

Production and Marketing Reports

Economic Contributions of the Green Industry in the United States in 2007–08

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SUMMARY. Economic contributions of the green industry in each state of the United States were estimated for 2007–08 using regional economic multipliers, together with information on horticulture product sales, employment, and payroll reported by the U.S. Economic Census and a nursery industry survey. Total sales revenues for all sectors were \$176.11 billion, direct output was \$117.40 billion, and total output impacts, including indirect and induced regional economic multiplier effects of nonlocal output, were \$175.26 billion. The total value added impact was \$107.16 billion, including employee compensation, proprietor (business owner) income, other property income, and indirect business taxes paid to state/local and federal governments. The industry had direct employment of 1.20 million full-time and part-time jobs and total employment impacts of 1.95 million jobs in the broader economy. The largest individual industry sectors in terms of employment and value added impacts were Landscaping services (1,075,343 jobs, \$50.3 billion), Nursery and greenhouse production (436,462 jobs, \$27.1 billion), and Building materials and garden equipment and supplies stores (190,839 jobs, \$9.7 billion). The top 10 individual states in terms of employment contributions were California (257,885 jobs), Florida (188,437 jobs), Texas (82,113 jobs), North Carolina (81,113 jobs), Ohio (79,707 jobs), Pennsylvania (75,604 jobs), New Jersey (67,993 jobs), Illinois (67,382 jobs), Georgia (66,042 jobs), and Virginia (58,677 jobs). The total value added of the U.S. green industry represented 0.76% of U.S. Gross Domestic Product (GDP) in 2007, and up to 1.60% of GDP in individual states. On the basis of a similar previous study for 2002 (Hall et al., 2006), total sales of horticultural products and services in 2007–08 increased by 3.5%, and total output impacts increased by 29.2%, or an average annual rate of 5.8% in inflation-adjusted terms.

The U.S. environmental horticulture industry, also known as the “green industry,” is comprised of wholesale nursery, greenhouse, and turfgrass sod growers; landscape service firms such as architects, designers/builders, contractors, and maintenance firms; retail firms such as garden centers, home centers and mass merchandisers with lawn and garden departments, and marketing intermediaries such as brokers and horticultural distribution

centers (re-wholesalers). There is also a substantial allied trade industry that supplies various production inputs to the industry.

The green industry has historically been one of the fastest growing sectors in the nation’s agricultural economy, often experiencing growth and expansion even during recessionary periods. However, the industry has reached the mature stage of its life cycle and has suffered as most businesses

with the recession of 2008–09 (Hall, 2010). Employment in the principal sectors of the U.S. green industry grew slowly or remained stable during the period 2001–07, then dropped sharply in 2008–09, as shown in Fig. 1. Industry firms that experienced remarkable growth in sales and profits for most of this decade now face stagnant demand for product, abundant supply in the marketplace, and prospective buyers willing to purchase product only if and when needed. The housing sector collapse revealed that the rate of green industry growth was also unsustainable and current economic conditions are retarding industry recovery. In recent years, there has been considerable consolidation among large growers in response to consolidation at the retail level. The rise of large, nationwide plant retailers like home centers and mass merchandisers has created a marketing opportunity for some large growers who can supply the large volumes these customers require, and these nursery firms have grown rapidly through acquisition during the past decade to service these big customers.

Despite the size and growth of the green industry, there is surprisingly little information at the national level regarding its economic impact. The U.S. Department of Agriculture conducts floriculture and nursery crop surveys to collect information at the grower level, but only in selected states, and the cash receipts reported by growers do not reflect the further economic impacts generated from this production activity. For firms downstream in the supply chain, such as landscapers, re-wholesalers, and retailers, information may be available from state comptrollers in certain states. However, to date, no one source of data has been adequate to capture the total economic importance of the green industry nationally.

Recognizing the limitations of existing data sources and the critical need for economic impact information, numerous state nursery and landscape associations have sponsored economic impact studies for their respective states. Stakeholders have found these studies to be useful in communicating the importance of the green industry to state legislatures, in gaining assistance and resources, and in combating proposed legislation that would have negative impacts on the green industry.

Table 1 summarizes the results of economic impact studies that have been conducted in the last 10 years regarding the green industry in selected states, with total impacts expressed on a per capita population basis, in constant 2004 dollars, and as a share of GDP by state [U.S. Department of Commerce (USDOC), 2011] to facilitate comparisons. These findings provide a benchmark for comparing the results from this study, which is national in scope. Although there have been many studies conducted to estimate grower-level sales or cash receipts, this summary only presents those studies that attempted to evaluate the postfarm gate economic impacts, including total employment and payroll associated with green industry sectors. Total output impacts estimated in these selected studies were highest for California (\$10.3 billion), Florida (\$9.2 billion), and Texas (\$9.0 billion), and employment impacts in these states were 168,867 jobs, 187,859 jobs, and 222,000 jobs, respectively. For all 23 state-level studies listed, total output impacts amounted to almost \$70 billion. Per capita output impacts across all states averaged \$346 per person, and ranged from \$192 per person (Maryland), to a high of \$506 per person (Florida). Direct comparison of these results across states is complicated by differences in research methods used in these studies. For example, some states used mail or telephone surveys to collect primary data, whereas some used in-person interviews, and others relied on secondary data sources. Another important difference is the number and type of sectors that were included in each respective study, as shown in the right-hand column of Table 1. Some states included all end users such as

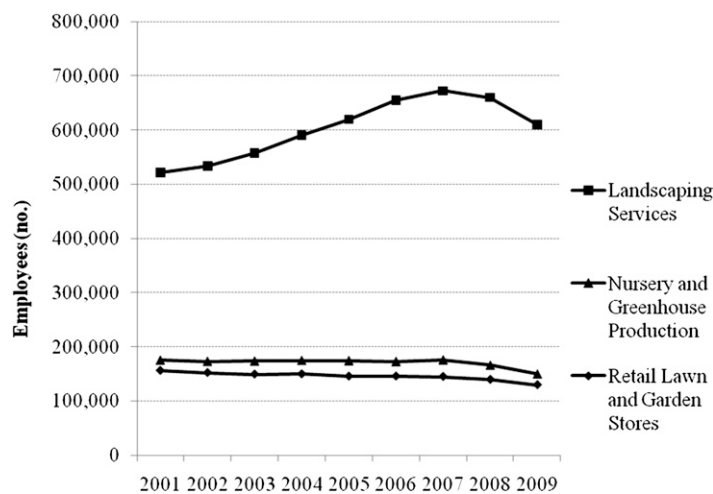


Fig. 1. Employment in principal sectors of the U.S. green industry in 2001–09 (U.S. Department of Labor, 2011).

