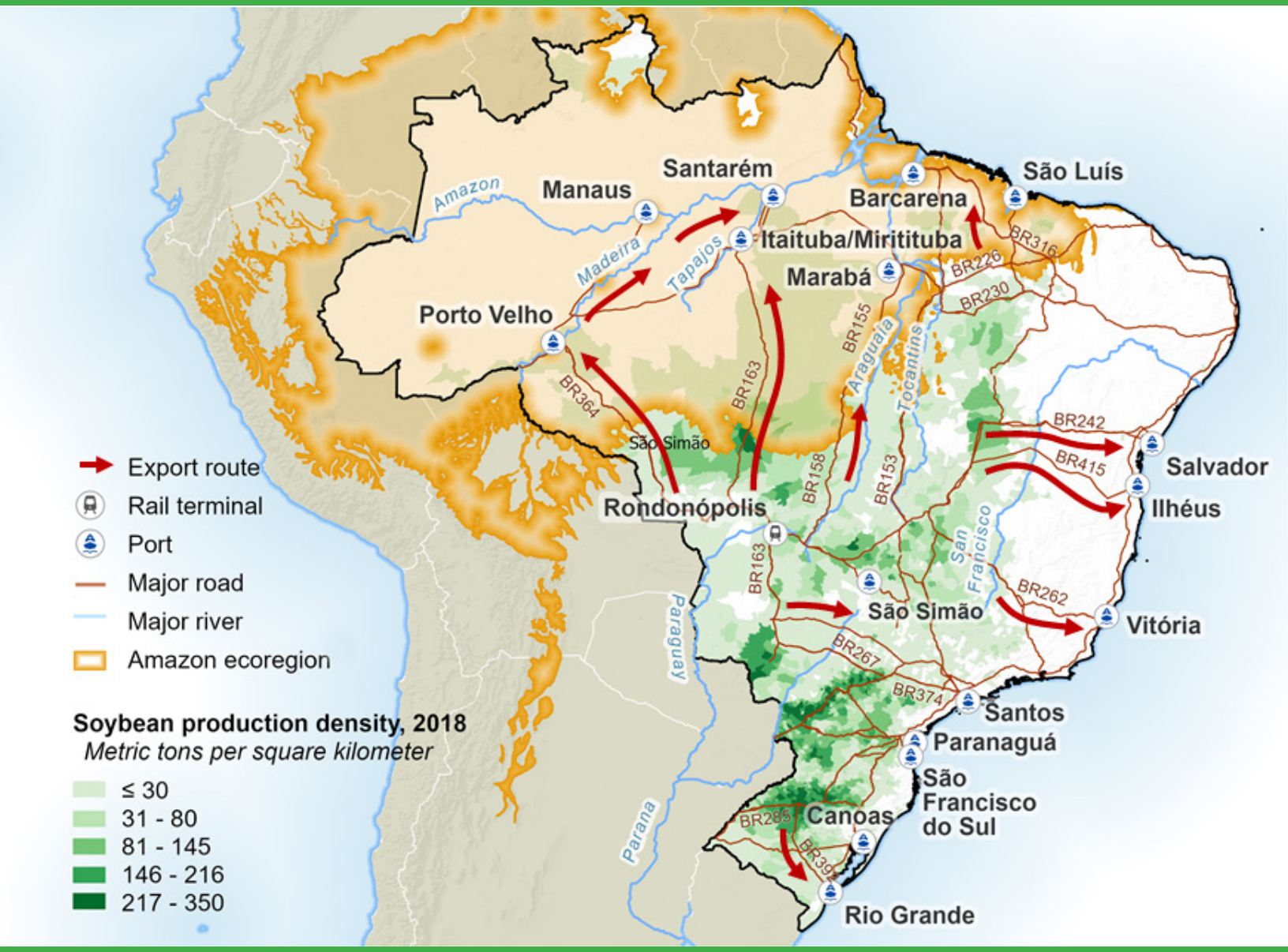
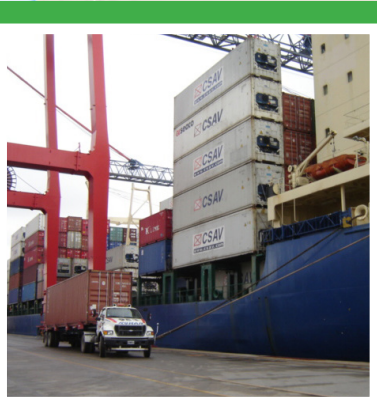
United States Department of Agriculture

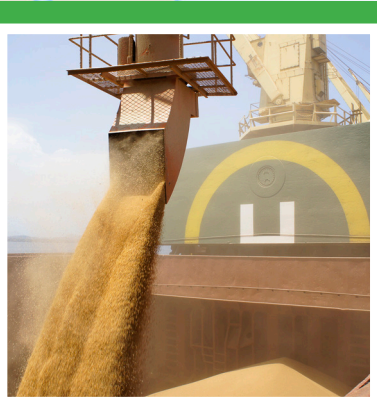
Agricultural Marketing Service

August 2020

SOYBEAN TRANSPORTATION GUIDE
BRAZIL 2019







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CONTENTS

SOYBEAN TRANSPORTATION GUIDE: BRAZIL 2019

Executive Summary

The *Soybean Transportation Guide* is a visual snapshot of Brazilian soybean transportation in 2019. It provides data on the cost of shipping soybeans, via highways and ocean, to Shanghai, China, and Hamburg, Germany. It also includes information about soybean production, exports, railways, ports, and infrastructural developments.

Brazil is one of the most important U.S. competitors in the world oilseed market. Brazil's competitiveness in the world market depends largely on continual improvement of its transportation infrastructure to reduce transportation costs. The country's position has also benefited from low production costs, increases in planted area, high productivity, and a weak national currency. Because Brazilian and U.S. producers use the same advanced production and technological methods, their soybeans are relatively interchangeable for buyers. U.S. soybean competitiveness worldwide rests on critical factors such as transportation costs and infrastructure improvements. Brazil is gaining a cost advantage. However, the United States retains a significant share of global soybean exports.

Since 2013, Brazil has surpassed U.S. soybean exports, becoming the top world soybean exporter. Further, USDA forecasts that Brazil is expected to be the world's largest soybean exporter through 2029. In recent years, the United States and Brazil have continued to vie for the position of the world's leading producer. The United States remains the second-largest exporter, followed by Argentina, Paraguay, and Canada. China is the driver of global soybean trade, accounting for more than half of soybean worldwide imports.

Soybean Transportation Cost and Export Demand

During 2019, Brazil exported 74.1 million metric tons (mmt) of soybeans, 11 percent less than 2018's total of 83.3 mmt (fig. 1)—a decline that also reduced transportation demand. The cost of shipping a metric ton of soybeans 100 miles by truck decreased 15 percent from $8.44 in 2018 to $7.19 in 2019. However, truck rates measured in reais (R$) varied in comparison with their estimates in U.S. dollars, reflecting the depreciation of the Brazilian real (R$) against the U.S. dollar. Truck rates also fluctuated because of the completion of the BR 163 road paving project, connecting Sorriso, North Mato Grosso, to Itaituba, Pará. For example, truck rates from Cruz Alta, Rio Grande do Sul to Rio Grande decreased 14 percent. Truck rates from Sorriso, North Mato Grosso, to the southern port of Santos and Paranaguá decreased 14-16 percent. Truck rates from North Mato Grosso to Rondonópolis (rail terminal) and to the northern river ports of Santarém and Itaituba/Miritituba (barge terminal) decreased 12-18 percent. Industry analysts expect transportation costs to reduce further, up to U.S. $7/metric ton (mt) (or R$30/mt) for the route from Sorriso to Itaituba. From 2018 to 2019, the Brazilian real depreciated nearly 7 percent against the U.S. dollar, from R$3.69 per U.S. dollar to R$3.94 per U.S. dollar. Ocean rates from the southern Brazilian ports to Shanghai, China, increased significantly during the second half of the year, averaging 9-11 percent higher than 2018 ocean freight costs. Ocean rates to Hamburg, Germany, varied, increasing from Santos and declining from Rio Grande and Paranaguá. Ocean rates increased because of higher bunker fuel prices, higher Brazilian corn exports, and a strong iron ore trade that reduced the availability of Panamax vessels for grain exports at the Brazilian ports.

From 2018 to 2019, Brazilian soybean transportation costs to Shanghai, China—as a percentage of total landed costs for the routes of North Mato Grosso to Santos and Santarém—slightly decreased in response to lower truck rates and farm prices. In Sorriso, North Mato Grosso—the largest Brazilian soybean-producing State—2019 transportation costs represented 28 percent of the total landed costs of shipping soybeans to Shanghai through Santos, compared with 34 percent in 2008 and 45 percent in 2006. Typically, Brazilian soybean exports peak in May and decline through the end of the year. Average Brazilian soybean export prices

decreased nearly 12 percent, from $408 per mt to $360 per mt, from the same time in 2018. The weakening of the Brazilian real against the U.S. dollar partially offset the nearly 8 percent fall in farm gate prices, from $323.42/mt in 2018 to $297.97/mt in 2019 (Companhia Nacional de Abastecimento (CONAB)). Soybeans are priced in U.S. dollars but paid in reais. Farm prices measured in reais increased an average of 2.4 percent, from R$1,148.12/mt in 2018 to R$1,175.84 in 2019 (CONAB).

Overall, Brazil's infrastructure is improving, narrowing the difference in shipping costs between Sorriso and Iowa to Shanghai. During 2019, shipping soybeans by truck for the first leg, the route from Sorriso, North Mato Grosso, to Shanghai cost about $22 per metric ton more than the route from the U.S. Gulf and Pacific Northwest (PNW) routes to Shanghai. However, the cost advantage to U.S. shippers narrowed to $10 per metric ton when North Mato Grosso soybeans were shipped by rail to Santos for the first leg and to $9 per metric ton when shipped by barge to Barcarena for the first leg. Soybean exports to China in 2019 declined nearly 16 percent to 58 mmt (valued at $20.5 billion) from 68.6 mmt in 2018, because of an epidemic of African swine fever that reduced the country's hog herd. In 2019, China received 78 percent of Brazil's total soybean exports (74 mmt). The next highest shares of Brazil's soybean exports went (in declining order) to Spain, the Netherlands, Thailand, and Iran. Of all the Brazilian States, Mato Grosso exported the most soybeans in 2019—roughly 21 percent of the national total—followed by Rio Grande do Sul, Paraná, Goiás, São Paulo, São Paulo, Minas Gerais, and Mato Grosso do Sul. Mato Grosso was also the top soybeans exporter to China.

In 2019, Santos was the largest Brazilian soybean export port, followed by Rio Grande, Paranaguá, São Luís, Barcarena, and São Francisco do Sul. These six ports accounted for 82 percent of Brazil's total exports. Looking at the split from a north/south perspective, the southern ports of Santos, Rio Grande, Paranaguá, and São Francisco do Sul dominate the soybean trade to China, accounting for about 72 percent of Brazil's soybean exports to China. Meanwhile, the northeastern ports of São Luís, Vitória, Salvador, and Barcarena accounted for nearly 26 percent of exports to China. The Amazon River ports of Manaus and Santarém exported nearly 2 percent to China.

During the 2019 peak harvest season, loading delays and vessel backups were similar in Brazilian ports and the U.S. Gulf, averaging 3-10 days—narrowing the time spread between the regions. Seasonally, the Northern ports had lower loading delays and vessel backups than the Southern ports of Santos and Paranaguá. Barcarena had vessel loading delays of 3-4 days, which nearly offset the roughly 3-day-longer voyage distance to Shanghai, compared with the ports of Santos and Paranaguá. In 2019, the ocean freight spread was about $1-$2/mt for route from the northeastern ports of Barcarena ($34.96/mt) and São Luís ($34.81/mt) to Shanghai and the route from the port of Santos ($33.65) to Shanghai. Ocean freight spread is the cost difference between two vessel routes to the same destination.

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GENERAL INFORMATION

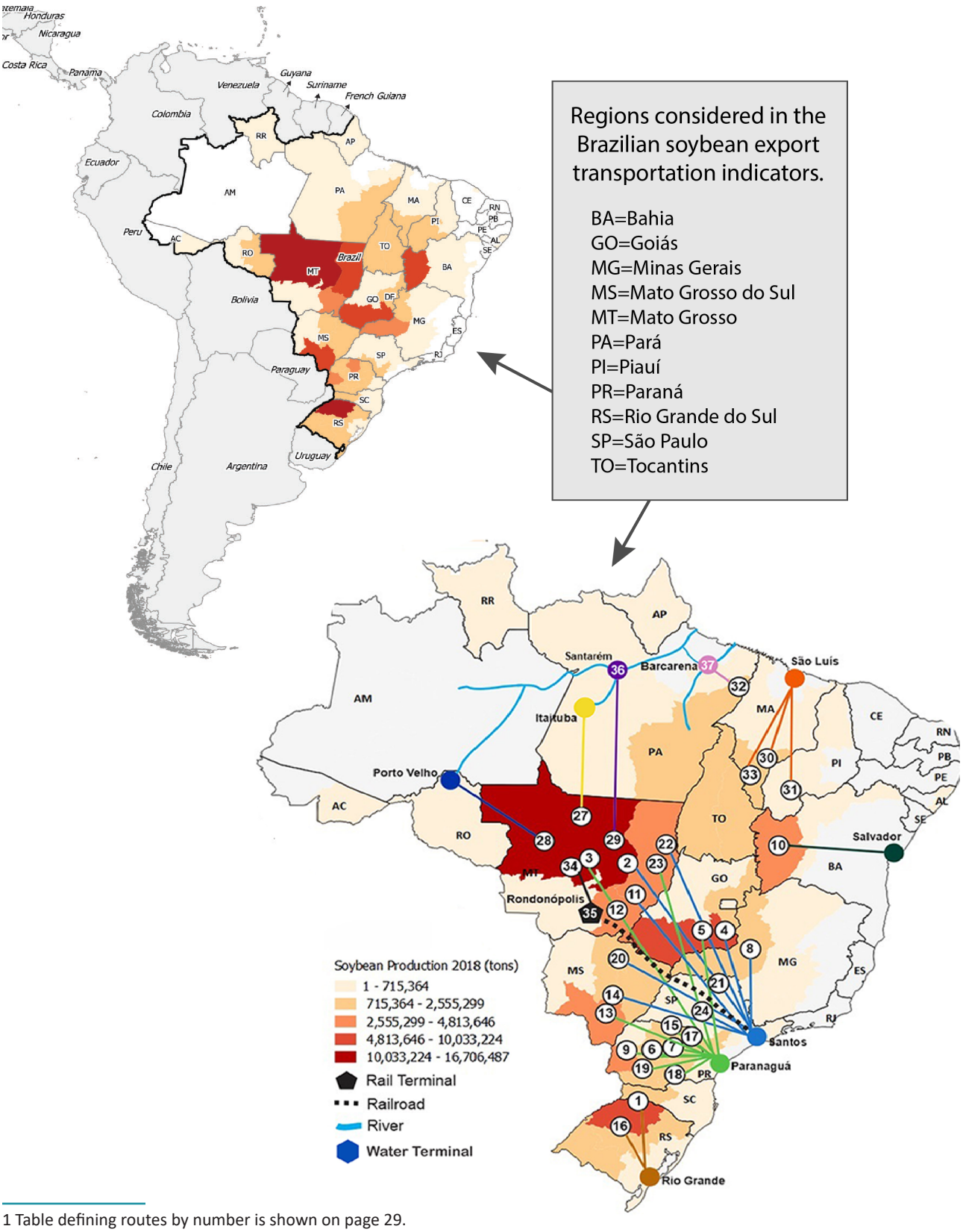
State and Abbreviation

Acre (AC)	Pará (PA)
Alagoas (AL)	Paraíba (PB)
Amapá (AP)	Paraná (PR)
Amazonas (AM)	Pernambuco (PE)
Bahia (BA)	Piauí (PI)
Ceará (CE)	Rio de Janeiro (RJ)
Distrito Federal (DF)	Rio Grande do Sul (RS)
Espírito Santo (ES)	Rondônia (RO)
Goiás (GO)	Roraima (RR)
Maranhão (MA)	Santa Catarina (SC)
Mato Grosso (MT)	São Paulo (SP)
Mato Grosso do Sul (MS)	Sergipe (SE)
Minas Gerais (MG)	Tocantins (TO)

Information about Brazil

Population:	211,257,586 (March 2020 estimate, Census, Instituto Brasileiro de Geografia e Estatística (IBGEE))
Gross Domestic Product per Capita, 2019:	US$8,960 (International Monetary Fund)
Inflation, 2019:	3.91 percent (Banco Central do Brasil)
Unemployment, 4th Quarter 2019:	11 percent (IBGE)
Area:	8,515,770 square kilometers
Languages:	Portuguese (official), Spanish, English, French

Routes[1] and regions considered in the Brazilian soybean export transportation indicator[2]



1 Table defining routes by number is shown on page 29.
2 Regions comprised about 81 percent of Brazilian soybean production, 2018.
Source: University of São Paulo, Escola Superior de Agricultura "Luiz de Queiroz," Brazil (ESALQ/USP) and USDA, Agricultural Marketing Service.

In 2019, Brazilian soybean transportation costs to Shanghai, China—as a percentage of total landed costs for the routes of North Mato Grosso to Santos and Santarém—slightly decreased in response to lower truck rates and farm prices than in 2018. In Sorriso, North Mato Grosso—the largest Brazilian soybean-producing State—2019 transportation costs represented 28 percent of the total landed costs of shipping soybeans to Shanghai through Santos, compared with 34 percent in 2008 and 45 percent in 2006.

Costs of transporting Brazilian soybeans from the southern ports to Shanghai, China, 2014-19

	2014	2015	2016	2017	2018	2019	% Change 2018-19	2014	2015	2016	2017	2018	2019	% Change 2018-19
	North MT[1] - Santos[2] by truck —US$/mt—							Northwest RS[1] - Rio Grande[2] —US$/mt—						
Truck	103.90	86.04	75.49	92.95	91.76	79.28	-13.6	24.56	26.37	18.38	30.72	29.20	25.06	-14.2
Ocean	36.85	23.81	16.63	26.88	30.31	33.65	11.0	37.02	25.31	20.50	27.30	31.06	33.94	9.3
Total transportation	140.75	109.86	92.12	119.82	122.08	112.92	-7.5	61.58	51.68	38.88	58.02	60.27	58.99	-2.1
Farm gate price[3]	388.33	295.17	331.91	293.60	306.03	285.35	-6.8	442.52	331.55	352.69	322.30	333.21	305.56	-8.3
Landed cost	529.08	405.02	424.03	413.43	428.11	398.28	-7.0	504.10	383.23	391.57	380.32	393.48	364.56	-7.3
Transport % of landed cost	27.8	27.1	21.9	29.0	28.5	28.4	-0.4	12.2	13.5	9.9	15.3	15.3	16.2	5.7
	North MT[1] - Santos[2] by truck and rail —US$/mt—							South GO[1] - Santos[2] —US$/mt—						
Truck	-	-	-	-	33.49	27.62	-17.5	62.57	39.82	34.66	44.22	43.25	37.34	-13.7
Rail[4]	-	-	-	-	43.29	39.98	-7.6	-	-	-	-	-	-	-
Ocean	-	-	-	-	30.31	33.65	11.0	36.85	23.81	16.63	26.88	30.31	33.65	11.0
Total transportation	-	-	-	-	107.10	101.25	-5.5	99.42	63.63	51.28	71.09	73.56	70.98	-3.5
Farm gate price[3]	-	-	-	-	306.03	285.35	-6.8	401.49	304.36	329.15	301.99	312.31	291.46	-6.7
Landed cost	-	-	-	-	413.13	386.60	-6.4	500.91	368.00	380.43	373.08	385.88	362.45	-6.1
Transport % of landed cost	-	-	-	-	25.9	26.2	1.0	19.8	17.2	13.6	19.1	19.1	19.6	2.8

[1]Producing regions: RS = Rio Grande do Sul, MT= Mato Grosso, and GO = Goiás.
[2]Export ports.
[3]The source of the farm gate price is the Brazilian Government, Companhia Nacional de Abastecimento (CONAB).
[4]In Brazil there are no public/official rail tariff rates. Rail rates can be approximately 30 percent lower than truck rates, depending on volumes hauled and the terms of contracts signed between the railroad company and shippers.
Note: mt = metric ton.
Source: University of São Paulo, Escola Superior de Agricultura "Luiz de Queiroz," Brazil (ESALQ/USP) and USDA, Agricultural Marketing Service.

