ECONOMIC IMPACT OF THE U.S. SUGAR INDUSTRY

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Photos courtesy of USDA unless otherwise indicated.

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The United States is one of the largest sugar-producing countries in the world. It is also one of the world's largest sugar importers, providing guaranteed—and essentially duty-free—access to more than 40 countries, making the U.S. one of the world's most accessible markets for foreign sugar.

U.S. sugar policy is designed to provide producers nonrecourse loans that are to be fully repaid, with interest, each year, thus avoiding any cost to the taxpayer. When other sugar-producing countries are abiding by their trade commitments and not dumping heavily subsidized sugar on the U.S. market at levels below the cost of production, U.S. sugar policy works as intended. While sugar is one of the most basic (yet fundamental) building blocks of the nation's food supply, it is also the backbone of a number of rural communities throughout the United States.

This report analyzes the economic impact of the U.S. sugar industry. In part, it is an update to previous studies conducted by LMC International for the American Sugar Alliance that examined the economic impact of the U.S. sugar industry.[1] The current study utilizes production and prices for the 2018/19 crop year and the IMPLAN model to estimate the impacts of the sugarbeet and sugarcane industries. The current study utilizes the coefficients provided in the 2011 LMC International report to estimate the impacts at the mill/processing levels and refining levels; the results are reported in 2021 dollars. Finally, the report profiles six sugar-growing regions around the United States to illustrate the impact of the sugar industry at the ground level. In these areas, the economic sustainability of the local economy and the sugar industry are inextricably linked.

[1] https://sugaralliance.org/wp-content/uploads/2015/08/LMC-Jobs-2011.pdf.

Section I – Industry Background

This report comes at a pivotal time for U.S. agriculture in general. The United States is emerging from the COVID-19 pandemic. In 2020, consumer and industrial demands for food and food ingredients, such as sugar, underwent enormous demand shocks. And for the sugar industry in particular, those shocks were following significant supply challenges with the poor sugarbeet harvest in 2019. The health and resilience of the U.S. supply chain for essential food ingredients was under stress. Ultimately, U.S. sugarbeet and sugarcane growers and processors responded with just-in-time delivery for their customers and a record year of production in 2020.[2] Unlike many other essential products that experienced pandemic related shortages, the U.S. sugar industry maintained a consistent supply throughout the pandemic.

U.S. sugarbeet acreage declined from 2000 to 2008 and has essentially leveled off since that time (Figure 1). As expected, the 11 states represented in Figure 2 show the same general trend. Notably, since the low in 1981, sugarbeet prices have had a slightly positive trend (Figure 3).

[2] https://www.regulations.gov/comment/AMS-TM-21-0034-0437.

Fewer acres planted in spite of this trend suggests that the returns from sugarbeets has tended to be lower than other crop alternatives for sugarbeet farmers.

Similar to sugarbeets, planted acres of sugarcane declined significantly from 2000 to 2008 and then increased, capturing roughly one-half of the lost acreage by 2021 (Figure 4). Sugarcane acreage in Louisiana has increased since 2015 while Florida and Texas have remained relatively flat (Figure 5). Hawaii stopped growing sugarcane in 2016. Sugarcane price per ton dropped precipitously from 1980

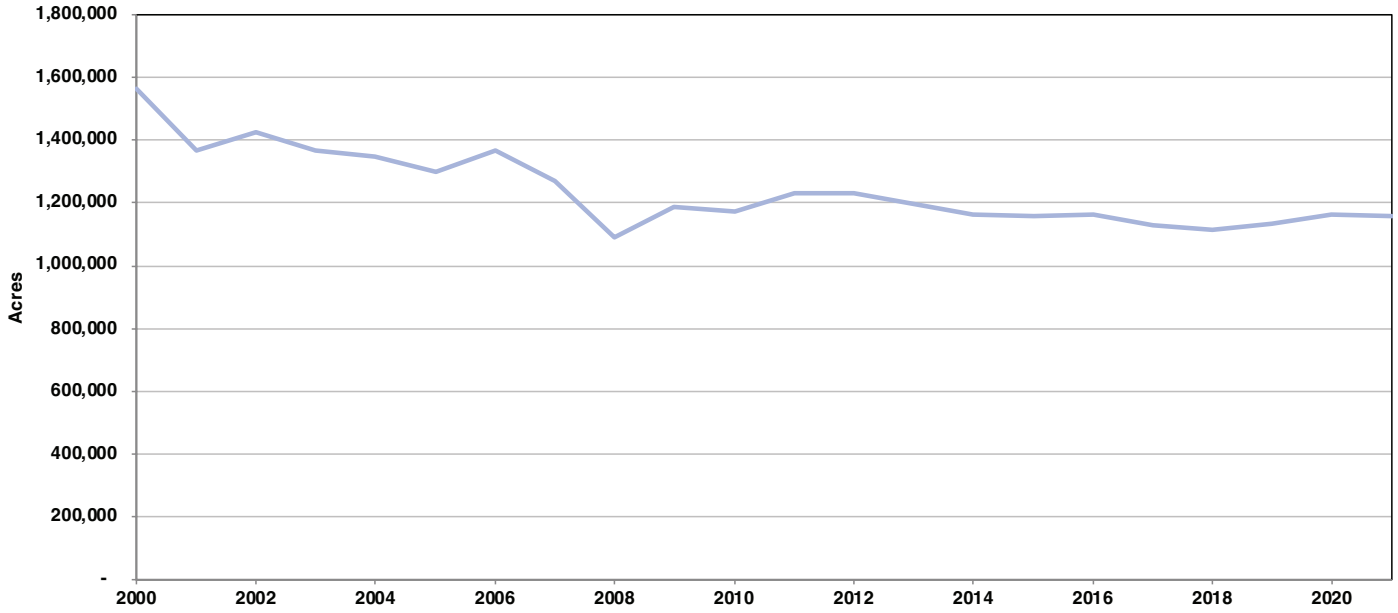

Figure 1. Total Acres in U.S. Sugarbeet Production, 2000 to 2021.

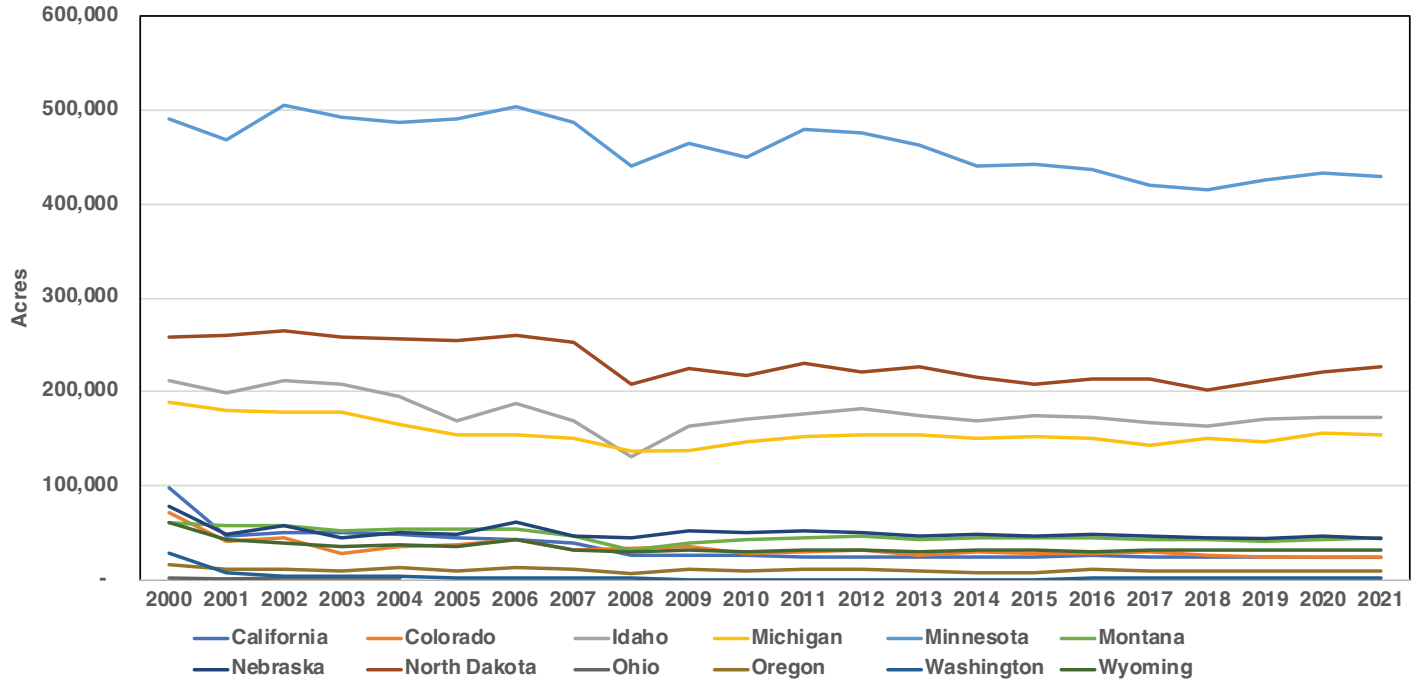

Figure 2. Acres in Sugarbeet Production by State, 2000 to 2021.

to 1981 and has steadily increased since that time with significant variability since 2008 (Figure 6).

