



2021

Economic Impact Study, U.S.-Based Recycling Industry



Executive Summary¹

Recycling in the United States is a critically essential industry dedicated to transforming end-of-life products and industrially generated recyclables into new commodity grade materials, and driving sustainable economic growth. Recognized as one of the world’s first green industries, recycling plays an essential role in the creation and support of jobs, and has a positive impact on the environment by reducing greenhouse gas emissions, saving energy, and protecting our natural resources. In 2021, the Institute of Scrap Recycling Industries, Inc. (ISRI) retained the independent economic consulting firm of John Dunham & Associates to perform an economic impact analysis to document the size and scope of the recycling industry in the United States and document its significant contribution to the U.S. economy, in terms of employment, tax generation, and overall economic benefit.

The U.S. recycling industry is not only a thriving economic engine, it is also a fundamental player in environmental protection, resource conservation, and sustainability. In recent years, the industry has annually recycled more than 130 million metric tons of materials, although the 2020 COVID-induced recession negatively impacted U.S. recycling volumes overall. Recycling reduces greenhouse gas emissions by significantly saving the amount of energy needed to manufacture the products that we buy, build, and use every day. The energy saved by recycling may then be used for other purposes, such as heating our homes and powering our automobiles.

In addition to its environmental stewardship, the study confirmed the U.S. recycling industry plays a prominent role as an economic leader, job creator, and major exporter. Specifically, the study found that the people and firms that purchase, process, and broker recyclables to be manufactured into new products in America provide 506,139 adults with good jobs in the U.S.² and generate approximately \$116.84 billion in annual economic activity.



The industry recycled **130 million** metric tons of materials in 2020.

	Direct	Supplier	Induced	Total
Jobs	159,640	153,983	192,516	506,139
Wages	\$12,334,813,000	\$11,011,191,900	\$11,046,238,200	\$34,392,243,100
Economic Impact	\$46,386,125,000	\$35,354,441,800	\$35,094,954,500	\$116,835,521,300

1.- The study defines the recycling industry as firms in the private sector involved in the processing and brokerage of recycled metals, plastics, rubber, paper, textiles, glass, and electronics.
 2.- Based on the Economic Impact of the Scrap Recycling Industry in the U.S. (2021), produced for the Institute of Scrap Recycling Industries, Inc. by John Dunham & Associates, 2021.