In 2019, Brazilian soybean transportation costs from Mato Grosso, as a percentage of total landed costs, decreased 1-3 percent and slightly declined from Rio Grande do Sul to Hamburg, Germany, from a year earlier.

Costs of transporting Brazilian soybeans from the southern ports to Hamburg, Germany, 2014-19

	2014	2015	2016	2017	2018	2019	% Change 2018-19	2014	2015	2016	2017	2018	2019	% Change 2018-19
	North MT[1] - Santos[2] by truck —US$/mt—							Northwest RS[1] - Rio Grande[2] —US$/mt—						
Truck	103.90	86.04	75.49	92.95	91.76	79.28	-13.6	24.56	26.37	23.85	30.72	29.20	25.06	-14.2
Ocean	27.75	19.75	18.13	24.50	25.25	25.63	1.5	27.00	20.25	17.25	25.50	26.25	25.63	-2.4
Total transportation	131.65	105.79	93.62	117.45	117.01	104.90	-10.4	51.56	46.62	41.10	56.22	55.45	50.68	-8.6
Farm gate price[3]	388.33	295.17	331.91	293.60	306.03	285.35	-6.8	442.52	331.55	348.28	322.30	333.21	305.56	-8.3
Landed cost	519.98	400.96	425.53	411.05	423.05	390.25	-7.8	494.08	378.17	389.37	378.52	388.66	356.25	-8.3
Transport % of landed cost	25.3	26.3	22.1	28.6	27.6	26.9	-2.7	10.5	12.3	10.6	14.9	14.3	14.2	-0.3
	North MT[1] - Santos[2] by truck and rail —US$/mt—							South GO[1] - Santos[2] —US$/mt—						
Truck	-	-	-	-	33.49	27.62	-17.5	62.57	39.82	34.66	44.22	43.25	37.34	-13.7
Rail[4]	-	-	-	-	43.29	39.98	-7.6	-	-	-	-	-		-
Ocean	-	-	-	-	25.25	25.63	1.5	27.75	19.75	18.13	24.50	25.25	25.63	1.5
Total transportation	-	-	-	-	102.03	93.23	-8.6	90.32	59.57	52.78	68.72	68.50	62.96	-8.1
Farm gate price[3]	-	-	-	-	306.03	285.35	-6.8	401.49	304.36	329.15	301.99	312.3	291.5	-6.7
Landed cost	-	-	-	-	408.07	378.58	-7.2	491.81	363.94	381.93	370.71	380.81	354.42	-6.9
Transport % of landed cost	-	-	-	-	25.0	24.6	-1.6	18.3	16.3	13.9	18.6	18.0	17.8	-1.3

[1]Producing regions: RS = Rio Grande do Sul, MT= Mato Grosso, and GO = Goiás.
[2]Export ports.
[3]The source of the farm gate price is the Brazilian Government, Companhia Nacional de Abastecimento (CONAB).
[4]In Brazil there are no public/official rail tariff rates. Rail rates can be approximately 30 percent lower than truck rates, depending on volumes hauled and the terms of contracts signed between the railroad company and shippers.
Note: mt = metric ton.
Source: University of São Paulo, Escola Superior de Agricultura "Luiz de Queiroz," Brazil (ESALQ/USP) and USDA, Agricultural Marketing Service.

Transportation costs, from the selected route of the northern and northeastern ports, to Shanghai, China, and Hamburg, Germany, decreased.

Cost of transporting soybeans from the northern and northeastern ports to Shanghai, China, 2017-19

	2017	2018	2019	% Change 2018-19	2017	2018	2019	% Change 2018-19
	North MT[1] - Santarém[2] —US$/mt—				South MA[1] - São Luís[2] —US$/mt—			
Truck	55.08	58.86	52.04	-11.6	37.69	37.60	32.99	-12.3
Ocean	30.75	34.81	35.06	0.7	29.56	33.89	34.81	2.7
Total transportation	85.83	93.67	87.10	-7.0	67.25	71.48	67.80	-5.2
Farm gate price[3]	293.60	306.03	285.35	-6.8	343.39	333.03	297.05	-10.8
Landed cost	379.43	399.70	372.45	-6.8	410.64	404.51	364.85	-9.8
Transport % of landed cost	22.7	23.4	23.4	-0.1	16.4	17.7	18.6	5.0
	Southwest PI[1] - São Luís[2] —US$/mt—				North MT[1] - Barcarena[2] —US$/mt—			
Truck	44.44	46.52	39.34	-15.4	-	-	46.64	-
Barge[4]	-	-	-	-	-	-	18.85	-
Ocean	29.56	33.89	34.81	2.7	-	-	34.96	-
Total transportation	74.00	80.41	74.15	-7.8	-	-	100.45	-
Farm gate price[3]	283.05	306.26	295.87	-3.4	-	-	285.35	-
Landed cost	357.05	386.67	370.02	-4.3	-	-	385.80	-
Transport % of landed cost	21.0	20.8	20.9	0.3	-	-	26.1	-

[1]Producing regions: MT= Mato Grosso, PI = Piauí, and MA = Maranhão.
[2]Export port.
[3]The source of the farm gate price is the Brazilian Government, Companhia Nacional de Abastecimento (CONAB).
[4]In Brazil, there are no public/official barge rates. Barge rates can be up to 60 percent lower than truck rates, depending on the volumes hauled and the terms of contracts signed between the barge company and shippers. The distance is in nautical miles.
Note: mt = metric ton.
Source: University of São Paulo, Escola Superior de Agricultura "Luiz de Queiroz," Brazil (ESALQ/USP) and USDA, Agricultural Marketing Service.

Cost of transporting soybeans from the northern and northeastern ports to Hamburg, Germany, 2017-19

	2017	2018	2019	% Change 2018-19	2017	2018	2019	% Change 2018-19
	North MT[1] - Santarém[2] —US$/mt—				South MA[1] - São Luís[2] —US$/mt—			
Truck	55.08	58.86	52.04	-11.6	37.69	37.60	32.99	-12.3
Ocean	23.90	23.35	23.42	0.3	20.20	19.40	20.34	4.9
Total transportation	78.98	82.21	75.45	-8.2	57.89	57.00	53.33	-6.4
Farm gate price[3]	293.60	306.03	285.35	-6.8	343.39	333.03	297.05	-10.8
Landed cost	372.58	388.24	360.81	-7.1	401.28	390.02	350.38	-10.2
Transport % of landed cost	21.2	21.2	20.9	-1.1	14.4	14.6	15.2	4.0
	Southwest PI[1] - São Luís[2] —US$/mt—				North MT[1] - Barcarena[2] —US$/mt—			
Truck	44.44	46.52	39.34	-15.4	-	-	46.64	-
Barge[4]	-	-	-	-	-	-	18.85	-
Ocean	20.20	19.40	20.34	4.9	-	-	21.16	-
Total transportation	64.64	65.92	59.68	-9.5	-	-	86.64	-
Farm gate price[3]	283.05	306.26	295.87	-3.4	-	-	285.35	-
Landed cost	347.68	372.18	355.55	-4.5	-	-	372.00	-
Transport % of landed cost	18.9	17.7	16.8	-5.2	-	-	23.3	-

[1]Producing regions: MT= Mato Grosso, PI = Piauí, and MA = Maranhão.

[2]Export port.

[3]The source of the farm gate price is the Brazilian Government, Companhia Nacional de Abastecimento (CONAB).

[4]In Brazil, there are no public/official barge rates. Barge rates can be up to 60 percent lower than truck rates, depending on the volumes hauled and the terms of contracts signed between the barge company and shippers. The distance is in nautical miles.

Note: mt = metric ton.

Source: University of São Paulo, Escola Superior de Agricultura "Luiz de Queiroz," Brazil (ESALQ/USP) and USDA, Agricultural Marketing Service.

In 2019, U.S. soybean transportation costs from Iowa through the U.S. Gulf to Hamburg, Germany increased about 1 percent in response to higher rail rates during the first half of the year. The U.S. soybean transportation costs from Minnesota and Iowa through the U.S. Gulf to Shanghai, as a percentage of total landed costs, increased 8-10 percent compared to 2018, as a result of lower farm prices and higher transportation costs. Barge rates declined 16-27 percent, compared to 2018, responding to lower corn transportation demand. Wet weather and a shortage of propane gas delayed corn planting and harvest, weakening barge transportation demand. Propane gas is the most widely used and cost-effective fuel option for grain dryers in corn production.

Average costs of transporting U.S. soybeans to Hamburg, Germany, and Shanghai, China, 2015-19

	2015	2016	2017	2018	2019	% Change 2018-19	2015	2016	2017	2018	2019	% Change 2018-19
	To Hamburg, Germany											
	Minneapolis, Minnesota —US$/mt—						Davenport, Iowa —US$/mt—					
Truck	10.23	10.36	12.71	12.14	10.10	-16.8	10.23	10.36	12.71	12.14	10.10	-16.8
Rail[1]	42.09	43.30	45.91	46.37	47.96	3.4	31.20	11.65	34.98	30.92	32.13	3.9
Barge[2]	27.49	24.32	22.62	29.97	21.99	-26.6	22.15	18.72	17.60	24.51	20.43	-16.7
Ocean[3]	14.32	13.83	15.46	19.85	18.15	-8.6	14.32	19.20	15.47	19.85	18.15	-8.6
Total transportation[4]	62.56	59.33	62.26	73.55	74.22	0.9	54.50	51.19	54.53	64.23	64.73	0.8
Farm price[5]	342.91	335.81	338.20	330.51	305.65	-7.5	344.69	340.89	344.53	336.05	307.27	-8.6
Landed cost[6]	405.47	395.14	400.46	404.06	379.86	-6.0	399.19	392.08	399.06	400.28	372.00	-7.1
Transport % of landed cost	15.3	15.1	15.5	18.1	19.4	7.0	13.6	13.1	13.6	16.0	17.4	8.4
	To Shanghai, China											
	Minneapolis, Minnesota —US$/mt—						Davenport, Iowa —US$/mt—					
Truck	14.13	10.36	12.71	12.14	10.10	-16.8	10.23	10.36	12.71	12.14	10.10	-16.8
Rail[1]	42.09	43.30	45.91	46.37	47.96	3.4	31.20	33.12	34.98	30.92	32.12	3.9
Barge[2]	27.49	24.32	22.62	29.97	21.99	-26.6	22.15	18.72	17.60	24.51	20.43	-16.7
Ocean[3]	30.09	26.65	38.37	44.42	44.55	0.3	30.09	26.65	38.37	44.42	44.55	0.3
Total transportation[4]	78.33	72.15	85.17	98.12	100.62	2.6	69.67	64.00	77.43	88.80	91.14	2.6
Farm price[5]	342.91	335.81	338.20	330.56	305.65	-7.5	344.69	340.89	344.53	336.05	307.27	-8.6
Landed cost[6]	421.24	407.96	423.37	428.68	406.27	-5.2	414.96	404.90	421.96	424.85	398.41	-6.2
Transport % of landed cost	18.5	17.8	20.1	22.8	24.7	8.1	16.9	15.9	18.3	20.9	22.9	9.5

[1]Rail rates include fuel surcharges, but do not include the cost of purchasing empty rail cars in the secondary rail markets, which could exceed the rail tariff rate plus fuel surcharge shown in the table.

[2]The Mississippi River closes from Minneapolis to just north of St. Louis during mid-December to late March; The distance by barge between Minneapolis and Davenport to the Port of New Orleans is 1,713 and 1,343 miles, respectively.

[3]Source: The Baltic Exchange and O'Neil Commodity Consulting; excludes handling charges.

[4]The average of the sum of the total costs may not be equal to the sum of the individual average costs of truck, rail, barge, and ocean because rail is used only in the first quarter.

[5]Source for the U.S. farm prices: USDA, National Agricultural Statistics Service.

[6]Landed cost is transportation cost plus farm price.

Note: mt = metric ton; total may not add exactly due to rounding.

Source: Compiled by the USDA, Agricultural Marketing Service.

The U.S. soybean transportation costs, as a percentage of total landed costs, from North and South Dakota, via the Pacific Northwest (PNW) to Shanghai, China, increased 6-8 percent from a year earlier in response to lower soybean prices.

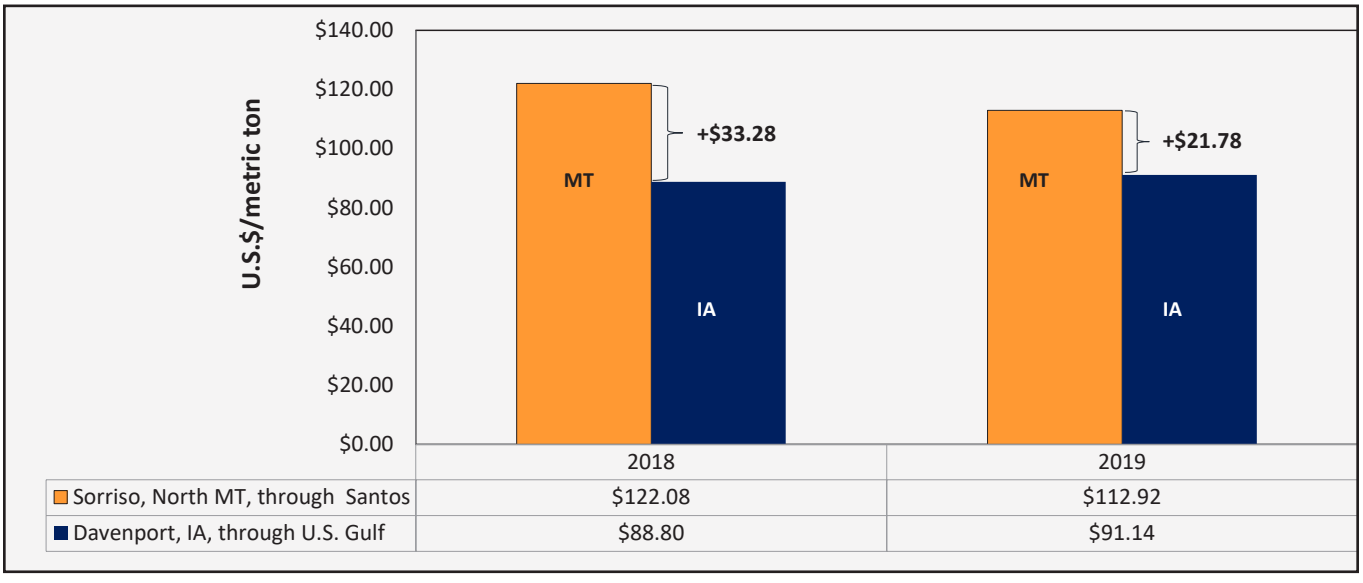
Average costs of transporting U.S. soybeans to Shanghai, China, 2015-19

	2015	2016	2017	2018	2019	% Change 2018-19	2015	2016	2017	2018	2019	% Change 2018-19
	To Shanghai, China via PNW											
	Fargo, ND —US$/mt—						Sioux Falls, SD —US$/mt—					
Truck	10.23	10.36	12.71	12.14	10.10	-16.8	10.23	10.44	12.71	12.14	10.10	-16.8
Rail[1]	55.98	53.04	54.66	55.12	56.36	2.3	57.20	54.02	55.65	56.11	57.35	2.2
Ocean[2]	16.34	14.90	20.37	24.34	24.59	1.0	16.34	14.90	20.37	24.34	24.59	1.0
Total transportation	82.55	78.30	87.74	91.60	91.05	-0.6	83.77	79.31	88.74	92.59	92.04	-0.6
Farm price[3]	322.98	327.42	324.57	319.55	285.65	-10.6	329.87	328.98	328.98	320.38	293.98	-8.2
Landed cost[4]	405.52	405.72	412.31	411.14	376.70	-8.4	413.64	408.29	417.72	412.96	386.02	-6.5
Transport % of landed cost	20.4	19.3	21.3	22.3	24.2	8.3	20.3	19.4	21.2	22.5	23.8	6.1

[1]Rail rates include fuel surcharges, but do not include the cost of purchasing empty rail cars in the secondary rail markets, which could exceed the rail tariff rate plus fuel surcharge shown in the table.
[2]Source for the U.S. ocean freight rates: O'Neil Commodity Consulting.
[3]Source for the U.S. farm prices: USDA, National Agricultural Statistics Service.
[4]Landed cost is transportation cost plus farm price.
Note: mt = metric ton; PNW = Pacific Northwest; SD = South Dakota; ND = North Dakota; total may not add exactly due to rounding.
Source: Compiled by the USDA, Agricultural Marketing Service.

In 2019, the cost per metric ton (mt) to ship soybeans from Sorriso, North Mato Grosso to Shanghai, China, was $21.78 more than from Davenport, IA. The U.S. cost advantage narrowed from 2018, as the Brazilian transportation costs declined 7 percent and Iowa costs increased nearly 3 percent. Sorriso is located 1,190 miles from the port of Santos. Davenport, IA, is about 900 miles by truck, 908 miles by rail, and 1,343 miles by barge, from the Port of New Orleans.

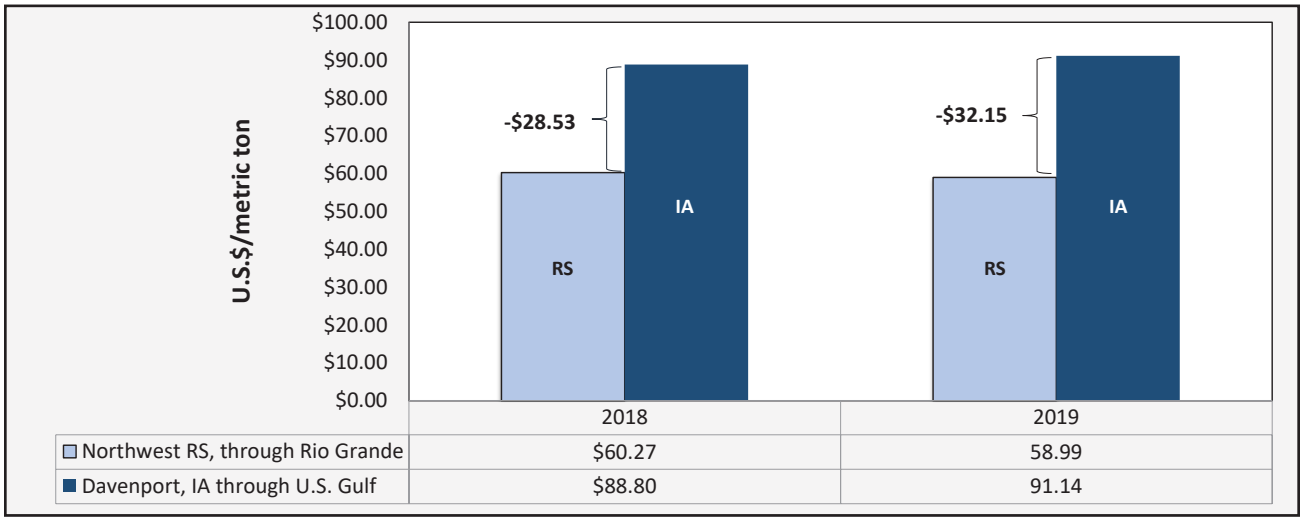
Transportation cost differences between Mato Gross (MT) and Iowa (IA) to Shanghai, China, 2018-19



Note: MT = Mato Grosso and IA = Iowa.
Source: USDA, Agricultural Marketing Service.

In 2019 the cost of shipping a metric ton of soybeans from Cruz Alta, Northwest Rio Grande do Sul, to Shanghai, China, was $32.15 less than from Davenport, IA. The Brazilian cost advantage widened from 2018, as the Brazilian transportation costs declined 2 percent and Iowa costs increased nearly 3 percent. The distance from Cruz Alta to the port of Rio Grande is 288 miles.