Figure 7 contains the annual production of sugarbeets and sugarcane in the United States. Notably, producers have increased production of both by 10 million tons per year even though planted acreage has declined for sugarbeets and only increased slightly for sugarcane. This indicates significant increases in yields per acre and efficiency throughout the entire production process.

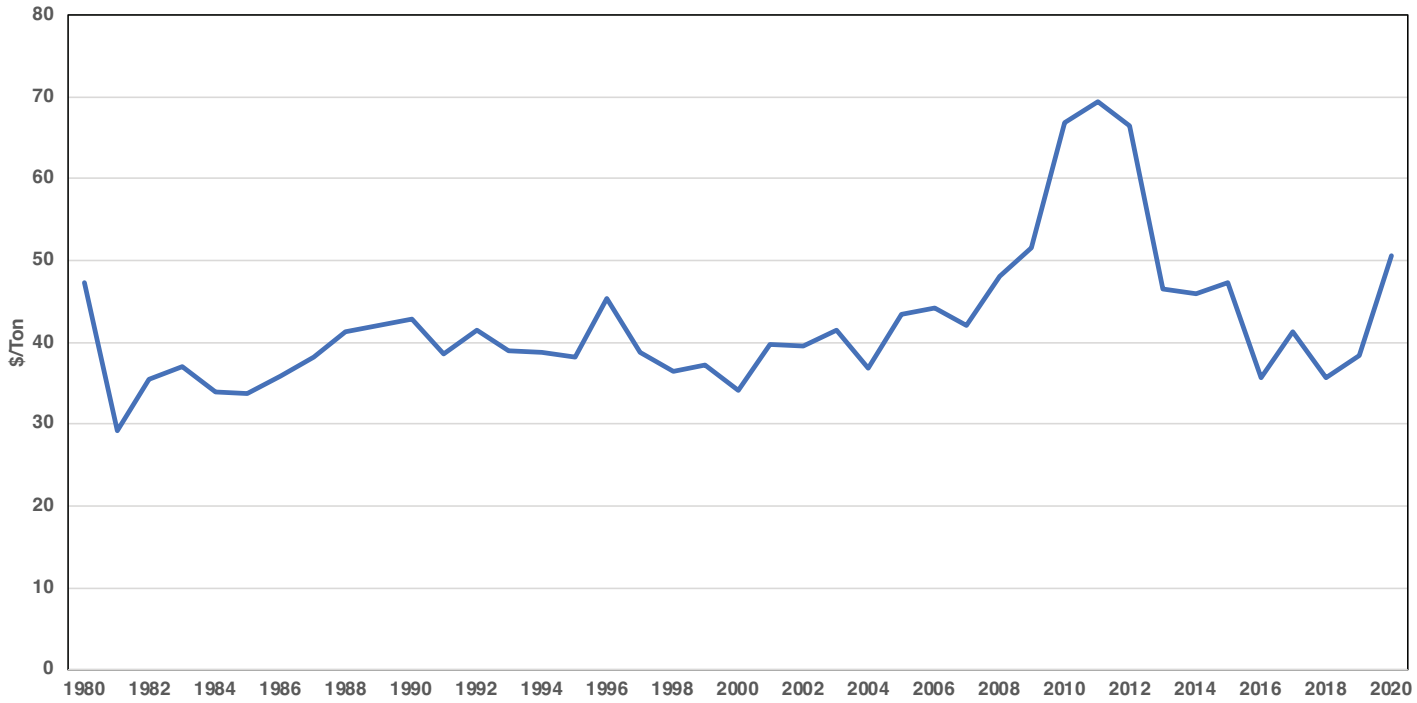

Figure 3. Sugarbeet Price per Ton, 1980 to 2020.

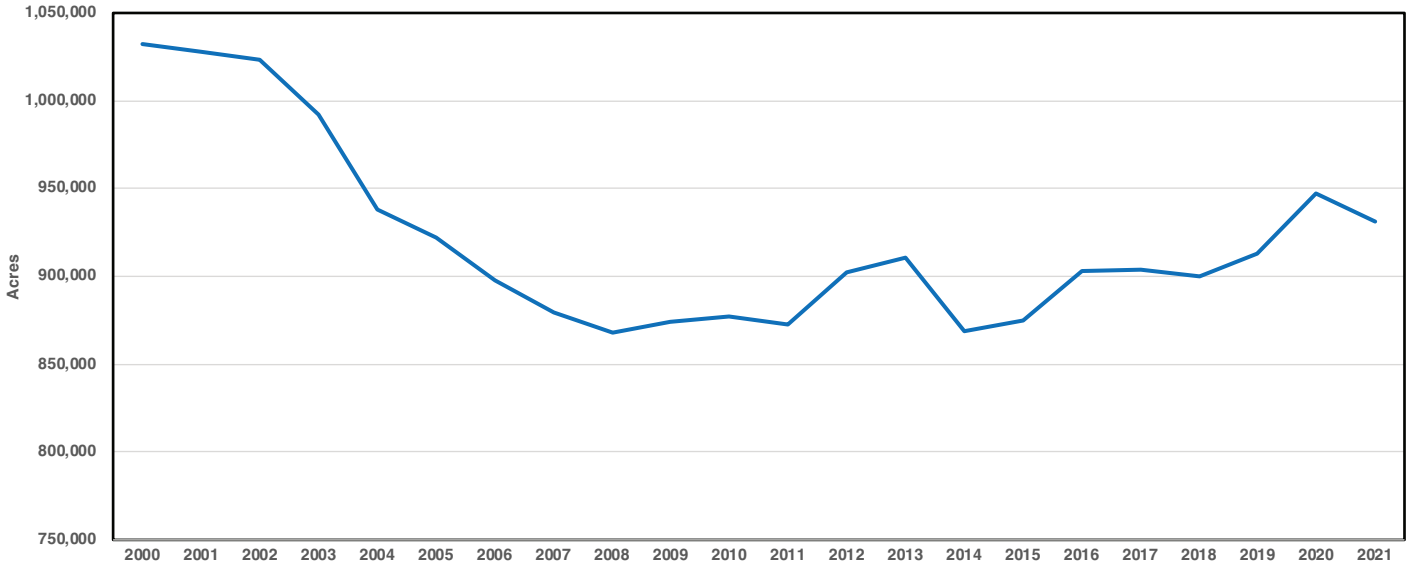

Figure 4. Total Acres in U.S. Sugarcane Production, 2000 to 2021.