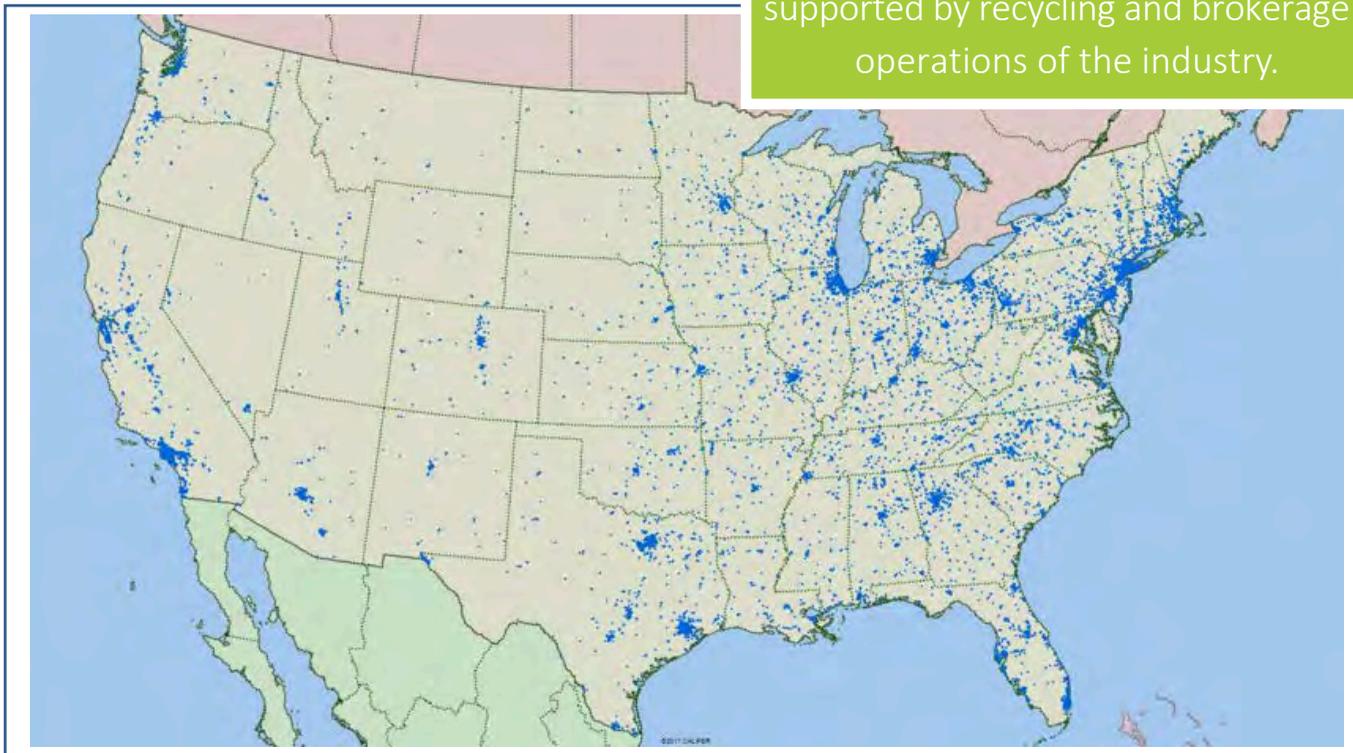
Summary of Findings

Employment: Source of Green Jobs

While many in the public policy world talk about the need for more green jobs, the recycling industry has been creating these environmentally friendly jobs and other opportunities in the U.S. for decades. The study found that in 2021, 159,640 jobs are being directly supported by processing and brokerage operations of the recycling industry in the U.S.³ These are good jobs paying an average of \$77,300 in wages and benefits to American workers. In addition to this, 346,499 jobs throughout the U.S. economy are indirectly supported by the recycling industry through suppliers and the indirect impact of the industry's expenditures.⁴

U.S. Recycling Industry Facilities

159,640 jobs are being directly supported by recycling and brokerage operations of the industry.



These are real people with real jobs—not only in firms that process recycled materials into new, usable commodity inputs, but also companies that supply the industry with recycled materials, like auto yards, as well as firms that supply machinery, trucks, and services to processors. In addition, thousands of people in industries seemingly unrelated to recycling—from servers in restaurants to construction workers to teachers in local schools, depend on the re-spending of the wages and taxes the recycling industry pays to its workers and suppliers.

- 3.- This includes firms involved in the purchasing, processing, and brokering of recycled materials including ferrous and nonferrous metals, paper, electronics, rubber, plastics, glass, and textiles.
- 4.- Direct impacts are those associated with processors and brokers. Supplier impacts are associated with firms providing goods and services to recyclers and brokers, and induced impacts are those resulting from the re-spending of wages by workers in the direct and supplier sectors.





The economic benefits generated by the recycling industry are far reaching. Not only are recycling facilities located in every state throughout the country, in urban and rural communities. The firms that supply materials as well as goods and services to processors and brokers are also located in every part of the country. This means that the U.S. recycling industry provides good-paying jobs in every state in the union. The study results are broken down by state, congressional districts, state legislative districts, and cities at <http://www.isri.org/recycling-commodities/economy>.

Overall Economic Activity

The activities of the recycling industry in the United States generate nearly \$116.84 billion annually in economic benefits here at home. All told, the U.S. recycling industry accounts for 0.53 percent of the nation's total economic activity,⁵ making it similar in size to the warehousing and storage industry.

Tax Revenues to Federal, State, and Local Governments

The recycling industry generates substantial revenues for federal, state and local governments throughout the U.S.

- The industry generates about \$4.97 billion in state and local revenues annually, money are used to help communities and people throughout the country.
- The industry and its employees pay another \$7.33 billion in federal taxes per year.