Transportation cost differences between Rio Grande do Sul (RS) and Iowa (IA) to Shanghai, China, 2018-19

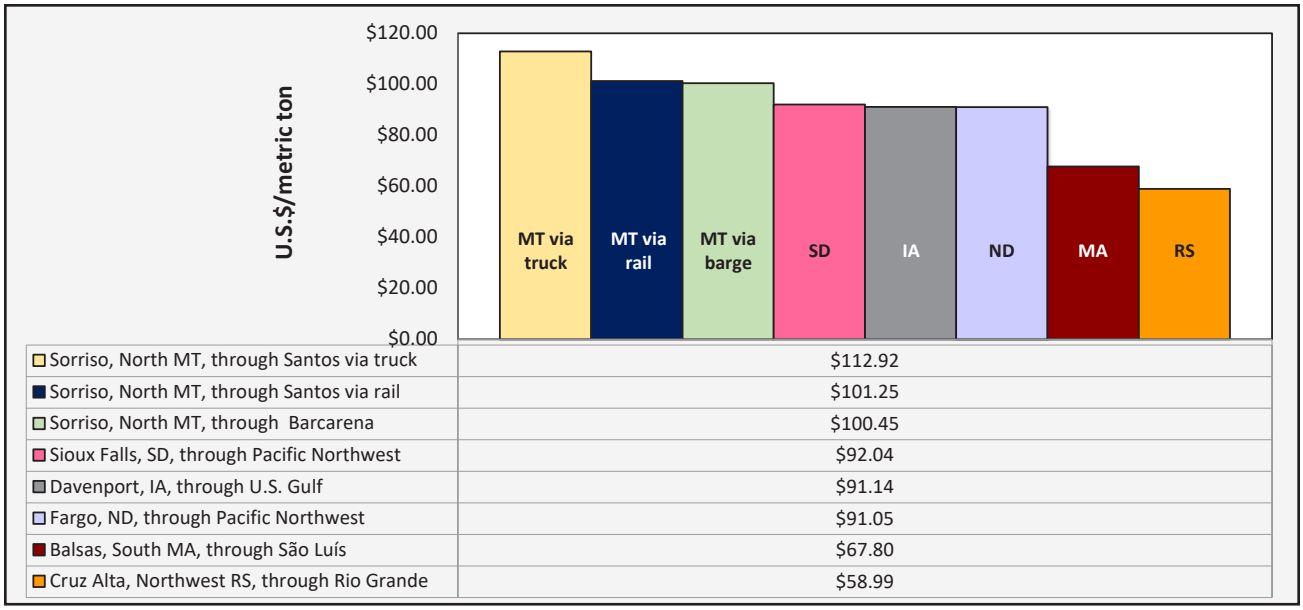


	2018	2019
Northwest RS, through Rio Grande	$60.27	58.99
Davenport, IA through U.S. Gulf	$88.80	91.14

Note: RS = Rio Grande do Sul and IA = Iowa.
Source: USDA, Agricultural Marketing Service.

During 2019, Sorriso, North Mato Grosso, soybean shippers to Shanghai paid about $22 per metric ton more than U.S. exporters, through the U.S. Gulf and PNW routes, when they used trucks. However, the cost advantage narrowed to $10 per metric ton when North Mato Grosso soybeans were shipped by rail to Santos and $9 per metric ton by barge to Barcarena to Shanghai. In Brazil, there are no public/official rail and barge tariff rates. Rail rates can be up to 30 percent lower than truck rates, and barge rates can be up to 60 percent lower than truck rates, depending on the volumes hauled and the terms of contracts signed between the railroad and barge companies and shippers.

Transportation cost differences between selected Brazil-United States Routes to Shanghai, China, 2019



Sorriso, North MT, through Santos via truck	$112.92
Sorriso, North MT, through Santos via rail	$101.25
Sorriso, North MT, through Barcarena	$100.45
Sioux Falls, SD, through Pacific Northwest	$92.04
Davenport, IA, through U.S. Gulf	$91.14
Fargo, ND, through Pacific Northwest	$91.05
Balsas, South MA, through São Luís	$67.80
Cruz Alta, Northwest RS, through Rio Grande	$58.99

Note: MT = Mato Grosso, MA = Maranhão, RS= Rio Grande do Sul, SD = South Dakota, IA = Iowa, and ND= North Dakota.
Source: USDA, Agricultural Marketing Service.

In 2019, selected Brazilian export truck routes, measured in reais (R$), saw proportionally higher transportation costs, than those estimated in U.S. dollars, owing to the depreciation of the Brazilian Real (R$) against the U.S. dollar and the completion of the BR 163 road paving project, connecting Sorriso, North Mato Grosso to Itaituba, Pará. For example, truck rates, measured in U.S. dollar per metric ton, from Cruz Alta, Rio Grande do Sul to Rio Grande decreased 14 percent. Truck rates from Sorriso, North Mato Grosso to the southern port of Santos and Paranaguá decreased 14-16 percent. Truck rates from North Mato Grosso to Rondonópolis (Rail terminal) and to the northern river ports of Santarém and Itaituba/Miritituba (Barge terminal) decreased 12-18 percent. From 2018 to 2019, the Brazilian real depreciated nearly 7 percent against the U.S. dollar, from R$3.69 per U.S. dollar to R$3.94 per U.S. dollar.

Truck rates for selected Brazilian soybean export routes, US$/metric ton, 2014-19

Route #	Origin[1] (reference city)	Destination	Distance[2] (miles)	2014	2015	2016	2017	2018	2019	% change 2018-19
				Freight price, US$/metric ton[3]						
1	Northwest RS[4] (Cruz Alta)	Rio Grande	288	24.56	26.37	23.85	30.72	29.20	25.06	-14.2
2	North MT (Sorriso)	Santos	1,190	103.90	86.04	75.49	92.95	91.76	79.28	-13.6
3	North MT (Sorriso)	Paranaguá	1,262	100.89	85.68	74.42	89.41	90.20	75.78	-16.0
4	South GO (Rio Verde)	Santos	587	62.57	39.82	34.66	44.22	43.25	37.34	-13.7
6	North Central PR (Londrina)	Paranaguá	268	30.98	24.07	21.31	29.29	27.22	22.64	-16.8
11	Southeast MT (Primavera do Leste)	Santos	901	79.00	58.82	51.29	63.63	62.16	53.56	-13.8
27	North MT (Sorriso)	Itaituba	672	--na--	41.70	41.72	59.65	56.27	46.64	-17.1
29	North MT (Sorriso)	Santarém	876	--na--	58.12	49.60	55.08	58.86	52.04	-11.6
30	South MA (Balsas)	São Luís	482	--na--	36.15	31.04	37.69	37.60	32.99	-12.3
31	Southwest PI (Bom Jesus)	São Luís	606	--na--	43.04	34.23	44.44	46.52	39.34	-15.4
32	Southeast PA (Paragominas)	Barcarena	249	--na--	19.82	17.93	25.00	22.39	20.12	-10.2
33	East TO (Campos Lindos)	São Luís	842	--na--	56.78	50.55	61.69	56.94	50.55	-11.2
34	North MT (Sorriso)	Rondonópolis (Rail terminal)	382	--na--	--na--	--na--	--na--	33.49	27.62	-17.5
35	Rondonópolis MT (Rail teminal)[5]	Santos	1019	--na--	--na--	--na--	--na--	43.29	39.98	-7.6
36	Itaituba PA (Barge terminal)[6]	Santarém	224	--na--	--na--	--na--	--na--	--na--	14.67	-
37	Itaituba PA (Barge terminal)[6]	Barcarena	738	--na--	--na--	--na--	--na--	--na--	18.85	-

[1]Although each origin region comprises several cities, the main city is considered as a reference to establish the freight price; na = not available.
[2]Distance from the main city of the considered region to the mentioned ports.
[3]Average monthly exchange rate from "Banco Central do Brasil" was used to convert Brazilian reais to U.S. dollars.
[4]RS = Rio Grande do Sul, MT= Mato Grosso, GO = Goiás, PR = Paraná, PI = Piauí, MA = Maranhão, PA = Pará, and TO = Tocantins.
[5]In Brazil, there are no public/official rail tariff rates. Rail rates can be up to 30 percent lower than truck rates, depending on the volumes hauled and the terms of contracts signed between the railroad company and shippers.
[6]In Brazil, there are no public/official barge rates. Barge rates can be up to 60 percent lower than truck rates, depending on the volumes hauled and the terms of contracts signed between the barge company and shippers. The distance is in nautical miles.
Source: University of São Paulo, Escola Superior de Agricultura "Luiz de Queiroz," Brazil (ESALQ/USP) and USDA, Agricultural Marketing Service.

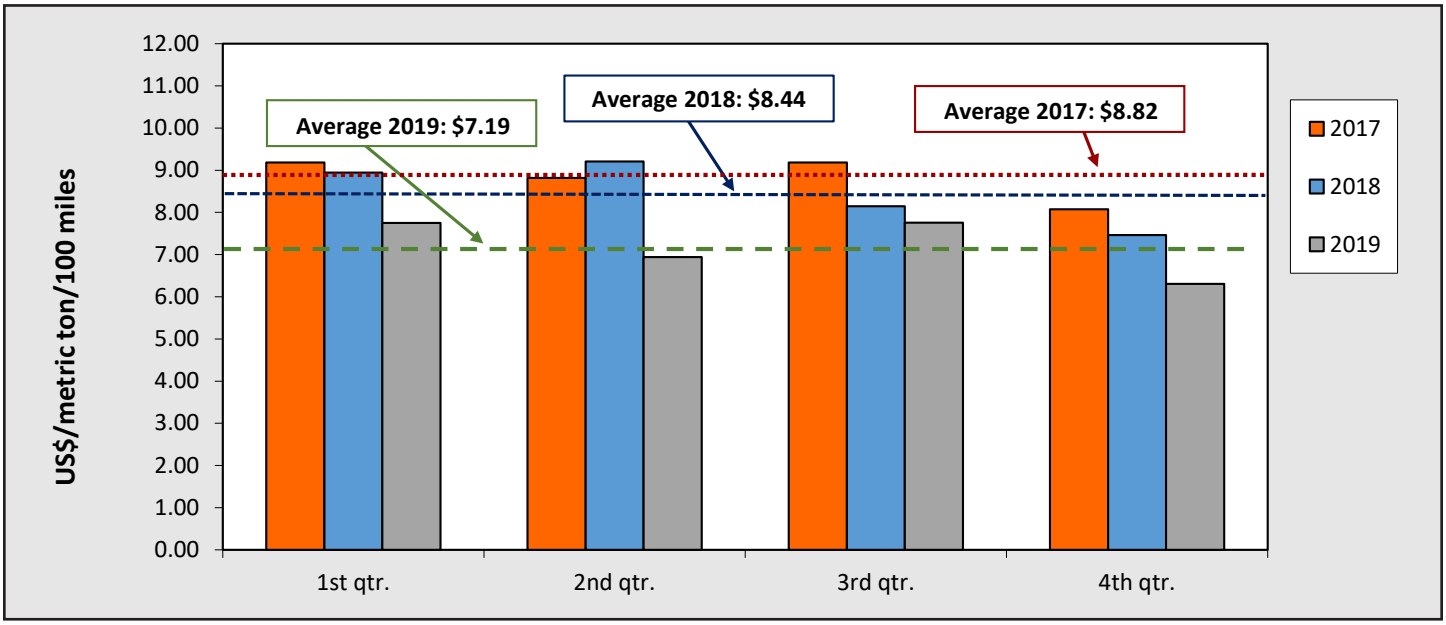
Truck rates for selected Brazilian soybean export routes, reais/metric ton, 2014-19

Route #	Origin[1] (reference city)	Destination	Distance[2] (miles)	2014	2015	2016	2017	2018	2019	% change 2018-19
				Freight price, reais/metric ton[3]						
1	Northwest RS[4] (Cruz Alta)	Rio Grande	288	57.52	87.26	83.70	97.91	106.15	98.63	-7.1
2	North MT (Sorriso)	Santos	1,190	243.68	283.84	263.26	296.36	334.43	312.20	-6.6
3	North MT (Sorriso)	Paranaguá	1,262	236.81	282.66	259.49	285.12	328.71	298.83	-9.1
4	South GO (Rio Verde)	Santos	587	146.51	130.98	121.33	140.95	157.35	146.75	-6.7
6	North Central PR (Londrina)	Paranaguá	268	72.47	79.44	74.77	93.34	98.87	89.07	-9.9
11	Southeast MT (Primavera do Leste)	Santos	901	185.01	193.85	179.27	202.86	226.32	210.83	-6.8
27	North MT (Sorriso)	Itaituba	672	--na--	137.56	145.97	190.01	204.53	183.26	-10.4
29	North MT (Sorriso)	Santarém	876	--na--	190.47	174.02	175.70	214.29	204.53	-4.6
30	South MA (Balsas)	São Luís	482	--na--	119.23	107.94	120.16	137.16	129.69	-5.5
31	Southwest PI (Bom Jesus)	São Luís	606	--na--	141.03	119.74	141.67	169.77	154.46	-9.0
32	Southeast PA (Paragominas)	Barcarena	249	--na--	65.77	62.95	79.64	81.19	78.95	-2.8
33	East TO (Campos Lindos)	São Luís	842	--na--	184.72	175.24	196.74	207.55	198.95	-4.1
34	North MT (Sorriso)	Rondonópolis (Rail terminal)	382	--na--	--na--	--na--	--na--	121.48	108.61	-10.6
35	Rondonópolis MT (Rail teminal)[5]	Santos	1019	--na--	--na--	--na--	--na--	157.64	157.62	0.0
36	Itaituba PA (Barge terminal)[6]	Santarém	224	--na--	--na--	--na--	--na--	--na--	25.78	-
37	Itaituba PA (Barge terminal)[6]	Barcarena	738	--na--	--na--	--na--	--na--	--na--	74.17	-

[1]Although each origin region comprises several cities, the main city is considered as a reference to establish the freight price; na = not available.
[2]Distance from the main city of the considered region to the mentioned ports.
[3]Average monthly exchange rate from "Banco Central do Brasil" was used to convert Brazilian reais to U.S. dollars.
[4]RS = Rio Grande do Sul, MT= Mato Grosso, GO = Goiás, PR = Paraná, PI = Piauí, MA = Maranhão, PA = Pará, and TO = Tocantins.
[5]In Brazil, there are no public/official rail tariff rates. Rail rates can be up to 30 percent lower than truck rates, depending on the volumes hauled and the terms of contracts signed between the railroad company and shippers.
[6]In Brazil, there are no public/official barge rates. Barge rates can be up to 60 percent lower than truck rates, depending on the volumes hauled and the terms of contracts signed between the barge company and shippers. The distance is in nautical miles.
Source: University of São Paulo, Escola Superior de Agricultura "Luiz de Queiroz," Brazil (ESALQ/USP) and USDA, Agricultural Marketing Service.

In 2019, the Brazilian soybean export transportation cost index increased. The cost of shipping a metric ton (mt) of soybeans 100 miles by truck decreased from $8.44 in 2018 to $7.19 in 2019.

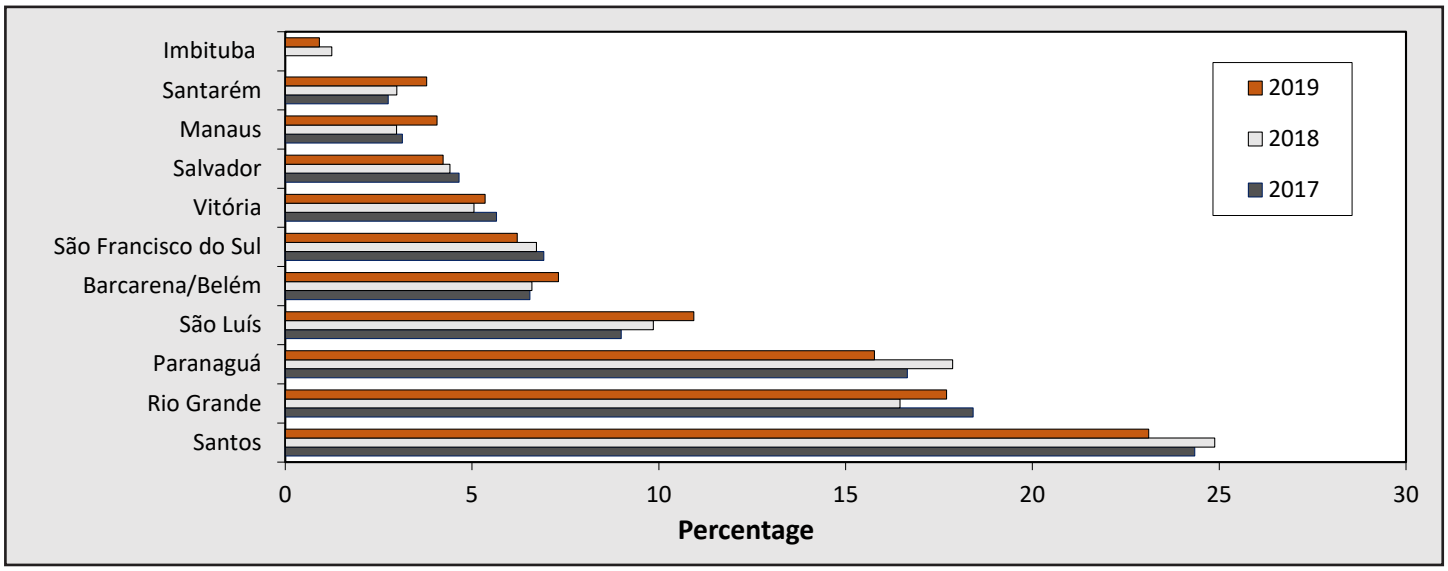
Brazilian soybean export truck cost index, 2017-19



Source: University of São Paulo, Escola Superior de Agricultura "Luiz de Queiroz," Brazil (ESALQ/USP) and USDA, Agricultural Marketing Service.

Brazil is the largest soybean exporting country, followed by the United States, Argentina, Paraguay, and Canada. In 2019, Santos was the largest Brazilian soybean export port, followed by Rio Grande, Paranaguá, São Luís, Barcarena, and São Francisco do Sul. These six ports accounted for 82 percent of Brazil's total exports. Soybean trade is still dominated by the southern ports of Santos, Rio Grande, Paranaguá, and São Francisco do Sul, accounting for nearly 63 percent of Brazil's soybean exports. In 2014, these ports accounted for nearly 73 percent of Brazil soybean exports. Approximately 28 percent of Brazil's soybean exports were shipped through the northeastern ports of São Luís, Vitória, Salvador, and Barcarena in 2019 compared with nearly 21 percent in 2014. In 2019, nearly 8 percent of Brazil's soybean exports were exported through the Amazon River ports of Manaus and Santarém compared with 5 percent in 2014.

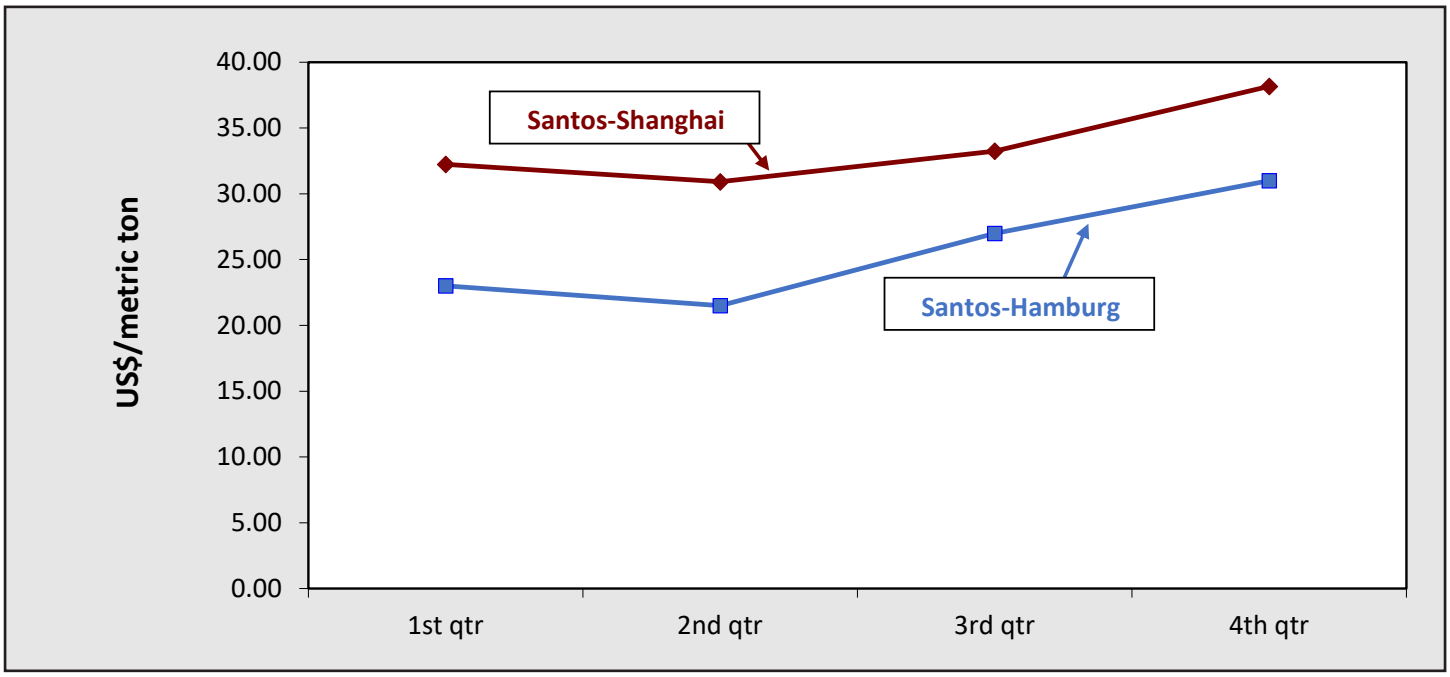
Brazilian soybean exports by port, 2017-19



Source: Comex Stat, Ministério da Economia.

