Implications of COVID-19 on Tennessee Exports of Forest Products

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Introduction

The coronavirus (COVID-19) pandemic has spread across the globe since the first death in China in early January 2020. As COVID-19 began to spread across the U.S. in March 2020, businesses closed and individuals were asked to limit trips and comply with shelter-in-place or stay-at-home orders (Baker et al., 2020). Countries around the globe imposed similar measures. Consequently, the pandemic has negatively affected the global economy beyond anything experienced in nearly a century. Estimates so far indicate the virus could decrease global economic growth by 3.0 percent to 6.0 percent in 2020 (Jackson et al., 2020). While there have been extensive stories about the impact of COVID-19 on the U.S. food supply, little has been reported on how agriculture-related products primarily used in manufacturing have been impacted by COVID-19.

In this report, we examine how the COVID-19 outbreak affected Tennessee forest product exports. The impacts of COVID-19 on forest products are due to supply and demand disruptions in both the finished wood products markets (e.g., furniture) and the interrelated market for raw materials and inputs (e.g., logs and lumber). Labor disruptions due to COVID-19 have resulted in decreased incomes, resulting in decreased demand for furniture and other finished wood products. Lockdowns and stay-at-home orders have limited shopping, also decreasing demand for these products. Given that labor is a primary resource for production, distribution and sales, stay-at-home and lockdown orders have also contributed to decreased sales

due to limited product availability. Statista (2020) reported that U.S. furniture sales decreased by 21 percent in March and decreased by 49 percent in April when compared to previous months. U.S. imports of furniture and home furnishings were down $1.2 billion as of April 2020 when compared to same period (January-April) in 2019 (Census, 2020). This phenomenon is not limited to the U.S. (Jackson et al., 2020).

Any decrease in demand for finished wood products in turn negatively affects the demand for forest products. It must also be noted that forest product sales, and exports in particular, have also been directly impacted by COVID-19. Labor disruptions have affected both production and distribution of forest products. Restrictions on movement have also affected transport and other trade-/market-facilitating activities (WTO, 2020), all of which have negatively affected Tennessee forest product exports.

Like many forest-product exporting states, Tennessee exports mainly go to manufacturers in China. For instance, China accounted for almost half of Tennessee's forest product exports in 2017 (Luppold et al., 2018; U.S. Department of Agriculture, 2020). Being so reliant on China for sales, Tennessee was particularly impacted by the U.S-China trade war, which is discussed briefly in this report and in a UT Extension report published earlier this year (Muhammad and Smith, 2020). More importantly, 2020 was expected to be a recovery year for U.S. exports due to the U.S.-China Phase One Trade Agreement (signed January 2020) and the announcement in February 2020 by China's State Council Tariff Commission that U.S. commodities including forest products would be exempt from retaliatory tariffs (Inouye, 2020). Thus, it is conceivable that Chinese imports would have returned to pre-trade war levels in 2020. However, recent data show that not only did the COVID-19 outbreak thwart this potential recovery, but resulted in even greater losses when compared to 2019.

In this report we examine how the COVID-19 outbreak impacted Tennessee forest product exports. To put this in context, we provide a background and overview of Tennessee production and exports and briefly discuss how the U.S.-China trade war impacted Tennessee. To assess the impacts of COVID-19, we examine the most recent trade data for 2020 and assess how Tennessee and U.S. exports in January-April 2020 compare to the same period in previous years. We close the report with a brief summary and implications.

Overview of the Tennessee Forestry Sector

The Southeast U.S. is the world's most important center for timber production (FAO, 2019). Much of this production is pine, and forestry is a substantial part of the economy in "pine states" such as Mississippi, Alabama and Georgia. Tennessee is mostly a hardwood state; however, hardwoods are high-value and an important part of Tennessee's economy (Pelkki and Sherman, 2020).

Forestry activity is generally located in rural areas and, especially in the hardwood region, often smaller-scale than other industries. Thus, the total economic activity of the wood products industry is often underappreciated. Forestry in Tennessee provides more than 98,000 jobs and has annual economic impact of more than $24 billion (Menard, English, and Jensen, 2019), almost 3 percent of the state's economy, which means Tennessee is among the top-10 states in terms of the relative importance of forestry, alongside Maine, Wisconsin and Oregon (Pelkki and Sherman, 2020).