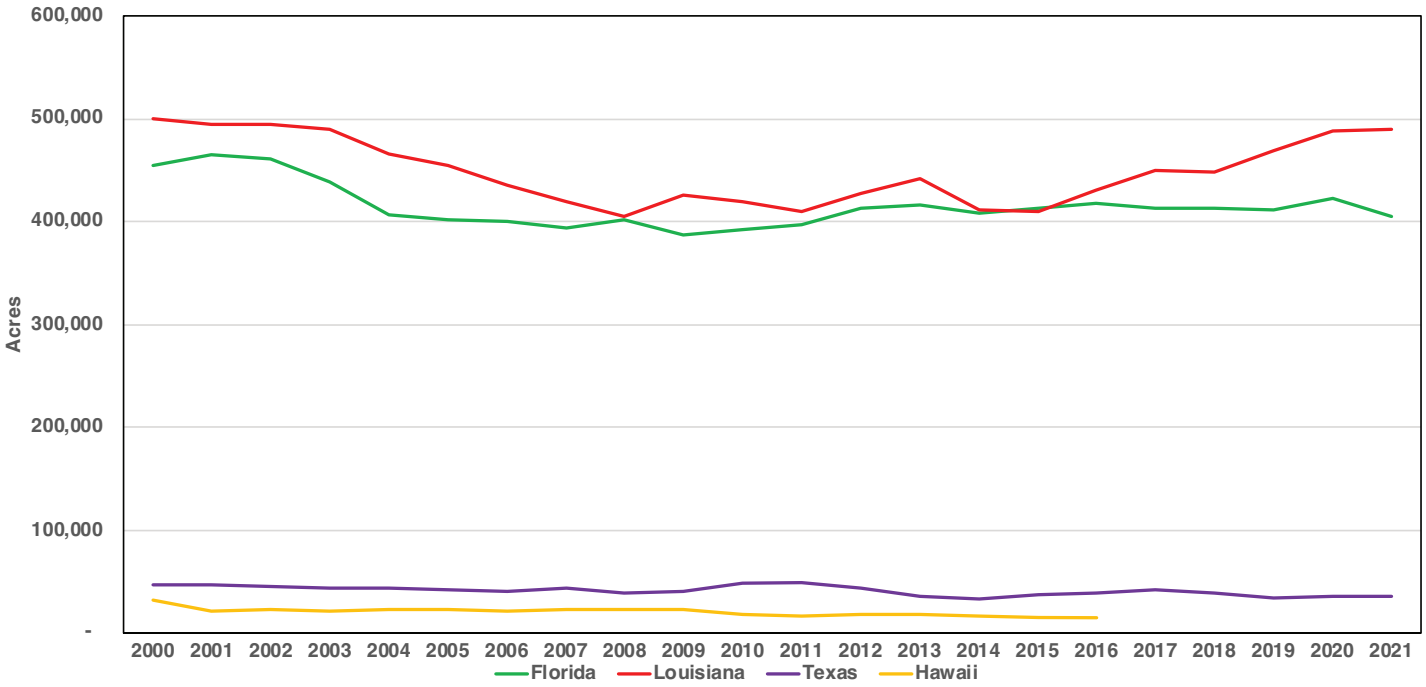

Figure 5. Acres in Sugarcane Production by State, 2000 to 2021.

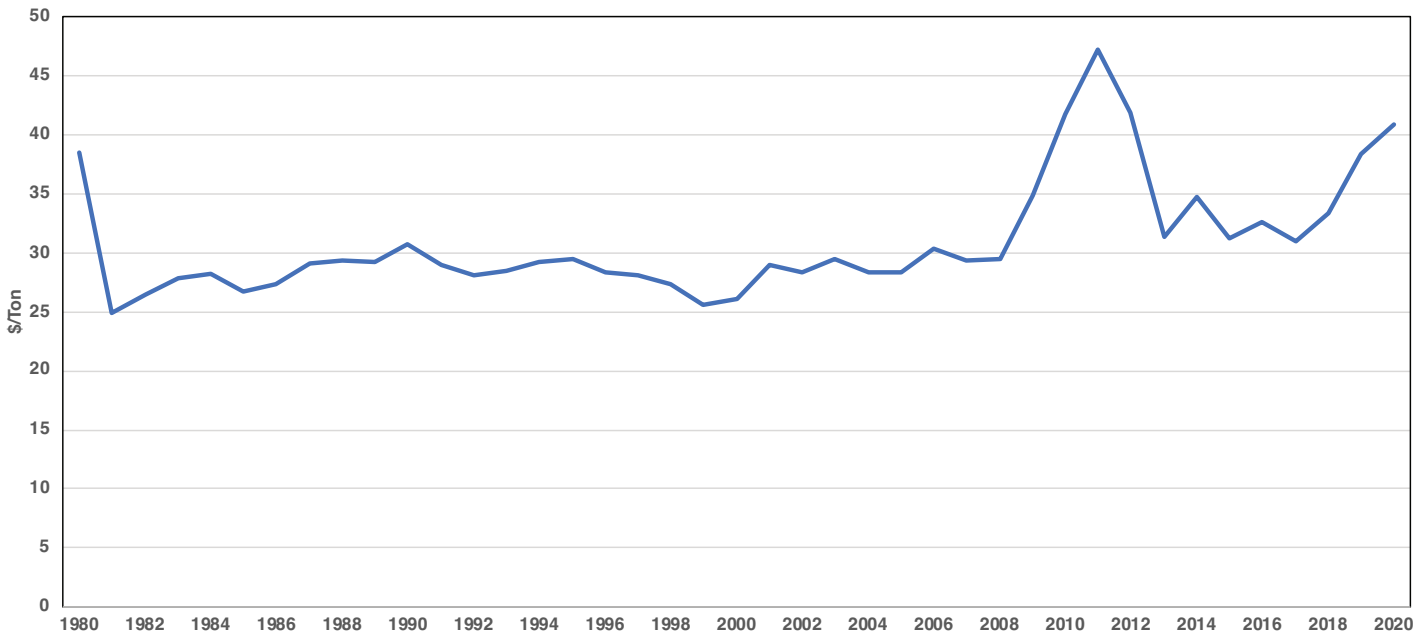

Figure 6. Sugarcane Price per Ton, 1980 to 2020.

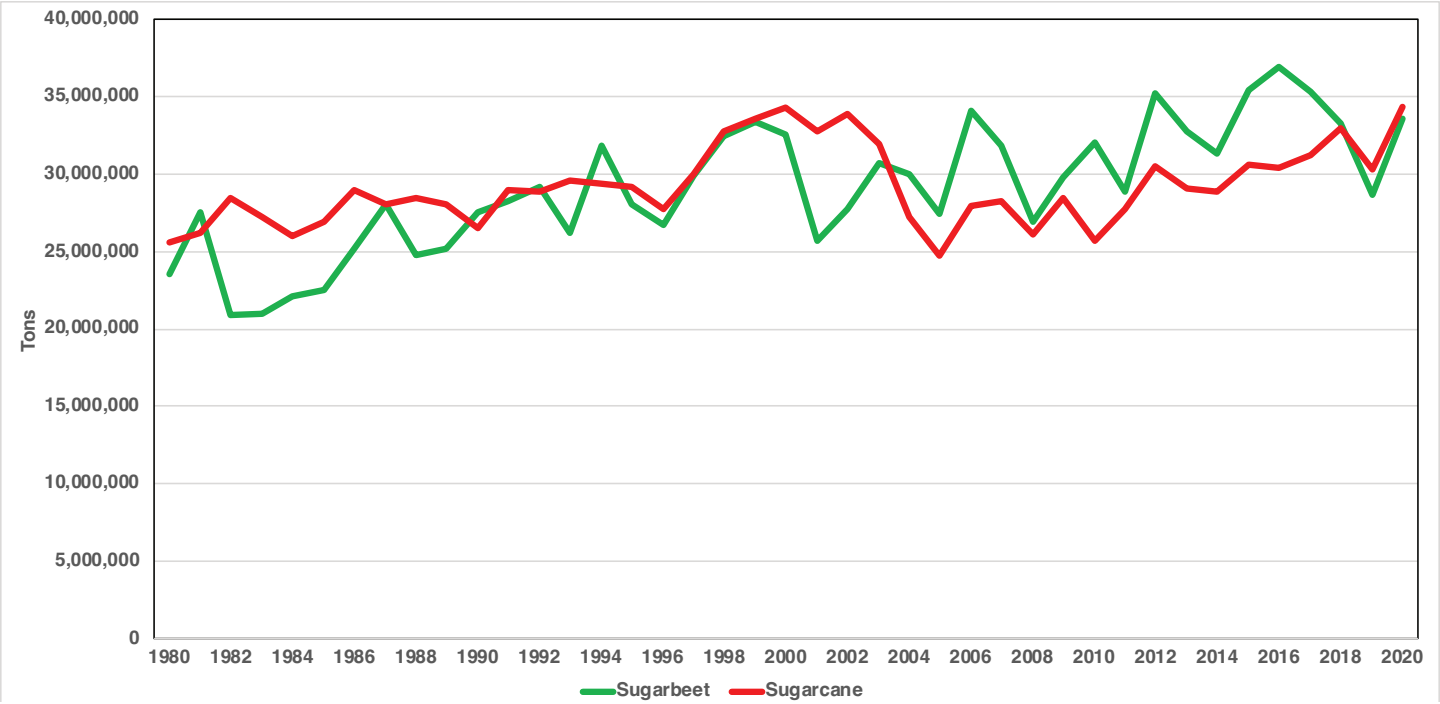

Figure 7. Sugarbeet and Sugarcane Annual Production in Tons, 1980 to 2020.

Section II – Methodology

IMPLAN® (Impact Analysis for Planning), an input/output (I-O) model, was used to estimate the economic impact of the sugarcane and sugarbeet industries on the U.S. economy. Originally developed by the U.S. Forest Service, in 1985 the IMPLAN model began being managed and maintained by the Minnesota IMPLAN Group (MIG, Inc.). In 2013, MIG, Inc. officially changed its name to IMPLAN. The model is, arguably, the most used and cited model for performing economic impact analyses in the United States. The IMPLAN model is driven by purchases of final goods and services in a certain region, such as a state, a group of states, or the entire nation. These purchases represent the dollar value of the increase in finished goods and services demanded and create an impact that ripples throughout the economy. Industries produce goods and services for final use and purchase goods and services from other industries. These other producers and industries buy goods and services as well, which IMPLAN designates as indirect purchases. In addition, each step along the cycle pays wages and salaries to employees, who, in turn, make additional expenditures into the economy of the region.