Table 1. Summary of selected recent studies on economic contributions of the green industry in individual states.

State	Yr	Output impact (million \$)	Employment impact (jobs)	Output impact per capita (\$) ^z	Sectors included ^y
Idaho	1999	662	12,911	442	P, L, F, A, R
Illinois	1999	3,950	160,000	276	P, L, R
South Carolina	1999	1,380	24,710	298	P, L, F, R
Florida	2000	9,164	187,859	506	P, L, R, T
Maryland	2000	1,152	14,800	192	P, L, R
Pennsylvania	2000	3,300	107,000	238	P, L, R
Tennessee	2000	2,782	73,000	432	P, L, R
Texas	2000	9,760	222,000	413	P, L, R
Utah	2000	800	15,000	316	P, L, R
California	2001	10,337	168,867	272	P, R
Louisiana	2001	2,215	56,686	450	P, G, L, R, RHA
Ohio	2001	3,950	96,600	314	P, L, RW, R
Arizona	2002	1,200	24,100	203	P, L
Colorado	2002	1,500	45,000	307	P, L, G, F, BG, R
Minnesota	2002	2,110	28,200	387	P, L, R
Nevada	2002	751	15,736	319	P, RW, L, G
Wisconsin	2002	2,706	43,000	458	P, HH, PG, G
Connecticut	2003	949	41,000	258	P, L, R
Maine	2003	286	10,000	207	P, L, R
Massachusetts	2003	1,860	52,000	271	P, L, R
New Hampshire	2003	438	12,100	322	P, L, R
Rhode Island	2003	329	10,000	289	P, L, R
Vermont	2003	186	5,400	284	P, L, R
North Carolina	2005	4,180	151,982	482	P, L, R, F, A
Alabama	2007	2,893	43,670	663	P, L, R
Colorado	2007	1,780	35,000	398	P, L, F, G, B, RHA
Total		70,620	1,656,621		

^zPopulation data from the U.S. Department of Commerce (USDOC, 2010c). Output impacts per capita were adjusted using the Gross Domestic Product implicit price deflator (USDOC, 2010d).

^yP = Producers, L = Landscape-related, R = Retailers, RW = Re-wholesalers, F = Florists, G = Golf courses, BG = Botanical gardens, HH = Households, A = Arborists, T = Trade firms, RHA = Related horticultural activities, PG = Public/Government.

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households, golf courses, and sports complexes, while others did not. Also, the economic models used to determine economic multipliers differed

between the studies, with many researchers using the Impact Analysis for Planning (IMPLAN®; MIG, Hudson, WI) input-output analysis regional

economic modeling system, while others used the Regional Input-Output Modeling System II (RIMSII) multipliers from the USDOC, Bureau of Economic Analysis. All of these factors again point to the need to conduct a study that is national in scope that uses a common methodology to collect industry data and calculate associated economic impacts.

The first attempt to develop a national estimate of the economic impact of the green industry was reported by Hall et al. (2006, 2007). Economic impacts for the U.S. green industry in 2002 were reported as 1,964,339 jobs, \$147.8 billion in output, \$95.1 billion in value added, \$64.3 billion in labor income, and \$6.9 billion in indirect business taxes, with these values expressed in 2004 dollars. For the production and manufacturing sectors, including nurseries/greenhouses and lawn and garden equipment manufacturers, total output impacts were \$34.6 billion, employment impacts were 300,677 jobs, and value added impacts were \$20.8 billion. For the horticultural services sectors, including landscape design, installation, and maintenance activities, total output impacts were \$57.8 billion, employment impacts were 753,557 jobs, and value added impacts were \$39.0 billion. For the wholesale/retail trade sectors, including lawn and garden stores and other wholesalers and retailers, total output impacts were \$55.5 billion, employment impacts were 910,104 jobs, and value added impacts were \$35.3 billion. The objective of this study was to update the earlier estimates of the economic impacts of the green industry at the national level, using data from primary and secondary sources.

Materials and methods

The economic sectors associated with the green industry were identified based on having horticultural products or services as their principal activity, as described in the North American Industry Classification System. In addition, wholesale and retail trade sectors that have significant sales of horticultural merchandise were included in the study. The Production and manufacturing industry group includes the sectors for Nursery and greenhouse production and Lawn and garden equipment manufacturing. The Horticultural services industry group includes the sectors Landscaping services

and Landscape architectural services. The wholesale sectors within the Wholesale and retail trade group include Merchant wholesalers of durable goods such as lawnmowers and other gardening equipment, and Merchant wholesalers of nondurable goods like flowers, nursery stock, and florist supplies. Retail sectors that have product line sales of horticultural goods include Wholesale electronic markets, agents and brokers, Furniture and home furnishings stores, Electronics and appliance stores, Building material and garden equipment and supplies dealers, Food and beverage stores, Health and personal care stores, Gasoline stations, Sporting goods, hobby, book, and music stores, General merchandise stores, Miscellaneous store retailers, and Non-store retailers. Retail lawn and garden stores are classified within the sector Building materials and garden equipment and supplies dealers, and florists are classified within Miscellaneous store retailers.