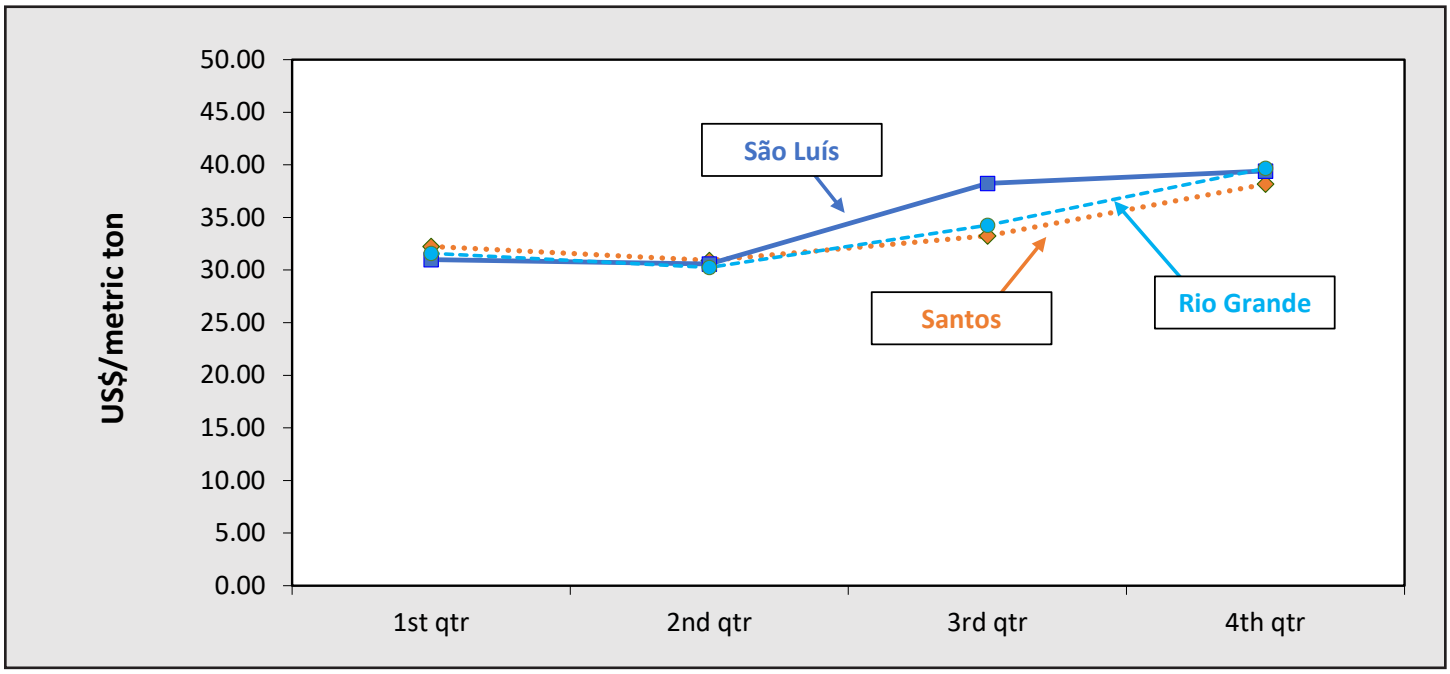
In 2019, ocean rates from the southern Brazilian ports increased 1 percent to Hamburg and 9-13 percent to Shanghai in response to higher bunker fuel prices, higher Brazilian corn exports, and a strong iron ore trade that reduced the availability of Panamax vessels for grain exports at the Brazilian ports. During the first half of 2019, ocean rates from the Port of Santos to Shanghai, China, were unusually low due to lower Chinese iron ore imports and the collapse of a mine-waste dam in southeastern Brazil that disrupted Brazilian iron supply. However, ocean rates increased in the second half of the year, averaging $33.65/mt.

Brazilian soybean ocean freight from Santos to Shanghai and Hamburg, 2019



Source: University of São Paulo, Escola Superior de Agricultura "Luiz de Queiroz," Brazil (ESALQ/USP) and USDA, Agricultural Marketing Service.

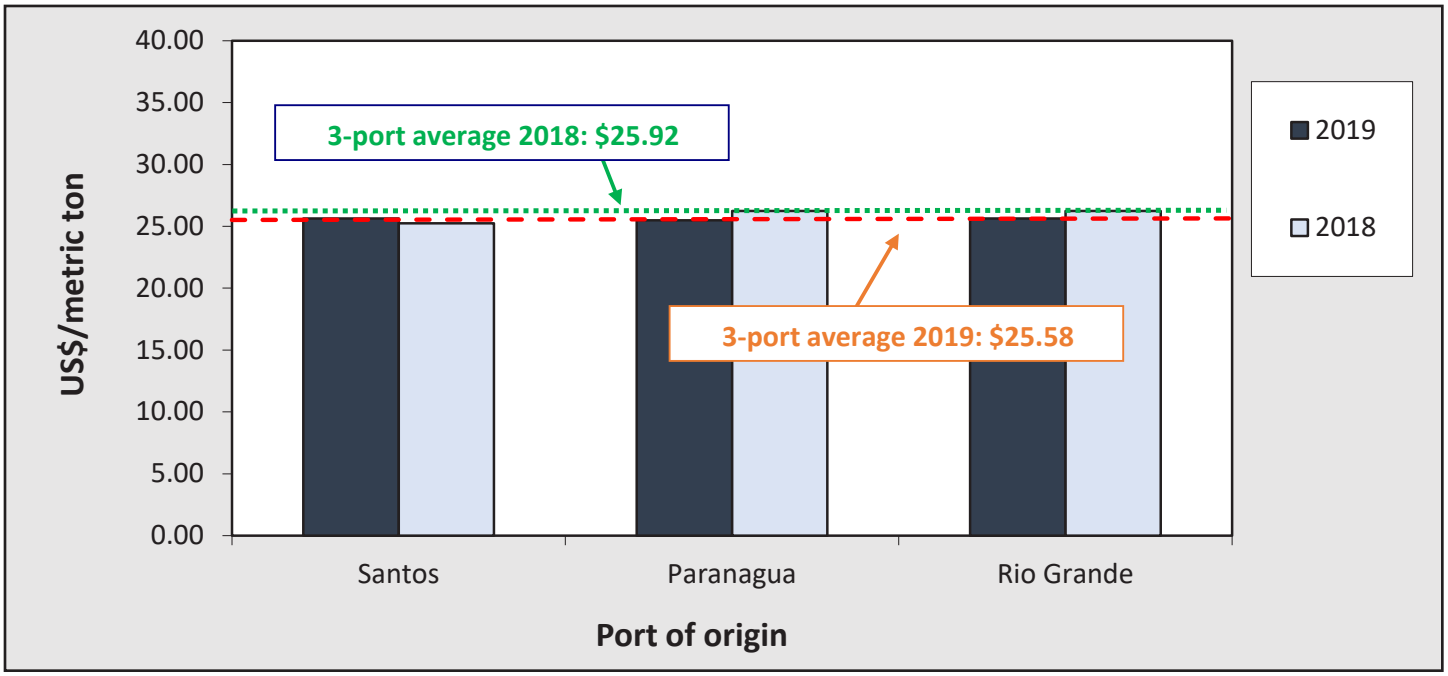
Brazilian soybean ocean freight from selected ports to Shanghai, China, 2019



Source: University of São Paulo, Escola Superior de Agricultura "Luiz de Queiroz," Brazil (ESALQ/USP) and USDA, Agricultural Marketing Service.

The cost to ship 1 mt of soybeans from Brazil to Hamburg, Germany, by oceangoing vessel slightly decreased, on average, from $25.92/mt to $25.58/mt.

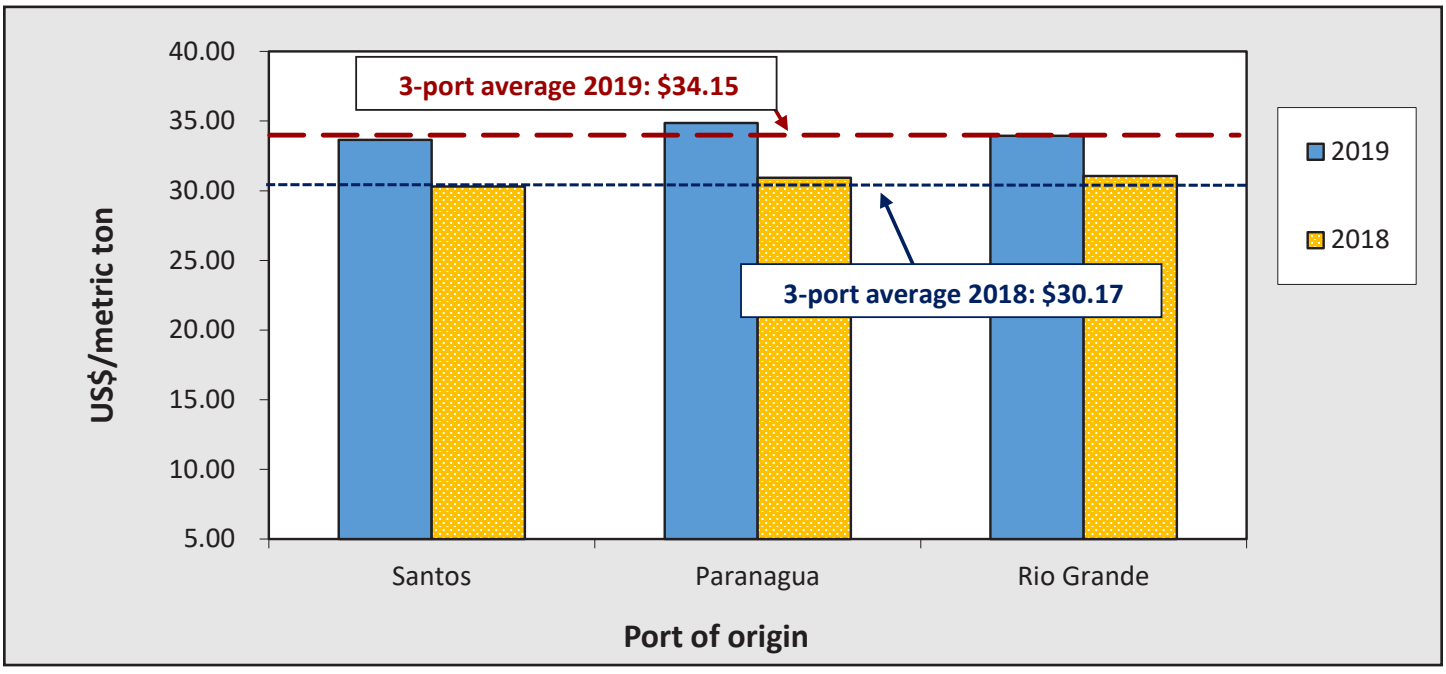
Ocean rates from Brazil to Hamburg, Germany, decreased in 2019



Source: University of São Paulo, Escola Superior de Agricultura "Luiz de Queiroz," Brazil (ESALQ/USP) and USDA, Agricultural Marketing Service.

In 2019, the cost to ship 1 mt of soybeans from Brazil to Shanghai, by ocean vessel, increased 11 percent on average, from $30.77/mt to $34.15/mt.

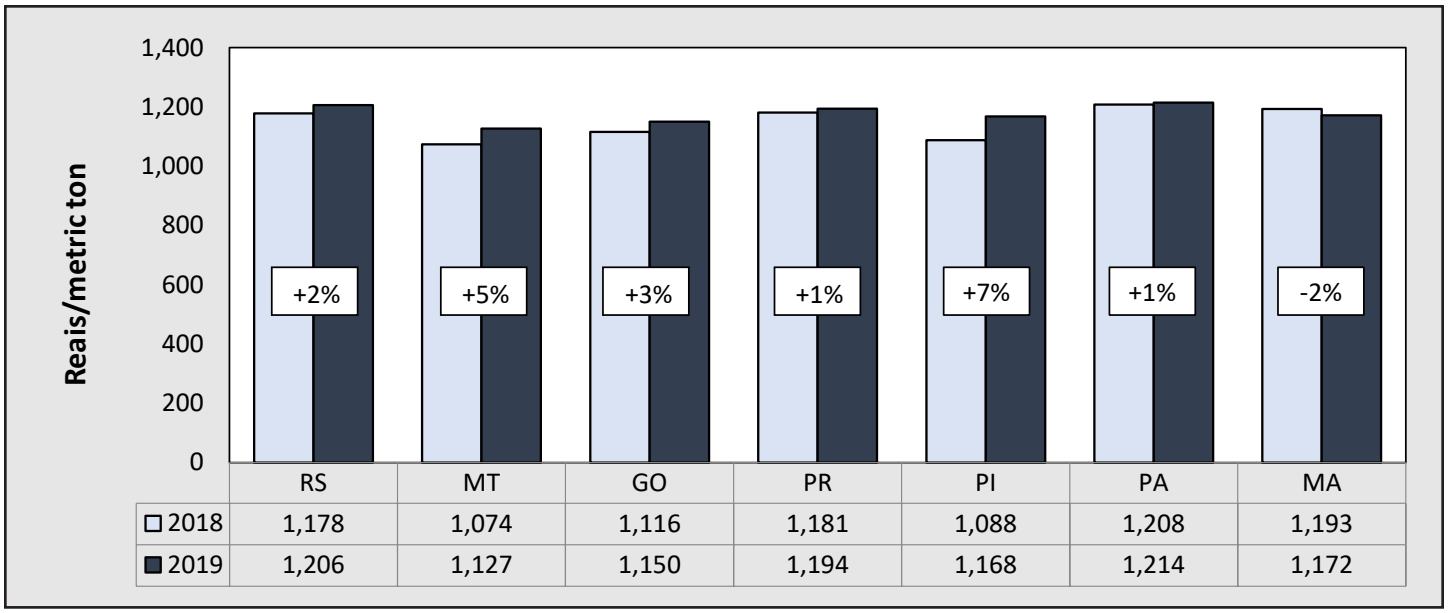
Ocean rates from Brazil to Shanghai, China, increased in 2019



Source: University of São Paulo, Escola Superior de Agricultura "Luiz de Queiroz," Brazil (ESALQ/USP) and USDA, Agricultural Marketing Service.

Farm prices measured in reais increased an average of 2.4 percent, from R$1,148.12/mt in 2018 to R$1,175.84/mt in 2019. Rio Grande do Sul, Mato Grosso, Goiás, Paraná, Piauí, and Pará farm prices increased 1-7 percent, while Maranhão farm prices decreased 2 percent. However, when year-to-year farm prices were measured in U.S. dollars, the percentage decrease was greater than when measured in reais. The difference was partially due to a nearly 7 percent fall in value of the Brazilian real against the U.S. dollar.

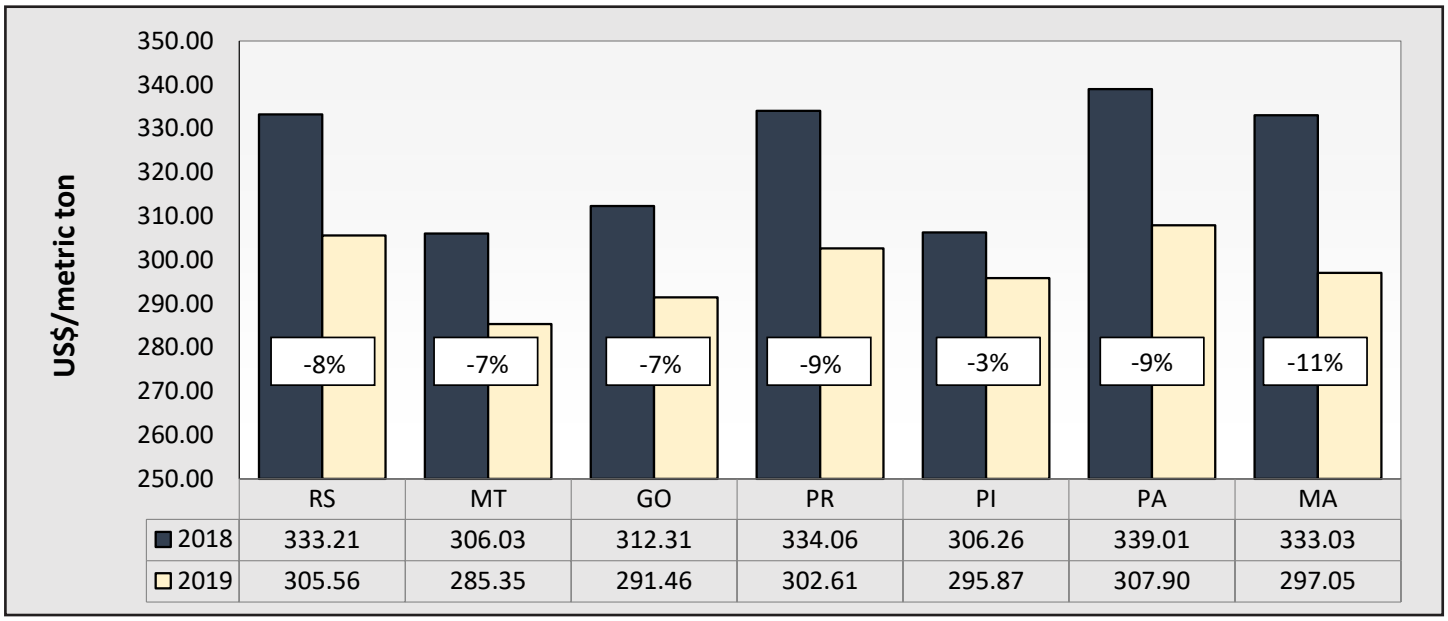
Selected Brazilian farm prices, reais/metric ton, 2018-19



	RS	MT	GO	PR	PI	PA	MA
2018	1,178	1,074	1,116	1,181	1,088	1,208	1,193
2019	1,206	1,127	1,150	1,194	1,168	1,214	1,172

Note: RS = Rio Grande do Sul, MT = Mato Grosso, GO = Goiás, PR = Paraná, PI = Piauí, PA = Pará, and MA = Maranhão.
Source: Companhia Nacional de Abastecimento (CONAB).

Selected Brazilian farm prices, US$/metric ton, 2018-19

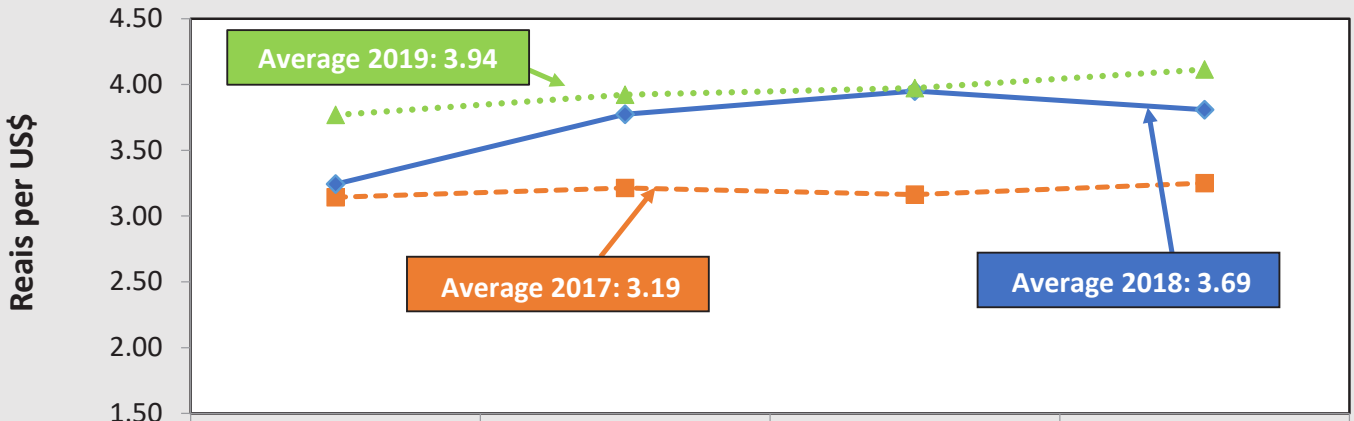


	RS	MT	GO	PR	PI	PA	MA
2018	333.21	306.03	312.31	334.06	306.26	339.01	333.03
2019	305.56	285.35	291.46	302.61	295.87	307.90	297.05

Note: RS = Rio Grande do Sul, MT = Mato Grosso, GO = Goiás, PR = Paraná, PI = Piauí, PA = Pará, and MA = Maranhão.
Source: Companhia Nacional de Abastecimento (CONAB).