In determining the overall economic impact of an industry, the IMPLAN model uses a set of multipliers, separated by sector, to estimate the direct, indirect, and induced effects (induced being effects of household spending) on the economic cycle. Over 500 sector codes are included in the IMPLAN model, where each code represents a unique industrial sector for a specific product or category of products. The multipliers that are derived for each sector quantify the ripple effects of a dollar increase in final demand, thus resulting in an estimation of the economic impact. The multipliers for the IMPLAN model for 2019 were adjusted to more accurately reflect the relationships among sugarcane and sugarbeets in the LMC International report.

Direct Effects: the set of expenditures applied to the I-O multipliers for an impact analysis.

Indirect Effects: the business-to-business purchases in the supply chain taking place in the region that stem from the initial industry input purchases from their suppliers.

Induced Effects: the values stemming from household spending of labor income, after removal of taxes, savings, and commuter income.

A variety of industries utilize IMPLAN to evaluate their changing impacts on the local, regional or national economy over time.[3] However, as noted by IMPLAN, data revisions can cause significant differences to prior analysis.[4] The use of IMPLAN is well-suited for this type of analysis. It allows us to compare changes in the sugar sector over time (through comparisons with earlier input-output modeling of the sugar sector), but also shows how farm output provides inputs to the food manufacturing sector, which in turn generates economic activity throughout the economy.

[3] Miller, R.E. and P.D. Blair. (2009). *Input-Output Analysis: Foundations and Extensions, Second Edition*. New York: Cambridge University Press.

[4] https://support.implan.com/hc/en-us/articles/360049768074-Multipliers-Changing-Over-Time.

Section III – Results

The national-level results are presented in Tables 1-4. The state-level results for sugarbeets and sugarcane are contained in Appendices A and B, respectively. For ease of comparison, these tables are identical to Tables E1-E4 in the 2011 LMC International report. Table 1 provides a summation of all of the states' impacts on the overall U.S. economy. The total impact from both the sugarbeet and sugarcane industries is slightly higher than previous estimates which leads to an estimated overall impact of the sugar industry of $23.3 billion.

Table 2 summarizes the employment impact of the sugar industry at the national level. While sugarbeets continue to have the largest estimated employment based upon updated IMPLAN coefficients, the difference is considerably smaller than the previous report. The sugarbeet industry results in 25,597 direct jobs with 44,788 indirect and 27,490 induced totaling 97,875. The sugarcane industry has 12,170 direct jobs with 24,031 indirect and 17,162 induced with a total of 53,363. The overall employment impact is 151,238 across nearly two dozen states.

Table 3 summarizes wages and benefits estimates for the U.S. sugar industry. Wages and benefits directly associated with the U.S. sugar industry for crop year 2018/19 are $1.3 billion. Adding indirect and induced wages of $2.1 and $2.3 billion, respectively, results in an estimated impact on wages and benefits of $5.7 billion.

Table 4 highlights the difference between estimates for the 2009/10 crop years developed by LMC International and the 2018/19 crop year developed by AFPC. The trend of declining jobs in the U.S. sugar industry that has been highlighted in previous LMC International reports continued. Roughly 2,000 fewer direct jobs are attributable to the sugar industry, a reduction of 5 percent. Extensive experience with multiplier analysis and IMPLAN in particular would lead us to conclude that the modest decline in direct jobs is likely attributable to reduced labor being required to handle the same throughput as seen in many industries.

As indicated in Table 4, estimates of the value added by the sugar industry increased slightly (20%) relative to the previous report. Estimates of wages were up 37 percent. While U.S. sugar production was up slightly (13%), the

productivity of the industry per worker increased from 216 tons per person to 248, an increase of 15 percent.

The U.S. sugar industry continues to be a major productive resource for the U.S. economy, contributing almost $23.5 billion to the economy annually through direct, indirect and induced economic activity. The industry also accounts for over 37,000 direct jobs and roughly four times that amount through downstream economic activity.

All agricultural jobs declined 32 percent from 1970 to 2020. Even though direct employment in the sugar industry declined for the reasons described above, we would expect to see a greater number of indirect and induced jobs related to the increase in value added to the economy by the sugar industry. Those increases are also not unsurprising since the U.S. economy in 2009/10 was different from the economy in 2018/19. In 2009/10, the U.S. economy was beginning to slow – economic growth was actually negative; whereas in 2018/19, the U.S. economy was growing at nearly 3%. Similarly, in 2008/09 the unemployment rate in the U.S. was nearing 10 percent, leading into a recession; whereas in 2018/19, the unemployment rate was below 5 percent. In both cases, the positive spillovers from economic activity (in this case production and sales of sugar in the United States) would have generated different indirect and induced effects. As the economy was functioning at a much higher level of efficiency in this latter period, those spillover impacts were greater, even though the industry had lost some direct jobs and direct economic impacts from the loss of several important regions (Hawaii) and processing facilities over that period.

Table 1. Economic impact of the sugar industry on the U.S. economy (million dollars).

	Direct	Indirect	Induced	Total
Sugarbeet Field	$1,217	$755	$380	$2,352
Sugarbeet Factory	$2,752	$3,663	$2,163	$8,578
Total Beet Sugar	**$3,969**	**$4,418**	**$2,543**	**$10,930**
Sugarcane Field	$1,100	$826	$791	$2,717
Sugarcane Factory	$1,500	$2,079	$1,040	$4,619
Total Raw Cane Sugar	**$2,600**	**$2,905**	**$1,831**	**$7,336**
Cane Refining	$1,631	$2,261	$1,131	$5,023
Total Cane Sugar	**$4,231**	**$5,166**	**$2,962**	**$12,359**
Total Sugar	**$8,200**	**$9,584**	**$5,505**	**$23,289**

Table 2. Employment impact of the sugar industry on the U.S. Economy.

	Direct	Indirect	Induced	Total
Sugarbeet Field	21,459	27,270	15,716	64,445
Sugarbeet Factory	4,138	17,518	11,774	33,430
Total Beet Sugar	**25,597**	**44,788**	**27,490**	**97,875**
Sugarcane Field	9,281	7,007	5,348	21,636
Sugarcane Factory	1,384	8,156	5,660	15,200
Total Raw Cane Sugar	**10,665**	**15,163**	**11,008**	**36,836**
Cane Refining	1,505	8,868	6,154	16,527
Total Cane Sugar	**12,170**	**24,031**	**17,162**	**53,363**
Total Sugar	**37,767**	**68,819**	**44,652**	**151,238**

Table 3. Impact of wages from the sugar industry on the U.S. economy (million dollars).

	Direct	Indirect	Induced	Total
Sugarbeet Field	$223	$248	$139	$610
Sugarbeet Factory	$273	$424	$1,137	$1,834
Total Beet Sugar	**$496**	**$672**	**$1,276**	**$2,444**
Sugarcane Field	$399	$271	$249	$919
Sugarcane Factory	$132	$480	$282	$894
Total Raw Cane Sugar	**$531**	**$751**	**$531**	**$1,813**
Cane Refining	$287	$701	$480	$1,468
Total Cane Sugar	**$818**	**$1,452**	**$1,011**	**$3,281**
Total Sugar	**$1,314**	**$2,124**	**$2,287**	**$5,725**

Table 4. AFPC Results Versus LMC.

	LMC International 2009/10	AFPC 2018/19	% Change
Jobs (full time equivalent)			
Direct Employment	39,958	37,767	-5%
Direct, Indirect and Induced Employment	142,457	151,238	6%
Value added (million dollars)			
Direct	$8,404	$8,200	-2%
Direct, Indirect and Induced Value Added	$19,474	$23,289	20%
Wages paid (million dollars)			
Direct	$1,172	$1,314	12%
Direct, Indirect and Induced Wages	$4,178	$5,725	37%
Productivity			
Sugar production (million tons)	7.97	8.99	13%
Tons of domestic sugar per employee (excludes refining jobs)	216	248	15%

Section IV – Community Profiles

While the preceding sections quantify the economic impact of the U.S. sugar industry, the numbers don't tell the full story. To really understand the impact the sugar industry has on the United States, one must take a look at the local communities in which the industry is located. In many of these locations, the sugar industry is one of the primary economic drivers underpinning the economic sustainability of the local community. This report highlights six such communities around the United States, including three in each of the sugarbeet and sugarcane growing regions of the United States. The locations are highlighted on the map in Figure 8. The locations were selected based on discussions with American Sugar Alliance staff.