Export Activities: Creating Thousands of Jobs Here at Home

Recycled commodities are among the nation's largest exports by quantity. Overall, exports account for 31.26 percent of the industry's economic activity. These exports create approximately 155,662 good green jobs in the U.S., and help strengthen the national economy. According to the study, in 2021, 50,360 jobs are directly supported by export activities associated with the processing and brokerage operations of recyclers operating in the U.S.⁶

This is because recycled materials that are intended for export must be collected, separated, and prepared for transport out of the U.S. The steps in this process provide well-paying U.S. jobs. In fact, were it not for these export markets, some materials would probably not be recycled at all simply because there is insufficient demand for them in the United States. By opening up new markets, the nation's recyclers create demand for materials that might otherwise end up in landfills.

The recycling industry is the first link in the global supply chain for the growing demand of all manner of commodities ranging from iron and steel to nonferrous metals such as aluminum, copper, and zinc; paper; plastics; electronics; rubber; and more. The result is economic and environmental sustainability for our nation and our world through the supply of high quality, environmentally friendly and energy saving raw materials to the global marketplace.



The activities of the recycling industry in the United States generate nearly **\$116.84 billion** annually in economic benefits.

5.- Bureau of Economic Analysis. GDP based on 2021 First Quarter GDP of 22.06 trillion, see: U.S. Bureau of Economic Analysis, Gross Domestic Product [GDP], retrieved from FRED, Federal Reserve Bank of St. Louis; <https://fred.stlouisfed.org/series/GDP>, May 27, 2021.

6.- This includes firms involved in the purchasing, processing and brokering of recycled materials including ferrous and nonferrous metals, paper, electronics, rubber, plastics, glass, and textiles.



Summary Table: Economic Impact of U.S. Recycling Exports

	Direct	Supplier	Induced	Total
Jobs	50,360	45,908	59,394	155,662
Wages	\$3,960,822,400	\$3,488,210,500	\$3,622,530,200	\$11,071,563,100
Economic Impact	\$14,500,419,300	\$10,634,739,100	\$10,564,643,400	\$35,699,801,800

In 2020, the industry exported 35.1 million metric tons of recycled commodities valued at \$20.8 billion, significantly helping the U.S. balance of trade.⁷ In terms of volume, recycled materials are among the nation’s largest commodity exports, in line with other important products like grain and corn, cotton, timber, and petroleum. Recycled materials processed in the U.S. are exported to other countries for manufacture into new products. America’s recycled materials help reduce global energy demand and greenhouse gases as well as the need to mine and harvest virgin materials.

Economic Benefits of Exporting Recycled Commodities Are No Different Than Those of Any Other Product

International trade is an important part of the American economy. In 2020, over \$2.13 trillion in goods and services were exported from the U.S., and about \$2.81 trillion were imported.⁸ Over 40 million Americans work for companies that engage in international trade, according to the U.S. Chamber of Commerce, and one in five jobs depend on exports.⁹ To suggest that the export of recycled commodities would somehow destroy jobs in the United States is no different than maintaining that the export of corn, coal, or cotton somehow takes away American jobs. The study also calculated the U.S. recycling industry’s state-by-state economic impact (as well as its effect on congressional and state legislative districts, and cities). The table summarizes those impacts. More detailed information tables – by state, congressional district and state legislative districts as well as cities can be accessed at <http://www.isri.org/recycling-commodities/economy>.



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7.- U.S. Census Bureau/U.S. International Trade Commission.
 8.- U.S. International Trade in Goods and Services Exports, Imports, and Balances, US Department of Commerce, Bureau of Economic Analysis, updated June 8, 2021. Available online at: <https://www.bea.gov/data/intl-trade-investment/international-trade-goods-and-services>.
 9.- Baughman, Laura, and Joseph Francois, Trade and American Jobs. The Impact of Trade on U.S. and State-Level Employment: 2020 Update, Prepared by Trade Partnership Worldwide LLC for Business Roundtable, October 2020. Available online at: <https://tradepartnership.com/reports/trade-and-american-jobs-the-impact-of-trade-on-u-s-and-state-level-employment-update-2020/0>





Study Methodology

The U.S. Recycling Industry Economic Impact Study estimates the economic contributions made by the various components of the recycling industry to the U.S. economy in 2021. John Dunham & Associates conducted this research, which was funded by the Institute of Scrap Recycling Industries, Inc. (ISRI). This work used standard econometric models maintained by the IMPLAN Group LLC.¹⁰ Data came from industry sources, government publications, and Data Axle.