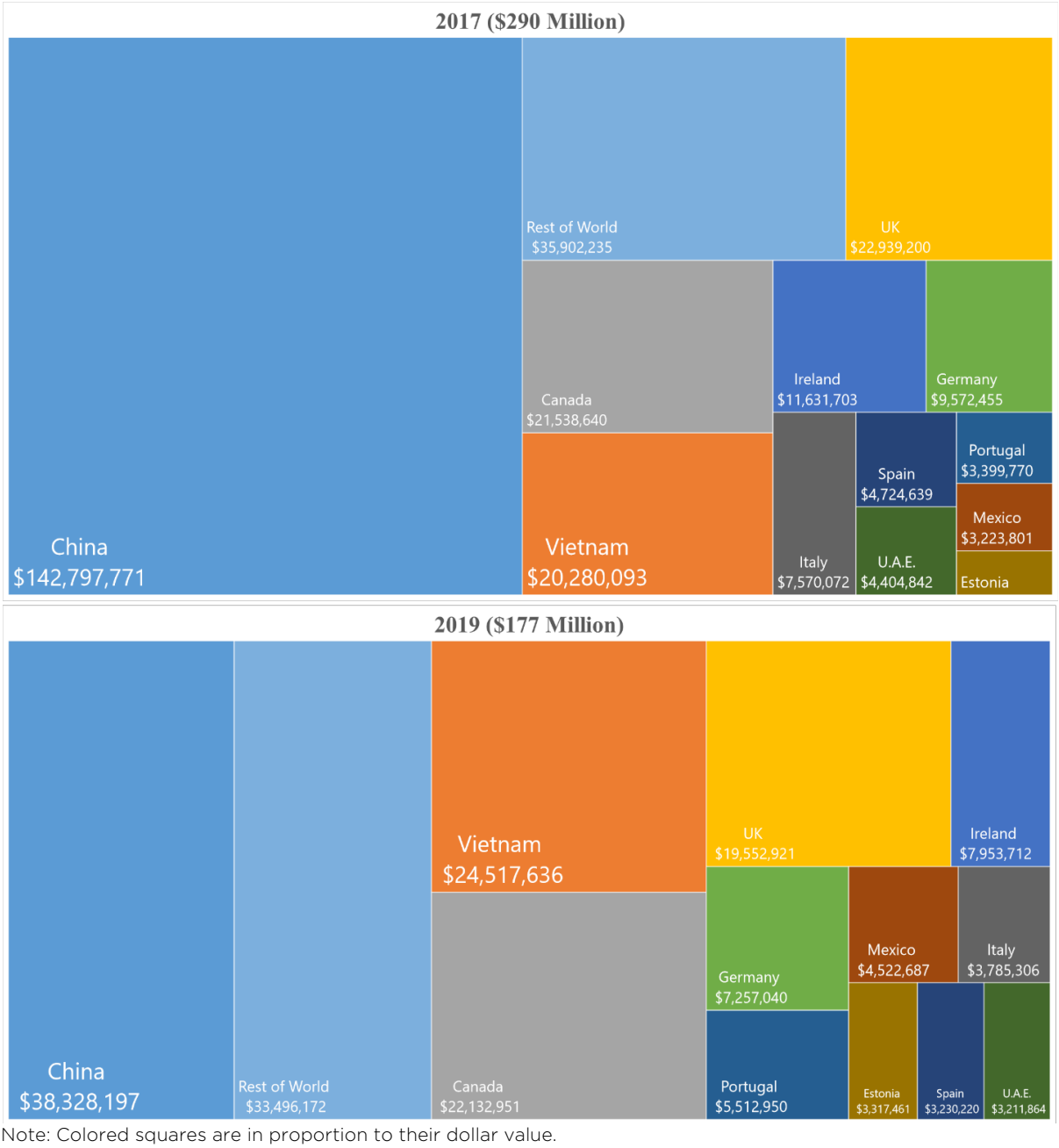
Tennessee is also a top-10 state in terms of the absolute numbers of forestry jobs, wages and economic activity. This fact puts Tennessee in the company of Georgia and Alabama — the biggest pine-producing states. Although the volume of Tennessee hardwood production is not comparable to the amount of pine produced in states like Georgia and Alabama, the high value of our hardwoods makes the forest industry in Tennessee comparably valuable (Pelkki and Sherman, 2020).