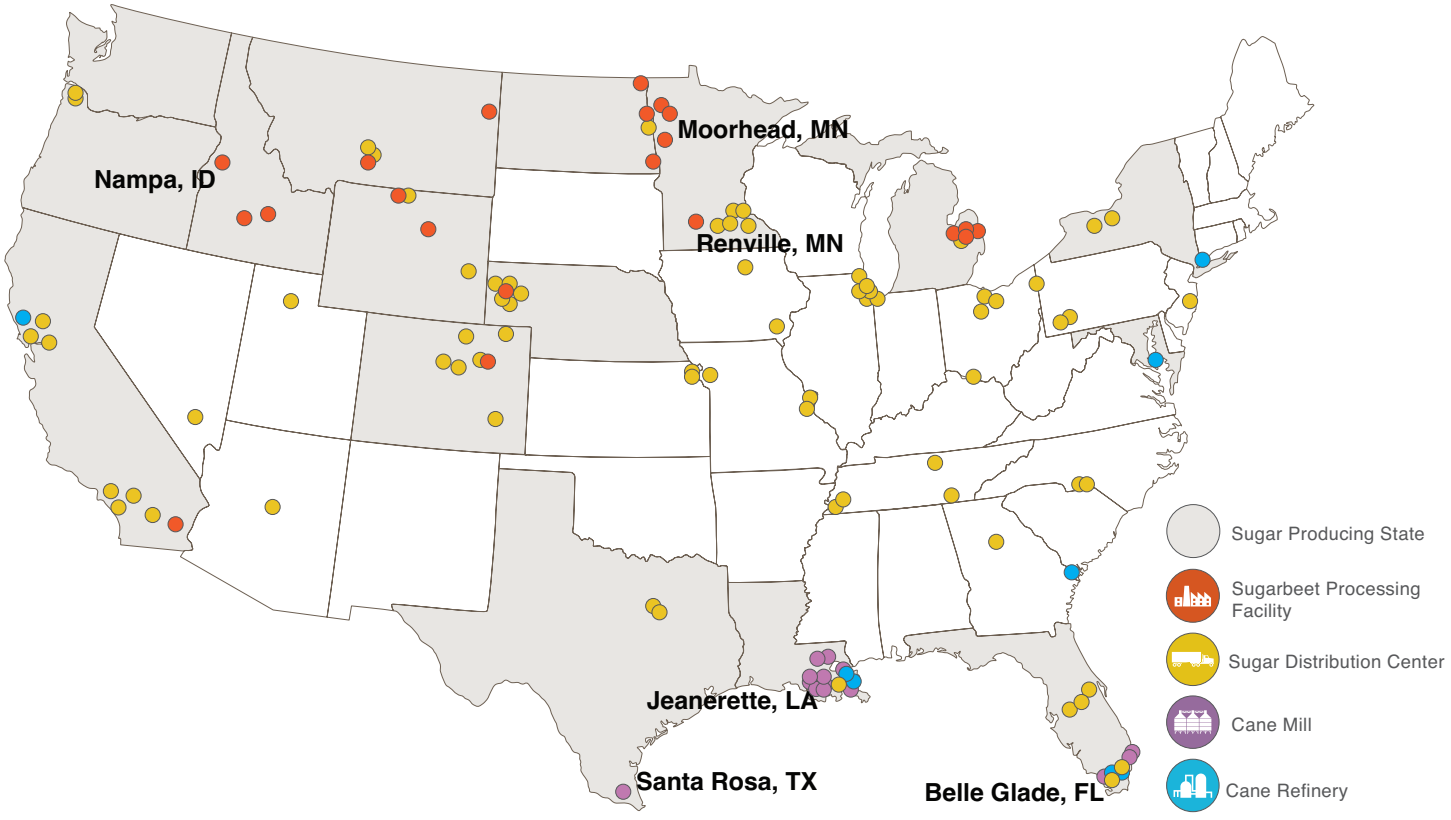

Figure 8. U.S. Sugar Growing Regions and Profiled Communities.

Moorhead, MN

The fertile Red River Valley is a swath of land approximately 35 miles wide on both sides of the North Dakota and Minnesota border, extending south from the United States border with Canada about 200 miles. In Minnesota, the sugarbeet industry supports 20,841 jobs, contributing $3 billion annually to the state's economy. Across the river in North Dakota, the industry supports 12,010 jobs and contributes $1.8 billion annually to the state's economy.

Approximately 2,600 sugarbeet growers in the Minnesota and North Dakota areas of the Red River Valley own American Crystal Sugar Company, an agricultural cooperative. Sugarbeet growers organized the company in 1973 to acquire the business and assets of the original American Crystal Sugar Company, a publicly held New Jersey corporation established in 1899. The current-day shareholders not only produce the crop, they own the company and all related facilities that process sugarbeets grown on approximately 410,000 acres of fertile Red River Valley soil. This organizational framework allows the producers to work collaboratively toward a common goal, allowing them to share in the fruits of their labor.
While the landscape of the Red River Valley in both Minnesota and North Dakota is dotted with American Crystal Sugar facilities (locations include Crookston, East Grand Forks and Moorhead, Minnesota; Drayton and Hillsboro, North Dakota), Moorhead, MN is the company headquarters and also home to one of their sugarbeet processing plants (Figure 9). Moorhead lies just across the North Dakota-Minnesota border from Fargo, ND and is part of the Fargo-Moorhead metropolitan area. The 2020 census reported a population of 44,505 for Moorhead. American Crystal Sugar Company throughout its various locations provides annual employment for approximately 1,400 employees (1,100 full-time and 300 seasonal).

Lynn Paulson, Senior VP and Director of Agribusiness Development with Bell Bank in Fargo, ND, provided a tremendous amount of feedback regarding the impact of the sugar industry on the region and its respective communities. Mr. Paulson has been involved in financing Red River Valley sugarbeet growers for almost four decades. He indicated his perception changed quickly once he became involved in the industry both from a lending and credit perspective and from a more macro perspective.

Mr. Paulson noted that "beets have been an economically stabilizing crop for its growers. It's helped bridge significant downturns in some of the other commodities raised in the area. It's kept small town main street businesses afloat. The beet cooperatives and their maintaining and upgrading of their factories have helped countless companies and businesses grow and thrive."

The economic impact and benefit that the sugar industry provides has been well documented. According to Paulson, "that economic benefit goes far beyond the farm gate – far beyond local communities. It goes beyond just making capital purchases (equipment, land, etc.) to grow or improve their farm operation. It also goes to larger metropolitan

Figure 9. American Crystal Sugar Processing Plant, Moorhead, MN.

areas. Growers may help their children buy a house or start a business in Fargo or Grand Forks. They may invest some of their profits in businesses outside the farm, etc. When beet farmers are profitable, they reinvest those dollars, it's not very often they just sit as cash."

Over the course of Paulson's four decades in the banking industry, he's seen it from several perspectives: the grower (who may be or may not be the "owner" of the beet stock), landowners (often retired) that may be getting increased land rents, agribusinesses that are involved in the sugarbeet industry, employees at the beet factory and the hundreds of ordinary citizens – retired people, people from outside the valley, regular folks that take/make time to help with the harvest, just to name a few – that answer the call for workers to assist in the fall beet harvest. According to Paulson, "the broad and overarching economic benefit cannot be overstated." He also acknowledged that the economic stability provided by the sugar industry also helps limit the outward migration to other states by people of all demographic segments.

Mr. Paulson also highlighted another significant role that sugarbeet growers and the sugar industry play: giving back to the local area and communities. According to Paulson, sugarbeet growers are "terrific corporate citizens. They understand their role and impact to the area." "Not to mention, the sugar program helps the American consumer have a reliable and stable supply of sugar – all at little to no cost to taxpayers."

Mr. Paulson firmly believes that sugarbeet growers "tend to be the best of the best. It's really hard to find a poor beet field. They have great respect for and are great stewards of the land."

In a recent Ag Week article highlighting the "all hands on deck" nature of the sugarbeet harvest, Harrison Weber, executive director of the Red River Valley Sugarbeet Growers Association, indicated that in a given year the farm aspect alone for the harvest requires 7,000-10,000 people. Notably, the article states "Cafes, field delivery co-ops, equipment dealers, part suppliers and many other local businesses play a large and integral role in the success of the region's sugarbeet harvest." Whether it's Moorhead or one of a number of other smaller towns dotting the countryside in the region, the sugar industry helps generate a tremendous amount of economic activity in the Red River Valley and beyond.[1]

[1] https://www.agweek.com/sugarbeet/7175126-Sugarbeet-harvest-an-all-hands-on-deck-endeavor-in-the-Red-River-Valley.