The study defines the recycling industry as firms in the private sector involved in the processing and brokerage of recycled metals, plastics, rubber, paper, textiles, glass, and electronics. The study measures the number of jobs in the sector, the wages paid to employees, the value added, and total output.

The study also estimates taxes paid by the industry and its employees. 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. Processors pay real estate and personal property taxes, business income taxes, and other business levies that vary by state and municipality. All entities engaged in business activity generated by the industry pay similar taxes.

The economic impact study begins with an accounting of the direct employment in the processing of recycled materials and the materials brokerage sectors. The data come from a variety of government and private sources. It is sometimes mistakenly thought that initial spending accounts for all of 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 models.

Industries are linked to each other when one industry buys from another to produce its own products. Each industry in turn makes purchases from a different mix of other industries, and so on. Employees in all industries extend the economic impact when they spend their earnings. Thus, economic activity started by recycling is linked to other industries in the state and national economies. The activities required to process one ton of recycled steel—from sorting, cutting, and baling to shipping—generate direct effects on the economy. Regional (or indirect) effects occur when these activities require purchases of goods and services, such as machinery or electricity, from local or regional suppliers. Additional induced effects occur when workers involved in direct and indirect activities spend their wages. The ratio between induced economic and direct effects is termed the multiplier.

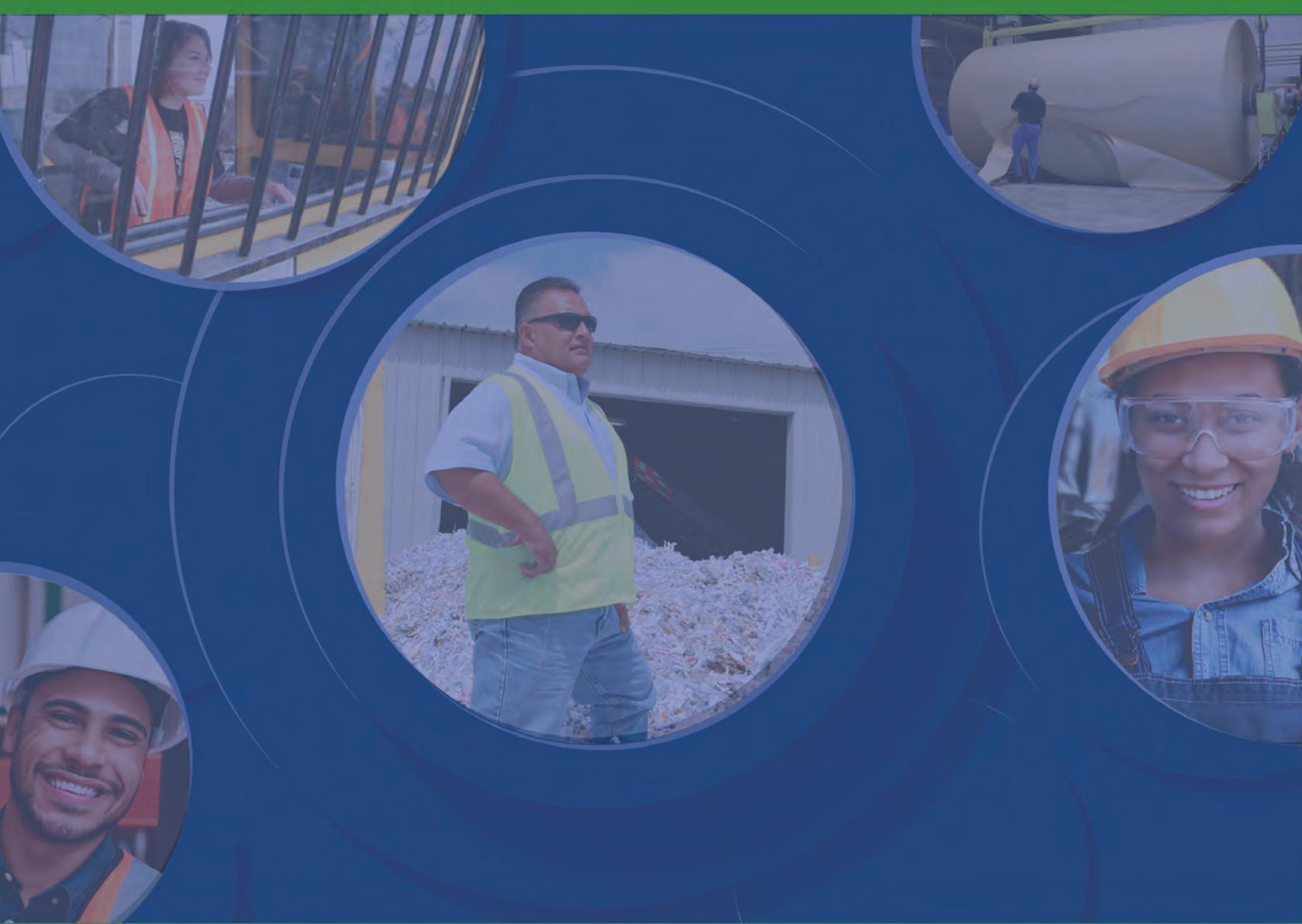
Once the direct impact of the industry has been calculated, the impact of supplier firms and the “induced impact” of re-spending by employees of industry and supplier firms is calculated using an input-output model of the U.S. The study calculates the impact on a national basis, by state, by congressional and state legislative districts, and by city. 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. In the case of the ISRI model, only the most conservative estimate of the induced effects has been used.