Economic information on the green industry in the United States was compiled from a variety of sources. For the nursery and greenhouse sector, national and state information on number of firms, employment, and value of sales were taken from the National Nursery Survey for 2008 conducted by the Green Industry Research Consortium, a multistate group of university economists and horticulturists (Hodges et al., 2010). For the manufacturing, horticultural services and wholesale/retail trade sectors, information on number of establishments, employment, payroll, and sales or gross receipts were taken from the 2007 Economic Census Industry Report Series for U.S. totals and from the Geographic Area Series for state-level information (USDOC, 2010a). The Economic Census is the most reliable information source available, since it has a well-established statistical methodology, with adjustment for nonresponding firms, and provides published reliability parameters. For the wholesale and retail sectors, whose primary business is not in horticulture, employment and payroll were estimated in proportion to horticulture product line sales as a share of total sales.

Data on sales of horticultural goods by the Wholesale and Retail Trade sectors were taken from the special report series on product line sales for the 2007 Economic Census

(USDOC, 2010b). Specific product lines within the retail sector category of Lawn, Garden, and Farm Equipment and Supplies included cut flowers, fertilizer-lime-chemicals and other soil treatments, indoor potted plants and floral items, lawn and garden equipment and tools, outdoor nursery stock, and other lawn and garden equipment and supplies. Values for farm supplies and equipment were netted out of figures for retail product line sales. Product lines within the wholesale trade sectors included lawn and garden machinery, equipment and parts (durable goods), and flowers and florists' supplies (nondurable goods). For some states and sectors in which sales, employment, and payroll information were missing because of the U.S. Census Bureau's nondisclosure rules for a small number of firms, these values were imputed based on the share of total establishments, so that the sum of state values matched U.S. totals. A total of \$23.5 billion in horticultural product/service sales were allocated in this manner.

Primary data regarding the structure and performance of the Nursery and greenhouse production sector were generated by the fifth National Nursery Survey conducted by the Green Industry Research Consortium. The survey sampled all 50 states in the United States using a standard methodology as generally described by Dillman (2007). Lists of firms in each state were compiled from the respective state departments of agriculture, resulting in a combined listing of nearly 39,000 nursery operations, from which a sample of 15,000 firms was selected for the survey. Sampling in each state was based on its proportion of the overall business population, and where possible stratified by size classes based on production area, inventory or sales volume. A total of 3044 usable responses were received from mail and telephone surveys, representing an overall response rate 15.9%. On the basis of adjusted population of validated active firms (19,803), total U.S. nursery industry sales were estimated at \$27.14 billion and total employment was estimated at 262,941 jobs. Further details on the survey methodology and results were reported by Hodges et al. (2010).

Information on the number of establishments, employment, payroll, and sales receipts for all sectors of the U.S.

green industry in 2007–08 is summarized in Table 2. There were a total of 1.4 million business establishments involved in the industry, including 19,917 production or manufacturing firms, 99,930 horticultural services firms, and 1.28 million wholesale or retail trade firms. Total reported employment was 1,202,210 employees and total payroll was \$35.9 billion. Total sales revenues or receipts for horticultural products and services were \$176.1 billion, including \$35.3 billion for producers or manufacturers, \$58.3 billion for horticultural services, and \$82.5 billion for wholesale/retail trade.

The regional economic impacts of the green industry sectors in each state were evaluated using 2007 economic multipliers from RIMSII (USDOC, 2008). RIMSII multipliers are equivalent to IMPLAN® multipliers and are available at the state-level for a very reasonable cost. Input–output models represent the structure of a regional economy in terms of transactions between industries, employees, households, and government institutions (Miller and Blair, 2009). The RIMSII system includes over 500 distinct industry sectors, and incorporates information from the U.S. National Income

and Product Accounts, together with regional economic data on commodity production, household income, employment, trade, capital investment, and taxation. The RIMSII final demand economic multipliers were used to estimate the total economic activity generated from output to final demand or exports. The multipliers capture the effects of supply chain purchases by industry firms from other economic sectors (indirect effects) and the effects of employee household consumer spending (induced effects), in addition to direct sales by industry firms. Separate multipliers were used for output (sales revenues or receipts), employment, value added, and labor income (earnings). The multipliers for output, value added, labor income, and indirect business taxes are expressed in units of dollars per dollar final demand or output, while the employment multiplier is expressed in jobs per million dollars final demand. The output total effects multipliers for each industry sector and state are shown in Table 3. Differences in values of the multipliers reflect the structure of industry sectors, the degree of economic integration, and the regional mix of supplier industries available to meet

local demands. These multipliers may be considered to provide conservative estimates of the regional multiplier effects because they do not capture the interregional feedback effects intermediate input purchases.

The economic multipliers were applied to estimated industry sales or output to estimate total economic impacts using the following formula: $I_{hij} = S_{hi} \times G_i [A_{hij} + E_{hi} \times (B_{hij} + C_{hij})]$, where I_{hij} is total impact for measures (j) of output, employment, value added, labor income, or indirect business taxes, in each sector (i), and state (h); S_{hi} is industry sales in sector i and state h; E_{hi} is the proportion of industry sales exported or shipped outside the state, by sector i in state h; A_{hij} is the direct effects multiplier for measure j in sector i and state h; B_{hij} is the indirect effects multiplier for measure j in sector i and state h; C_{hij} is the induced effects multiplier for measure j in sector i and state h; G_i is the gross margin on sales for sector i, which is set at a value of 0.201 to 0.423 for the wholesale and retail trade sectors and is set equal to 1 for the production/manufacturing and service sectors. The calculation treats only the export portion of output as new final demand

Table 2. Number of establishments, sales revenues, payroll, and direct employment in U.S. green industry sectors in 2007–08 (Hodges et al., 2010; U.S. Department of Commerce, 2010a, 2010b)

