

Economic Contributions of the Green Industry to the Texas Economy

Report to the Texas Nursery and Landscape Association
2022

by

Marco A. Palma and Charles R. Hall
Texas A&M University
2124 TAMU, College Station, TX. 77843-2124
mapalma@tamu.edu

Acknowledgements

This report was made possible by a grant from the Texas Nursery and Landscape Association (TNLA). The Data were obtained from the Texas Comptrollers of Public Accounts (TCPA), Baseline data from the Green Industry Research Consortium National Nursery Survey. Others who contributed with this report include Daniel Hanselka, Dean McCorkle, Rebekka Dudensing (Texas A&M AgriLife Extension Service), and Alan Hodges (University of Florida). This report complies with the terms of the TNLA contract. The authors welcome comments or information about the usefulness and implications of these findings.

Background and Introduction

The green industry supply chain continues to improve, with lead times shortening and availability coming more into line with normal conditions. Inflationary pressures are also starting to slow, with a marked improvement in inventory levels across the supply chain. It is expected, however that the bullwhip effect will be felt as some firms in the industry have been too aggressive in building inventory with the additional working capital resulting from PPP and other COVID relief programs. Green industry sales have been strong, however, in the wake of the Texas freeze in February 2021, resulting in additional plant purchases from out-of-state and significant price increases throughout the supply chain. This has led to the increases witnessed in each of the green industry sectors included in this report. Inflation of inputs increased 10.1% in 2021 as compared to 2020, forcing many growers to increased prices significantly which have been successfully passed on downstream in the supply chain. The current industry concern is whether consumers will continue their lawn and garden spending at the same rate as they did during COVID and how soon will the price increases catch up to the inelasticity of demand for green industry products and services. There is little doubt that 2021 has been the best year ever in terms of sales and profits within the green industry.

Summary of Texas Sales

Total green industry sales in Texas show a tremendous increase and hit an all-time record of **\$30.3 billion** in 2021, representing a 24.7% jump from the adjusted sales in 2019. Note that the sales figures are adjusted by the Texas Comptroller's office for the preceding three years, which may result in some differences for the annual reports until the figures become permanent. The *production and manufacturing* sales increased 23.7% to a total of \$3.82 billion in 2021.

Fueled by an increase in purchasing of green industry during the recovery from COVID, the *Horticultural Services* sector experienced an enormous 36.7% increase to \$9.98 billion in 2021. The *Wholesale and Retail* sector had an increase of 17.7% to a total of \$16.5 billion in 2021. The net margins attributed to the retail sector accounted for nearly \$5.0 billion. Net margins represent the share of sales attributed to the retail sector and not accounting for the portion of sales included in the production and manufacturing sector or the horticultural services sector. This study measures green industry sales in Texas by sector and then estimates economic contributions to the Texas Economy in terms of output, employment and value added.

Methodology

In order to estimate economic contributions of the Green Industry to the Texas economy sales by each green industry sector need to be measured. The North American Industry Classification System (NAICS) is used to gather data on *total green industry sales, including all sectors related to the green industry*. The data used in this report were provided by the State Comptroller's Office, as well as baseline data from the Green Industry Research Consortium National Nursery Survey and **includes industry sales**

through the end of fiscal year 2021. Please note that the Texas Comptroller’s office updates the sales data for the preceding three years, so there will be some adjustments in the sales figures for the previous three years. Every business in the state and the country is classified by North American Industry Classification System (NAICS). NAICS was developed jointly by the United States, Canada, and Mexico to provide comparable statistics about business activity across North America. Green industry firms fall within one of the NAICS codes in Table 1.

Green Industry Sales in Texas

When reporting sales to the State Comptroller’s office, each firm must report all sales, including those with sales taxes and those without sales taxes (wholesale). The reporting system has an area of potential slippage. For example, since wholesale growers do not collect any sales tax (for the state), some small and medium size growers are unaware of their reporting responsibilities. Not all of these firms realize, however, that their services are subject to sale taxes. Therefore, unintended non-compliance has been a source of under reporting, which would underestimate green industry sales in Texas.

Table 1. NAICS Codes for Green Industry Sectors

Industry Sector	NAICS Code
Nursery & Greenhouse	1114
Lawn & Garden Equipment Mfg	333112
Greenhouse Manufacturing (Prefab. Metal Buildings)*	332311
Landscaping Services	561730
Landscape Architectural Services	541320
Flower, Nursery Stock And Florist Supplies Wholesalers	424930
Lawn & Garden Equipment & Supplies Stores	4442
Florists	4531
Building Material & Supplies Dealers*	4441
Food & Beverage Stores*	445
General Merchandise Stores*	452
Farm & Garden Machinery & Equipment Wholesalers*	423820

* Green industry represents a portion of overall business activity (Sectors not included in Previous Scope reports).

Table 2. Total Green Industry Gross Sales in 2021

Sector (NAICS code)	Sales	Establishments
Production/Manufacturing	3,817,227,241	4,341
Nursery & Greenhouse (1114) ^	2,923,129,848	3,856
Lawn & Garden Equipment Manufacturing (333112) ^	854,098,278	377
Prefabricated metal buildings (332311) (Greenhouses) ^*	39,999,115	108
Horticultural Services	9,978,545,810	54,147
Landscaping Services (561730)	9,292,561,555	51,770
Landscape Architectural Services (541320)	685,984,255	2,377
Wholesale & Retail Trade Horticulture Products (Gross)	16,505,801,108	86,369
Flower, Nursery Stock and Florist Supplies Wholesalers (424930)	1,113,907,858	2,088
Lawn & Garden Equipment & Supplies Stores (4442)	7,954,692,574	9,788
Florists (4531)	641,527,926	12,552
Building Material & Supplies Dealers (4441)*	3,036,621,903	7,273
Food & Beverage Stores (445)*	572,742,951	12,140
General Merchandise Stores (452)*	1,748,894,760	41,367
Farm & Garden Equipment Wholesalers (423820)*	1,437,413,135	1,161
Total All Sectors	30,301,574,159	144,857

^ Estimated from baseline data from National Nursery Survey, and Texas Comptroller's Office Data.

* NAICS represents a portion of Total Green Industry Sales

Due to this this potential slippage problem, additional data were used to supplement this report's methodology. Table 2 shows Total Green Industry Gross Sales in 2021, and Table 3 shows sales from 2015-2021 for each green industry sector. Table 3 shows sales for the retail industry including gross sales, and net sales. Net sales represent the margin sales that correspond to the retail sector only.