From 2018 to 2019, the Brazilian real depreciated nearly 7 percent against the U.S. dollar, from R$3.69 per U.S. dollar to R$3.94 per U.S. dollar.

Average quarterly exchange rate, real per U.S. dollar, 2017-19

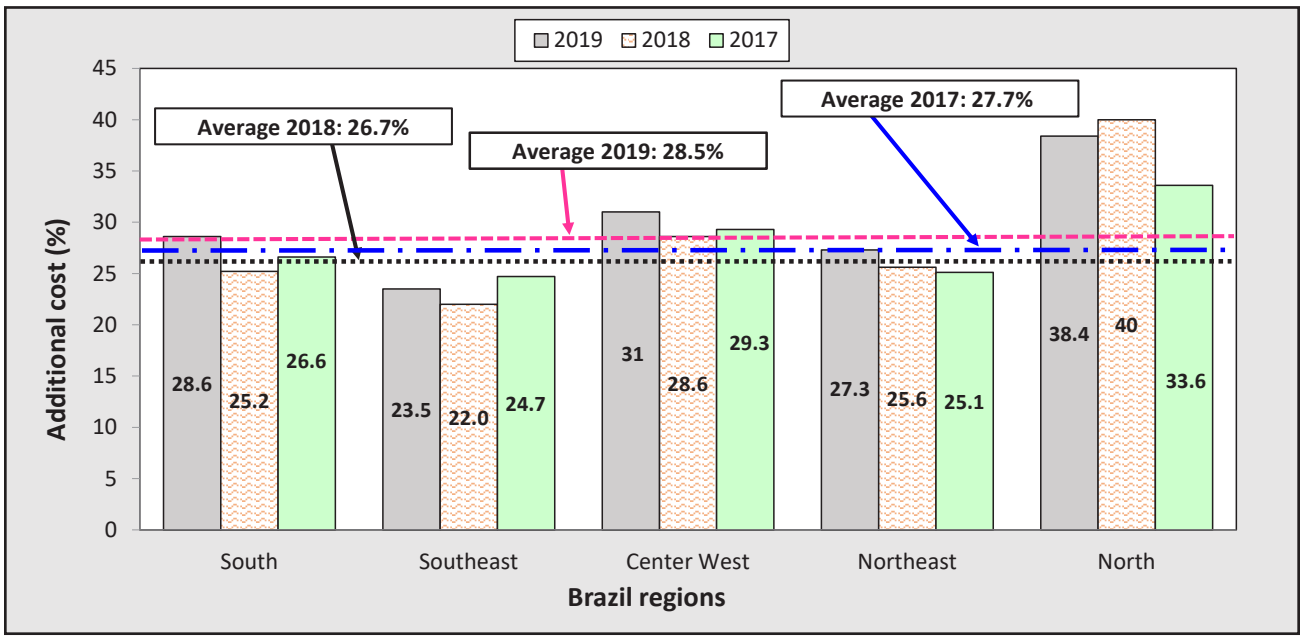


	1st	2nd	3rd	4th
2017	3.14	3.21	3.16	3.25
2018	3.24	3.77	3.95	3.81
2019	3.77	3.92	3.97	4.11

Source: Banco Central do Brasil

The 2019 Confederação Nacional do Transporte (CNT) survey of the overall highway conditions in Brazil estimates that, because of the poor conditions of the paved roads, the 2019 marginal operational cost of cargo trucks was 28.5 percent higher than it would have been if the trucks had used only paved roads in optimal condition. Overall, the 2019 additional operational cargo cost (28.5 percent) was higher than 2018 (26.7 percent). This cost declined only in the North. For example, according to CNT, if the cost of shipping a metric ton of soybeans from Sorriso, North MT, to Santos was $100 per metric ton (mt), the 2019 optimal cost should have been $71.50/mt.

Cost increases due to poor road pavement conditions, 2017-19



Source: Confederação Nacional do Transporte (CNT).

Brazilian Minimum Freight Rates Law Update

On January 16, 2020, Brazil's National Land Transportation Agency's (ANTT) published updated guidelines to the National Policy of Minimum Freight Rates Law for truck cargo transportation.[3]

1. Shippers are obligated to pay backhaul freight rates for the return of empty containers. Shippers must also pay backhaul freight rates for trucks in specific fleets that cannot legally carry backhaul cargo, such as a truck that carries fuel or gases and cannot return with another type cargo.

2. The truck driver's daily rate (salary and expenses for lodging and food) is included in the calculation of the minimum rate.

3. Pressurized cargo—such as carbon dioxide, nitrogen, and oxygen gases utilized in the food industry—have been added as a new type of cargo covered by the law.

4. Two new tables were created for high efficiency loading operations that take less time to load and unload, thereby reducing the waiting time for trucks and drivers.

5. The costs of items included in the table (such as tires and maintenance) are to be updated every 6 months.

Current status: The Brazilian Supreme Court held several conciliation hearings about the constitutionality of the law. Conciliation hearings are suspended because of the COVID-19 pandemic. A new date will be appointed in due time.

Background: On August 9, 2018, the National Policy of Minimum Freight Rates Law was enacted to end an 11-day nationwide strike in late May by the truck drivers who blocked highways, creating immediate shortages of critical products such as fuel, food, and medicines. The poultry and pork industries were hit especially hard (USDA, FAS, Gain Report BR1810). Shortages of fuel and animal feed affected farms and feedlots. Slaughterhouses idled their production lines when transportation to the ports was cut off and their refrigerated warehouses reached full capacity (USDA, FAS, Gain Report BR1810). Soybean exports were not significantly affected for the limited duration of the strike. The law allows ANTT to set minimum freight rates for trucking nationwide, reflecting total operating costs based on fuel costs, distances, tolls, and other factors (Confederação Nacional do Transporte (CNT) and AgriCensus). The minimum freight rates include a charge on backhaul trips, even if the truck is empty. Truckers are forbidden to negotiate contracts below the ANTT minimum. The law requires freight rates to be equal to, or above, the minimum rates set by the ANTT. Rates are published twice a year, on January 20 and July 20.[4] The minimum freight rates are adjusted every 6 months, based on several criteria, including fuel prices, inflation, and the cost of operations for independent drivers. Since 2018, organizations opposing these minimum mandatory freight rates have challenged the constitutionality of the law before the Brazil's Supreme Court.

3 On January 1, 2019, ANTT and the Fundação de Estudos Agrários Luiz de Queiroz (FEALQ) signed a 21-month contract to update the methodology and the minimum freight rate table.

4 The frequency with which freight rates will be published will change if the price of diesel fluctuates more than 10 percent from the set minimum price (USDA, FAS, Gain Report BR1812). If the freight rates are not published within the identified timeframe, the previous period's freight rates—updated by the National Consumer Price Index (IPCA)—will be valid.

Investment Partnership Program (PPI): Selected Infrastructure Project Priorities that Facilitate Exports of Agricultural Products

On February 1, 2019, the Brazilian government announced the infrastructure priorities for President Bolsonaro's Administration (ANTT and CNT):

1. **The North-South (EF-151) Railroad**: Porto National, Tocantins-Estrela d'Oeste, São Paulo. This railroad integrates four States: Tocantins, Goiás, Minas Gerais, and São Paulo with access to the northeastern port of Itaquí-Sâo Luis, Maranhão, and the southern port of Santos with an extension that is 955 miles (1,537 km) long.

   Current Status: On August 8, 2019, Rumo S.A. signed the 30-year concession contract for Ferrovia Norte-Sul (North-South Railway) from Estrela d'Oeste to Porto Nacional. Rumo has 2 years to complete the 424 miles (682 km) between Anápolis and Estrela d'Oeste (95 percent completed) and start operations in 2021.

2. **The West-East Integration (FIOL) Railroad (EF-334)**: Ilhéus, Bahia to Figueirópolis, Tocantins. Extension: 947 miles (1,537 km).

   Current Status: The Brazilian government announced that Valec Engenharia, Construções e Ferrovias S.A. in partnership with the Army Engineering Construction Battalion will build the railroad.

3. **Ferrogrão Railroad (EF-170) Railroad**: The purpose is to consolidate the new Brazilian export rail corridor of the "Arco Norte" by connecting the grain-producing region of the Midwest to the State of Pará, ending at Miritituba Port. The EF-170 is expected to increase transport capacity and competitiveness within the corridor and alleviate traffic conditions on highway BR-163 by serving as an alternative route for soybean and corn exports. The estimated cost of the project is $2.5 billion (R$14 billion).[5] The concession is for 65 years. Public hearings and technical studies are complete.

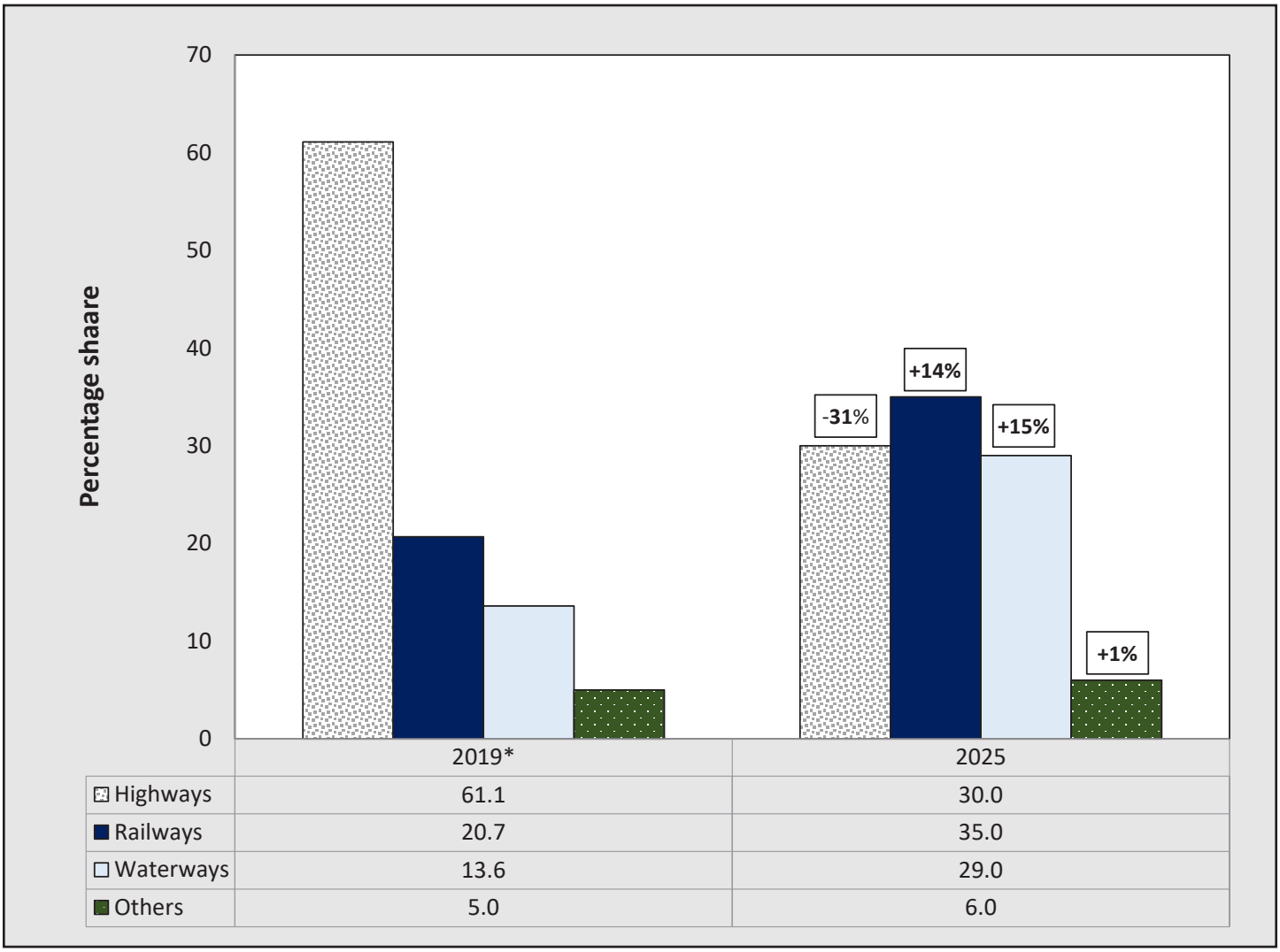
   Current status: The Brazilian government announced that the auction for the construction and operation of the railroad will be held in the first semester of 2021.

4. **BR-163**: The distance by truck of 663 miles (1,067 km) via BR-163—from Sorriso, North Mato Grosso, (Brazil's largest grain producer) to Miritituba—is completed. Currently, it takes about 2 days to ship grain to Miritituba. There are reports of road deterioration (Portosenavios).

   Current status: The Brazilian government announced that the auction to privatize BR-163 operations will be held in 2022. The concession is for 10 years.

The Brazilian Government plans to change the current cargo transportation matrix by developing an integrated intermodal system. The intention is to increase railway shipments from 21 percent to 35 percent and waterway shipments from 14 percent to 29 percent. Truck shipments will be reduced from 61 percent to 30 percent.

Brazil Modal share for general cargo, 2019-25



	2019*	2025
Highways	61.1	30.0
Railways	20.7	35.0
Waterways	13.6	29.0
Others	5.0	6.0

*Because of rounding, 2019 shares do not sum exactly to 100.

Source: Brazil Ministry of Transportation, National Plan of Logistic & Transportation (PNLT) and Confederação Nacional do Transporte (CNT) 2019.

TRANSPORTATION INDICATORS

Quarterly costs of transporting Brazilian soybeans from the southern ports to Shanghai, China

	2019									
	1st qtr	2nd qtr	3rd qtr	4th qtr	Avg	1st qtr	2nd qtr	3rd qtr	4th qtr	Avg
	North MT[1] - Santos[2] by truck —US$/mt—					North MT[1] - Paranaguá[2] —US$/mt—				
Truck	81.92	73.96	88.37	72.86	79.28	71.05	72.82	87.49	71.77	75.78
Ocean	32.25	30.92	33.25	38.17	33.65	33.75	31.42	34.75	39.50	34.86
Total transportation	114.17	104.88	121.62	111.03	112.92	104.80	104.24	122.24	111.27	110.64
Farm gate price[3]	275.38	271.70	286.87	307.47	285.35	275.38	271.70	286.87	307.47	285.35
Landed cost	389.54	376.58	408.48	418.50	398.28	380.18	375.94	409.10	418.74	395.99
Transport % of landed cost	29.3	27.8	29.8	26.5	28.4	27.6	27.7	29.9	26.6	27.9
	North MT[1] - Santos[2] by truck and rail —US$/mt—					Northwest RS[1] - Rio Grande[2] —US$/mt—				
Truck	29.89	26.49	30.03	24.07	27.62	26.05	24.86	26.82	22.50	25.06
Rail[4]	41.21	31.39	48.04	39.28	39.98	-	-	-	-	-
Ocean	32.25	30.92	33.25	38.17	33.65	31.58	30.25	34.25	39.67	33.94
Total transportation	103.36	88.80	111.32	101.53	101.25	57.63	55.11	61.07	62.17	58.99
Farm gate price[3]	275.38	271.70	286.87	307.47	285.35	308.52	294.72	304.20	314.81	305.56
Landed cost	378.73	360.50	398.19	409.00	386.60	366.2	349.83	365.27	376.98	364.56
Transport % of landed cost	27.3	24.6	28.0	24.8	26.2	15.7	15.8	16.7	16.5	16.2

[1]Producing regions: RS = Rio Grande do Sul and MT= Mato Grosso.

[2]Export port.

[3]The source of the farm gate price is the Brazilian Government, Companhia Nacional de Abastecimento (CONAB).

[4]In Brazil, there are no public/official rail tariff rates. Rail rates can be up to 30 percent lower than truck rates, depending on the volumes hauled and the terms of contracts signed between the railroad company and shippers.

Note: qtr. = quarter. mt = metric ton. Avg = average.

Source: University of São Paulo, Escola Superior de Agricultura "Luiz de Queiroz," Brazil (ESALQ/USP) and USDA, Agricultural Marketing Service.

Quarterly costs of transporting Brazilian soybeans from the southern ports to Hamburg, Germany

	2019									
	1st qtr	2nd qtr	3rd qtr	4th qtr	Avg	1st qtr	2nd qtr	3rd qtr	4th qtr	Avg
	North MT[1] - Santos[2] by truck —US$/mt—					North MT[1] - Paranaguá[2] —US$/mt—				
Truck	81.92	73.96	88.37	72.86	79.28	71.05	72.82	87.49	71.77	75.78
Ocean	23.00	21.50	27.00	31.00	25.63	23.00	21.25	27.00	30.75	25.50
Total transportation	104.92	95.46	115.37	103.86	104.90	94.05	94.07	114.49	102.52	101.28
Farm gate price[3]	275.38	271.70	286.87	307.47	285.35	275.38	271.70	286.87	307.47	285.35
Landed cost	380.29	367.16	402.23	411.33	390.25	369.43	365.77	401.35	409.99	386.64
Transport % of landed cost	27.6	26.0	28.7	25.2	26.9	25.5	25.7	28.5	25.0	26.2
	North MT[1] - Santos[2] by truck and rail —US$/mt—					Northwest RS[1] - Rio Grande[2] —US$/mt—				
Truck	29.89	26.49	30.03	24.07	27.62	26.05	24.86	26.82	22.50	25.06
Rail[4]	41.21	31.39	48.04	39.28	39.98	-	-	-	-	-
Ocean	23.00	21.50	27.00	31.00	25.63	23.00	21.25	27.00	31.25	25.63
Total transportation	94.11	79.38	105.07	94.36	93.23	49.05	46.11	53.82	53.75	50.68
Farm gate price[3]	275.38	271.70	286.87	307.47	285.35	308.52	294.72	304.20	314.81	305.56
Landed cost	369.48	351.08	391.94	401.83	378.58	357.57	340.83	358.02	368.56	356.25
Transport % of landed cost	25.5	22.6	26.8	23.5	24.6	13.7	13.5	15.0	14.6	14.2

[1]Producing regions: RS = Rio Grande do Sul and MT= Mato Grosso.

[2]Export port.

[3]The source of the farm gate price is the Brazilian Government, Companhia Nacional de Abastecimento (CONAB).

[4]In Brazil, there are no public/official rail tariff rates. Rail rates can be up to 30 percent lower than truck rates, depending on the volumes hauled and the terms of contracts signed between the railroad company and shippers.

Note: qtr. = quarter. mt = metric ton. Avg = average.

Source: University of São Paulo, Escola Superior de Agricultura "Luiz de Queiroz," Brazil (ESALQ/USP) and USDA, Agricultural Marketing Service.

Quarterly costs of transporting Brazilian soybeans from the northern and northeastern ports to Shanghai, China

	2019									
	1st qtr	2nd qtr	3rd qtr	4th qtr	Avg	1st qtr	2nd qtr	3rd qtr	4th qtr	Avg
	North MT[1] - Santarém[2] —US$/mt—					South MA[1] - São Luís[2] —US$/mt—				
Truck	59.40	47.34	55.66	45.74	52.04	37.04	31.80	36.22	26.89	32.99
Ocean	32.25	30.58	38.25	39.17	35.06	31.00	30.58	38.25	39.42	34.81
Total transportation	91.65	77.92	93.91	84.91	87.10	68.04	62.38	74.47	66.31	67.80
Farm gate price[3]	275.38	271.70	286.87	307.47	285.35	298.43	278.70	300.20	310.87	297.05
Landed cost	367.03	349.62	380.78	392.39	372.45	366.47	341.08	374.67	377.18	364.85
Transport % of landed cost	25.0	22.3	24.7	21.6	23.4	18.6	18.3	19.9	17.6	18.6
	Southwest PI[1] - São Luís[2] —US$/mt—					North MT[1] - Barcarena[2] —US$/mt—				
Truck	45.24	38.41	41.42	32.28	39.34	53.99	45.66	49.49	37.43	46.64
Barge[4]	-	-	-	-	-	19.66	18.30	20.63	16.79	18.85
Ocean	31.00	30.58	38.25	39.42	34.81	32.25	29.92	38.25	39.42	34.96
Total transportation	76.24	68.99	79.67	71.70	74.15	105.90	93.89	108.37	93.64	100.45
Farm gate price[3]	292.96	285.28	288.35	316.88	295.87	275.38	271.70	286.87	307.47	285.35
Landed cost	369.20	354.27	368.03	388.58	370.02	381.28	365.59	395.24	401.11	385.80
Transport % of landed cost	20.7	19.5	21.6	21.6	20.9	27.8	25.7	27.4	23.3	26.1

[1]Producing regions: MT = Mato Grosso, PI = Piauí, and MA = Maranhão.