The Tennessee forest products industry is increasingly globally connected. About half of the higher-grade hardwood lumber produced by Tennessee's sawmills is now exported (Luppold et al., 2018). This globalization trend began with the decline of domestic furniture production; at that time, much of the lumber exported was returned to the U.S. in the form of finished goods. Now, however, most of the lumber and logs exported remains as finished goods in the destination countries. Tennessee is a key part of the world's "wood basket" and helps to supply the increasing global demand for forest products (FAO, 2019).

Trade War Impact on Tennessee Forest Product Exports

Before discussing the impacts of COVID-19, it is important to understand the state of Tennessee's forest product exports prior to the pandemic. In 2019, the U.S.-China trade war was in full swing. In 2018, the Trump administration imposed tariffs on Chinese woodworking and furniture industries, which impacted U.S. imports of

furniture and other finished wood products from China. This in turn decreased Chinese demand for materials (e.g., logs and lumber) used in manufacturing. In retaliation, the Chinese imposed tariffs as high as 25 percent on U.S. logs and lumber (Pryor, 2019), significantly reducing Tennessee forest product exports. Prior to the trade war in 2017, Tennessee forest product exports were valued at $290 million with almost half going to China ($143 million). In 2019, exports declined to $177 million, with exports to China falling by more than 70 percent to $38 million (**Figure 1).**



Note: Colored squares are in proportion to their dollar value.
Source: U.S. Department of Agriculture, Foreign Agricultural Service (2020)

Figure 1. Tennessee Forest Product Exports and Trade War Implications: 2017 and 2019.

Table 1 shows the leading forest products exports for Tennessee to the world and China in 2017 and 2019. Comparing 2017 and 2019 allows for assessing the impact of the trade war, which started during the second quarter of 2018. Note that Tennessee exports are mostly hardwood logs and lumber, with oak lumber accounting for a major share of overall trade. In 2017, Tennessee oak lumber exports were $127 million, with $69 million going to the Chinese market. Oak lumber was assessed the highest possible tariff (25 percent) by the Chinese government (Pryor, 2019). Consequently, Tennessee oak lumber exports were down by 34 percent in 2019, with exports to China down 70 percent. Other hardwood lumber exports decreased by 68 percent overall ($32 to $10 million) and 75 percent in China ($16 million to $4 million). Tennessee ash lumber exports declined from $23 million in 2017 to only $12 million in 2019. Ash lumber was assessed a 20 percent tariff in China. Mostly due to the trade war, 2019 was a particularly bad year for Tennessee forest product exports.

Table 1. Tennessee Forest Product Exports: 2017, 2019 (Trade War Implications)