Table 3. Total Green Industry Sales 2015-2021

	GROWER	LANDSCAPE	RETAIL (Gross)	RETAIL (Net)	TOTAL
2021	\$3,817,227,241	\$9,978,545,810	\$16,505,801,108	\$4,998,399,907	\$18,794,172,958
2020	\$2,914,164,066	\$6,315,987,354	\$13,590,413,633	\$4,115,542,275	\$13,345,693,694
2019	\$2,565,827,249	\$6,806,861,414	\$12,974,096,595	\$3,928,904,922	\$13,301,593,584
2018	\$1,961,639,032	\$5,732,757,842	\$11,813,581,638	\$3,577,469,822	\$11,271,866,696
2017	\$2,140,097,172	\$5,651,181,407	\$12,008,101,380	\$3,636,375,625	\$11,427,654,204
2016	\$1,752,759,937	\$5,293,733,325	\$11,181,899,614	\$3,386,179,539	\$10,432,672,801
2015	\$1,987,750,169	\$4,763,827,857	\$12,141,826,310	\$3,676,871,125	\$10,428,449,152

Total industry sales, including grower, landscaping and retailing sales increased 24.7% in 2021 for a total of \$30.3 billion in gross sales. The grower sector experienced an increase of 23.7% to a total of \$3.82 billion. The landscaping sector experienced an increase of 36.7% to a total of \$9.98 billion. Gross retail sales increased 17.7% to a total of \$16.51 billion in 2021. Figures 1, 2, 3 and 4 represent industry sales for growers, landscaping, retailing (gross) and total gross industry sales respectively broken down by subsectors.