Industry group/sector (North American Industry Classification System no.)	Number establishments	Sales revenues (million \$)	Payroll (million \$)	Direct employment (jobs)
Production and manufacturing	19,917	35,386	8,773	277,736
Nursery and greenhouse production (1114)	19,803	27,139	8,268	262,941
Lawn and garden equipment manufacturing (333112)	114	8,247	506	14,795
Horticultural services	99,930	58,276	19,129	631,511
Landscaping services (56173)	93,687	53,910	17,389	596,896
Landscape architectural services (54132)	6,243	4,365	1,740	34,615
Wholesale and retail trade^a	1,279,848	82,452	7,974	292,962
Building material and garden equipment and supplies stores (444)	91,070	39,004	4,609	163,458
Miscellaneous store retailers (453)	121,911	7,045	874	47,175
Merchant wholesalers, durable goods (423)	254,975	8,681	670	12,355
General merchandise stores (452)	45,855	7,489	711	36,366
Merchant wholesalers, nondurable goods (424)	134,614	11,568	470	9,570
Non-store retailers (454)	59,375	3,368	279	7,408
Food and beverage stores (445)	146,084	2,451	252	12,785
Wholesale electronic markets, agents and brokers (425)	45,394	2,129	46	1,030
Furniture and home furnishings stores (442)	65,144	218	30	1,128
Gasoline stations (447)	118,756	292	10	612
Electronics and appliance stores (443)	50,803	90	9	420
Health and personal care stores (446)	88,452	77	10	350
Sporting goods, hobby, book, and music stores (451)	57,415	40	5	305
Total all industry groups	1,399,695	176,113	35,876	1,202,210

^aWholesale and retail trade sector sales, payroll, and employment reflect share of business for horticulture product lines sales.

Table 3. Total output (revenue) multipliers for green industry sectors by state in 2007 (U.S. Department of Commerce, 2008).

State	Greenhouse, nursery, and floriculture production	Lawn and garden equipment manufacturing	Services to buildings and dwellings (landscaping)	Architectural, engineering, and related services (landscape architecture)	Wholesale trade	Retail trade
	(\$ per \$ final demand)					
Alabama	1.896	2.209	1.946	1.923	1.785	1.858
Alaska	1.578	1.000	1.827	1.723	1.558	1.626
Arizona	1.834	1.648	1.970	2.033	1.827	1.881
Arkansas	1.693	1.887	1.812	1.748	1.696	1.734
California	2.025	1.843	2.343	2.262	2.031	2.081
Colorado	1.941	1.894	2.250	2.250	2.023	2.061
Connecticut	1.713	1.828	1.907	1.941	1.805	1.840
Delaware	1.603	1.000	1.896	1.768	1.667	1.713
District of Columbia	1.000	1.000	1.359	1.385	1.242	1.297
Florida	1.846	1.623	2.028	2.095	1.871	1.924
Georgia	1.957	1.926	2.194	2.232	2.043	2.105
Hawaii	1.745	1.000	1.999	1.922	1.740	1.794
Idaho	1.659	1.428	1.660	1.710	1.590	1.612
Illinois	1.899	2.500	2.313	2.279	2.087	2.151
Indiana	1.762	2.316	2.067	1.960	1.843	1.908
Iowa	1.637	2.004	1.687	1.677	1.622	1.690
Kansas	1.677	1.669	1.893	1.745	1.656	1.699
Kentucky	1.811	2.222	2.009	1.937	1.819	1.888
Louisiana	1.762	1.634	1.984	1.858	1.709	1.751
Maine	1.752	1.556	1.861	1.882	1.762	1.807
Maryland	1.735	1.744	1.972	2.029	1.823	1.880
Massachusetts	1.715	1.760	2.010	2.101	1.880	1.911
Michigan	1.836	2.375	2.029	2.082	1.915	1.963
Minnesota	1.806	1.897	2.098	2.077	1.925	1.971
Mississippi	1.725	1.912	1.865	1.721	1.651	1.706
Missouri	1.818	2.207	2.033	2.010	1.929	1.990
Montana	1.714	1.000	1.848	1.740	1.594	1.650
Nebraska	1.532	1.631	1.619	1.656	1.579	1.621
Nevada	1.503	1.000	1.782	1.833	1.702	1.737
New Hampshire	1.722	1.000	1.914	1.954	1.788	1.804
New Jersey	1.900	1.793	2.244	2.181	1.975	2.015
New Mexico	1.746	1.000	1.914	1.818	1.628	1.676
New York	1.616	1.746	1.906	1.941	1.792	1.855
North Carolina	1.892	2.197	2.019	2.059	1.914	1.959
North Dakota	1.593	1.000	1.717	1.607	1.522	1.564
Ohio	1.876	2.497	2.183	2.136	1.991	2.046
Oklahoma	1.861	1.967	2.094	1.940	1.786	1.837
Oregon	1.863	1.816	1.918	1.977	1.830	1.880
Pennsylvania	1.964	2.219	2.222	2.191	2.020	2.062
Rhode Island	1.707	1.000	1.865	1.836	1.742	1.770
South Carolina	1.856	2.207	1.983	1.982	1.830	1.923
South Dakota	1.503	1.515	1.566	1.575	1.508	1.551
Tennessee	1.918	2.351	2.129	2.135	1.971	2.057
Texas	2.091	2.007	2.438	2.320	2.069	2.142
Utah	1.975	2.106	2.265	2.193	2.007	2.068
Vermont	1.688	1.000	1.721	1.748	1.581	1.670
Virginia	1.739	1.735	2.011	2.047	1.897	1.933
Washington	1.922	1.653	2.118	2.065	1.873	1.925
West Virginia	1.638	1.000	1.786	1.700	1.586	1.645
Wisconsin	1.798	2.223	1.913	1.936	1.825	1.881
Wyoming	1.473	1.000	1.631	1.506	1.413	1.461

which is subject to the full multipliers effects (direct, indirect and induced), while in-state sales reflect intermediate

demand from other business sectors and are subject only to the direct effects multipliers. Industry sales were

taken as equivalent to output, thus assuming no net change in business inventories during the year.



Fig. 2. Map of regions for economic analysis of the U.S. green industry. Alaska and Hawaii not shown but are included in the Pacific region.

Data on exports were taken from the IMPLAN® database for 2002, except in the case of the nursery and greenhouse sector, where information for some states was taken from the 2008 National Nursery Survey. The calculation for retail and wholesale sectors assumed output is reduced to reflect the gross margin on sales according to national averages taken from the Annual Benchmark Report for Retail Trade and Food Services, and the Annual Benchmark Report for Wholesale Trade (USDOC, 2005a, 2005b). The pertinent gross margins were 20.1% for flower and nursery stock wholesalers, 24.7% for general merchandise stores, 26.5% for lawn and garden

Table 4. Summary of total economic contributions of the U.S. green industry by industry group and sector in 2007–08.