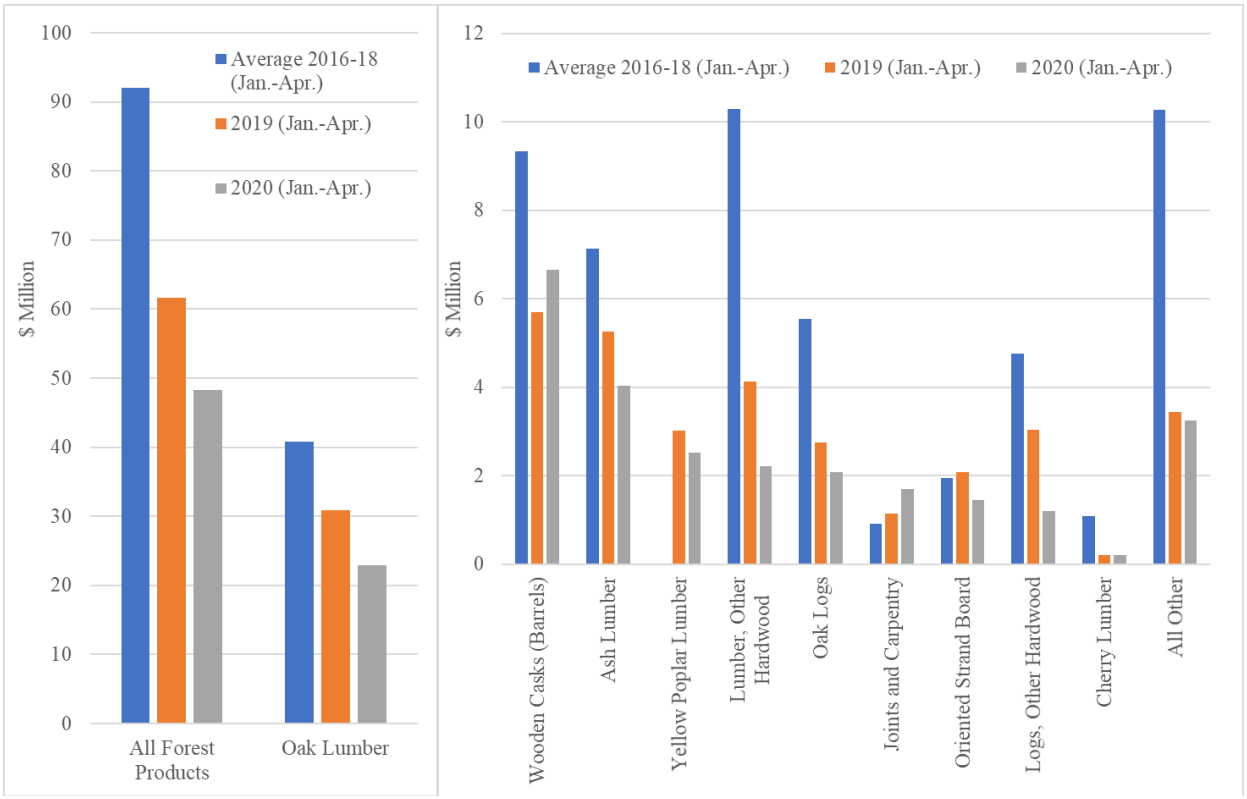
Export	World			China		
	2017	2019	% Change	2017	2019	% Change
	$ million			$ million		
Oak Lumber	$127.3	$83.8	-34%	$68.6	$20.4	-70%
Lumber, Other Hardwood	32.3	10.2	-68%	15.5	3.9	-75%
Wooden Casks (Barrels)	27.6	20.5	-26%			
Ash Lumber	22.6	12.4	-45%	15.2	5.0	-67%
Logs, Other Hardwood	19.1	6.4	-66%	15.4	3.1	-80%
Oak Logs	15.8	8.9	-43%	11.6	3.6	-69%
Logs, Softwood	9.1	0.0	-100%	6.7	0.0	-100%
Lumber, Softwood	7.0	0.0	-100%	4.1	0.0	-100%
Joints and Carpentry	5.2	4.5	-15%			
Strand Board	5.0	6.4	29%			
Cherry Lumber	3.1	0.6	-81%	2.5	0.3	-87%
Plywood (Hardwood)	2.6	0.0	-100%			
Pallets	2.4	1.5	-36%	1.2	0.7	-43%
Other Hardwood (NES)*	1.5	2.9	90%			
Maple Lumber	1.3	0.7	-46%	1.2	0.4	-66%
Door Frames	1.2	1.0	-19%			
Densified Wood	1.1	0.0	-100%			
All Other	6.0	17.1	185%	0.8	1.0	25%
Forest Products (Total)	**$290.1**	**$177.0**	**-39%**	**$142.8**	**$38.3**	**-73%**

Note: NES is not elsewhere specified.
Source: U.S. Department of Agriculture, Foreign Agricultural Service (2020)

Impacts of COVID-19 on Tennessee Exports

Figure 2 shows Tennessee forest product exports during the first four months of this year, compared with 2019 and with an average for the three previous years (2016-2018). Note that January 2020 is when the Chinese government reported the first COVID-19 death. April 2020 is the most recent trade data available, and lockdowns were still in place during that month. Since China is the leading importer of Tennessee forest products, it is likely that Tennessee exports were impacted by the COVID-19 outbreak as far back as January. Disruptions in the months that followed were due to issues in China and other countries, as well the U.S. response to the outbreak in March 2020.