[2]Export port.

[3]The source of the farm gate price is the Brazilian Government, Companhia Nacional de Abastecimento (CONAB).

[4]In Brazil, there are no public/official barge rates. Barge rates can be up to 60 percent lower than truck rates, depending on the volumes hauled and the terms of contracts signed between the barge company and shippers. The distance is in nautical miles.

Note: qtr. = quarter. mt = metric ton. Avg = average.

Source: University of São Paulo, Escola Superior de Agricultura "Luiz de Queiroz," Brazil (ESALQ/USP) and USDA, Agricultural Marketing Service.

Quarterly costs of transporting Brazilian soybeans from the northern and northeastern ports to Hamburg, Germany

	2019									
	1st qtr	2nd qtr	3rd qtr	4th qtr	Avg	1st qtr	2nd qtr	3rd qtr	4th qtr	Avg
	North MT[1] - Santarém[2] —US$/mt—					South MA[1] - São Luís[2] —US$/mt—				
Truck	59.40	47.34	55.66	45.74	52.04	37.04	31.80	36.22	26.89	32.99
Ocean	21.00	20.25	25.92	26.50	23.42	18.00	17.10	22.77	23.50	20.34
Total transportation	80.40	67.59	81.58	72.24	75.45	55.04	48.90	58.99	50.39	53.33
Farm gate price[3]	275.38	271.70	286.87	307.47	285.35	298.43	278.70	300.20	310.87	297.05
Landed cost	355.78	339.29	368.45	379.72	360.81	353.47	327.60	359.19	361.26	350.38
Transport % of landed cost	22.6	19.9	22.1	19.0	20.9	15.6	14.9	16.4	13.9	15.2
	Southwest PI[1] - São Luís[2] —US$/mt—					North MT[1] - Barcarena[2] —US$/mt—				
Truck	45.24	38.41	41.42	32.28	39.34	53.99	45.66	49.49	37.43	46.64
Barge[4]	-	-	-	-	-	19.66	18.30	20.63	16.79	18.85
Ocean	18.00	17.10	22.77	23.50	20.34	19.00	17.85	23.52	24.25	21.16
Total transportation	63.24	55.51	64.19	55.78	59.68	92.65	81.82	93.64	78.47	86.64
Farm gate price[3]	292.96	285.28	288.35	316.88	295.87	275.38	271.70	286.87	307.47	285.35
Landed cost	356.20	340.79	352.55	372.66	355.55	368.03	353.52	380.51	385.94	372.00
Transport % of landed cost	17.8	16.3	18.2	15.0	16.8	25.2	23.1	24.6	20.3	23.3

[1]Producing regions: MT = Mato Grosso, PI = Piauí, and MA = Maranhão.

[2]Export port.

[3]The source of the farm gate price is the Brazilian Government, Companhia Nacional de Abastecimento (CONAB).

[4]In Brazil, there are no public/official barge rates. Barge rates can be up to 60 percent lower than truck rates, depending on the volumes hauled and the terms of contracts signed between the barge company and shippers. The distance is in nautical miles.

Note: qtr. = quarter. mt = metric ton. Avg = average.

Source: University of São Paulo, Escola Superior de Agricultura "Luiz de Queiroz," Brazil (ESALQ/USP) and USDA, Agricultural Marketing Service.

Truck rates for selected Brazilian soybean export transportation routes, 2019

Route #	Origin[1] (reference city)	Destination	Distance (miles)[2]	Share (%)[3]	Freight Price (US$) (per 100 miles)[4]				
					1st qtr	2nd qtr	3rd qtr	4th qtr	Avg
1	Northwest RS[5] (Cruz Alta)	Rio Grande	288	11.3	9.05	8.63	9.31	7.81	8.70
2	North MT (Sorriso)	Santos	1,190	3.0	6.88	6.21	7.43	6.12	6.66
3	North MT (Sorriso)	Paranaguá	1,262	2.9	5.63	5.77	6.93	5.69	6.00
4	South GO (Rio Verde)	Santos	587	4.8	7.29	5.89	6.75	5.51	6.36
5	South GO (Rio Verde)	Paranaguá	726	3.9	6.15	6.03	7.06	5.81	6.26
6	North Central PR (Londrina)	Paranaguá	268	3.2	8.86	8.40	9.06	7.47	8.45
7	Western Central PR (Mamborê)	Paranaguá	311	2.4	7.96	7.76	8.48	7.11	7.83
8	Triangle MG (Uberaba)	Santos	339	3.0	10.13	8.11	9.02	7.37	8.66
9	West PR (Assis Chateaubriand)	Paranaguá	377	2.3	7.45	7.00	7.86	6.47	7.19
10	West Extreme BA (São Desidério)	Salvador	535	6.6	7.03	6.48	7.41	6.02	6.74
11	Southeast MT (Primavera do Leste)	Santos	901	2.4	6.23	5.60	6.61	5.34	5.94
12	Southeast MT (Primavera do Leste)	Paranaguá	975	2.2	5.21	5.26	6.35	5.09	5.48
13	Southwest MS (Maracaju)	Paranaguá	612	3.5	6.48	6.33	7.28	5.99	6.52
14	Southwest MS (Maracaju)	Santos	652	3.2	7.67	6.20	7.21	5.90	6.75
15	West PR (Assis Chateaubriand)	Santos	550	1.6	7.76	6.29	7.27	5.98	6.82
16	East GO (Cristalina)	Santos	585	1.9	8.18	6.80	7.94	6.50	7.35
17	North PR (Cornélio Procópio)	Paranaguá	306	1.8	7.16	6.78	7.24	5.92	6.78
18	Eastern Central PR (Castro)	Paranaguá	130	2.0	12.15	10.87	11.15	9.18	10.84
19	South Central PR (Guarapuava)	Paranaguá	204	2.3	11.22	10.29	11.06	9.07	10.41
20	North Central MS (São Gabriel do Oeste)	Santos	720	2.4	6.79	5.44	6.29	5.17	5.92
21	Ribeirão Preto SP (Guairá)	Santos	314	0.0	8.57	6.62	7.30	5.89	7.09
22	Northeast MT (Canarana)	Santos	950	3.3	7.04	5.71	6.84	5.56	6.29
23	East MS (Chapadão do Sul)	Santos	607	0.0	6.71	5.45	6.23	5.11	5.88
24	Northeast MT (Canarana)	Paranaguá	1,075	2.9	6.04	5.66	6.66	5.54	5.97
25	Western Central RS (Tupanciretã)	Rio Grande	273	2.5	9.40	8.31	8.47	6.91	8.27
26	Southwest PR (Chopinzinho)	Paranaguá	291	1.7	11.75	10.44	11.81	7.48	10.37
27	North MT (Sorriso)	Itaituba	672	5.4	8.04	6.80	7.37	5.57	6.94
28	North MT (Sorriso)	Porto Velho	632	5.7	6.29	5.98	6.26	5.19	5.93
29	North MT (Sorriso)	Santarém	876	4.1	6.78	5.40	6.35	5.22	5.94
30	South MA (Balsas)	São Luís	482	2.1	7.69	6.60	7.52	5.58	6.85
31	Southwest PI (Bom Jesus)	São Luís	606	2.6	7.47	6.34	6.84	5.33	6.49
32	Southeast PA (Paragominas)	Barcarena	249	1.5	10.05	7.58	8.08	6.66	8.09
33	East TO (Campos Lindos)	São Luís	842	1.6	6.43	5.36	6.68	5.54	6.00
	Weighted average		**587**	**100.0**	**7.75**	**6.94**	**7.75**	**6.30**	**7.19**
34	North MT (Sorriso)	Rondonópolis (Rail terminal)	382		7.83	6.93	7.86	6.30	7.23
35	Rondonópolis MT (Rail teminal)[6]	Santos	1,019		4.04	3.08	4.71	3.86	3.92
36	Itaituba PA (Barge terminal)[7]	Santarém	224		9.24	7.84	5.15	3.93	6.54
37	Itaituba PA (Barge terminal)[7]	Barcarena	738		2.67	2.48	2.80	2.28	2.55

[1]Although each origin region comprises several cities, the main city is considered as a reference to establish the freight price; na = not available.

[2]Distance from the main city of the considered region to the mentioned ports.

[3]Share is measured as a percentage of total production.

[4]Average monthly exchange rate from "Banco Central do Brasil" was used to convert Brazilian reais to U.S. dollars.

[5]RS = Rio Grande do Sul, MT= Mato Grosso, GO = Goiás, PR = Paraná, MG = Minas Gerais, BA = Bahia, MS = Mato Grosso do Sul, SP = São Paulo, PI = Piauí, MA = Maranhão, PA = Pará, and TO = Tocantins.

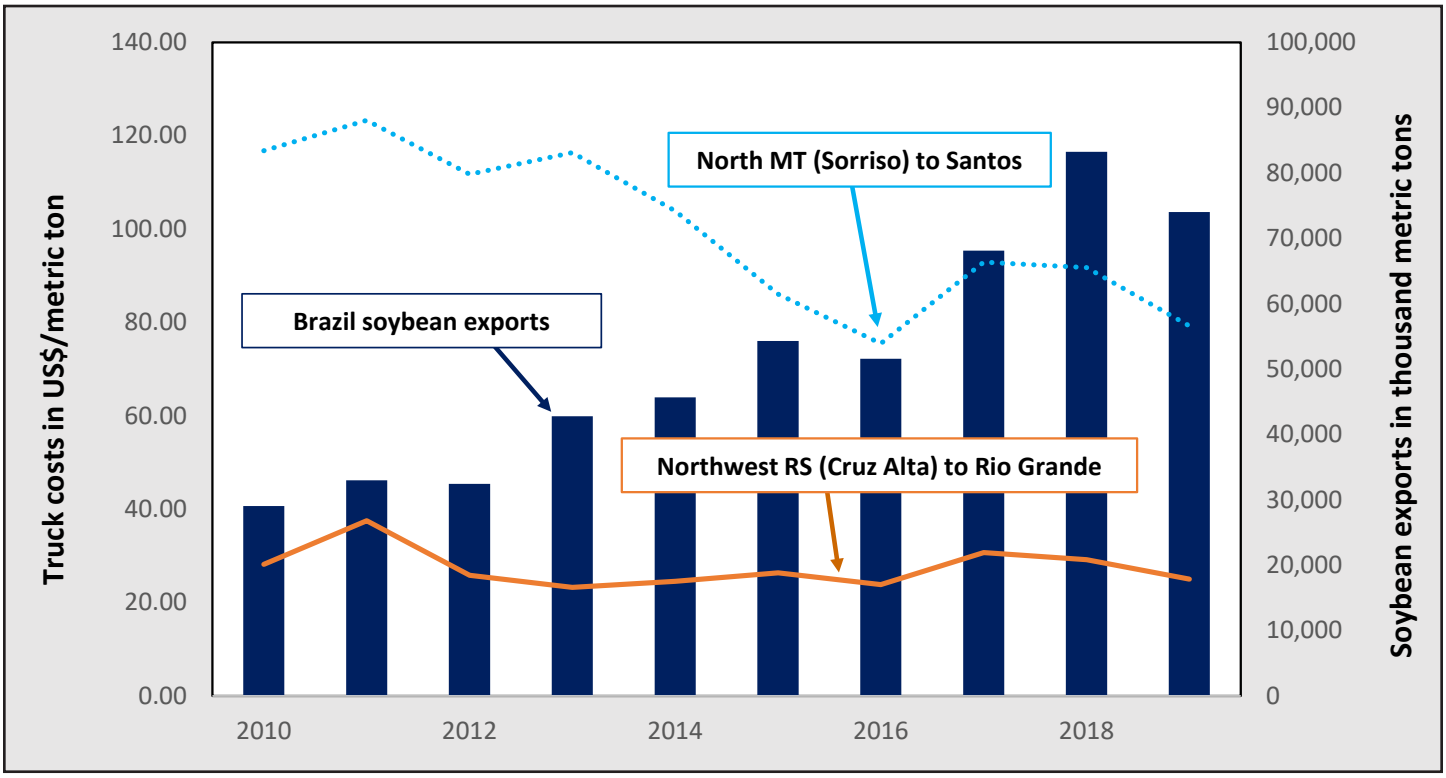
[6]In Brazil, there are no public/official rail tariff rates. Rail rates can be up to 30 percent lower than truck rates, depending on the volumes hauled and the terms of contracts signed between the railroad company and shippers.

[7]In Brazil, there are no public/official barge rates. Barge rates can be up to 60 percent lower than truck rates, depending on the volumes hauled and the terms of contracts signed between the barge company and shippers. The distance is in nautical miles.

Note: qtr. = quarter. mt = metric ton. Avg = average.

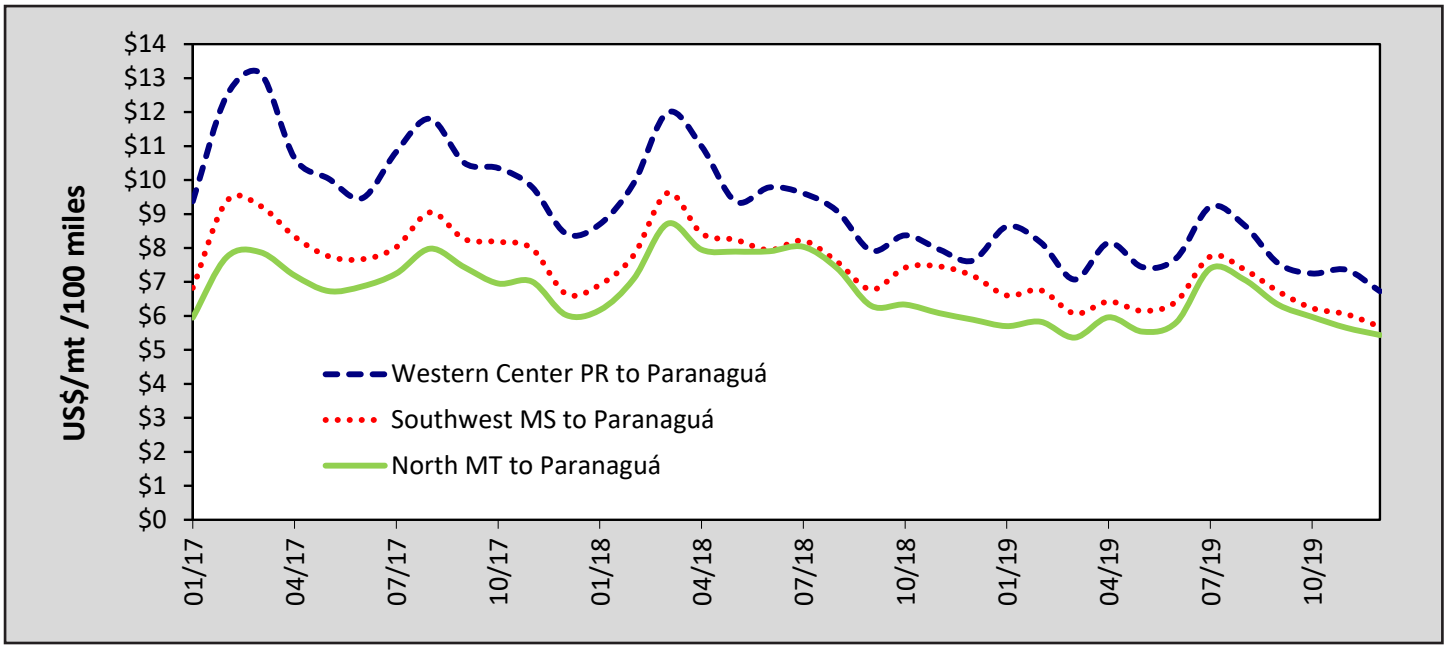
Source: University of São Paulo, Escola Superior de Agricultura "Luiz de Queiroz," Brazil (ESALQ/USP) and USDA, Agricultural Marketing Service.

Brazilian soybean export increases and truck cost declines for selected routes, 2010-19



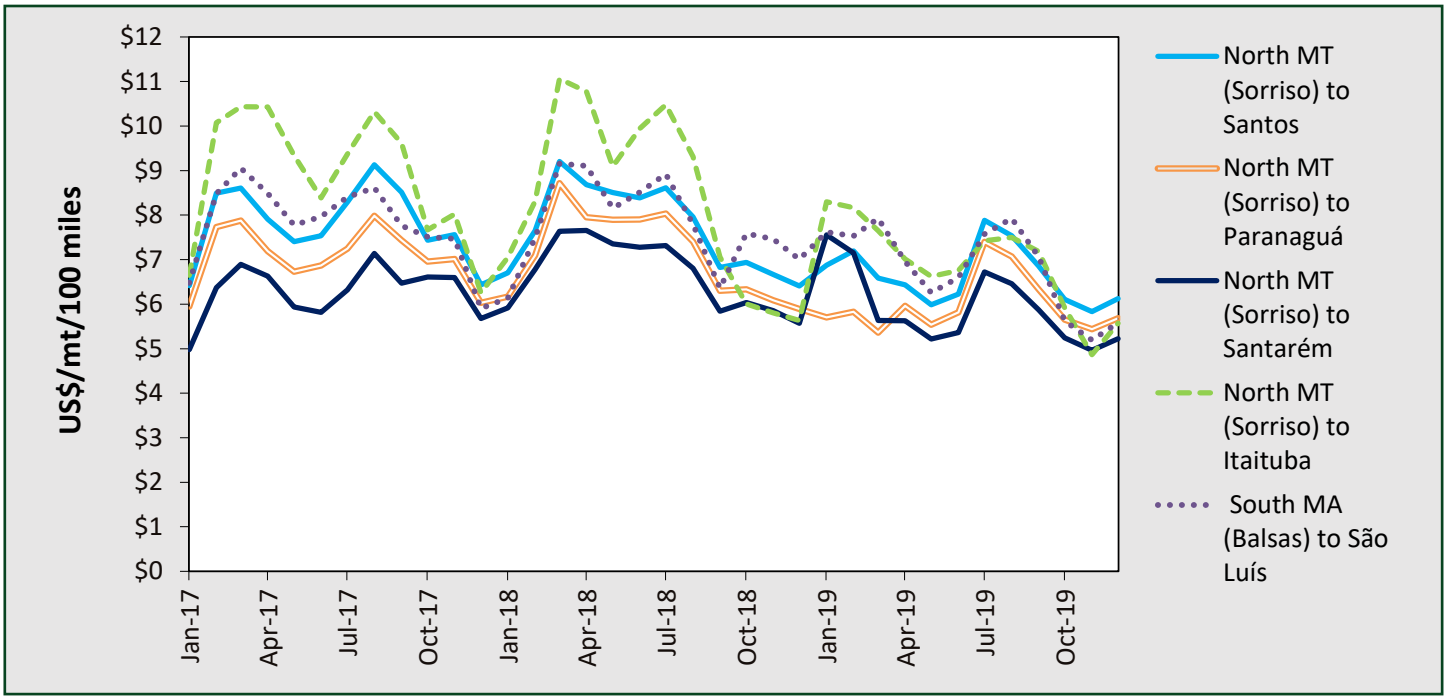
Note: MT = Mato Grosso and RG = Rio Grande do Sul.
Source: Comex Stat, Ministério da Indústria, Comércio Exterior e Serviços (MDIC), University of São Paulo, Escola Superior de Agricultura "Luiz de Queiroz," Brazil (ESALQ/USP) and USDA, Agricultural Marketing Service.

Truck rates for selected southern Brazilian soybean export transportation routes, 2017-19



Note: mt = metric ton. PR = Paraná, MT= Mato Grosso, and MS = Mato Grosso do Sul.
Source: University of São Paulo, Escola Superior de Agricultura "Luiz de Queiroz," Brazil (ESALQ/USP) and USDA, Agricultural Marketing Service.