Industry group/sector (North American Industry Classification System no.)	Sales revenue	Direct output	Total output impact ^y	Payroll	Total earnings impact ^y	Total value added impact ^y	Direct employment	Total employment impact ^y
	(million \$)							(No. full-time and part-time jobs)
Production and manufacturing	35,386	35,386	52,572	8,773	13,145	32,128	277,736	468,692
Nursery and greenhouse production (1114)	27,139	27,139	40,941	8,268	11,986	27,099	262,941	436,462
Lawn and garden equipment manufacturing (333112)	8,247	8,247	11,632	506	1,160	5,028	14,795	32,230
Horticultural services	58,276	58,276	92,830	19,129	30,151	54,521	631,511	1,123,428
Landscaping services (56173)	53,910	53,910	86,661	17,389	27,809	50,283	596,896	1,075,343
Landscape architectural services r (54132)	4,365	4,365	6,169	1,740	2,342	4,238	34,615	48,085
Wholesale and retail trade^z	82,452	23,740	29,856	7,974	9,866	20,511	292,962	357,515
Building material and garden equipment and supplies stores (444)	39,004	11,896	14,121	4,609	5,300	9,706	163,458	190,839
Miscellaneous store retailers (453)	7,045	3,071	4,047	874	1,181	2,750	47,175	59,829
Merchant wholesalers, durable goods (423)	8,681	2,087	2,985	670	945	2,064	12,355	19,218
General merchandise stores (452)	7,489	1,955	2,220	711	794	1,532	36,366	39,433
Merchant wholesalers, nondurable goods (424)	11,568	1,921	2,852	470	752	1,975	9,570	15,732
Non-store retailers (454)	3,368	1,455	1,878	279	409	1,278	7,408	12,170
Food and beverage (445)	2,451	706	823	252	288	567	12,785	14,074
Wholesale electronic markets, agents and brokers (425)	2,129	431	658	46	116	453	1,030	2,765
Furniture and home furnishings stores (442)	218	97	114	30	35	78	1,128	1,325
Gasoline stations (447)	292	57	81	10	17	54	612	920
Electronics and appliance stores (443)	90	26	30	9	11	21	420	467
Health and personal care stores (446)	77	23	28	10	11	19	350	403
Sporting goods, hobby, book, and music stores (451)	40	15	18	5	6	12	305	339
Total all industries	176,113	117,402	175,258	35,876	53,162	107,160	1,202,210	1,949,635

^zValues for wholesale and retail trade sectors reflect share of sales, employment and payroll for horticulture product lines, and gross margin on sales for output.

^yTotal impact estimates include regional economic multiplier effects.

Table 5. Summary of total economic contributions of the U.S. green industry in regions and states in 2007–08.

Region/State	Establishments (no.)	Horticultural sales (million \$)	Horticultural output (million \$)	Output impact (million \$)	Horticultural employment (jobs)	Horticultural payroll (million \$)	Labor income (earnings) impact (million \$)
Appalachian	129,997	16,803	11,057	17,726	119,482	3,178	5,107
Kentucky	18,136	2,061	1,317	1,862	12,939	317	468
North Carolina	43,969	5,641	3,345	5,816	43,140	1,100	1,886
Tennessee	27,604	4,071	2,908	4,860	25,335	660	1,161
Virginia	32,934	4,634	3,309	4,957	35,286	1,044	1,519
West Virginia	7,354	395	178	231	2,782	57	73
Great Plains	33,256	3,359	1,802	2,482	20,793	552	748
Kansas	14,112	1,313	780	1,179	10,563	256	367
Nebraska	9,859	1,209	652	793	5,818	194	237
North Dakota	4,334	444	176	251	2,192	50	72
South Dakota	4,951	393	194	258	2,220	52	72
Midwest	277,808	34,482	22,275	31,961	217,731	6,245	9,066
Illinois	57,408	9,287	6,152	8,433	42,703	1,597	2,267
Indiana	28,301	3,205	1,914	2,895	21,965	592	890
Iowa	16,018	1,561	939	1,411	9,213	265	394
Michigan	44,940	4,602	3,142	4,203	30,347	925	1,261
Minnesota	26,975	3,044	1,759	2,110	23,537	551	654
Missouri	28,146	3,004	1,797	2,108	20,333	559	646
Ohio	50,363	6,334	4,225	6,915	46,206	1,190	1,960
Wisconsin	25,657	3,445	2,347	3,885	23,427	566	993
Mountain	86,279	10,916	7,454	12,480	88,547	2,366	3,983
Arizona	23,281	3,623	2,632	4,364	31,341	786	1,338
Colorado	24,490	3,000	2,047	3,371	22,128	693	1,120
Idaho	7,835	753	519	881	7,694	167	282
Montana	5,970	550	311	452	2,800	94	140
Nevada	9,922	1,421	1,039	1,958	13,612	357	661
Utah	11,382	1,279	749	1,233	9,121	223	376
Wyoming	3,399	288	157	219	1,850	46	66
Northeast	308,411	33,188	22,647	34,227	208,059	7,053	10,439
Connecticut	17,252	2,526	1,734	2,649	15,421	542	825
Delaware	4,352	595	358	743	4,095	116	217
District of Columbia	1,866	115	53	54	598	21	21
Maine	8,004	643	420	743	5,247	132	237
Maryland	23,162	3,360	2,311	3,815	27,349	791	1,243
Massachusetts	31,613	3,425	2,367	3,685	19,331	781	1,199
New Hampshire	7,696	1,267	904	1,464	5,083	278	440
New Jersey	47,026	5,529	3,889	6,705	32,709	1,227	2,023
New York	100,759	8,321	5,463	6,292	45,791	1,589	1,818
Pennsylvania	56,968	6,377	4,448	6,794	45,893	1,359	2,022
Rhode Island	5,247	530	361	755	3,411	111	228
Vermont	4,466	500	338	528	3,132	108	165
Pacific	215,795	31,061	22,660	33,736	226,717	7,562	10,949
Alaska	2,996	369	279	347	1,513	77	97
California	157,470	22,920	17,236	25,049	170,006	5,863	8,287
Hawaii	5,597	1,019	815	1,557	5,871	271	486
Oregon	19,163	2,738	1,888	3,091	23,225	515	855
Washington	30,569	4,016	2,443	3,692	26,102	836	1,225
Southcentral	150,768	19,444	11,526	14,128	121,031	3,537	4,289
Arkansas	12,959	3,204	1,492	2,106	16,305	365	536
Louisiana	19,473	2,303	1,543	1,961	10,924	471	589
New Mexico	7,905	905	703	751	5,231	227	242
Oklahoma	15,785	3,427	1,479	1,923	20,126	423	565
Texas	94,647	9,605	6,309	7,387	68,445	2,050	2,357
Southeast	198,164	27,060	18,181	29,130	200,547	5,411	8,716
Alabama	21,595	2,225	1,387	2,594	15,078	452	814
Florida	98,177	14,489	9,925	15,289	113,922	3,108	4,770
Georgia	44,472	6,264	4,247	6,354	41,677	1,166	1,785
Mississippi	12,981	1,312	790	1,221	9,284	198	313
South Carolina	20,939	2,770	1,832	3,672	20,587	488	1,034