Renville, MN

Minnesota is the largest sugarbeet producing state with over 11 million tons produced in 2020. Southern Minnesota Beet Sugar Cooperative (SMBSC) members grow sugarbeets in 20 counties in this major production region. This 100 percent shareholder/grower-owned beet sugar extraction cooperative located on the outskirts of Renville, MN, was founded in 1972 and is now comprised of just over 500 shareholders producing approximately 3.6 million tons of sugarbeets annually (yielding approximately 1 billion pounds of refined sugar). SMBSC provides employment for 370 full-time, benefit-eligible employees with an additional 360 additional employees hired on a seasonal basis to assist with harvest. To put into perspective what the employment figures mean to the community, Renville is a city with a population of

Figure 10. Southern Minnesota Beet Sugar Cooperative.

1,301 residents as of the 2020 census. Many of the full-time jobs are held by highly skilled workers with mechanical and/or technical training. The contribution to the local economy in annual payroll is estimated at $25 million. The city website proudly states, "Renville serves as an agricultural service and distribution center for the surrounding area." Renville is home to the largest beet factory in Minnesota, slicing up to 16,500 tons/day. We reached out to several community leaders and professionals that could speak to the importance of SMBSC to the region. Below are noteworthy anecdotes from a couple of leaders eager to speak to the impact of SMBSC on the area.

Stewardship and being a good neighbor were common themes. DeeAnne Newville, CEO of Renville-Sibley Cooperative Power Association, indicated that SMBSC accounts for roughly half of their kWh electricity sales. They are a relatively small rural electric cooperative, the smallest in the state of Minnesota. Ms. Newville stressed that a cooperative is the best business model and noted that she witnesses SMBSC's shared cooperative values in her interactions with their leadership team. Ms. Newville shared a story from a few years ago where SMBSC was interested in saving some money as electricity is a large variable cost for the cooperative. SMBSC had great awareness that cost savings for them might mean increased costs being passed along to other members of the cooperative. This stewardship, community partnership, and overlap of members in many cases, really came to light in how they wished to make the best decisions for their business while also making sure not to negatively impact other members of the electric cooperative.

Shane Wohlman is the City Administrator/Clerk for the City of Renville, Minnesota. His wife Corina, along with his son Spencer, are also employed at SMBSC. His parents started and owned a security company for 28 years, and SMBSC was their first and largest client. With such personal connections to the cooperative, it was no surprise when he stated "SMBSC has been a part of my whole life." He went on to say "Even though SMBSC is not specifically in the city limits of Renville, the economic impact that it has on Renville and Renville County as a whole are enormous. The jobs that are provided are not just average jobs, but excellent paying jobs with great benefits. There is such a vast array of jobs as well – environmental, lab, safety, machinery operators, welders, electricians, pipe fitters, etc. The list goes on and on. These are not just jobs, but careers. With good paying jobs, that brings people. And with people, that brings families. People and families are of course the backbone of any community."

He indicated the City of Renville once used the slogan "Cooperative Capital" and indicated the consensus is without SMBSC, the makeup of the city would be much different. According to Mr. Wohlman, "housing would not be a hot commodity, the grocery store would suffer, the café and local bar would definitely feel the impacts as well. All of these businesses benefit from [SMBSC]."

Nampa, ID

While much of sugarbeet production in the United States is concentrated in the Red River Valley in Minnesota and North Dakota, in 2020, Idaho ranked second in sugarbeet production in the United States with over 6.8 million tons grown. In Idaho, sugarbeet farmers and the sugarbeet industry overall support 19,858 jobs and contribute $2.3 billion annually to the state's economy.

Amalgamated Sugar Company, operating in multiple locations in Idaho and headquartered in Boise, is a grower-owned cooperative involved in producing sugar from sugarbeets grown by its more than 700 members. Amalgamated Sugar Company is the second largest manufacturer of sugar from sugarbeets in the United States and sells sugar across the country through its national sales company, National Sugar Marketing LLC. Amalgam-

ated Sugar Company employs 1,767 employees (99 percent are in Idaho and Oregon) and contributes $115 million in annual payroll to residents of local communities.

While Amalgamated Sugar Company is headquartered in Boise, ID, the company operates factories and facilities in communities across Idaho including Nampa, Twin Falls, and Mini-Cassia. While this profile focuses on Nampa and the surrounding area (including Parma), sugarbeet farmers and the overall sugarbeet industry are no less important to the other communities in which they are located around the state. For example, the Mini-Cassia factory, located in Minidoka County, Idaho, is the largest employer in the county, providing 10 percent of the county's jobs.

Located in the western part of the state, the city of Nampa is home to an Amalgamated Sugar Company factory, which is the 6th largest private employer in the city, annually employing between 500-600 workers.[2] Another 20 miles northwest of Nampa is the town of Parma, a small farming town of approximately 2,000 residents. Roger Blaylock, General Manager of Parma Company, an agricultural manufacturing firm that has produced sugarbeet harvesting equipment in Parma, ID, for over 65 years, reflected on the importance of the sugar industry in this region of the state. Sugarbeets are a specialized crop naturally requiring specialized harvesters, and Parma takes pride in being one of only four manufacturers producing sugarbeet harvesters and the sole producer of harvesters remaining in the Western United States.

Figure 11. Amalgamated Sugar Factory. Source: https://www.idahopress.com/news/local/amalgamated-sugar-factory-celebrates-75-years/article_31fa8241-4002-5abe-9650-6230f2764139.html

Sugarbeet farmers and the sugar industry are vital to this rural southwest Idaho community. Although the company has diversified its business, reaching beyond sugarbeet harvesting equipment, the sugar industry remains critical for the company and still represents a sizable portion of their business and customer base. According to Mr. Blaylock, "even in years when sugarbeet harvesting equipment and related sales may only represent 10 percent of revenues, the sugar industry is still the foundation and heartbeat of the company, much like it is the lifeblood of communities in the areas of eastern Oregon and across all southern Idaho."

Parma continues to provide state-of-the-art engineering and updated technology for beet farmers and the sugar industry. Mr. Blaylock indicated that in the region there are "a lot of row crops, but beets are one of the main cash crops; sugarbeets remain a very solid cash crop for Idaho and the region." Mr. Blaylock went on to say, "for many people here, it is their life." He also fondly remembered how he grew sugarbeets and worked in the fields hoeing weeds as a child on their small family farm.

Mr. Blaylock stressed "while the sugar industry may not seem large as a whole, compared to other crops grown, there is so much beneath the surface that supports it and keeps it going and thriving. What you see on the surface and think of is just the tip of the iceberg." Even in his company, sugar helps provide jobs and a way of life for the company's employees. "The sugar industry is really continuing to sustain a way of life for communities in America, and the world."

[2] https://www.cityofnampa.us/848/Leading-Employers.

Santa Rosa, TX

In Texas, sugarcane farmers and the sugarcane industry support 2,368 jobs, contributing $218 million annually to the state's economy. Near the southern tip of Texas, along the border with Mexico, lies Santa Rosa, TX, a small, rural town of fewer than 3,000 residents as of the last census. Santa Rosa is also home to the Rio Grande Valley Sugar Growers, Inc. (RGVSG), a member-owned cooperative comprised of more than 125 farmers that utilize more than 40,000 acres of rich South Texas farmland in the cultivation of sugarcane crops each year.

RGVSG is a fixture in the community, employing 200 full-time employees and another 300 seasonal workers during the harvesting period from October to April. The total operating budget of the cooperative exceeds $50 million, including an annual payroll of $15 million. RGVSG is one of the top 10 producers of raw sugar in the United States, processing more than 1.4 million tons of sugarcane annually, producing nearly 140,000 tons of raw sugar and 50,000 tons of molasses. The raw sugar is transported to Louisiana through the Port of Harlingen via barge for refining, and the molasses is sold for cattle feed.