Figure 1. Grower Sales 2012-2021

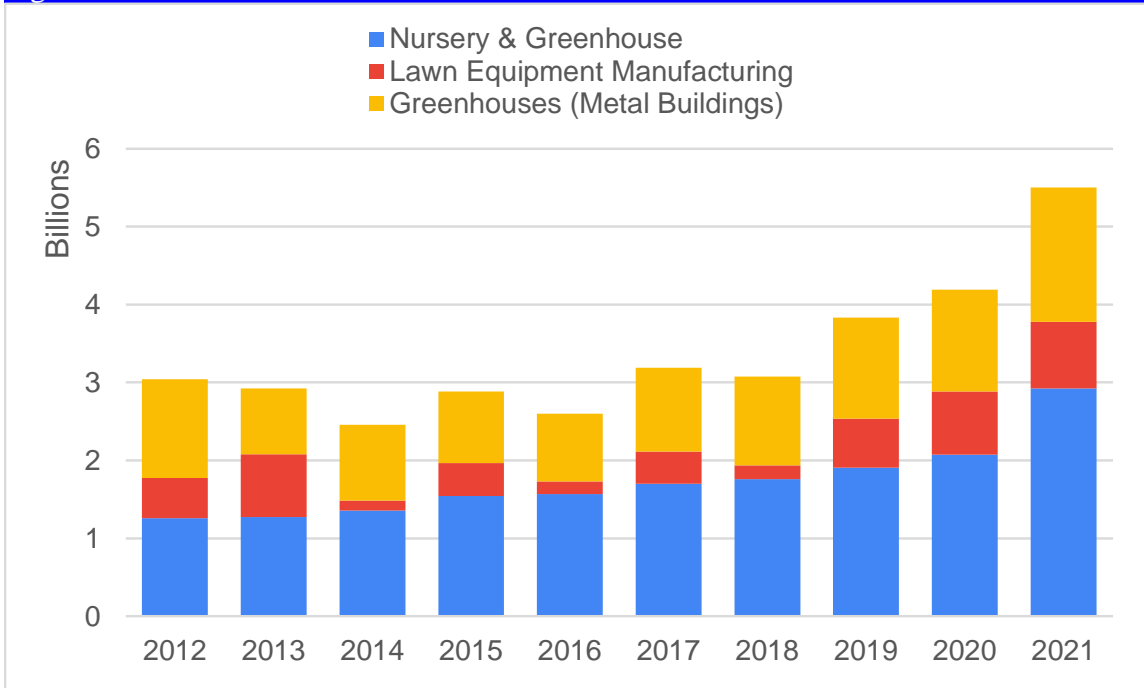


Figure 2. Landscaping Sales 2012-2021

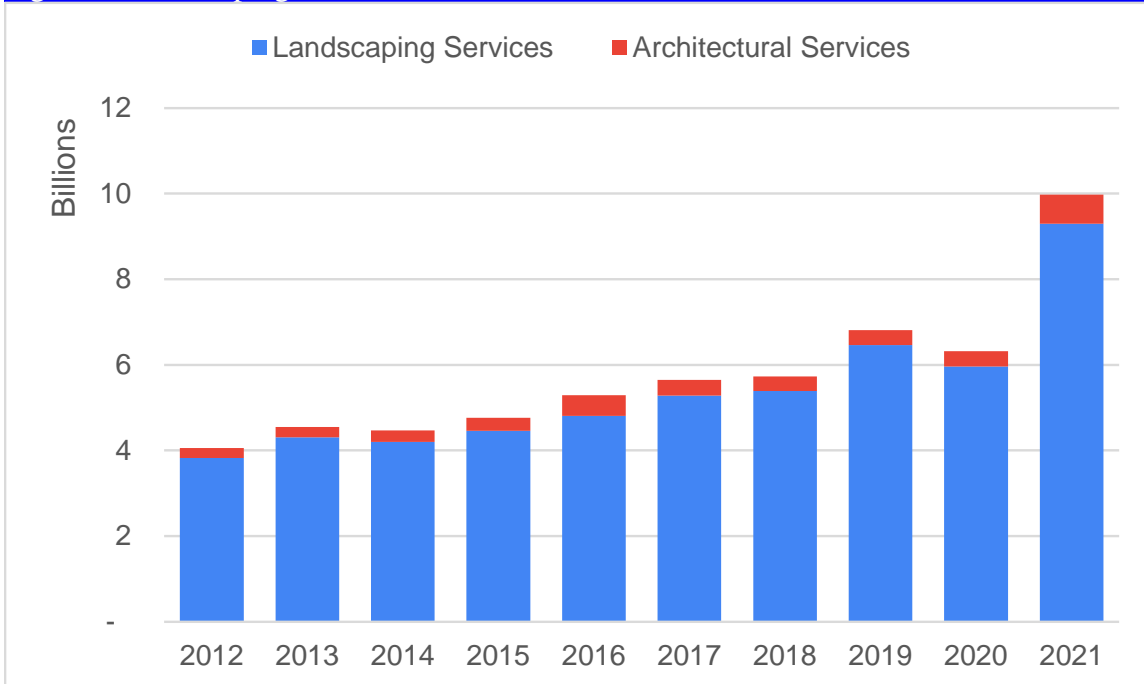


Figure 3. Retailing Sales 2012-2021

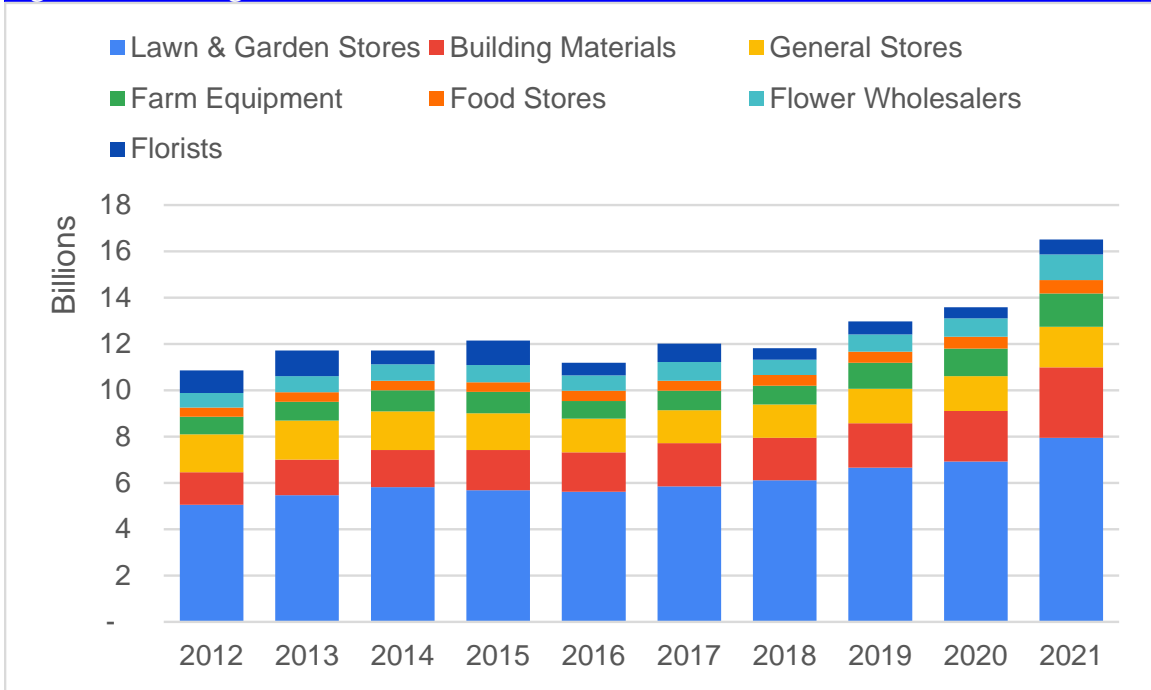


Figure 4. Total Industry Sales 2012-2021

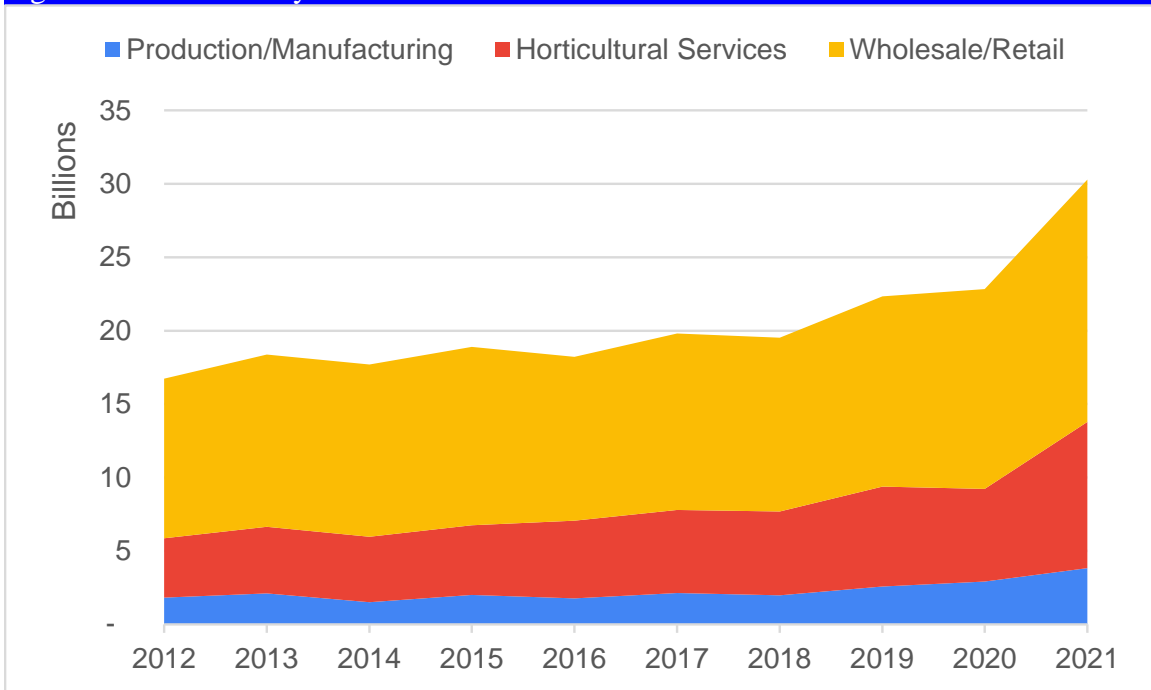


Table 4 presents green industry sales by sector and by major Metropolitan Statistical Area (MSA). There are 27 MSAs in Texas. The major MSAs are, Austin, Dallas, Ft. Worth, Houston, and San Antonio. The economic scope reports sales in five of the major MSAs. The five major MSAs included in this report represent a combined 59.7% of the total industry sales as shown in Figure 5. Houston and Dallas hold the largest share of green industry sales in 2021 with 18.8% and 18.2% respectively. Figure 6 is a graphical representation of grower, landscaping and retailing sales by MSA in Texas.

Table 4. Total Green Industry Sales by Metropolitan Statistical Area (MSA), 2021

MSA	GROWER	LANDSCAPE	RETAIL(Gross)	TOTAL	% OF TOTAL
Austin	219,648,846	1,177,935,852	991,947,737	2,389,532,436	7.89%
Dallas	376,334,624	2,655,291,805	2,472,544,418	5,504,170,847	18.16%
Ft Worth	155,096,103	725,043,970	1,330,731,088	2,210,871,161	7.30%
Houston	412,983,531	2,585,045,609	2,695,751,779	5,693,780,919	18.79%
San Antonio	328,210,753	693,464,433	1,258,570,873	2,280,246,059	7.53%
Other	2,324,953,383	2,141,764,141	7,756,255,214	12,222,972,737	40.34%
Total	3,817,227,241	9,978,545,810	16,505,801,108	30,301,574,159	100.00%