Table 6. Summary of total employment and value added contributions of the U.S. green industry in regions and states by industry group in 2007–08.

Region/State	Employment (no. full-time and part-time jobs)				Value added (million \$)			
	Production and manufacturing	Horticultural services	Wholesale and retail trade	Total all industry groups	Production and manufacturing	Horticultural services	Wholesale and retail trade	Total all industry groups
Appalachian	47,043	126,900	34,448	208,391	3,262.6	5,279.7	1,917.8	10,460.0
Kentucky	3,960	10,524	5,597	20,081	350.1	439.8	280.4	1,070.2
North Carolina	13,366	56,339	12,066	81,770	569.8	2,265.0	746.0	3,580.8
Tennessee	18,051	19,067	7,157	44,274	1,484.0	849.6	400.6	2,734.2
Virginia	11,293	39,344	8,039	58,677	850.3	1,663.7	416.0	2,930.0
West Virginia	373	1,627	1,589	3,589	8.5	61.6	74.7	144.9
Great Plains	4,234	15,372	10,432	30,038	243.4	696.9	554.4	1,494.8
Kansas	2,672	9,517	3,495	15,685	75.3	436.8	173.1	685.2
Nebraska	658	3,698	3,630	7,985	135.1	166.7	191.5	493.2
North Dakota	260	1,004	2,010	3,274	2.4	44.0	112.9	159.4
South Dakota	644	1,153	1,297	3,094	30.6	49.5	76.9	156.9
Midwest	82,204	172,548	80,500	335,252	5,471.3	9,048.9	4,478.3	18,998.6
Illinois	10,536	41,905	14,941	67,382	1,461.2	2,538.3	1,001.9	5,001.3
Indiana	4,129	22,034	9,497	35,660	228.1	1,022.7	481.6	1,732.4
Iowa	3,231	7,307	4,488	15,027	278.9	315.7	233.9	828.5
Michigan	9,950	22,880	11,543	44,373	721.1	1,288.7	572.0	2,581.8
Minnesota	10,163	8,536	8,613	27,311	294.4	551.6	480.5	1,326.5
Missouri	2,432	13,168	8,213	23,813	232.4	608.1	429.5	1,270.1
Ohio	27,789	36,918	14,999	79,707	1,462.6	1,771.9	873.5	4,108.0
Wisconsin	13,974	19,800	8,206	41,979	792.6	951.9	405.5	2,150.0
Mountain	12,116	124,043	23,281	159,440	672.5	5,459.1	1,277.6	7,409.2
Arizona	2,605	45,448	6,265	54,318	308.2	1,845.5	337.0	2,490.7
Colorado	3,855	29,887	5,930	39,672	167.4	1,560.8	335.2	2,063.4
Idaho	3,045	8,402	2,079	13,526	87.5	343.9	101.9	533.3
Montana	235	2,448	2,412	5,096	55.9	111.0	117.8	284.6
Nevada	388	24,690	2,242	27,320	18.6	1,003.0	136.8	1,158.4
Utah	1,521	11,475	3,554	16,550	27.1	517.8	202.4	747.4
Wyoming	468	1,692	799	2,958	7.8	77.2	46.3	131.3
Northeast	90,973	204,664	59,831	355,469	5,407.2	11,944.3	3,610.3	20,961.7
Connecticut	5,128	18,266	4,413	27,807	312.4	1,033.3	277.0	1,622.7
Delaware	301	6,811	1,664	8,776	11.0	319.1	110.5	440.6
District of Columbia		180	419		599	16.4	19.8	36.2
Maine	2,193	6,667	1,795	10,655	67.5	291.3	93.7	452.5
Maryland	8,230	33,746	5,791	47,768	367.9	1,627.2	335.8	2,330.9
Massachusetts	1,551	27,344	6,545	35,440	78.8	1,802.4	370.0	2,251.1
New Hampshire	2,793	6,289	2,844	11,926	422.6	325.8	179.4	927.8
New Jersey	21,044	38,253	8,696	67,993	1,263.6	2,304.0	552.2	4,119.8
New York	14,631	25,966	13,533	54,131	954.5	1,923.7	927.2	3,805.5
Pennsylvania	31,560	32,637	11,407	75,604	1,736.1	1,864.1	584.6	4,184.8
Rhode Island	1,452	5,872	1,390	8,713	52.9	319.8	82.4	455.0
Vermont	2,089	2,632	1,335	6,057	139.8	117.2	77.8	334.9
Pacific	96,332	219,823	42,422	358,577	8,048.1	10,546.2	2,570.3	21,164.6
Alaska	781	873	825	2,479	116.7	55.9	47.0	219.7
California	59,817	170,643	27,425	257,885	5,866.1	8,310.3	1,659.0	15,835.5
Hawaii	10,052	6,582	1,340	17,974	623.8	283.5	72.5	979.8
Oregon	19,730	14,342	4,723	38,794	936.5	606.7	289.3	1,832.5
Washington	5,951	27,383	8,109	41,443	505.0	1,289.8	502.4	2,297.2
Southcentral	29,625	66,455	58,190	154,270	2,783.2	3,070.9	3,143.7	8,997.8
Arkansas	2,658	5,763	15,577	23,999	260.8	193.4	801.4	1,255.6
Louisiana	5,866	5,740	4,674	16,280	760.3	247.8	255.9	1,264.1
New Mexico	1,492	2,908	1,394	5,794	297.7	133.6	69.6	500.9
Oklahoma	1,898	5,958	18,227	26,084	73.5	237.8	958.4	1,269.6
Texas	17,710	46,087	18,316	82,113	1,390.8	2,258.4	1,058.4	4,707.5
Southeast	109,455	193,623	48,411	351,489	6,525.8	8,474.9	2,958.3	17,959.0
Alabama	9,752	17,666	6,257	33,675	609.3	669.4	324.3	1,602.9