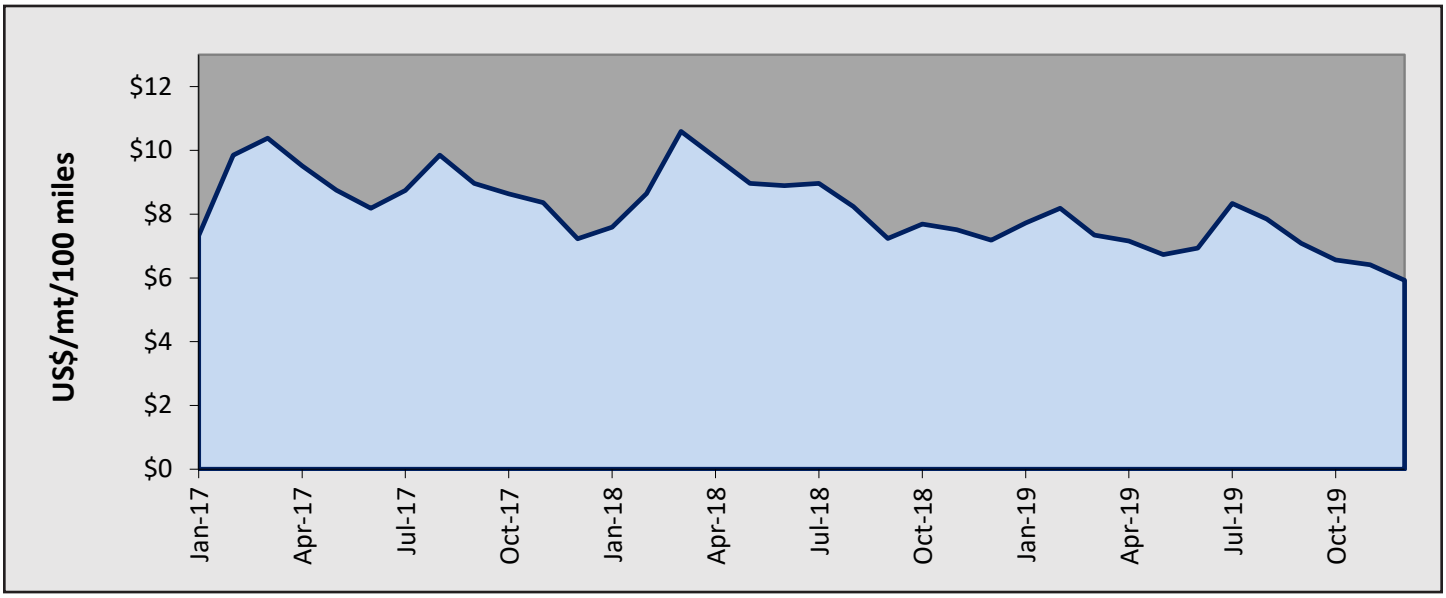
Truck rates for selected north, south, and northeastern Brazilian soybean export transportation routes, 2017-19



Note: mt = metric ton. MT= Mato Grosso and MA = Maranhão.

Source: University of São Paulo, Escola Superior de Agricultura "Luiz de Queiroz," Brazil (ESALQ/USP) and USDA, Agricultural Marketing Service.

Brazilian soybean export truck transportation weighted average prices, 2017-19



Note: mt = metric ton.

Source: University of São Paulo, Escola Superior de Agricultura "Luiz de Queiroz," Brazil (ESALQ/USP) and USDA, Agricultural Marketing Service.

Monthly Brazilian soybean export truck transportation cost index, 2012-19

Month	Freight price* (per 100 miles)	Index variation (%) (Base: prior month)	Index value (Base: Jan. 05 = 100)	Month	Freight price* (per 100 miles)	Index variation (%) (Base: prior month)	Index value (Base: Jan. 05 = 100)
Jan-12	10.20	1.7	175.90	Jan-16	6.42	-5.1	110.63
Feb-12	10.76	5.4	185.45	Feb-16	6.73	4.8	115.98
Mar-12	10.55	-2.0	181.82	Mar-16	7.79	15.8	134.33
Apr-12	10.45	-1.0	180.06	Apr-16	8.30	6.5	143.05
May-12	9.64	-7.7	166.20	May-16	7.28	-12.3	125.43
Jun-12	9.37	-2.9	161.44	Jun-16	7.16	-1.5	123.51
Jul-12	9.76	4.2	168.16	Jul-16	7.46	4.2	128.64
Aug-12	10.17	4.3	175.33	Aug-16	7.33	-1.7	126.41
Sep-12	10.30	1.3	177.54	Sep-16	6.35	-13.3	109.53
Oct-12	10.13	-1.6	174.66	Oct-16	5.88	-7.5	101.35
Nov-12	9.84	-2.8	169.69	Nov-16	5.00	-14.9	86.21
Dec-12	9.73	-1.1	167.74	Dec-16	5.47	9.4	94.32
Jan-13	10.11	3.9	174.31	Jan-17	7.32	33.8	126.20
Feb-13	10.79	6.7	185.96	Feb-17	9.85	34.6	169.85
Mar-13	11.14	3.3	192.04	Mar-17	10.38	5.3	178.90
Apr-13	10.95	-1.7	188.71	Apr-17	9.52	-8.3	164.05
May-13	10.40	-5.0	179.31	May-17	8.75	-8.0	150.90
Jun-13	9.49	-8.8	163.61	Jun-17	8.18	-6.5	141.04
Jul-13	9.65	1.7	166.41	Jul-17	8.74	6.8	150.66
Aug-13	9.80	1.5	168.95	Aug-17	9.85	12.7	169.76
Sep-13	10.21	4.2	176.02	Sep-17	8.97	-9.0	154.55
Oct-13	10.17	-0.4	175.28	Oct-17	8.64	-3.6	148.93
Nov-13	9.29	-8.6	160.18	Nov-17	8.36	-3.2	144.11
Dec-13	8.91	-4.1	153.63	Dec-17	7.23	-13.5	124.63
Jan-14	8.86	-0.6	152.73	Jan-18	7.59	5.0	130.90
Feb-14	10.34	16.7	178.24	Feb-18	8.65	13.9	149.04
Mar-14	11.61	12.3	200.13	Mar-18	10.59	22.5	182.61
Apr-14	11.35	-2.2	195.65	Apr-18	9.78	-7.7	168.59
May-14	10.90	-4.0	187.89	May-18	8.96	-8.4	154.45
Jun-14	10.34	-5.1	178.24	Jun-18	8.89	-0.8	153.24
Jul-14	10.16	-1.7	175.21	Jul-18	8.97	0.9	154.58
Aug-14	10.10	-0.6	174.08	Aug-18	8.24	-8.1	142.00
Sep-14	9.66	-4.3	166.54	Sep-18	7.24	-12.1	124.78
Oct-14	8.77	-9.3	151.13	Oct-18	7.69	6.2	132.55
Nov-14	8.36	-4.6	144.16	Nov-18	7.51	-2.3	129.44
Dec-14	7.96	-4.9	137.15	Dec-18	7.19	-4.3	123.87
Jan-15	8.01	0.7	138.15	Jan-19	7.72	7.5	133.13
Feb-15	8.02	0.1	138.29	Feb-19	8.19	6.0	141.15
Mar-15	8.32	3.7	143.44	Mar-19	7.34	-10.3	126.61
Apr-15	9.00	8.2	155.13	Apr-19	7.16	-2.6	123.35
May-15	8.39	-6.8	144.58	May-19	6.73	-5.9	116.02
Jun-15	8.01	-4.5	138.12	Jun-19	6.94	3.1	119.56
Jul-15	7.56	-5.7	130.25	Jul-19	8.33	20.1	143.60
Aug-15	7.38	-2.4	127.15	Aug-19	7.85	-5.8	135.23
Sep-15	6.60	-10.5	113.78	Sep-19	7.09	-9.7	122.17
Oct-15	6.70	1.5	115.43	Oct-19	6.57	-7.4	113.19
Nov-15	7.08	5.8	122.08	Nov-19	6.41	-2.3	110.54
Dec-15	6.76	-4.5	116.56	Dec-19	5.93	-7.5	102.21

*Weighted average.

Source: University of São Paulo, Escola Superior de Agricultura “Luiz de Queiroz,” Brazil (ESALQ/USP) and USDA, Agricultural Marketing Service.

Quarterly ocean freight rates for shipping soybeans from selected Brazilian ports to Shanghai, China, 2012-19 (US$/metric ton)*

Port	1st qtr 2012	2nd qtr 2012	3rd qtr 2012	4th qtr 2012	2012 Average
Santos	46.62	51.35	50.42	50.42	49.70
Paranaguá	52.32	57.63	55.42	55.42	55.20
Rio Grande	47.92	52.78	49.02	49.02	49.69
Port	**1st qtr 2013**	**2nd qtr 2013**	**3rd qtr 2013**	**4th qtr 2013**	**2013 Average**
Santos	52.34	34.50	34.50	42.50	40.96
Paranaguá	56.03	36.75	36.75	46.00	43.88
Rio Grande	51.34	35.25	35.25	44.25	41.52
Port	**1st qtr 2014**	**2nd qtr 2014**	**3rd qtr 2014**	**4th qtr 2014**	**2014 Average**
Santos	44.83	38.07	34.00	30.50	36.85
Paranagua	47.22	41.13	36.00	32.50	39.21
Rio Grande	44.83	38.75	32.50	30.50	36.65
Port	**1st qtr 2015**	**2nd qtr 2015**	**3rd qtr 2015**	**4th qtr 2015**	**2015 Average**
Santos	29.50	22.50	23.25	20.00	23.81
Paranaguá	31.50	23.50	24.18	20.50	24.92
Rio Grande	29.50	25.00	25.75	21.00	25.31
Santarém	32.00	25.00	25.75	23.50	26.56
São Luís	32.00	25.00	25.75	23.50	26.56
Barcarena	32.00	25.00	25.75	23.50	26.56
Port	**1st qtr 2016**	**2nd qtr 2016**	**3rd qtr 2016**	**4th qtr 2016**	**2016 Average**
Santos	17.50	16.50	12.50	20.00	16.63
Paranaguá	18.00	18.50	14.50	21.50	18.13
Rio Grande	18.50	17.00	13.00	20.50	17.25
Santarém	22.00	21.00	19.40	23.75	21.54
São Luís	20.00	18.40	17.50	22.00	19.48
Barcarena	22.50	21.50	20.00	23.75	21.94
Port	**1st qtr 2017**	**2nd qtr 2017**	**3rd qtr 2017**	**4th qtr 2017**	**2017 Average**
Santos	18.50	29.00	30.00	30.00	26.88
Paranaguá	20.50	30.50	31.00	31.50	28.38
Rio Grande	18.00	29.50	31.00	30.70	27.30
Santarém	24.00	33.50	31.00	34.50	30.75
São Luís	23.50	30.25	31.00	33.50	29.56
Barcarena	24.00	33.50	31.00	34.50	30.75
Port	**1st qtr 2018**	**2nd qtr 2018**	**3rd qtr 2018**	**4th qtr 2018**	**2018 Average**
Santos	32.50	31.00	27.75	30.00	30.31
Paranaguá	32.00	32.00	28.75	31.00	30.94
Rio Grande	33.00	31.50	28.25	31.00	30.94
Santarém	38.50	35.50	31.25	34.00	34.81
São Luís	37.00	34.80	30.75	33.00	33.89
Barcarena	37.50	33.80	32.25	35.00	34.64
Port	**1st qtr 2019**	**2nd qtr 2019**	**3rd qtr 2019**	**4th qtr 2019**	**2019 Average**
Santos	32.25	30.92	33.25	38.17	33.65
Paranaguá	33.75	31.42	34.75	39.50	34.86
Rio Grande	31.58	30.25	30.58	39.67	33.94
Santarém	32.25	30.58	38.25	39.17	35.06
São Luís	31.00	30.58	38.25	39.42	34.81
Barcarena	32.25	29.92	38.25	39.42	34.96

*The rates correspond to the average actual values negotiated between shippers and carriers and " qtr. = weighted according to the magnitude of the shipped volume.

Note: qtr. = quarter.

Source: University of São Paulo, Escola Superior de Agricultura "Luiz de Queiroz," Brazil (ESALQ/USP) and USDA, Agricultural Marketing Service.

Quarterly ocean freight rates for shipping soybeans from selected Brazilian ports to Hamburg, Germany, 2012-19 (US$/metric ton)*

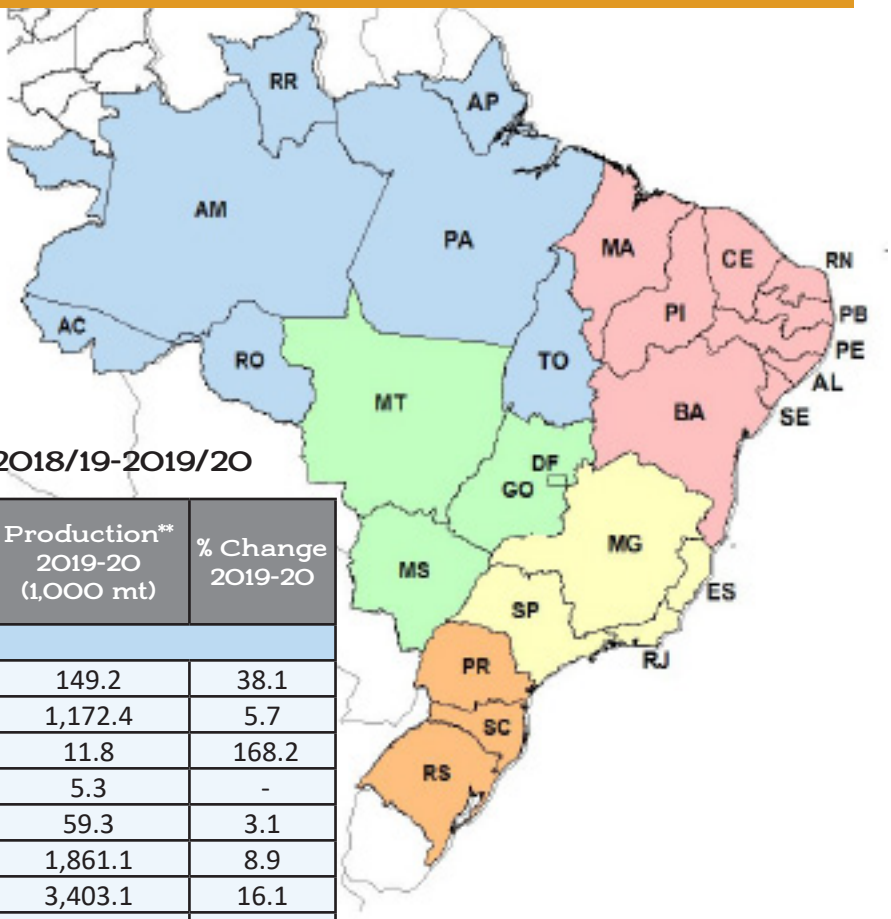
Port	1st qtr 2012	2nd qtr 2012	3rd qtr 2012	4th qtr 2012	2012 Average
Santos	32.00	35.00	32.00	28.00	31.75
Paranaguá	31.58	35.00	34.30	34.30	33.80
Rio Grande	32.08	36.50	32.00	32.00	33.15
Port	**1st qtr 2013**	**2nd qtr 2013**	**3rd qtr 2013**	**4th qtr 2013**	**2013 Average**
Santos	30.00	29.00	29.00	30.00	29.50
Paranaguá	30.00	29.00	29.00	30.00	29.50
Rio Grande	30.00	29.00	29.00	30.00	29.50
Port	**1st qtr 2014**	**2nd qtr 2014**	**3rd qtr 2014**	**4th qtr 2014**	**2014 Average**
Santos	31.00	30.00	26.00	24.00	27.75
Paranaguá	31.00	30.00	28.00	26.00	28.75
Rio Grande	31.00	30.00	24.50	22.50	27.00
Port	**1st qtr 2015**	**2nd qtr 2015**	**3rd qtr 2015**	**4th qtr 2015**	**2015 Average**
Santos	22.00	21.00	19.00	17.00	19.75
Paranaguá	22.00	21.00	19.00	17.00	19.75
Rio Grande	22.00	21.00	19.00	17.00	19.75
Santarém	20.00	14.50	13.50	20.00	17.00
São Luís	20.00	18.25	16.38	20.50	18.78
Barcarena	20.00	16.00	15.20	21.00	18.05
Port	**1st qtr 2016**	**2nd qtr 2016**	**3rd qtr 2016**	**4th qtr 2016**	**2016 Average**
Santos	16.00	17.00	16.50	23.00	18.13
Paranaguá	16.00	17.00	16.50	24.00	18.38
Rio Grande	16.00	17.00	16.50	23.00	18.13
Santarém	11.03	14.13	15.00	19.80	14.99
São Luís	8.25	11.00	11.80	15.80	11.71
Barcarena	9.60	12.45	13.20	17.35	13.15
Port	**1st qtr 2017**	**2nd qtr 2017**	**3rd qtr 2017**	**4th qtr 201**	**2017 Average**
Santos	21.00	24.00	26.00	27.00	24.50
Paranaguá	22.00	25.00	27.00	28.00	25.50
Rio Grande	22.00	25.00	27.00	28.00	25.50
Santarém	21.00	23.60	25.00	26.00	23.90
São Luís	17.60	20.00	21.20	22.00	20.20
Barcarena	18.00	20.60	21.80	22.70	20.78
Port	**1st qtr 2018**	**2nd qtr 2018**	**3rd qtr 2018**	**4th qtr 2018**	**2018 Average**
Santos	27.00	25.00	24.00	25.00	25.25
Paranaguá	28.00	26.00	25.00	26.00	26.25
Rio Grande	28.00	26.00	25.00	26.00	26.25
Santarém	25.00	22.90	22.50	23.00	23.35
São Luís	21.00	19.10	18.50	19.00	19.40
Barcarena	23.00	20.90	20.20	20.00	21.03
Port	**1st qtr 2019**	**2nd qtr 2019**	**3rd qtr 2019**	**4th qtr 2019**	**2019 Average**
Santos	23.00	21.50	27.00	31.00	25.63
Paranaguá	23.00	21.25	27.00	30.75	25.50
Rio Grande	23.00	21.25	27.00	31.25	25.63
Santarém	21.00	20.25	25.92	26.50	23.42
São Luís	18.00	17.10	22.77	23.50	20.34
Barcarena	19.00	17.85	23.52	24.25	21.16

*The rates correspond to the average actual values negotiated between shippers and carriers and " qtr. = weighted according to the magnitude of the shipped volume.

Note: qtr. = quarter.

Source: University of São Paulo, Escola Superior de Agricultura "Luiz de Queiroz," Brazil (ESALQ/USP) and USDA, Agricultural Marketing Service.

