an economic activity can be assessed using multipliers from regional input-output modeling.

The economic activities of events are also linked to other industries in the state and national economies. The activities required to produce a cardboard box, for example, from shipping the rolls of kraft paper from the paper mill to custom design of the product generate the direct effects on the economy. Regional (or indirect) impacts occur when these activities require purchases of goods and services such as kraft paper or electricity from local or regional suppliers. Additionally, induced impacts occur when workers involved in direct and indirect activities spend their wages. The ratio between the induced economic impact and direct impact is termed the multiplier. This method of analysis allows the impact of local production activities to be quantified in terms of final demand, earnings, and employment in the states and the nation as a whole.

Once the direct impact of the industry has been calculated, the input-output methodology is used to calculate the contribution of the supplier sector and of the re-spending in the economy by employees in the industry and its suppliers. This induced impact is the most controversial part of economic impact studies and is often quite inflated. In the case of the **AMERIPEN** model, only the most conservative estimate of the induced impact has been used. Visit www.ameripen.org/page/economic-impact for a complete explanation of the data, model and methodology used for this study. A full breakdown of the study, including the economic impact by state and by packaging materials and substrates (e.g., aluminum/steel, glass, paper, plastic, etc.) and other segments (e.g., converters, fulfillment, packaging envelopes and labels, etc.) is also available for further research.

AMERIPEN is a coalition of packaging entities dedicated to improving packaging and the environment. It is the only material neutral packaging policy association in the United States and our membership represents the entire packaging supply chain, including materials suppliers, packaging producers, consumer packaged goods companies and end-of-life materials managers. Our **Vision** is for packaging to be recognized for all its benefits, including preventing waste and driving a circular economy and our **Mission** is to be the leading voice for the packaging industry, using science to inspire, create and advocate for sustainable solutions for the packaging value chain.