(Continued on next page)

Table 6. (Continued) Summary of total employment and value added contributions of the U.S. green industry in regions and states by industry group in 2007–08.

Region/State	Employment (no. full-time and part-time jobs)				Value added (million \$)			
	Production and manufacturing	Horticultural services	Wholesale and retail trade	Total all industry groups	Production and manufacturing	Horticultural services	Wholesale and retail trade	Total all industry groups
Florida	68,783	99,862	19,792	188,437	3,861.1	4,562.2	1,313.4	9,736.7
Georgia	18,305	35,004	12,732	66,042	1,316.9	1,703.1	791.4	3,811.4
Mississippi	5,058	6,613	3,525	15,197	273.0	232.0	184.3	689.2
South Carolina	7,557	34,478	6,104	48,139	465.6	1,308.3	345.0	2,118.8
Total All Regions	471,981	1,123,428	357,515	1,952,925	32,414.0	54,521.0	20,510.7	107,445.8

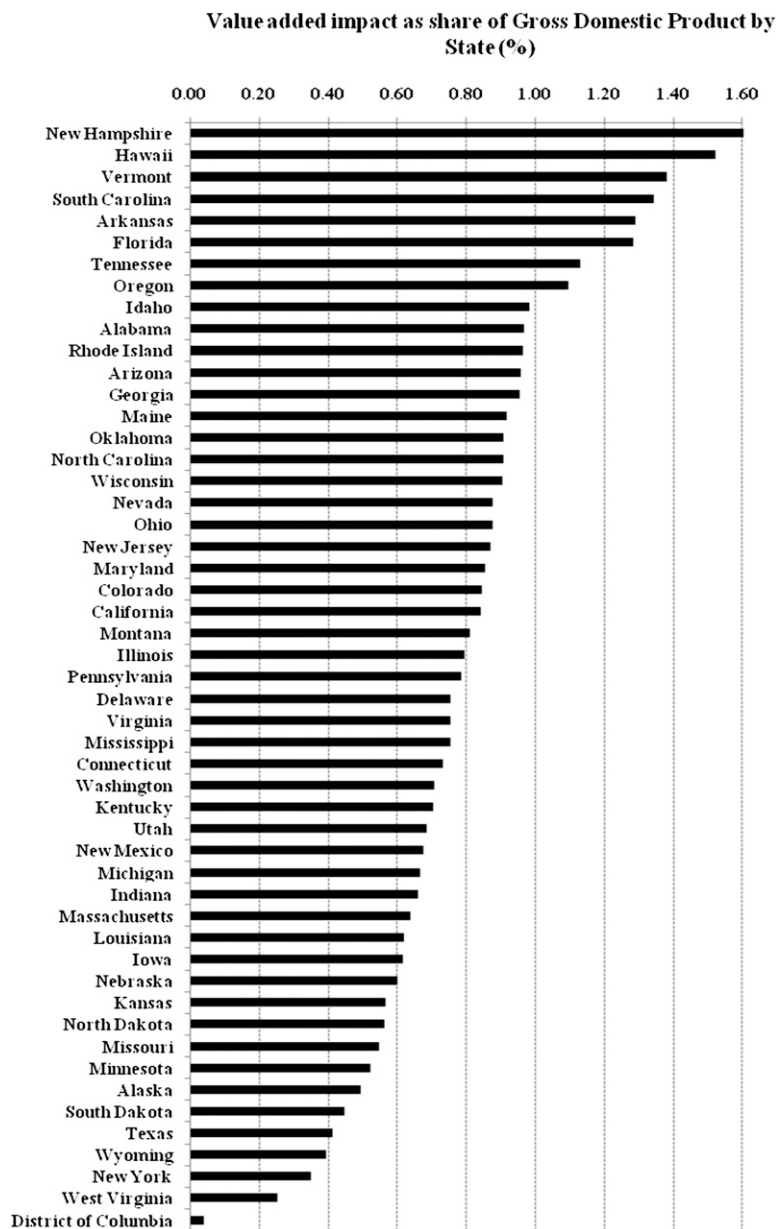


Fig. 3. Rank ordered total value added contributions by the U.S. green industry in each state as a share of Gross Domestic Product in 2007–08.

equipment wholesalers, 28.5% for food and beverage stores, 29.5% for lawn and garden stores and Building materials

and supply stores, and 42.3% for florists (miscellaneous retailers). All economic data were compiled and reported for

each industry sector and individual states within eight regions of the United States, as shown in Fig. 2.

Results and discussion

Economic contribution estimates for the U.S. green industry in 2007–08 are summarized by sector in Table 4. Total sales revenues for all sectors were \$176.11 billion, direct output was \$117.40 billion, and total output impacts, including indirect and induced regional economic multiplier effects of nonlocal output, were \$175.26 billion. Total industry payroll was \$35.88 billion and the total labor earnings impact (with multiplier effects) was \$53.16 billion. The total value added impact was \$107.16 billion, including employee compensation, proprietor (business owner) income, other property income, and indirect business taxes paid to state/local and federal governments. The industry had direct employment of 1.2 million full-time and part-time jobs, and total employment impacts of 1.95 million jobs in the broader economy.