Figure 5. Total Green Industry Sales in Texas by MSA in 2021

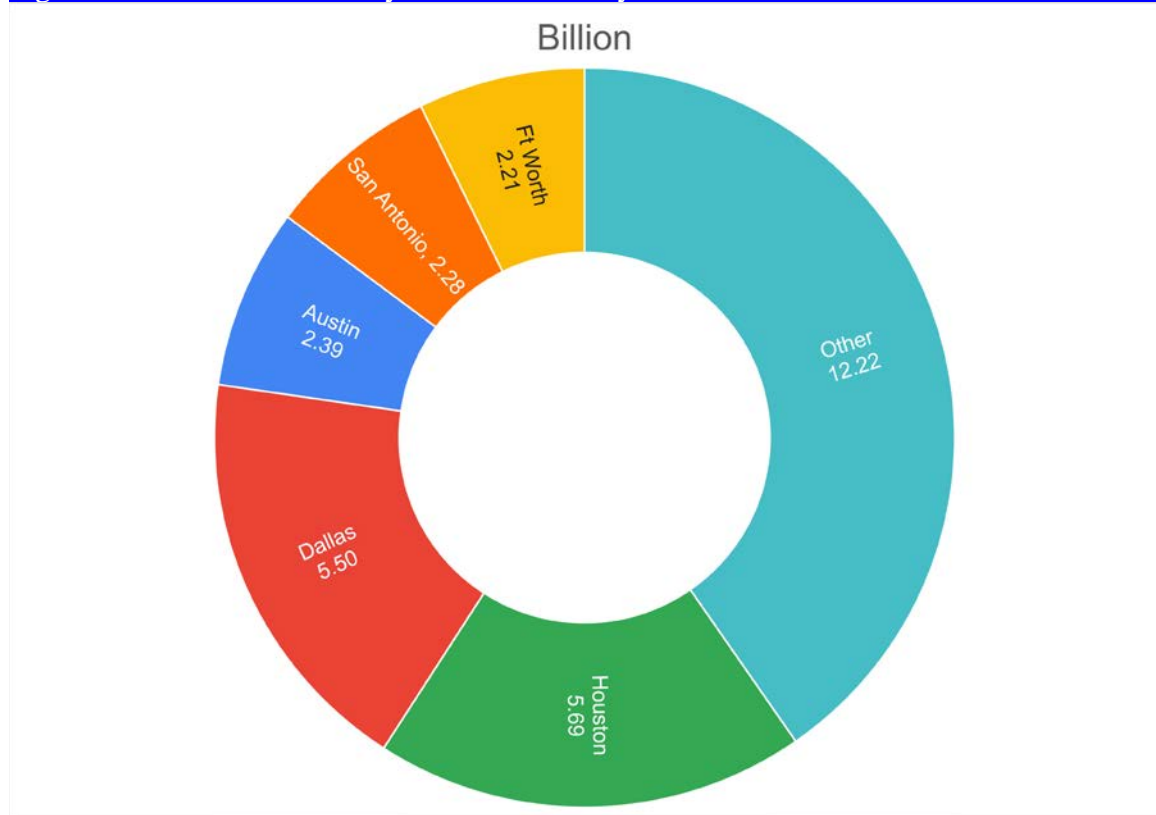
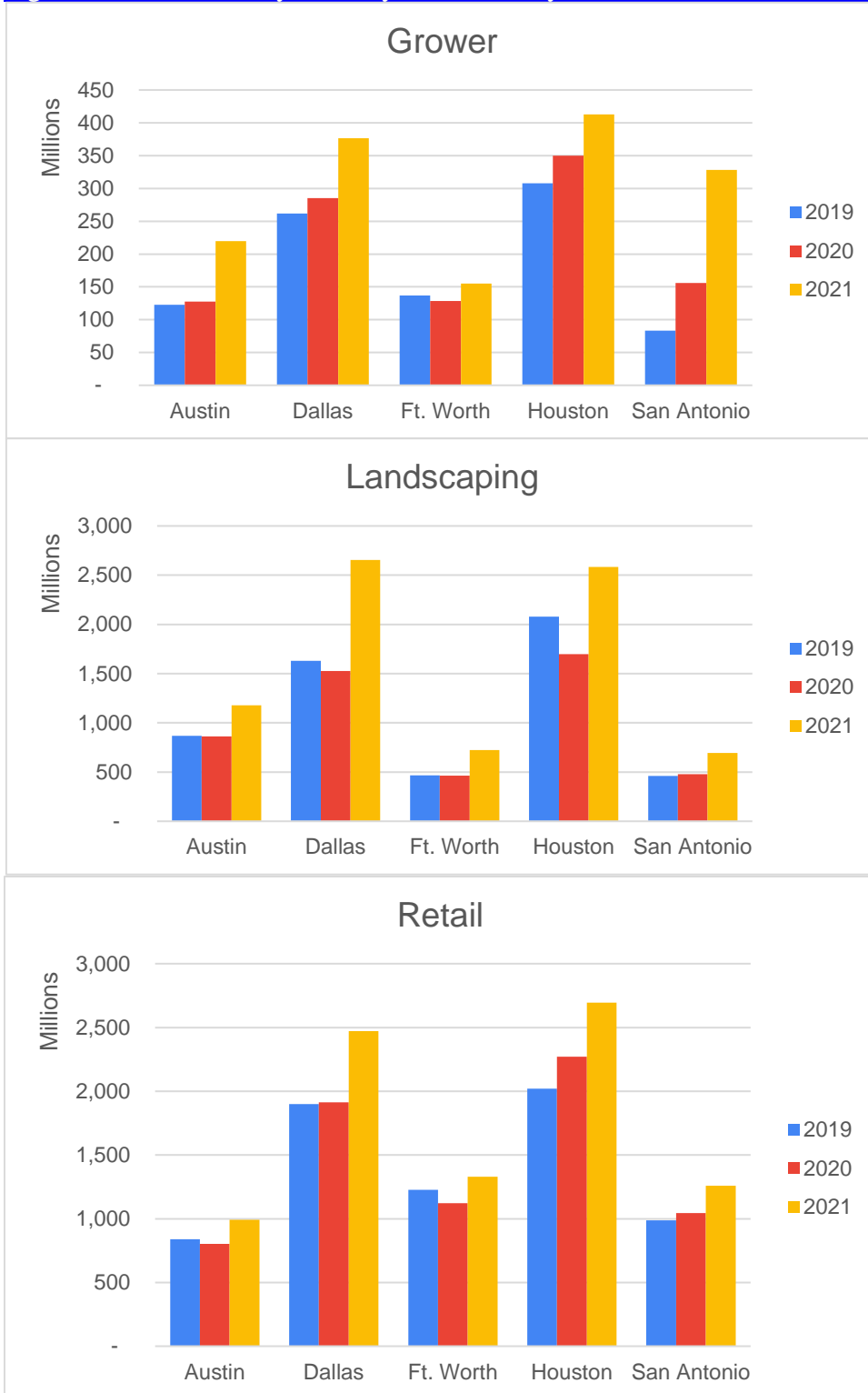


Figure 6. Green Industry Sales by Outlet and by MSA , 2019-2021



Economic Contributions of the Green Industry to the Texas Economy

The net sales data from the previous section were used to estimate total economic contributions of the Green Industry to the Texas Economy. To evaluate the economic impact contributions of the green industry to the Texas economy, economic models were developed using the Implan software system and associated Texas datasets (MIG, 2019). The Implan system includes more than 500 industries. Input-Output models represent the structure of a regional economy in terms of transactions, employees, households, and government institutions (Miller & Blair, 1985).