In 2016-2018, Tennessee forest product exports during the first four months averaged around $92 million. Exports during this same period in 2019 were $62 million, down 33 percent, which can be attributed to the retaliatory tariffs that China imposed on U.S. forest products. Although 2019 was a particularly bad year for Tennessee, exports in 2020 were even lower by comparison. During the first four months of 2020, exports were only $48 million, down 22 percent when compared to the same four months in the previous year.



Source: U.S. Department of Agriculture, Foreign Agricultural Service (2020)

Figure 2. Tennessee Forest Product Exports (January – April): Three-year Average (2016-18), 2019 and 2020 (COVID-19 Implications).

The decline in forest product exports in 2020 is primarily driven by declines in log and lumber exports. Oak lumber, which is the leading forest product export for Tennessee, declined by $8 million (-26 percent) during the first four months of 2020 compared to the previous year. Other noted declines in 2020 relative to 2019 include ash lumber, down $1.3 million (-23 percent); other hardwood lumber, down $2 million (-46 percent); and other hardwood logs, down $1.8 million (-63 percent). Interestingly, exports of wooden casks (oak barrels), which are used in distilled spirits and wine production, actually increased in 2020. This result is to be expected since American whiskey has been growing in global popularity over the last few years, and distilled spirits beverage sales have remained relatively steady during the lockdown period. The primary takeaway from **Figure 2** is that while 2019 was a particularly bad year, exports are on track to be even lower in 2020 if markets do not recover.

Select U.S. forest product exports are reported in **Table 2**. Since trade data at the state level are reported in value only, changes in volume and prices (unit values) can only be examined at the national level. The information in **Table 2** allows us to better understand the reasons for the decline in Tennessee exports. That is, are the recent declines in exports due to volume, price or both? Note that when both supply and demand decrease, there will definitely be a decrease in the quantities bought and sold, but prices could increase, decrease or remain unchanged depending on the change in demand relative to supply.

Table 2. Select U.S. Lumber Exports Pre- and Post-COVID-19

	Jan.–April 2019	Jan.–April 2020	% Change
	Red Oak Lumber		
Export Value ($ million)	$169.6	$133.2	-22%
Export Quantity (1,000 M^3)	299.7	248.2	-17%
Unit Value ($/$M^3$)	$565.8	$536.6	-5%
	White Oak Lumber		
Export Value ($ million)	$152.2	$120.0	-21%
Export Quantity (1,000 M^3)	219.8	182.1	-17%
Unit Value ($/$M^3$)	$692.5	$658.8	-5%
	Walnut Lumber		
Export Value ($ million)	$83.4	$74.0	-11%
Export Quantity (1,000 M^3)	69.0	65.2	-6%
Unit Value ($/$M^3$)	$1,208.7	$1,134.9	-6%
	Ash Lumber		
Export Value ($ million)	$72.3	$55.9	-23%
Export Quantity (1,000 M^3)	107.3	92.5	-14%
Unit Value ($/$M^3$)	$674.2	$604.6	-10%
	Yellow Poplar Lumber		
Export Value ($ million)	$60.9	$55.4	-9.0%
Export Quantity (1,000 M^3)	155.4	151.5	-3%
Unit Value ($/M3)	$392.1	$365.7	-7%
	Cherry Lumber		
Export Value ($ million)	$46.6	$29.6	-37%
Export Quantity (1,000 M^3)	65.2	41.3	-37%
Unit Value ($/$M^3$)	$715.6	$715.7	0%

Note: M^3 is cubic meters.
Source: U.S. Department of Agriculture, Foreign Agricultural Service (2020)

In January–April 2020, U.S. red oak lumber exports were down 22 percent in value when compared to the same period in 2019; this was due more to a decrease in quantity (-17 percent) than price (-5 percent). A similar pattern occurred for white oak lumber. Walnut lumber exports declined by 11 percent in value, due to declines in both quantity (-6 percent) and price (-6 percent); the decline in ash lumber exports (-23 percent) was also due to both quantity (-14 percent) and price (-10 percent). The decline in yellow poplar lumber exports (-9 percent) was mostly due to price (-7 percent), whereas the decline in cherry lumber exports (-37 percent) was solely due to quantity (-37 percent).