For the Production and manufacturing industry group, including the sectors Nursery and greenhouse production and Lawn and garden equipment manufacturing, total output impacts were \$52.57 billion, employment impacts were 468,692 jobs, earnings impacts were \$13.14 billion, and value added impacts were \$32.13 billion. For the Horticultural services group consisting of Landscape services and Landscape architectural services, total output impacts were \$92.83 billion, employment impacts were 1,123,428 jobs, earnings impacts were \$30.15 billion, and value added impacts were \$54.52 billion. For the Wholesale and retail trade group, total output impacts were \$29.86 billion, employment impacts were 357,515 jobs, earnings impacts were \$9.86 billion, and value added impacts were \$20.51 billion.



Fig. 4. Map of value added contributions by the green industry in each state as a share of Gross Domestic Product in 2007–08. Alaska and Hawaii are not shown.

The largest individual green industry sectors in terms of employment and value added impacts were Landscaping services (1,075,343 jobs, \$50.3 billion), Nursery and greenhouse production (436,462 jobs, \$27.1 billion), and Building materials and garden equipment and supplies stores (190,839 jobs, \$9.7 billion), as shown in Table 4. Other industry sectors with employment impacts exceeding 10,000 jobs were Miscellaneous store retailers (59,829 jobs), Landscape architectural services (48,085 jobs), Lawn and garden equipment manufacturing (32,230 jobs), General merchandise stores (39,433 jobs), Merchant wholesalers of durable goods (19,218 jobs), Merchant wholesalers of nondurable goods (15,732 jobs), Food and beverage stores (14,074 jobs), and Non-store retailers (12,170 jobs).

The economic contributions by the green industry in U.S. states and regions are summarized in Tables 5 and 6. The largest regions in terms of total employment contributions were the Pacific (358,577 jobs), Southeast (351,489 jobs), and Midwest (335,252 jobs), followed by the Appalachian region (208,391 jobs), Mountain (159,440 jobs), Southcentral (154,270 jobs), and Great Plains (30,038 jobs).

Table 7. Comparison of economic impacts of the U.S. green industry in 2002–03 and 2007–08.

Measure	2002–03 ^a	2007–08	Change (%)
Horticultural sales (million \$)	170,099	176,113	3.5
Output impact (million \$)	135,682	175,258	29.2
Production and manufacturing	38,419	52,572	36.8
Horticultural services	64,190	92,830	44.6
Wholesale and retail trade	33,073	29,856	-9.7
Value added impact (million \$)	87,725	107,160	22.2
Labor income impact (million \$)	59,862	53,162	-11.2
Direct employment (no. jobs)	1,235,557	1,202,210	-2.7
Employment impact (no. jobs)	1,619,322	1,949,635	20.4
Production and manufacturing	300,677	468,692	55.9
Horticultural services	753,557	1,123,428	49.1
Wholesale and retail trade	565,087	357,515	-36.7

^aValues for 2002–03 adjusted for inflation using the U.S. Gross Domestic Product implicit price deflator (U.S. Department of Commerce, 2010d).

Generally, output and value added contributions among regions followed the same ordering as employment. The top 10 individual states in terms of employment contributions were California (257,885 jobs), Florida (188,437 jobs), Texas (82,113 jobs), North Carolina (81,113 jobs), Ohio (79,707 jobs), Pennsylvania (75,604 jobs), New Jersey (67,993 jobs), Illinois (67,382 jobs), Georgia (66,042 jobs), and Virginia (58,677 jobs).

The contribution of the green industry to GDP is a measure of the

industry's importance to the overall economy. GDP is equivalent to the sum of value added by all industries and alternatively represents gross output minus intermediate purchases of goods and services from other U.S. industries or imports. The total value added of the U.S. green industry (\$107.45 billion) represented 0.76% of U.S. GDP in 2007 (\$14,062 billion). The contribution of the green industry to GDP by state is presented in Fig. 3, and a map of these data is shown in Fig. 4. The top-10 states with the

highest percentage contribution to GDP were New Hampshire (1.60%), Hawaii (1.52%), Vermont (1.38%), South Carolina (1.34%), Arkansas (1.29%), Florida (1.31%), Tennessee (1.13%), Oregon (1.10%), Idaho (0.98%), and Alabama (0.97%).

Changes in estimated economic impacts of the U.S. green industry from 2002–03 to 2007–08 are shown in Table 7, with values for 2002–03 adjusted using the GDP implicit price deflator to express all values in 2007 dollars. Total horticultural sales increased by 3.5% and total output impacts increased by 29.2%, or an average annual rate of 5.8% over the 5-year period. While the Production and manufacturing industry group and Horticultural services group had substantially increased output impacts of 36.8% and 44.6%, respectively, the Wholesale and retail trade group declined by 9.7% during this period. Value added impacts increased by 22.2%, however, labor income impacts declined by 11.2%. Direct employment also declined by 2.7% but total employment impacts increased by 20.4%. The Production and manufacturing industry group had the highest increase in employment impacts (56%), followed closely by the Horticultural services industry group (49%). However, the Wholesale and retail trade industry group registered a decline of nearly 37% in employment impacts during the 2002–07 period. Note that these changes in economic impacts reflect changes in economic structure and integration as well as growth in industry activity. Also, the increase in sales estimated for the Nursery and greenhouse production sector in 2008 reflects the use of information from the National Nursery Survey rather than the Census of Agriculture, which was used for the previous study for 2002.

It should be kept in mind that the economic contributions reported

here for the green industry in 2007 do not reflect possible decreases occurring during the recession of 2008–09. Anecdotal evidence from stakeholders suggests that industry sales declined by 10% to 40% from their peak in 2007. Quantification of the impacts of recession on the green industry is currently an active area of research.

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