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	DIRECT			SUPPLIERS			INDUCED			TOTAL		
	Jobs	Wages	Output	Jobs	Wages	Output	Jobs	Wages	Output	Jobs	Wages	Output
Alabama	9578	\$700,099,600	\$4,436,452,800	13437	\$1,011,626,300	\$5,071,936,800	12417	\$639,991,300	\$2,032,262,000	35432	\$2,351,717,200	\$11,540,651,600
Alaska	441	\$25,229,600	\$186,214,400	188	\$17,297,000	\$121,564,300	369	\$19,771,300	\$101,287,700	998	\$62,297,900	\$409,066,400
Arizona	4525	\$289,486,500	\$2,047,607,900	4634	\$323,901,900	\$1,330,819,400	6018	\$316,081,300	\$1,152,680,500	15177	\$929,469,700	\$4,531,107,800
Arkansas	6798	\$425,897,600	\$3,190,947,500	7557	\$503,630,700	\$2,752,781,000	7539	\$346,734,400	\$1,241,828,300	21894	\$1,276,262,700	\$7,185,556,800
California	47677	\$4,020,107,800	\$23,416,708,900	46432	\$3,868,562,800	\$13,239,615,200	61597	\$4,028,946,600	\$12,327,814,200	155706	\$11,917,617,200	\$48,984,138,300
Colorado	6265	\$456,116,000	\$3,455,904,900	4924	\$369,727,300	\$1,398,015,700	7678	\$425,250,500	\$1,546,185,900	18867	\$1,251,093,800	\$6,400,106,500
Connecticut	3723	\$338,057,700	\$1,735,302,100	3988	\$419,958,500	\$1,324,089,800	5101	\$376,370,200	\$1,036,169,300	12812	\$1,134,386,400	\$4,095,561,200
Delaware	676	\$47,512,700	\$347,036,400	440	\$45,718,600	\$311,193,600	699	\$46,127,000	\$216,400,100	1815	\$139,358,300	\$874,630,100
DC	130	\$5,780,600	\$50,644,900	79	\$8,871,900	\$28,695,500	186	\$18,081,400	\$67,710,800	395	\$32,733,900	\$147,051,200
Florida	12777	\$852,010,800	\$6,052,980,700	13693	\$883,717,700	\$3,816,398,000	18367	\$911,407,000	\$3,425,674,100	44837	\$2,647,135,500	\$13,295,052,800
Georgia	20148	\$1,542,579,500	\$10,233,970,800	26585	\$1,927,851,700	\$8,313,460,600	29256	\$1,560,513,900	\$4,999,206,700	75989	\$5,030,945,100	\$23,546,638,100
Hawaii	1059	\$56,039,500	\$409,542,600	449	\$25,242,800	\$118,151,700	1014	\$45,775,000	\$200,647,200	2522	\$127,057,300	\$728,341,500
Idaho	2203	\$164,180,500	\$1,070,013,700	1876	\$131,247,900	\$616,562,800	2258	\$116,717,800	\$409,055,800	6337	\$412,146,200	\$2,095,632,300
Illinois	30093	\$2,528,796,500	\$14,689,139,300	32433	\$2,645,938,600	\$9,184,769,400	43737	\$2,676,908,500	\$7,738,073,000	106263	\$7,851,643,600	\$31,611,981,700
Indiana	19426	\$1,529,640,100	\$9,800,718,300	21920	\$1,640,674,200	\$6,460,942,700	27083	\$1,535,192,800	\$4,615,929,600	68429	\$4,705,507,100	\$20,877,590,600
Iowa	5469	\$444,488,500	\$3,311,004,500	5188	\$413,390,400	\$1,990,047,300	6800	\$380,334,600	\$1,470,850,700	17457	\$1,238,213,500	\$6,771,902,500
Kansas	4146	\$284,217,700	\$2,262,598,000	3789	\$249,371,000	\$1,281,440,700	4819	\$245,641,700	\$955,943,200	12754	\$779,230,400	\$4,499,981,900
Kentucky	9410	\$700,369,800	\$4,952,014,600	10109	\$720,485,500	\$3,516,339,800	11583	\$595,594,500	\$1,922,135,500	31102	\$2,016,449,800	\$10,390,489,900
Louisiana	5974	\$449,852,000	\$3,256,337,500	9065	\$759,795,300	\$5,768,383,100	8068	\$418,447,000	\$1,672,243,600	23107	\$1,628,094,300	\$10,696,964,200
Maine	2030	\$126,075,400	\$900,535,400	2645	\$170,938,000	\$839,232,700	2487	\$117,095,500	\$396,544,600	7162	\$414,108,900	\$2,136,312,700
Maryland	4791	\$346,807,800	\$2,357,285,700	4222	\$327,441,800	\$1,192,556,100	6043	\$366,614,000	\$1,245,304,300	15056	\$1,040,863,600	\$4,795,146,100
Massachusetts	8345	\$809,783,000	\$3,922,342,400	8059	\$826,819,900	\$2,549,563,100	11692	\$890,135,100	\$2,261,118,900	28096	\$2,526,738,000	\$8,733,024,400
Michigan	21762	\$1,657,846,200	\$9,961,582,400	25426	\$1,896,463,700	\$7,171,187,400	30376	\$1,644,833,400	\$4,825,997,900	77564	\$5,199,143,300	\$21,958,767,700
Minnesota	11373	\$912,730,700	\$5,574,258,100	12419	\$1,008,794,100	\$3,727,320,000	16389	\$966,225,700	\$2,911,641,400	40181	\$2,887,750,500	\$12,213,219,500
Mississippi	6179	\$375,792,500	\$2,677,155,100	6619	\$390,189,600	\$1,885,658,500	7056	\$311,569,800	\$1,123,610,600	19854	\$1,077,551,900	\$5,686,424,200
Missouri	12887	\$973,245,800	\$6,970,748,200	12984	\$868,488,700	\$3,385,309,800	17659	\$908,894,600	\$2,999,021,100	43530	\$2,750,629,100	\$13,355,079,100