The economic multipliers derived from the Implan model were used to estimate the total economic activity generated in the state by sales (*output*) to final demand or exports. This includes the effects of intermediate purchases by green industry firms from other economic sectors (*indirect effects*) and the effects of green industry employee household consumer spending (*induced effects*), in addition to direct sales by industry firms. The wholesale and retail sectors use products from the production/manufacturing and horticultural services sectors; therefore, when calculating the impacts for the wholesale and retail trade horticulture products, output (retail sales) are reduced to reflect only the gross margin on sales to those sectors, otherwise we would be double counting the economic impact stemming from those products.

Economic impact multipliers vary based on data about actual relationships in the economy. The total economic contributions of the Green Industry in Texas were estimated at \$38.8 billion in output; 320,391 jobs, and \$21.7 billion in value added as shown in Table 5. For the production and manufacturing sectors, including nursery and greenhouse, lawn and garden equipment manufacturing, and metal building manufacturers, total output impacts were \$7.1 billion; employment impacts were 59,204 jobs; and value-added impacts were \$3.6 billion. For the horticultural services sectors, including landscaping services and landscape architecture services, total output impacts were \$20.2 billion; employment impacts were 171,250 jobs; and value-added impacts were \$11.2 billion. For the wholesale and retail trade sectors, total output impacts were \$11.5 billion; employment impacts were 89,938 jobs; and value-added impacts were \$6.9 billion. The largest economic impact contributions for individual sectors were landscaping services, lawn and garden stores and nursery and greenhouse.

Table 5. Economic Contributions of the Green Industry in Texas, 2021

	Output (\$Mn)	Employment (jobs)	Value Added (\$Mn)
Production & Manufacturing	7,098	59,204	3,560
Nursery & Greenhouse	5,637	54,730	3,101
Lawn & Garden Equipment Manufacturing	1,382	4,155	427
Prefabricated Metal Buildings	78	319	32
Horticultural Services	20,162	171,250	11,196
Landscaping Services	18,701	162,461	10,338
Landscape Architecture Services	1,461	8,789	858
Wholesale & Retail Trade Horticulture Products	11,510	89,938	6,911
Flower, Nursery Stock & Florist Supplies Wholesalers	419	1,970	231
Lawn & Garden Equipment & Supplies Stores	6,006	44,377	3,688
Florists	755	9,711	421
Building Material & Supplies Dealers	2,293	16,940	1,408
Food & Beverage Stores	391	3,718	226
General Merchandise Stores	1,106	10,679	640
Farm & Garden Equipment Wholesalers	541	2,543	297
Total (All Sectors)	38,770	320,391	21,668

Figure 7. Green Industry Economic Output Contributions to the Texas Economy in 2021

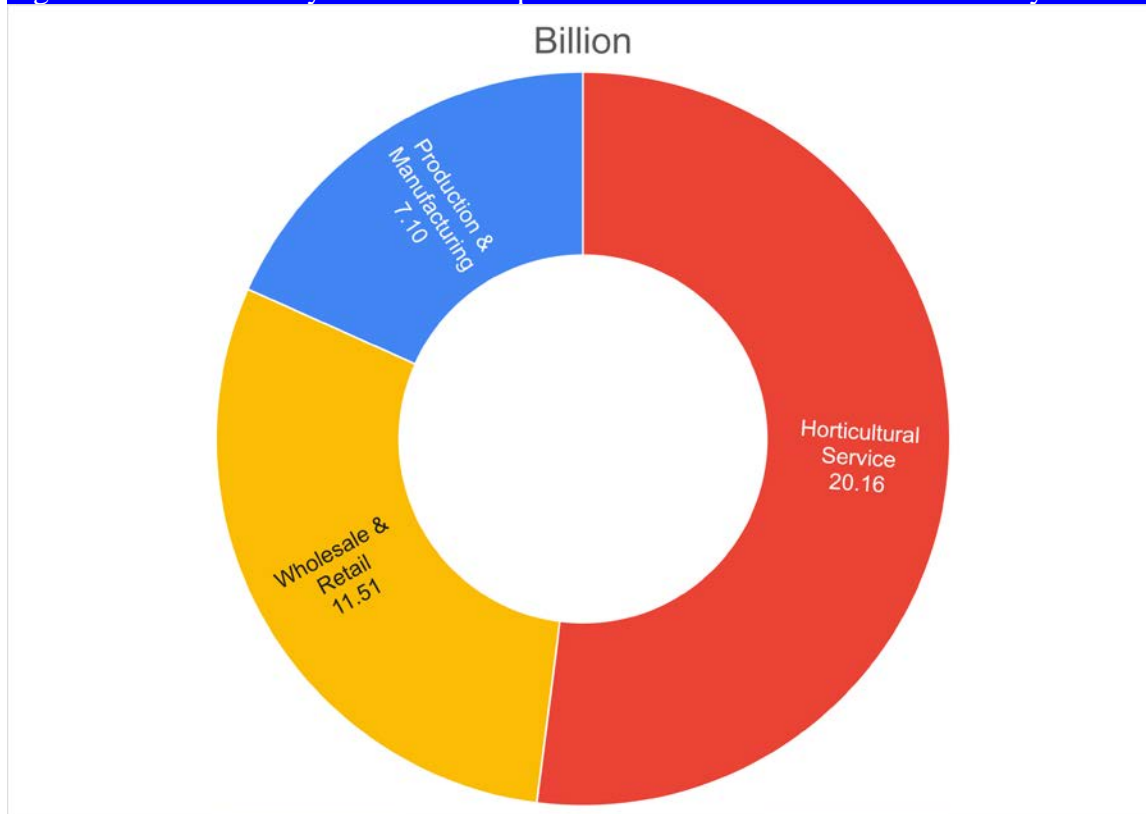
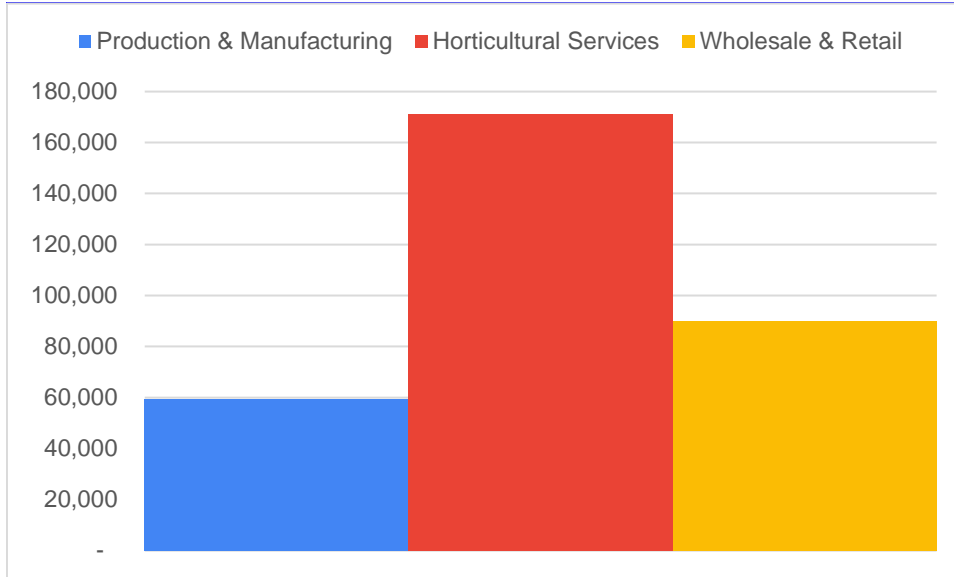


Figure 8. Employment Contributions by the Green Industry in Texas 2021



Economic impact results are also reported by major metropolitan statistical area (MSA) as summarized in Table 6. The MSAs with the greatest economic impact contributions to the State’s economy are Dallas-Fort Worth and Houston with \$9.9 billion and \$7.3 billion respectively. Austin generated \$3.1 billion in output impact and San Antonio had \$2.9 of output economic impact.