10.- The model uses 2018 input/output accounts.

Economic and Job Impacts on a State-by-State Level

	Direct			Suppliers			Induced			Total		
	Jobs	Wages	Output									
AL	3,736	\$252,288,800	\$1,192,402,200	4,128	\$251,792,700	\$890,181,300	4,204	\$205,576,900	\$664,852,600	12,068	\$709,658,400	\$2,747,436,100
AK	212	\$19,174,700	\$54,178,000	154	\$12,219,000	\$60,120,300	211	\$13,175,600	\$46,395,200	577	\$44,569,300	\$160,693,500
AZ	2,500	\$193,013,600	\$625,697,000	2,163	\$147,946,100	\$558,098,300	2,929	\$160,860,700	\$523,803,700	7,592	\$501,820,400	\$1,707,599,000
AR	1,638	\$87,225,000	\$413,492,400	1,490	\$72,580,500	\$329,792,900	1,511	\$57,086,800	\$265,596,100	4,639	\$216,892,300	\$1,008,881,400
CA	16,684	\$1,381,572,600	\$4,748,571,900	15,069	\$1,227,926,800	\$3,521,983,7000	19,676	\$1,293,131,900	\$3,955,296,200	51,429	\$3,902,631,300	\$12,225,851,800
CO	1,410	\$106,935,100	\$335,496,800	1,298	\$93,338,000	\$299,385,000	1,770	\$99,607,000	\$350,617,300	4,478	\$299,880,100	\$985,499,100
CT	2,049	\$173,850,500	\$599,866,500	1,461	\$126,687,300	\$346,153,300	2,124	\$147,568,300	\$411,967,600	5,634	\$448,106,100	\$1,357,987,400
DE	222	\$16,525,400	\$51,343,0000	173	\$13,555,800	\$53,908,800	258	\$16,410,100	\$67,172,200	653	\$46,491,300	\$172,424,000
DC	32	\$1,803,000	\$6,484,400	27	\$2,704,900	\$7,942,400	48	\$4,727,300	\$16,357,800	107	\$9,235,200	\$30,784,600
FL	7,229	\$515,634,800	\$2,078,457,100	7,960	\$476,922,600	\$1,505,023,800	9,734	\$484,450,200	\$1,644,997,100	24,923	\$1,477,007,600	\$5,228,478,000
GA	4,298	\$245,360,400	\$1,217,735,500	4,927	\$303,166,300	\$1,033,962,900	5,220	\$251,886,900	\$920,828,100	14,445	\$800,413,600	\$3,172,526,500
HI	664	\$51,422,300	\$159,032,700	423	\$28,020,200	\$84,678,100	632	\$34,697,800	\$115,021,500	1,719	\$114,140,300	\$358,732,300
ID	507	\$48,703,500	\$140,149,000	523	\$32,982,600	\$106,842,400	661	\$36,115,300	\$124,159,700	1,691	\$117,801,400	\$371,151,100
IL	9,385	\$818,903,300	\$2,578,380,000	7,314	\$583,153,600	\$1,729,397,600	11,049	\$689,772,800	\$2,069,094,300	27,748	\$2,091,829,700	\$6,376,871,900
IN	7,382	\$522,218,200	\$2,256,137,100	6,611	\$456,061,700	\$1,524,749,800	8,128	\$442,358,000	\$1,376,420,600	22,121	\$1,420,637,900	\$5,157,307,500
IA	1,894	\$117,606,300	\$507,154,100	1,574	\$102,108,000	\$362,417,900	1,990	\$100,360,200	\$379,728,600	5,458	\$320,074,500	\$1,249,300,600
KS	1,143	\$73,197,800	\$252,721,600	890	\$56,293,500	\$221,962,100	1,155	\$58,343,000	\$239,194,000	3,188	\$187,834,300	\$713,877,700
KY	2,351	\$164,720,100	\$841,674,300	2,949	\$192,718,800	\$674,447,300	3,088	\$161,149,000	\$518,597,700	8,388	\$518,587,900	\$2,034,719,300