Figure 13. RGVSG Mill. Source: https://portofharlingen.com/2021/04/12/portraits-rio-grande-valley-sugar-growers/#

Figure 12. Logo for Rio Grande Valley Sugar Growers, Inc. Source: https://www.rgvsugar.com

In a recent interview with the Port of Harlingen, Sean Brashear, CEO of RGVSG, noted that they "waste nothing and use everything at the RGV Sugar Mill. The leftover crushed cane is then moved directly to boilers and used as fuel to generate electricity. We also collect ash from the boilers and deposit it, along with residual soil that is collected during clarification, on nearby fields as a form of fertilizer." Mr. Brashear also noted that "shipping through the Port via barge not only saves money with how many trucks it would take to ship to Louisiana 140,000 tons of raw sugar, but also save on carbon emissions and highway safety

from keeping those trucks off the road. It is reliable, safe, and efficient, qualities we value."[3]

While every part of the sugarcane plant is utilized and nothing goes to waste, operating RGVSG still relies on a number of local vendors. For example, for one local equipment vendor we contacted, RGVSG provides a substantial stream of annual equipment rental revenue as well as parts sales revenue for keeping their owned equipment running. That revenue helps the vendor to employ mechanics, rental coordinators, and parts staff. Hauling services for this vendor are also outsourced, so the business generated by RGVSG also provides economic benefit for the haulers. The vendor said that they know first-hand that RGVSG is a huge employer for people not only in Santa Rosa but also in neighboring rural communities. They hire many employees directly out of school, providing entry-level jobs for those seeking opportunities.

When asked about the importance of sugarcane to the area, Jacob Sosebee of Nutrien Ag Solutions in the Rio Grande Valley said "the economic impact is exhaustive." Mr. Sosebee indicated that the sugar industry supports 30 employees for Nutrien Ag Solutions in the Rio Grande Valley alone.

Beyond the farmers that grow sugarcane in the area, RGVSG's employees are also active in the local communities. For example, Ofelia Gonzales, who works for RGVSG processing data in the mill, is also a member of the local Rotary. The sugar mill is one of the Rotary's main sponsors, funding scholarships for students, a Christmas parade, a free circus, Thanksgiving dinners for the community, and winter clothes and blankets for local children.[4] RGVSG also partners with Ronald McDonald House and supports the Rio Grande Valley Livestock Show & Rodeo.

[3] https://portofharlingen.com/2021/04/12/portraits-rio-grande-valley-sugar-growers/.
[4] https://www.youtube.com/watch?v=2Gcp-ySAu-A&list=PLNt8oG42m2_tk4f43csiUJ6VTlHakrpWV.

Belle Glade, FL

Just southeast of Lake Okeechobee in Florida lies the small town of Belle Glade. The town's motto really says it all: "her soil is her fortune." This high organic matter muck soil is the perfect medium for growing sugarcane. According to the Palm Beach County Cooperative Extension Service, "sugarcane is planted on approximately 440,000 acres in the Everglades Agricultural Area (EAA), making it the most extensively grown row crop in Florida. Production is primarily on land along or near the southern half of Lake Okeechobee. Most of the production is in Palm Beach County, but sugarcane is also grown in Hendry, Glades and Martin counties. Eighty percent of the crop is grown on high organic matter muck soils and 20% is grown on sand. About 50% of the cane sugar produced in the U.S. comes from Florida, which

Figure 14. Everglades Equipment Group in Belle Glade, FL. Source: https://www.evergladesfarmequipment.com/locations/belle-glade/

Figure 15. Sugar Farmers Presentation to Students at Glades Day School. Source: Glades Day School, Belle Glade, FL

Figure 16. Students from West Technical Education Center in Belle Glade discuss career opportunities in the sugar industry. Source: Florida Crystals Corporation.

accounts for about 20% of all sugar consumed (cane and beet) in the country."[5] Florida sugarcane growers and the Florida sugar industry support 19,201 jobs and contribute $4.7 billion annually to the state's economy. This area of the country is also known by some as the winter vegetable capital of the United States, providing an important rotation crop for local producers.

Figure 17. Glades Day School Students with Hog Barn Project. Source: Glades Day School, Belle Glade, FL

One could easily write an entire report on the various sugar organizations and vendors that keep sugarcane growers and the industry around Belle Glade afloat. But, one example we highlight here is Everglades Equipment Group, which was initially founded in 1963 as a farming operation around southeastern Lake Okeechobee.[6] Over the past 50 years, the Schlechter family has grown the operation into one of the largest John Deere dealerships in the world, with 18 locations ranging from just north of Orlando in central Florida to Homestead just outside of Miami. Mike Schlechter, the President of the company, is quick to credit sugarcane farmers for the role they have played in the success of their business. "The sugar industry is the backbone of our business," acknowledged Schlechter. Despite

[5] https://discover.pbcgov.org/coextension/agriculture/pages/sugarcane.aspx.
[6] https://www.evergladesfarmequipment.com/about-us/.

Figure 18. Students from Glades Day School Visit Local Farm. Source: Glades Day School, Belle Glade, FL

Figure 20. Florida Sugar Farmers Donate Food to Lakeside Medical Center Staff. Source: Health Care District of Palm Beach County

Figure 21.Florida Sugar Farmers Donate Food to Lakeside Medical Center Staff. Source: Health Care District of Palm Beach County

Figure 19. Florida Sugar Farmers Support Lakeside Medical Center in Belle Glade, FL. Source: Health Care District of Palm Beach County

Figure 22. Florida Sugar Farmers Donate Food to Lakeside Medical Center Staff. Source: Health Care District of Palm Beach County

Figure 23. Florida Sugar Farmers Donate Food to Lakeside Medical Center Staff. Source: Health Care District of Palm Beach County

branching out all across Central and South Florida, the store in Belle Glade remains Everglade's largest by dollar volume. In fact, the fleet of rental equipment deployed in sugarcane production around Belle Glade provides the inventory that, in part, facilitated Everglade's expansion into other areas of the state.

Sugar cane farmers in Belle Glade are also a lifeline for the local community. According to Amie Pitts, Head of School, Glades Day School, "sugar cane growers have significantly impacted our school and community in multiple ways. Financially, our school would not exist without the support of cane farmers. Through annual giving, fundraiser support, and specific project sponsorships, the sugar industry provides our school with ongoing funding to sustain our current programs and empower growth and improvement.

Educationally, sugarcane growers impact our students through on-campus presentations, in-field hands-on learning experiences, and internship programs. Collectively, each of these opportunities fulfills areas in our STEM and Agriscience curriculum. As one of the largest employers in our area, the sugarcane industry employs many of our alumni and families. The positive impact that sugarcane growers and the sugar industry have on our community has also driven economic development, fueling other businesses to thrive and support the mission of Glades Day School. Conclusively, the sugar industry is a lifeline to our school, families, and community, and we are abundantly grateful for their support."

Sugarcane growers around Belle Glade have also been an important partner with the Health Care District of Palm Beach County. Sugar Cane Growers Cooperative of Florida, a member cooperative comprised of 41 small to medium-sized farms, donated $360,000 in financial support for Lakeside Medical Center in Belle Glade, FL, including for the development of the new hospital. A number of sugarcane farmers and other members of the local sugar industry provided financial support to Lakeside Medical Center as well (Figure 19).

In May 2020, in the midst of the early months of the COVID-19 pandemic, Florida Crystals and Hundley Farms donated locally grown food including rice, sweet corn and Florida Crystals® Organic Raw Cane Sugar to the Lakeside Medical Center's medical and support staff (Figure 20).

Dennis Grady with the Chamber of Commerce of the Palm Beaches noted that "sugar farmers in Palm Beach County have been a vital component of the business leadership in [the] county." He highlighted that the industry has been vital in providing financial support and leadership for key community efforts. "School bond issues and the establishment of a Countywide Health Care District to help the underserved in our county in this important area are just two important county wide efforts that would not have succeeded without support from the industry," said Mr. Grady.

Mr. Grady also noted that sugarcane farmers and the sugar industry have served the region "very well during economic downturns." For example, Mr. Grady explained that when "other major industries suffered significant layoffs and business slowdown" during the COVID-19 pandemic "the sugar industry continued strong economic activity providing needed stability to the economic engine of Palm Beach County." Sugarcane farmers and the sugar industry also stepped in to help out in other tangible ways during the pandemic. For example, U.S. Sugar donated Chick-fil-a food to the Lakeside Medical Center's medical and support staff (Figures 21-23). These examples highlight the myriad ways sugarcane growers, their families, and the overall sugar industry are involved in helping sustain the local economy in and around Belle Glade, FL.

Jeanerette, LA

The state of Louisiana has a rich agricultural heritage, and sugarcane has long been and remains the leading row crop. In Louisiana, sugarcane farmers and the sugarcane industry support 19,600 jobs and contribute $4.2 billion annually to the state's economy.

The town of Jeanerette, LA, "is situated in the heart of Acadiana, in Iberia parish, along the beautiful banks of Bayou Teche." The town of Jeanerette was charted in 1878 and grew from the cypress lumber and sugar industries. Sugarcane, a key factor in the community's economic growth for the past 200 years boasts two active sugar mills. Jeanerette is the home of manufacturers of equipment for the cultivation, harvesting and processing of sugarcane. Cane harvesting season (grinding) starts in October and goes through December.[7]

[7] https://www.jeanerettemuseum.com/our-crew.