Table 6. Economic Impact Contributions of the Green Industry in Texas by MSA 2021

	Output	Employment	Value
	(\$Mn)	(jobs)	Added (\$Mn)
Austin	3,057	25,266	1,709
Dallas-Fort Worth	9,871	81,574	5,517
Houston	7,285	60,203	4,071
San Antonio	2,917	24,110	1,631
Other	15,639	129,239	8,740
Total	38,770	320,391	21,668

*Figures may not sum due to rounding

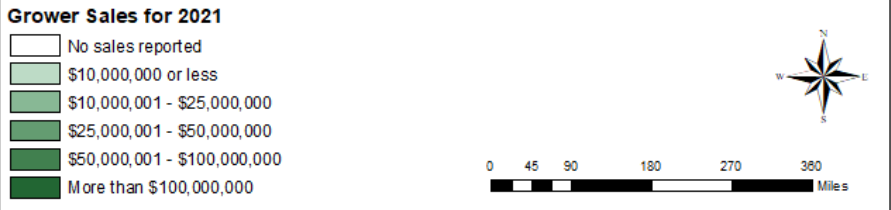
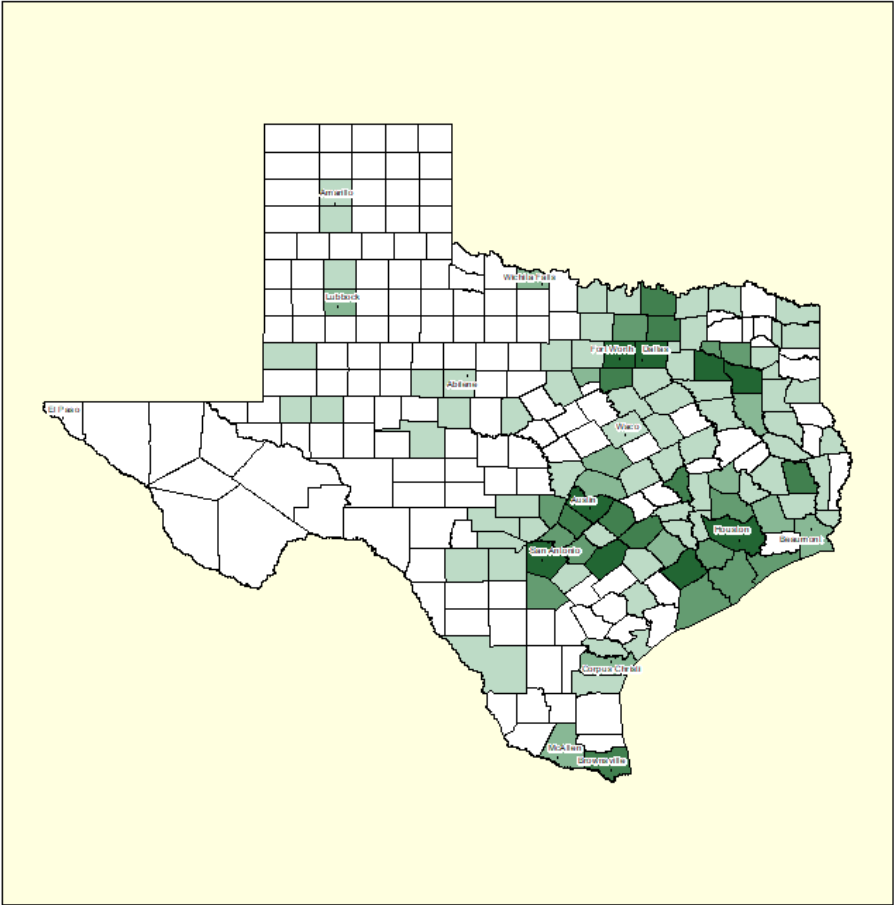
Measures of economic activity.

Sales or output is the dollar volume of a good or service produced or sold. **Final Demand** is sales to final consumers, including households, governments, and exports. **Intermediate sales** are sales to other industrial sectors. **Income** is the money earned within the region from production and sales. **Total income** includes personal income (wage and salary income, including income of sole proprietor’s profits and rents). **Jobs or employment** is a measure of the number of jobs required to produce a given volume of sales/production, expressed as full-time equivalents, or as the total number including part time and seasonal positions. **Value Added** is the sum of total income and indirect business taxes.

Appendix – Estimated Green Industry Sales by County, 2021.