LA	1,566	\$109,750,800	\$397,351,800	1,503	\$100,655,200	\$552,066,300	1,704	\$85,469,900	\$365,643,900	4,773	\$295,875,900	\$1,315,062,000
ME	569	\$33,589,300	\$119,177,100	562	\$29,181,900	\$100,551,100	594	\$28,005,900	\$97,388,400	1,725	\$90,777,100	\$317,116,600
MD	1,778	\$130,809,500	\$426,364,200	1,295	\$97,962,200	\$274,373,800	1,828	\$111,923,700	\$360,659,300	4,901	\$340,695,400	\$1,061,397,300
MA	3,684	\$317,748,000	\$931,953,900	2,448	\$209,256,900	\$551,895,900	3,962	\$277,311,400	\$760,409,800	10,094	\$804,316,300	\$2,244,259,600
MI	4,778	\$366,314,500	\$1,309,359,500	4,770	\$340,003,700	\$1,081,761,900	5,910	\$327,187,500	\$1,033,885,300	15,458	\$1,033,505,700	\$3,425,006,700
MN	3,365	\$266,104,600	\$940,588,100	2,980	\$225,303,700	\$672,300,000	4,268	\$250,675,200	\$771,143,600	10,613	\$742,083,500	\$2,384,031,700
MS	911	\$58,868,200	\$284,330,000	1,028	\$56,024,900	\$227,314,000	1,011	\$47,597,400	\$183,348,800	2,950	\$162,490,500	\$694,992,800
MO	2,878	\$193,840,300	\$778,496,300	2,663	\$173,648,000	\$572,049,600	3,374	\$172,881,800	\$580,083,900	8,915	\$540,370,100	\$1,930,629,800
MT	337	\$20,462,100	\$71,980,900	344	\$21,402,500	\$95,409,900	353	\$15,274,800	\$63,243,000	1,034	\$57,139,400	\$230,633,800
NE	775	\$46,687,700	\$177,306,400	618	\$38,426,500	\$139,213,400	825	\$42,845,600	\$178,662,900	2,218	\$127,959,800	\$495,182,700
NV	743	\$62,672,300	\$190,615,400	677	\$48,249,000	\$177,397,700	810	\$43,068,300	\$154,406,400	2,230	\$153,989,600	\$522,419,500
NH	809	\$68,458,200	\$213,176,100	601	\$43,628,600	\$125,610,700	848	\$51,697,600	\$153,123,400	2,258	\$163,784,400	\$491,910,200
NJ	5,143	\$446,557,100	\$1,653,631,900	4,035	\$338,579,700	\$911,865,600	5,853	\$381,797,400	\$1,101,083,000	15,031	\$1,166,934,200	\$3,666,580,500
NM	484	\$39,283,500	\$121,299,800	349	\$21,490,400	\$97,931,600	511	\$25,598,000	\$97,523,700	1,344	\$86,371,900	\$316,755,100
NY	7,024	\$557,372,200	\$1,857,707,900	5,212	\$468,927,500	\$1,252,837,500	7,455	\$570,520,200	\$1,592,505,700	19,691	\$1,596,819,900	\$4,703,051,100
NC	4,547	\$310,817,700	\$1,234,537,400	4,846	\$303,932,900	\$996,028,100	5,424	\$285,151,500	\$979,437,000	14,817	\$899,902,100	\$3,210,002,500
ND	283	\$20,123,700	\$72,211,800	213	\$13,800,000	\$55,538,500	305	\$15,086,800	\$61,614,000	801	\$49,010,500	\$189,364,300
OH	8,460	\$652,284,200	\$2,387,020,000	7,847	\$551,532,300	\$1,816,880,400	10,287	\$557,365,000	\$1,794,271,300	26,594	\$1,761,181,500	\$5,998,171,700