Montana	793	\$30,709,400	\$323,788,300	551	\$30,344,200	\$218,686,100	654	\$23,234,600	\$142,865,300	1998	\$84,288,200	\$685,339,700
Nebraska	3171	\$217,122,900	\$1,706,267,900	3151	\$214,928,300	\$878,935,600	3965	\$207,347,200	\$801,374,200	10287	\$639,398,400	\$3,386,577,700
Nevada	1342	\$78,089,000	\$583,446,800	1191	\$79,552,300	\$408,385,600	1535	\$66,087,800	\$328,236,000	4068	\$223,729,100	\$1,320,068,400
New Hampshire	1520	\$107,257,700	\$683,338,100	1685	\$120,014,900	\$454,954,700	1824	\$103,122,000	\$337,359,000	5029	\$330,394,600	\$1,475,651,800
New Jersey	12043	\$1,130,641,900	\$5,825,024,100	11588	\$1,091,866,400	\$3,535,067,700	16873	\$1,129,445,100	\$3,192,449,200	40504	\$3,351,953,400	\$12,552,541,000
New Mexico	1036	\$41,665,700	\$444,790,500	634	\$35,207,400	\$270,128,400	894	\$34,592,900	\$204,363,000	2564	\$111,466,000	\$919,281,900
New York	17604	\$1,701,133,900	\$8,981,042,500	16631	\$1,676,364,000	\$5,563,053,900	24386	\$2,009,074,800	\$5,463,867,700	58621	\$5,386,572,700	\$20,007,964,100
North Carolina	19503	\$1,548,029,500	\$11,117,879,200	22111	\$1,552,251,800	\$6,213,151,900	26124	\$1,436,272,000	\$4,603,282,400	67738	\$4,536,553,300	\$21,934,313,500
North Dakota	612	\$42,122,700	\$299,191,000	582	\$35,145,700	\$208,947,500	734	\$35,504,400	\$170,680,300	1928	\$112,772,800	\$678,818,800
Ohio	26018	\$2,027,974,900	\$13,087,630,700	29959	\$2,225,732,200	\$9,025,442,400	37225	\$2,019,994,300	\$6,347,042,500	93202	\$6,273,701,400	\$28,460,115,600
Oklahoma	4368	\$312,453,500	\$2,155,056,400	5793	\$398,694,200	\$1,974,820,800	5880	\$291,549,100	\$1,059,883,900	16041	\$1,002,696,800	\$5,189,761,100
Oregon	6232	\$394,189,800	\$2,668,424,500	5700	\$438,497,100	\$1,694,594,400	6420	\$337,460,600	\$1,087,630,700	18352	\$1,170,147,500	\$5,450,649,600
Pennsylvania	26688	\$2,037,034,000	\$13,295,886,900	27688	\$2,180,207,700	\$8,337,118,700	36660	\$2,092,440,500	\$6,286,129,900	91036	\$6,309,682,200	\$27,919,135,500
Rhode Island	1498	\$89,047,400	\$609,022,900	1632	\$105,239,600	\$432,416,100	1914	\$93,014,000	\$314,240,100	5044	\$287,301,000	\$1,355,679,100
South Carolina	11114	\$877,341,900	\$5,388,670,100	15074	\$1,106,195,200	\$5,159,014,200	15490	\$813,237,900	\$2,459,885,600	41678	\$2,796,775,000	\$13,007,569,900
South Dakota	1066	\$69,483,400	\$525,920,100	1215	\$83,045,100	\$343,107,400	1352	\$68,746,900	\$273,665,600	3633	\$221,275,400	\$1,142,693,100
Tennessee	15193	\$1,166,430,200	\$7,794,176,300	17798	\$1,325,653,600	\$5,477,998,800	20616	\$1,175,753,300	\$3,522,589,900	53607	\$3,667,837,100	\$16,794,765,000
Texas	28326	\$2,041,695,700	\$13,416,097,900	37748	\$3,056,221,800	\$18,969,447,800	41268	\$2,251,863,800	\$8,069,792,500	107342	\$7,349,781,300	\$40,455,338,200
Utah	4457	\$316,511,400	\$2,251,480,500	4256	\$280,905,000	\$1,187,539,500	5733	\$289,072,100	\$1,040,965,100	14446	\$886,488,500	\$4,479,985,100
Vermont	970	\$58,495,500	\$494,323,900	596	\$35,138,200	\$241,200,700	779	\$36,931,200	\$144,010,100	2345	\$130,564,900	\$879,534,700
Virginia	10849	\$752,316,300	\$6,040,242,200	12440	\$947,802,500	\$4,056,542,200	13882	\$726,721,600	\$2,585,531,000	37171	\$2,426,840,400	\$12,682,315,400
Washington	12737	\$967,852,200	\$6,043,680,900	14312	\$1,206,049,600	\$4,614,933,700	15630	\$944,313,000	\$2,862,240,100	42679	\$3,118,214,800	\$13,520,854,700
West Virginia	1221	\$82,631,000	\$648,876,700	1870	\$151,516,300	\$1,073,807,500	1441	\$69,277,300	\$293,383,800	4532	\$303,424,600	\$2,016,068,000
Wisconsin	22884	\$1,803,634,500	\$10,833,345,600	26759	\$1,966,383,800	\$7,704,716,500	31872	\$1,737,354,700	\$4,991,122,500	81515	\$5,507,373,000	\$23,529,184,600
Wyoming	310	\$17,877,300	\$170,573,800	430	\$33,537,300	\$223,444,100	375	\$16,736,200	\$113,688,100	1115	\$68,150,800	\$507,706,000
United States	489440	\$37,974,486,100	\$242,657,224,900	540554	\$41,832,640,100	\$175,663,491,200	659817	\$37,918,402,200	\$119,591,615,500	1689811	\$117,725,528,400	\$537,912,331,600



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