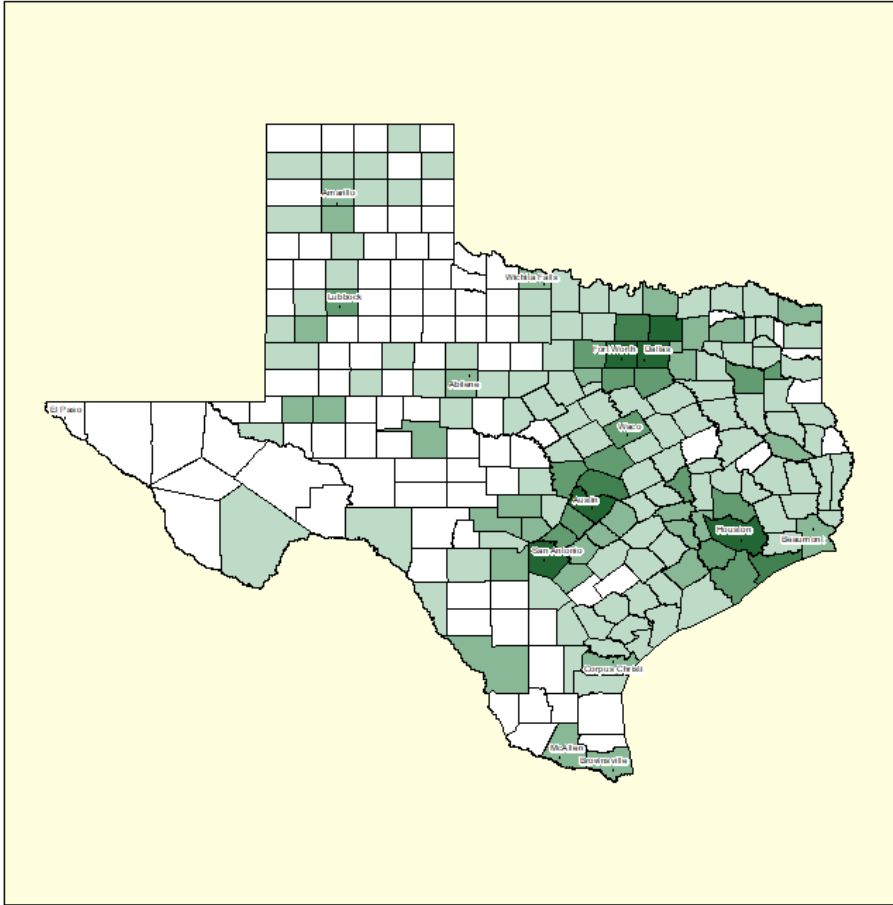
County	Sales	County	Sales	County	Sales	County	Sales	County	Sales
Anderson	35,024,566	Deaf Smith	145,504,111	Hutchinson	4,556,249	Navarro	59,603,668	Val Verde	14,083,440
Andrews	1,951,154	Delta	82,996	Irion	-	Newton	1,255,873	Van Zandt	168,508,481
Angelina	95,579,177	Denton	911,206,655	Jack	458,430	Nolan	51,556,541	Victoria	95,108,523
Aransas	18,122,404	De Witt	-	Jackson	38,596,125	Nueces	278,530,679	Walker	78,993,083
Archer	22,643,583	Dickens	30,475	Jasper	55,213,194	Ochiltree	1,688,264	Waller	150,601,877
Armstrong	-	Dimmit	1,501,549	Jeff Davis	40,378	Oldham	-	Ward	7,026,697
Atascosa	82,291,983	Donley	195,500	Jefferson	236,263,140	Orange	42,710,781	Washington	132,789,568
Austin	85,685,289	Duval	367,357	Jim Hogg	153,196	Palo Pinto	20,171,902	Webb	104,008,793
Bailey	25,911,695	Eastland	21,239,579	Jim Wells	16,890,052	Panola	14,304,807	Wharton	377,738,567
Bandera	48,214,967	Ector	106,117,693	Johnson	327,920,866	Parker	202,630,666	Wheeler	394,757
Bastrop	141,387,927	Edwards	-	Jones	3,036,295	Parmer	18,265,208	Wichita	111,736,639
Baylor	112,642	Ellis	201,121,695	Karnes	2,576,706	Pecos	5,712,356	Wilbarger	6,811,147
Bee	27,839,300	El Paso	-	Kaufman	90,968,940	Polk	35,251,832	Willacy	4,416,059
Bell	301,180,050	Erath	62,794,507	Kendall	95,206,972	Potter	83,157,084	Williamson	700,034,230
Bexar	1,824,804,650	Falls	1,576,510	Kenedy	-	Presidio	584,758	Wilson	37,153,138
Blanco	50,344,574	Fannin	34,223,911	Kent	711	Rains	48,566,391	Winkler	184,017
Borden	-	Fayette	97,573,011	Kerr	88,400,382	Randall	173,294,080	Wise	71,704,347
Bosque	3,009,465	Fisher	32,629	Kimble	442,632	Reagan	79,504	Wood	74,699,705
Bowie	147,354,460	Floyd	233,714	King	-	Real	44,028	Yoakum	495,615
Brazoria	269,168,996	Foard	2,457	Kinney	0	Red River	515,665	Young	21,573,259
Brazos	407,306,438	Fort Bend	522,838,018	Kleberg	8,425,016	Reeves	4,856,983	Zapata	1,779,412
Brewster	1,408,321	Franklin	967,375	Knox	6,548	Refugio	249,139	Zavala	7,652,088
Briscoe	-	Freestone	5,743,134	Lamar	106,835,813	Roberts	-		
Brooks	321,966	Frio	8,507,322	Lamb	57,117,245	Robertson	13,545,138		
Brown	32,558,792	Gaines	59,561,403	Lampasas	20,543,839	Rockwall	93,430,252		
Burleson	48,649,355	Galveston	638,396,766	La Salle	-	Runnels	19,371,014		
Burnet	108,045,055	Garza	313,813	Lavaca	21,537,990	Rusk	19,467,485		
Caldwell	32,768,798	Gillespie	45,705,670	Lee	17,887,671	Sabine	2,384,611		
Calhoun	14,987,175	Glasscock	-	Leon	10,665,704	San Augustine	313,704		
Callahan	1,074,460	Goliad	522,829	Liberty	68,686,558	San Jacinto	2,182,318		
Cameron	217,981,979	Gonzales	133,049,172	Limestone	21,149,483	San Patricio	83,574,527		
Camp	1,764,075	Gray	19,779,052	Lipscomb	20,534	San Saba	8,198,858		
Carson	9,178,507	Grayson	180,121,186	Live Oak	12,639,631	Schleicher	5,254		
Cass	7,180,801	Gregg	228,484,908	Llano	11,251,070	Scurry	3,599,489		
Castro	37,989	Grimes	33,598,441	Loving	-	Shackelford	104,024		
Chambers	48,943,520	Guadalupe	188,484,592	Lubbock	322,791,931	Shelby	24,075,779		
Cherokee	67,302,383	Hale	122,812,897	Lynn	53,577	Sherman	130,340		
Childress	5,105,106	Hall	36,988	Madison	2,075,083	Smith	605,597,868		
Clay	356,744	Hamilton	869,910	Marion	315,129	Somervell	2,096,862		
Cochran	-	Hansford	14,945,788	Martin	393,332	Starr	14,049,926		
Coke	72,101	Hardeman	152,622	Mason	265,872	Stephens	3,252,893		
Coleman	566,071	Hardin	23,810,197	Matagorda	71,343,734	Sterling	-		
Collin	1,260,546,756	Harris	4,361,475,223	Maverick	19,596,529	Stonewall	10,885		
Collingsworth	6,054	Harrison	75,105,157	McCulloch	1,282,072	Sutton	44,281		
Colorado	42,769,977	Hartley	851,424	McLennan	303,693,024	Swisher	629,826		
Comal	231,399,930	Haskell	1,161,825	McMullen	-	Tarrant	2,035,513,850		
Comanche	16,616,670	Hays	255,918,316	Medina	79,486,306	Taylor	161,578,706		
Concho	-	Hemphill	191,716	Menard	11,908	Terrell	-		
Cooke	79,153,194	Henderson	89,745,084	Midland	131,381,734	Terry	48,089,205		
Coryell	22,726,132	Hidalgo	433,598,459	Milam	9,969,867	Throckmorton	72,189		
Cottle	-	Hill	39,875,324	Mills	938,312	Titus	40,061,618		
Crane	79,305	Hockley	58,878,222	Mitchell	97,563	Tom Green	96,892,349		
Crockett	29,509	Hood	67,425,203	Montague	14,525,429	Travis	1,657,141,825		
Crosby	21,819,634	Hopkins	66,647,930	Montgomery	523,003,242	Trinity	534,924		
Culberson	11,120	Houston	26,240,858	Moore	119,446,835	Tyler	62,775,297		
Dallam	38,234,142	Howard	33,561,252	Morris	9,816,556	Upshur	29,672,129		
Dallas	3,718,870,568	Hudspeth	58,999	Motley	-	Upton	256,395		
Dawson	2,783,639	Hunt	83,036,137	Nacogdoches	76,999,237	Uvalde	29,857,331		