According to the city, "for nearly 200 years, sugar production has been the financial backbone of Jeanerette."[8] Sugar's role in the culture and local economy are enshrined in in the town's nickname – "Sugar City" – and both the nickname and sugarcane feature prominently in the town's logo (Figure 24). Even the town museum, a "100-year-old cypress home built in 1902 and dedicated as a museum in the bicentennial year of 1976" pays homage to the last 200 years of sugarcane production and processing in Jeanerette. The museum has "a sugarcane patch growing on site, along with a working antique sugar mill and early-mechanized cane-harvesting equipment."

According to the American Sugar Cane League, there are currently 11 raw sugar factories operating in Louisiana. Commonly known as "sugar mills," these facilities are primarily located in south Louisiana. While the number of sugar mills in the state has decreased over the past four decades, this is due to the increased efficiency of factories rather than a drop in sugar production. Today's Louisiana sugar mills have become so efficient that it takes fewer mills to process the cane – even though sugarcane production remains at or near all-time highs.[9]

[8] https://www.jeanerette.com/history.html.

Figure 24. City Logo for Jeanerette, LA. Source: http://www.jeanerette.com/history.html

Figure 25. Picture of St. Mary Sugar Cooperative, Inc. Mill. Source: https://www.amscl.org/sugar_news_archives/st-mary-sugar-doing-the-right-thing/

Five of the 11 sugar mills in Louisiana lie along the I-90 corridor southeast of Lafayette – one of those is St. Mary Sugar Cooperative, Inc. in Jeanerette (Figure 25). Built in 1946, St. Mary Sugar's first year of operation was in 1947. According to David Thibodeaux, General Manager, "today we're grinding more cane than they ever imagined compared to what they were doing in 1947. They were doing 70,000 tons of cane in an entire crop and we do that in less than a week now."[10]

St. Mary Sugar employs 110 people in Jeanerette – providing stable employment for the region – with that number swelling to 275 during grinding season. "We have a lot of good employees," Thibodeaux said. "They're dedicated. Some of them have 35 years of experience here and some of them have worlds of experience at other mills and then came here. When you put it all together, it takes all of that to run a sugar house."[11]

Mr. Thibodeaux also noted that St. Mary Sugar does a lot of business in the local community. They pay a significant amount of taxes to the local community. They buy fuel and electricity from local vendors. They also maintain an $8 million repair budget, with much of that being spent in the local community.

Mr. Thibodeaux noted the significant impact St. Mary Sugar has on the local economy. While he lamented the fact that "it costs a lot of money to make sugar," he is clearly proud of the fact that sugarcane farmers and the sugar industry in southern Louisiana help contribute to a stable, affordable supply of sugar for consumers throughout the United States.

[9] https://www.amscl.org/industry-info/raw-sugar-factories/.
[10] https://www.amscl.org/sugar_news_archives/st-mary-sugar-doing-the-right-thing/.
[11] https://www.amscl.org/sugar_news_archives/st-mary-sugar-doing-the-right-thing/.

Appendix A. State and Region Sugarbeet Results

Table 1: Economic Impact of the sugar industry on the US economy (million dollars)

Value Added	Total				Farm				Factory			
	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total
Colorado, Montana, Nebraska, and Wyoming	$628	$673	$346	$1,647	$192	$112	$55	$359	$436	$561	$291	$1,288
California, Idaho, Illinois, Oregon, Washington, and Utah	$1,108	$1,150	$633	$2,891	$382	$231	$113	$726	$726	$919	$520	$2,165
Michigan, Minnesota, and North Dakota, Iowa and Ohio	$2,233	$2,595	$1,564	$6,392	$643	$413	$212	$1,268	$1,590	$2,182	$1,352	$5,124
Total	$3,969	$4,418	$2,543	$10,930	$1,217	$756	$380	$2,353	$2,752	$3,662	$2,163	$8,577

Table 2: Employment impact of the sugar industry on the US Economy

Jobs	Total				Farm				Factory			
	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total
Colorado, Montana, Nebraska, and Wyoming	8170	11655	6085	25910	7433	8492	4314	20239	737	3163	1771	5671
California, Idaho, Illinois, Oregon, Washington, and Utah	5823	12019	6945	24787	4514	6669	3593	14776	1309	5350	3352	10011
Michigan, Minnesota, and North Dakota, Iowa and Ohio	11604	21114	14460	47178	9512	12109	7809	29430	2092	9005	6651	17748
Total	25597	44788	27490	97875	21459	27270	15716	64445	4138	17518	11774	33430

Table 3: Impact on wages from the sugar industry on the US economy (million dollars)

Wages	Total				Farm				Factory			
	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total
Colorado, Montana, Nebraska, and Wyoming	$148	$190	$240	$578	$98	$111	$57	$266	$50	$79	$183	$312
California, Idaho, Illinois, Oregon, Washington, and Utah	$177	$262	$603	$1,042	$38	$45	$25	$108	$139	$217	$578	$934
Michigan, Minnesota, and North Dakota, Iowa and Ohio	$171	$220	$433	$824	$87	$92	$57	$236	$84	$128	$376	$588
Total	$496	$672	$1,276	$2,444	$223	$248	$139	$610	$273	$424	$1,137	$1,834

Appendix B. State Sugarcane Results

Table 1: Economic Impact of the sugar industry on the US economy (million dollars)

Value Adde	Total				Farm				Factory			
	Direct	**Indirect**	**Induced**	**Total**	**Direct**	**Indirect**	**Induced**	**Total**	**Direct**	**Indirect**	**Induced**	**Total**
Florida	$1,265	$1,372	$1,010	$3,647	$515	$399	$472	$1,386	$750	$973	$538	$2,261
Louisiana	$1,266	$1,446	$759	$3,471	$558	$407	$297	$1,262	$708	$1,039	$462	$2,209
Texas	$69	$87	$62	$218	$27	$20	$22	$69	$42	$67	$40	$149
Total	$2,600	$2,905	$1,831	$7,336	$1,100	$826	$791	$2,717	$1,500	$2,079	$1,040	$4,619

Table 2: Employment impact of the sugar industry on the US Economy

Jobs	Total				Farm				Factory			
	Direct	**Indirect**	**Induced**	**Total**	**Direct**	**Indirect**	**Induced**	**Total**	**Direct**	**Indirect**	**Induced**	**Total**
Florida	4597	6774	5686	17057	4048	3295	3089	10432	549	3479	2597	6625
Louisiana	5589	7352	4471	17412	4855	3544	2121	10520	734	3808	2350	6892
Texas	479	1037	851	2367	378	168	138	684	101	869	713	1683
Total	10665	15163	11008	36836	9281	7007	5348	21636	1384	8156	5660	15200

Table 3: Impact on wages from the sugar industry on the US economy (million dollars)

Wages	Total				Farm				Factory			
	Direct	**Indirect**	**Induced**	**Total**	**Direct**	**Indirect**	**Induced**	**Total**	**Direct**	**Indirect**	**Induced**	**Total**
Florida	$281	$343	$283	$907	$221	$138	$152	$511	$60	$205	$131	$396
Louisiana	$233	$376	$224	$833	$167	$126	$90	$383	$66	$250	$134	$450
Texas	$17	$32	$24	$73	$11	$7	$7	$25	$6	$25	$17	$48
Total	$531	$751	$531	$1,813	$399	$271	$249	$919	$132	$480	$282	$894

Table 4. Value added from raw cane sugar production - direct, indirect and induced for Refinery and Marketing

	Direct	Indirect	Induced	Total
Florida	$328	$470	$246	$1,044
CA and LA	$676	$1,080	$504	$2,260
NY, MD, GA and others	$627	$711	$381	$1,719
Total	**$1,631**	**$2,261**	**$1,131**	**$5,022**

Table 5. Emplotment from cane sugar production - direct, indirect and induced for Refinery and Marketing

	Direct	Indirect	Induced	Total
Florida	154	1178	819	2151
CA and LA	634	4186	2707	7527
NY, MD, GA and others	717	3504	2628	6849
Total	**1505**	**8868**	**6154**	**16527**

Table 6. Wages paid from cane sugar production - direct, indirect and induced for Refinery and Marketing

	Direct	Indirect	Induced	Total
Florida	$28	$72	$51	$151
CA and LA	$122	$348	$229	$699
NY, MD, GA and others	$137	$281	$200	$618
Total	**$287**	**$701**	**$480**	**$1,468**