OK	1,171	\$72,336,100	\$292,222,000	1,078	\$64,941,900	\$262,887,200	1,230	\$56,917,300	\$227,192,000	3,479	\$194,195,300	\$782,301,200
OR	3,839	\$279,882,100	\$1,173,283,600	4,416	\$295,124,100	\$881,872,900	4,850	\$249,478,800	\$768,469,700	13,105	\$824,485,000	\$2,823,626,200
PA	7,176	\$537,021,300	\$1,835,434,800	5,904	\$445,077,700	\$1,378,014,700	8,187	\$476,881,900	\$1,461,122,800	21,267	\$1,458,980,900	\$4,674,572,300
RI	753	\$53,347,800	\$176,945,100	511	\$33,928,500	\$102,201,500	724	\$39,284,000	\$122,647,900	1,988	\$126,560,300	\$401,794,500
SC	2,742	\$238,426,700	\$721,399,400	2,486	\$166,138,600	\$552,237,700	3,077	\$169,933,700	\$517,944,700	8,305	\$574,499,000	\$1,791,581,800
SD	452	\$23,035,800	\$129,172,300	350	\$20,652,500	\$76,937,000	451	\$20,614,800	\$82,915,100	1,253	\$64,303,100	\$289,024,400
TN	4,757	\$372,319,200	\$1,468,529,800	4,560	\$323,432,900	\$1,011,468,300	5,511	\$329,623,000	\$953,369,000	14,828	\$1,025,375,100	\$3,433,367,100
TX	12,050	\$949,102,800	\$3,470,320,800	12,113	\$878,985,500	\$3,358,399,000	15,476	\$862,606,000	\$2,945,188,100	39,639	\$2,690,694,300	\$9,773,907,900
UT	1,299	\$89,788,900	\$334,128,500	1,237	\$76,028,400	\$297,253,600	1,518	\$74,222,600	\$276,119,600	4,054	\$240,039,900	\$907,501,700
VT	233	\$13,357,900	\$50,703,700	206	\$10,512,400	\$37,952,400	231	\$10,973,300	\$42,170,100	670	\$34,843,600	\$130,826,200
VA	2,478	\$167,014,600	\$680,469,900	2,176	\$145,870,400	\$472,984,200	2,698	\$139,254,200	\$511,195,600	7,352	\$452,139,200	\$1,664,649,700
WA	5,386	\$570,417,100	\$2,707,098,500	9,762	\$761,465,100	\$2,238,172,400	9,863	\$594,491,400	\$1,706,724,500	25,011	\$1,926,373,600	\$6,651,995,400
WV	659	\$42,291,100	\$169,089,700	681	\$41,996,700	\$179,187,300	692	\$31,870,600	\$118,710,300	2,032	\$116,158,400	\$466,987,300
WI	4,905	\$416,848,800	\$1,874,027,000	7,171	\$471,623,000	\$1,432,359,300	8,053	\$431,992,100	\$1,294,263,800	20,129	\$1,320,463,900	\$4,600,650,100
WY	270	\$17,723,500	\$77,217,800	207	\$13,229,900	\$60,440,400	245	\$11,358,700	\$48,387,600	722	\$42,312,100	\$186,045,800
Total	159,640	\$12,334,813,000	\$46,386,125,000	153,983	\$11,011,191,900	\$35,354,441,800	192,516	\$11,046,238,200	\$35,094,954,500	506,139	\$34,392,243,100	\$116,835,521,300

The study also calculated the impact of the U.S.-based recycling industry on a state by state basis (as well as by congressional and state legislative districts and cities). The table above summarizes those impacts. Specific tables—by state, congressional district, and state legislative districts, as well as cities—can be accessed at isri.org/economy.



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