Grower Sales



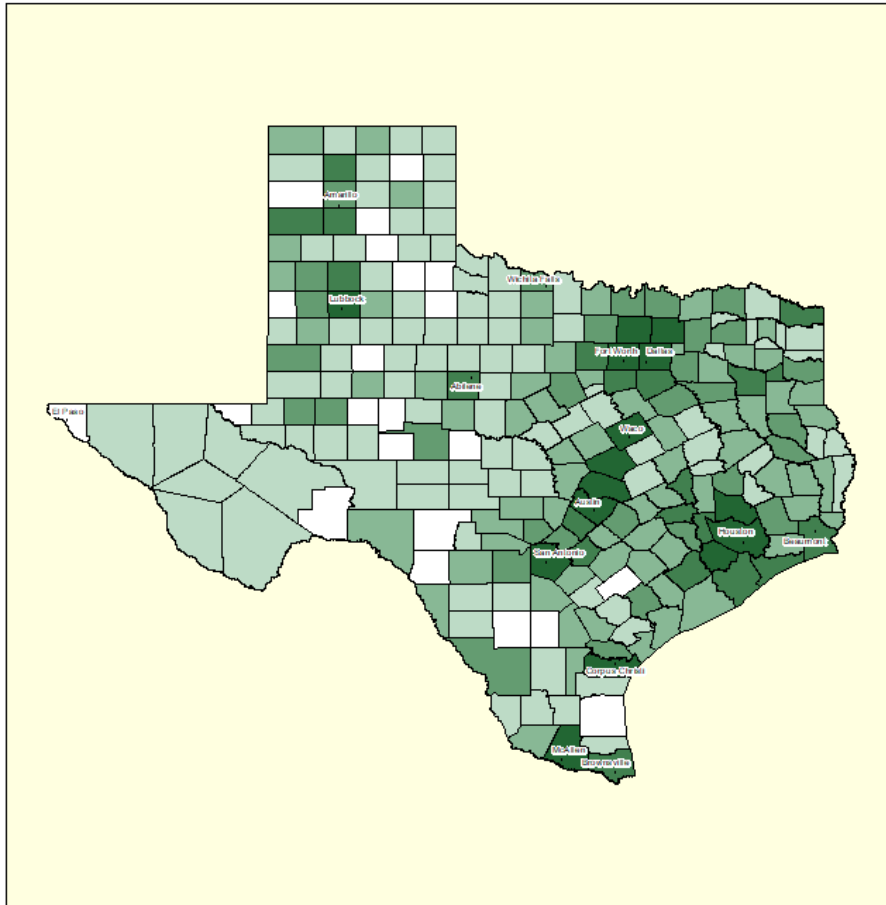
Developed by Daniel Hanzelka, Texas A&M AgriLife Extension Service

Landscaping Sales

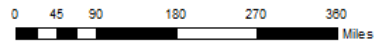
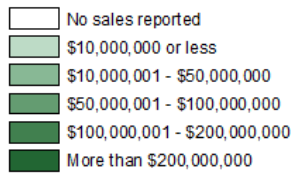


Developed by Daniel Harshbarger, Texas A&M AgriLife Extension Service

Retail Sales

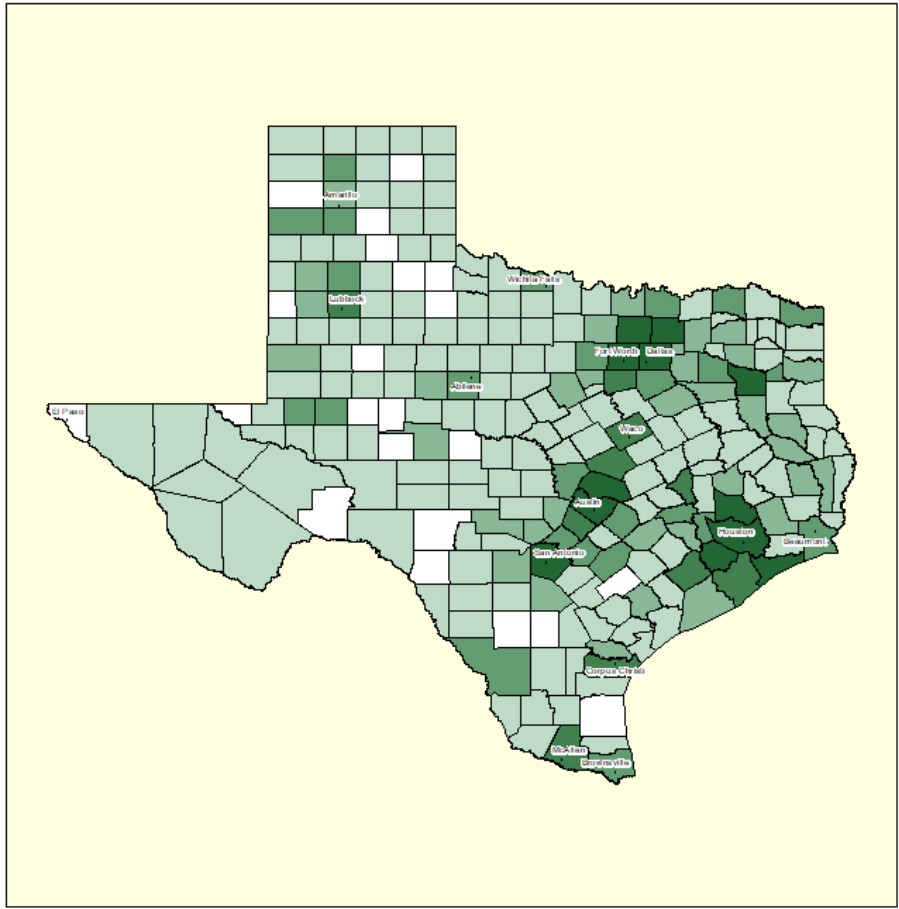


Retail Sales for 2021









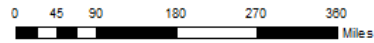
Developed by Daniel Harshbarger, Texas A&M AgriLife Extension Service

Total Sales



Total Sales for 2021

-  No sales reported
-  \$50,000,000 or less
-  \$50,000,001 - \$100,000,000
-  \$100,000,001 - \$250,000,000
-  \$250,000,001 - \$500,000,000
-  More than \$500,000,000



Developed by Daniel Harshbarger, Texas A&M AgriLife Extension Service