Closing

The global market for forest products (e.g., logs and lumber) is directly linked to the global market for finished wood products (e.g., furniture and flooring). Based on the demand for finished wood products, manufacturers around the world have a "derived" demand for inputs and raw materials such as lumber. The COVID-19 outbreak has directly impacted the forest product market and indirectly through the market for finished wood products. As a result, Tennessee has experienced significant declines in forest product exports in 2020.

When comparing January–April 2020 to the same period in 2019, Tennessee forest product exports were down 23 percent from $62 million to $48 million. With the implementation of the U.S.-China Phase One Trade Deal and recent tariff exclusion policy in China, it was expected that U.S. exports would recover to pre-2019 levels. If a recovery was imminent, then the impact of COVID-19 is best represented by comparing current trade with trade prior to 2019. The amount of average exports during the first four months in 2016-2018 was $92 million. Compared to this period, Tennessee forest product exports were down 48 percent in 2020.

Although Tennessee forest product exports in 2020 are on pace to be even lower that 2019, there is the still the possibility that exports will recover if the pandemic subsides. Note that the U.S.-China Phase One Trade Agreement and the tariff exclusion policies that the Chinese government implemented could still result in a significant increase in purchases from May until December. It could also be argued, however, that recent tensions between the U.S. and China due to COVID-19 could further damage trade relations and limit a "post-COVID-19" recovery. Time will determine if the former or latter outcome holds true.

References

Baker, S.R., R.A. Farrokhnia, S. Meyer, M. Pagel, and C. Yannelis. 2020. "How Does Household Spending Respond to an Epidemic? Consumption During the 2020 COVID-19 Pandemic." National Bureau of Economic Research. NBER Working Paper No. 26949. https://www.nber.org/papers/w26949.pdf

Food and Agriculture Organization of the United Nations (FAO). 2019. Forest Products 2017. http://www.fao.org/3/ca5703m/ca5703m.pdf

Inouye, A. 2020. "China Announces a New Round of Tariff Exclusions." Trade Policy Monitoring Report CH2020-0017. U.S. Department of Agriculture, Foreign Agricultural Service.

Jackson, J. K., A.B. Schwarzenberg, M.A. Weiss, and R.M. Nelson. 2020. Global Economic Effects of COVID-19. Congressional Research Service. CRS Report R46270.

Luppold, W., M. Bumgardner, K. Kottwitz, F. Maplesden, and I. Novoselov. Chapter 5: Sawn Hardwood. In: Forest Products Annual Market Review 2017-2018. Geneva, Switzerland: United Nations Publications.

Menard, J., B. English, and K. Jensen. 2019. "Tennessee Ag and Forestry Stats 2017: Economic Contributions of Agriculture and Forestry in Tennessee." University of Tennessee publication RS# 19-001. https://ag.tennessee.edu/arec/Documents/publications/FullRpt2017.pdf

Muhammad, A., and S.A. Smith. 2020. "The U.S.-China Phase One Trade Agreement: Implications for U.S. Forestry." University of Tennessee Extension publication W 888. https://extension.tennessee.edu/publications/Documents/W888.pdf

Pelkki M., and G. Sherman. 2020. "Forestry's Economic Contribution in the United States, 2016." *Forest Products Journal* 70(1):28-38.

Pryor, T. 2019. "AHEC January-June 2019 Hardwood Export Report." American Hardwood Export Council.

Statista. 2020. "Impact of Coronavirus (COVID-19) on Monthly Retail Sales Development in the United States 2020, by Retail Sector." https://www.statista.com/statistics/1104316/coronavirus-month-over-month-retail-sales-development-by-sector-us/

U.S. Census Bureau (Census). 2020. USA Trade Online. https://usatrade.census.gov/

U.S. Department of Agriculture. 2020. Global Agricultural Trade System. Foreign Agricultural Service. https://apps.fas.usda.gov/Gats/default.aspx

World Trade Organization (WTO). 2020. “Trade Set to Plunge as COVID-19 Pandemic Upends Global Economy.” https://www.wto.org/english/news_e/pres20_e/pr855_e.htm

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