SOYBEAN PRODUCTION



Soybean production by state, 2018/19-2019/20

Region/State	Production* 2018-19 (1,000 mt)	Production** 2019-20 (1,000 mt)	% Change 2019-20
NORTH			
Roraima (RR)	108.0	149.2	38.1
Rondônia (RO)	1,109.2	1,172.4	5.7
Acre (AC)	4.4	11.8	168.2
Amazonas (AM)	5.3	5.3	-
Amapá (AP)	57.5	59.3	3.1
Pará (PA)	1,708.9	1,861.1	8.9
Tocantins (TO)	2,931.5	3,403.1	16.1
Total	**5,924.8**	**6,662.2**	**12.4**
NORTHEAST			
Maranhão (MA)	2,917.7	3,095.2	6.1
Piauí (PI)	2,322.1	2,374.6	2.3
Alagoas (AL)	4.5	3.4	-24.4
Bahia (BA)	5,309.1	6,026.0	13.5
Total	**10,553.4**	**11,499.2**	**9.0**
CENTER-WEST			
Mato Grosso (MT)	32,454.5	35,434.5	9.2
Mato Grosso do Sul (MS)	8,504.0	10,708.2	25.9
Goiás (GO)	11,437.40	12,464.60	9.0
Distrito Federal (DF)	241.6	290.6	20.3
Total	**52,637.5**	**58,897.9**	**11.9**
SOUTHEAST			
Minas Gerais (MG)	5,074.3	5,986.3	18.0
São Paulo (SP)	3,017.5	3,958.7	31.2
Total	**8,091.8**	**9,945.0**	**22.9**
SOUTH			
Paraná (PR)	16,252.7	20,772.7	27.8
Santa Catarina (SC)	2,382.6	2,252.8	-5.4
Rio Grande do Sul (RS)	19,187.1	10,853.4	-43.4
Total	37,822.4	33,878.9	-10.4
TOTAL PRODUCTION	**115,029.9**	**120,883.2**	**5.1**

*Data based on calendar year, January-December

**Forecast, July 2020

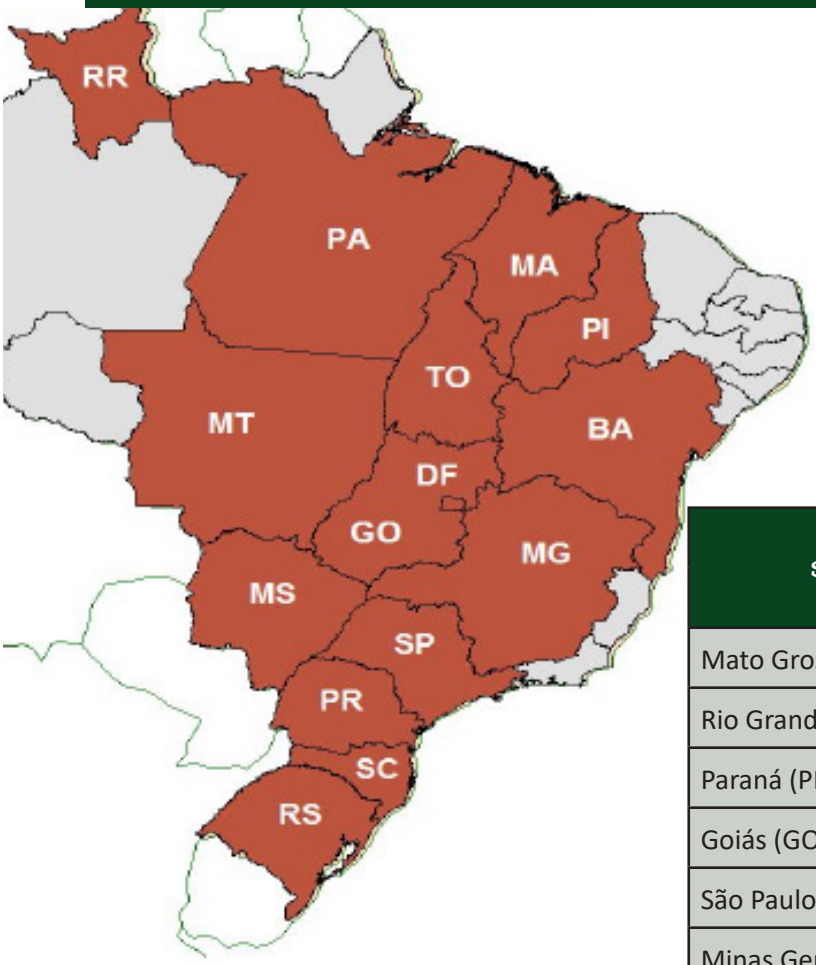
Source: Companhia Nacional de abastecimento (CONAB).

Brazil soybean supply and distribution

Year*	Area harvested	Beginning stocks	Production	Imports	Total supply	Exports	Crush	Domestic consumption	Ending stocks
	1,000 hectares	1,000 metric tons							
2007/08	21,300	6,625	61,000	83	67,708	24,515	31,895	34,365	8,828
2008/09	21,700	8,828	57,800	124	66,752	28,041	30,779	33,129	5,582
2009/10	23,500	5,582	69,000	150	74,732	29,188	35,700	38,100	7,444
2010/11	24,200	7,444	75,300	40	82,784	33,789	37,264	39,714	9,281
2011/12	25,000	9,281	66,500	298	76,079	31,905	36,230	38,730	5,444
2012/13	27,700	5,444	82,000	240	87,684	42,826	36,432	38,982	5,876
2013/14	30,100	5,876	86,700	579	93,155	45,747	38,195	40,795	6,613
2014/15	32,100	6,613	97,200	329	104,142	54,635	40,339	42,989	6,518
2015/16	33,300	6,518	96,500	362	103,380	52,100	39,967	42,617	8,663
2016/17	33,900	8,663	114,600	267	123,530	68,807	42,161	44,811	9,912
2017/18	35,150	9,912	122,000	185	132,097	83,729	43,389	45,716	2,652
2018/19	35,900	2,652	119,000	145	121,797	73,445	43,510	45,710	2,642
2019/20	36,900	2,642	126,000	245	128,887	79,500	44,000	46,637	2,750
2020/21**	38,300	2,750	131,000	150	133,900	83,000	45,000	47,650	3,250

*Data based on Brazil's local February/January Marketing Year (MY).
Where February 2012 - January 2013 is the 2011/12 MY.
**Forecast, July 10, 2020
Source: USDA/Foreign Agricultural Service/Market and Trade Data/Reports/Oilseeds

EXPORTS

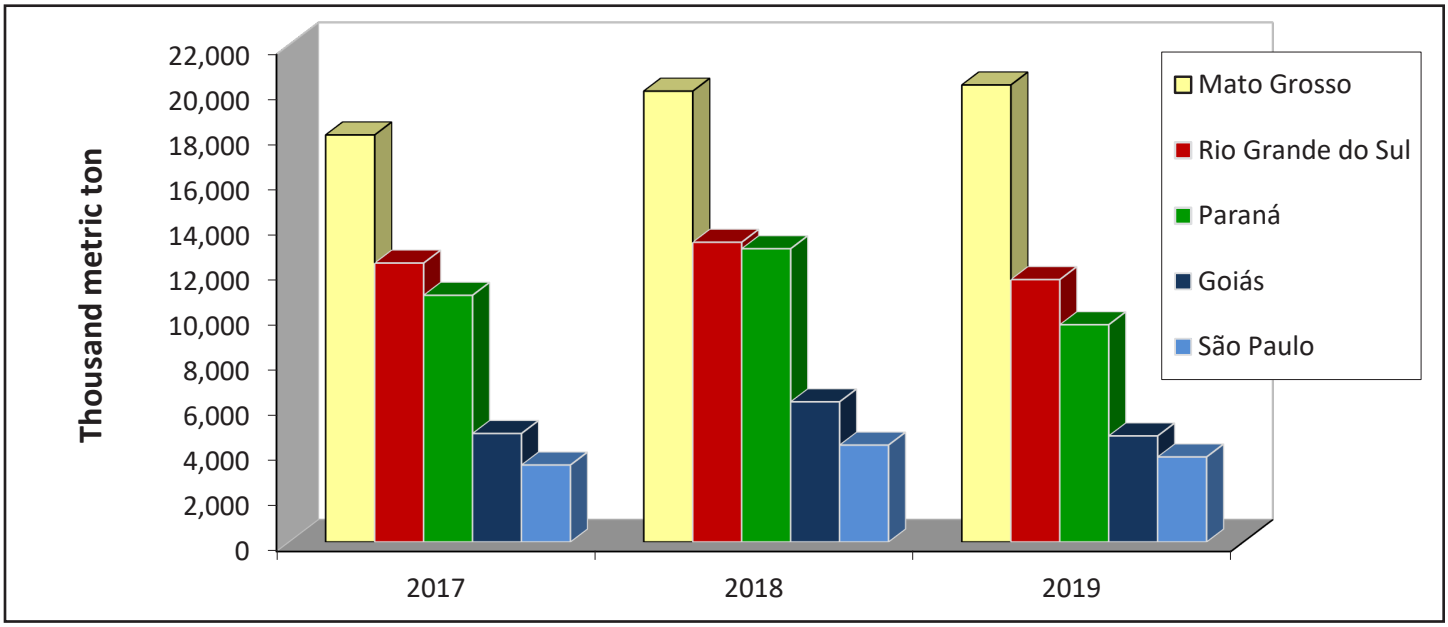


Top 15 Brazilian soybean exporting states, 2017-19

State	2017	2018	2019	Rank
	metric ton			
Mato Grosso (MT)	18,017,456	19,954,041	20,228,381	1
Rio Grande do Sul (RS)	12,349,282	13,271,420	11,618,880	2
Paraná (PR)	10,924,399	12,983,316	9,620,076	3
Goiás (GO)	4,805,409	6,205,890	4,696,288	4
São Paulo (SP)	3,408,327	4,290,303	3,765,147	5
Minas Gerais (MG)	2,626,070	4,433,678	3,284,743	6
Mato Grosso do Sul (MS)	3,642,153	5,198,305	3,278,575	7
Bahia (BA)	3,096,844	4,011,811	3,252,826	8
Maranhão (MA)	1,887,820	2,497,486	2,306,346	9
Tocantins (TO)	2,014,962	2,528,345	2,213,791	10
Santa Catarina (SC)	1,844,618	2,334,653	1,860,502	11
Pará (PA)	1,172,575	1,423,392	1,508,828	13
Piauí (PI)	821,018	1,526,710	1,176,435	12
Rondônia (RO)	878,079	1,048,164	1,115,058	14
Distrito Federal (DF)	263,976	317,357	150,112	15
Others	394,716	1,221,942	3,987,647	
Total	**68,147,705**	**83,246,813**	**74,063,633**	

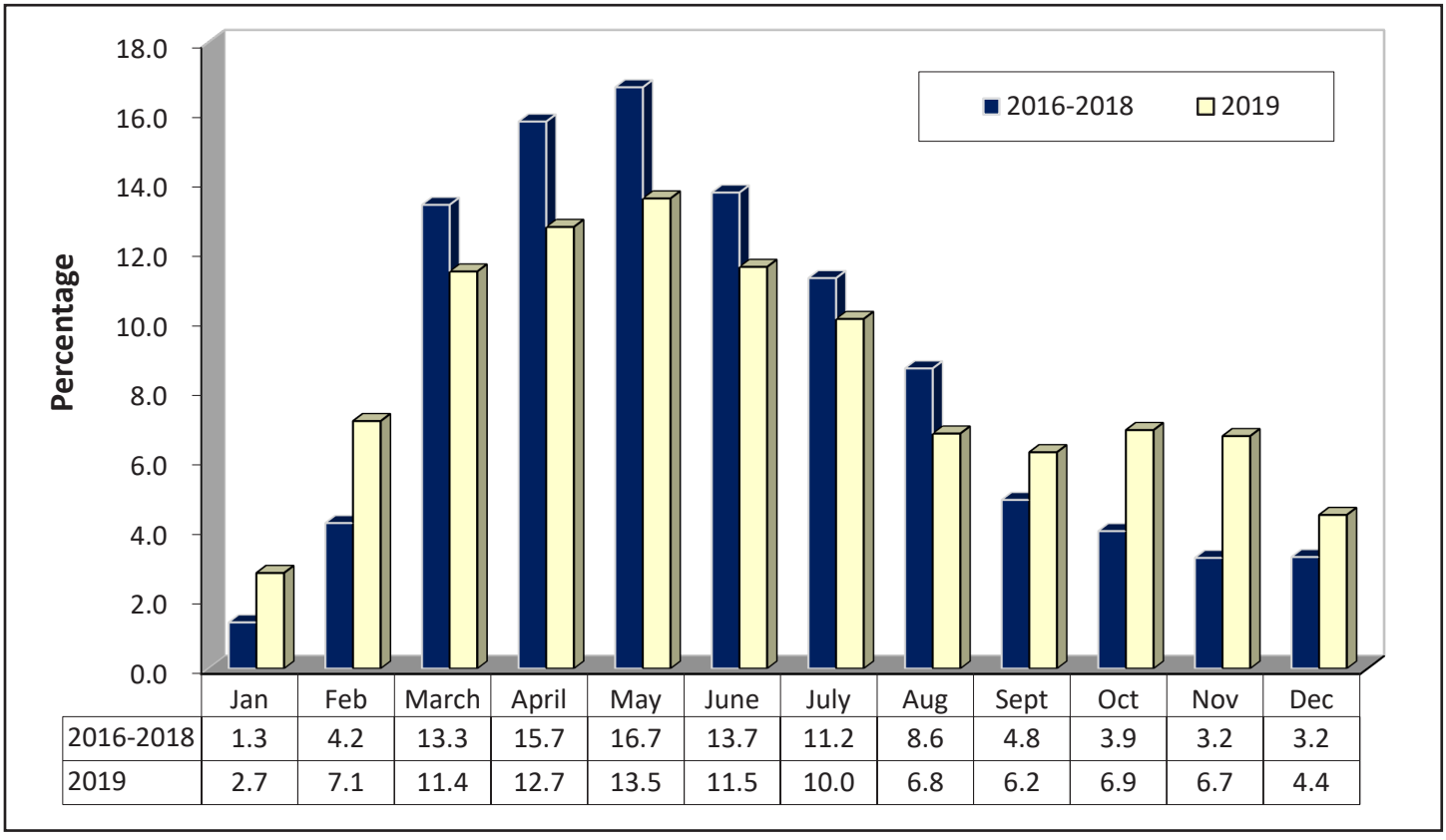
Source: Comex Stat, Ministério da Economia.

Top five Brazilian soybean exporting states, 2017-19



Source: Comex Stat, Ministério da Economia.

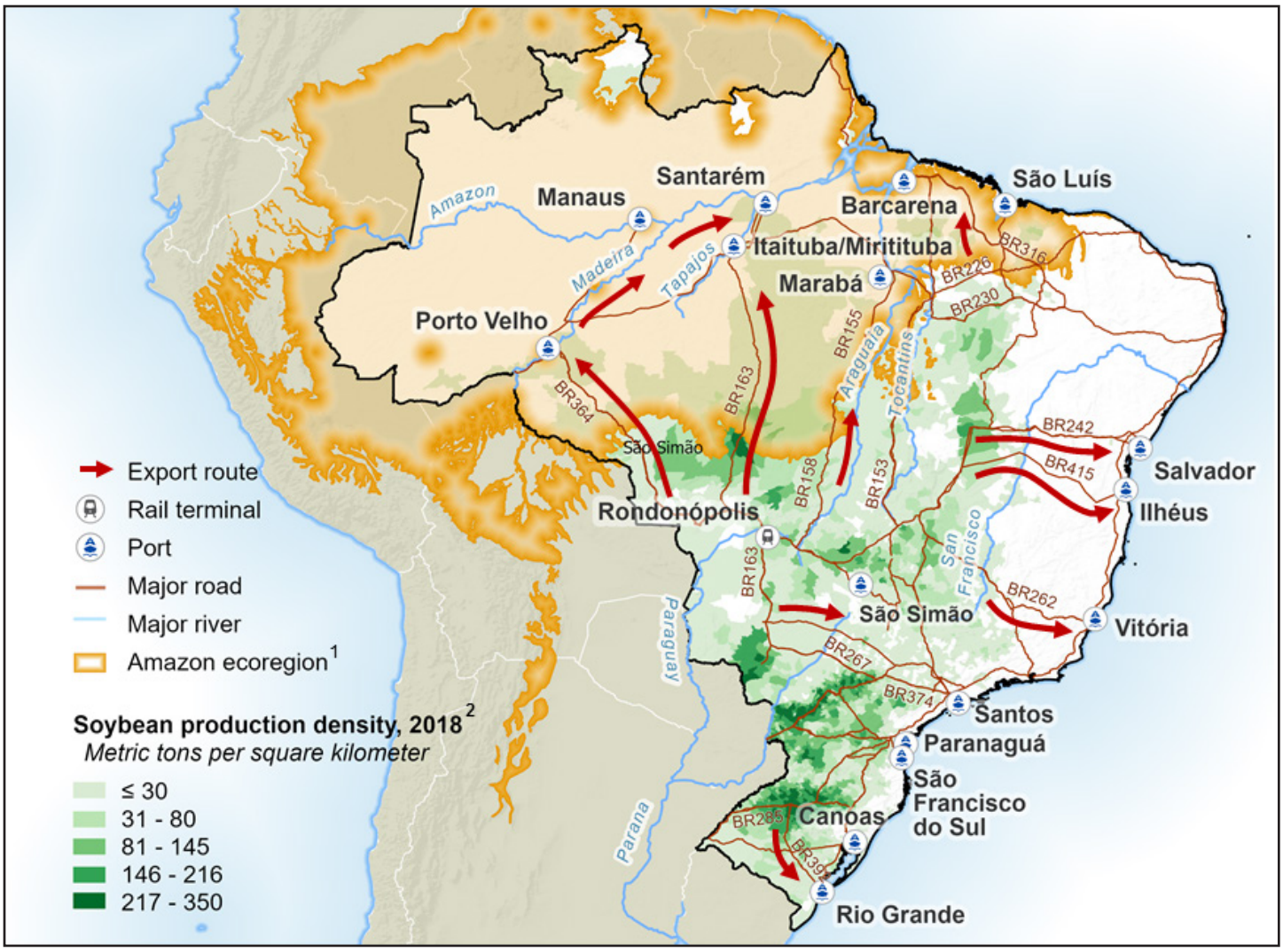
Brazil average monthly soybean exports, 2016-19



	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
2016-2018	1.3	4.2	13.3	15.7	16.7	13.7	11.2	8.6	4.8	3.9	3.2	3.2
2019	2.7	7.1	11.4	12.7	13.5	11.5	10.0	6.8	6.2	6.9	6.7	4.4

Source: Comex Stat, Ministério da Economia.

Main export routes for soybeans

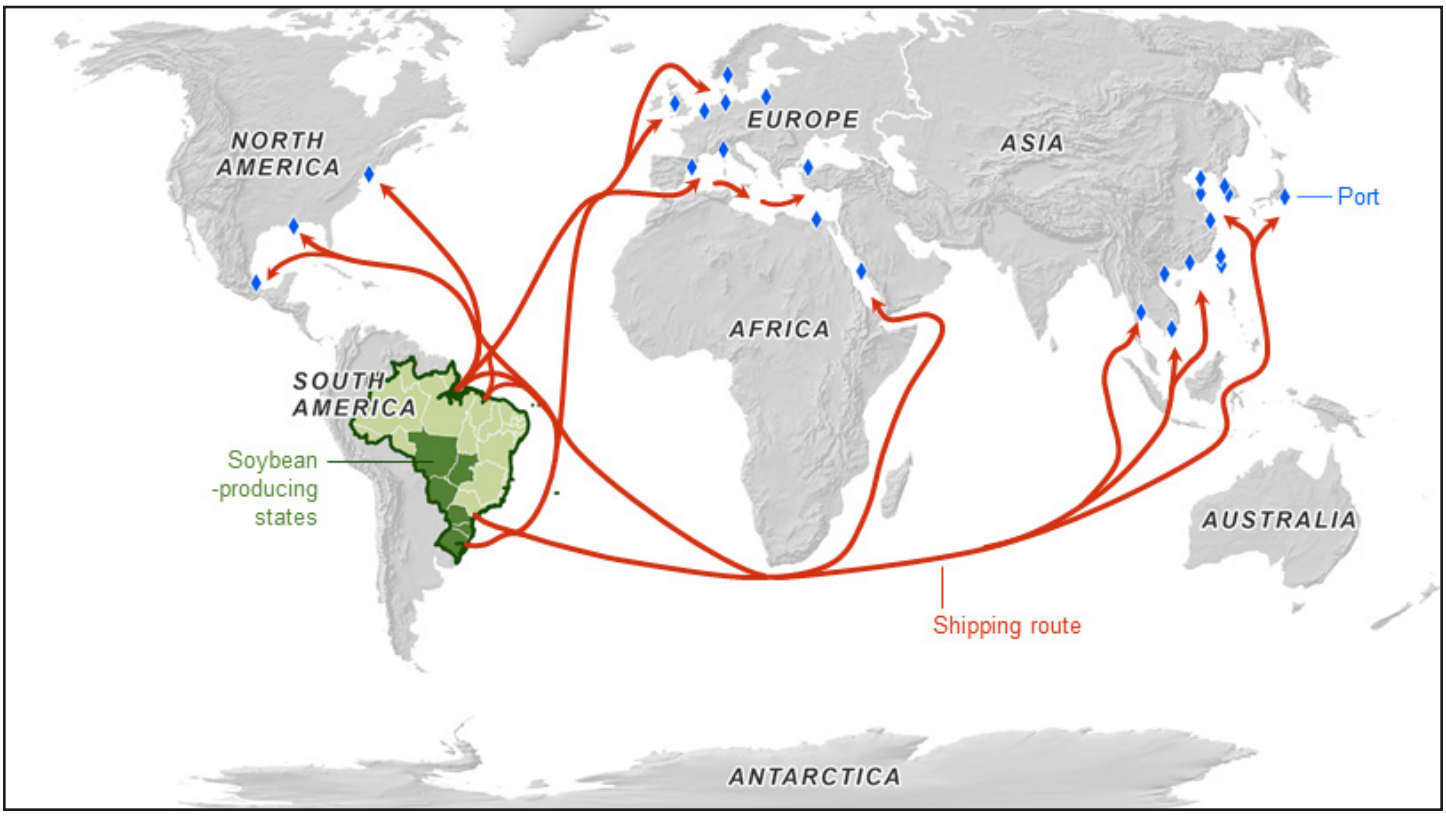


[1]World Wildlife Fund.

[2]Brazilian Institute of Geography and Statistics—Produção Agricola Municipal.

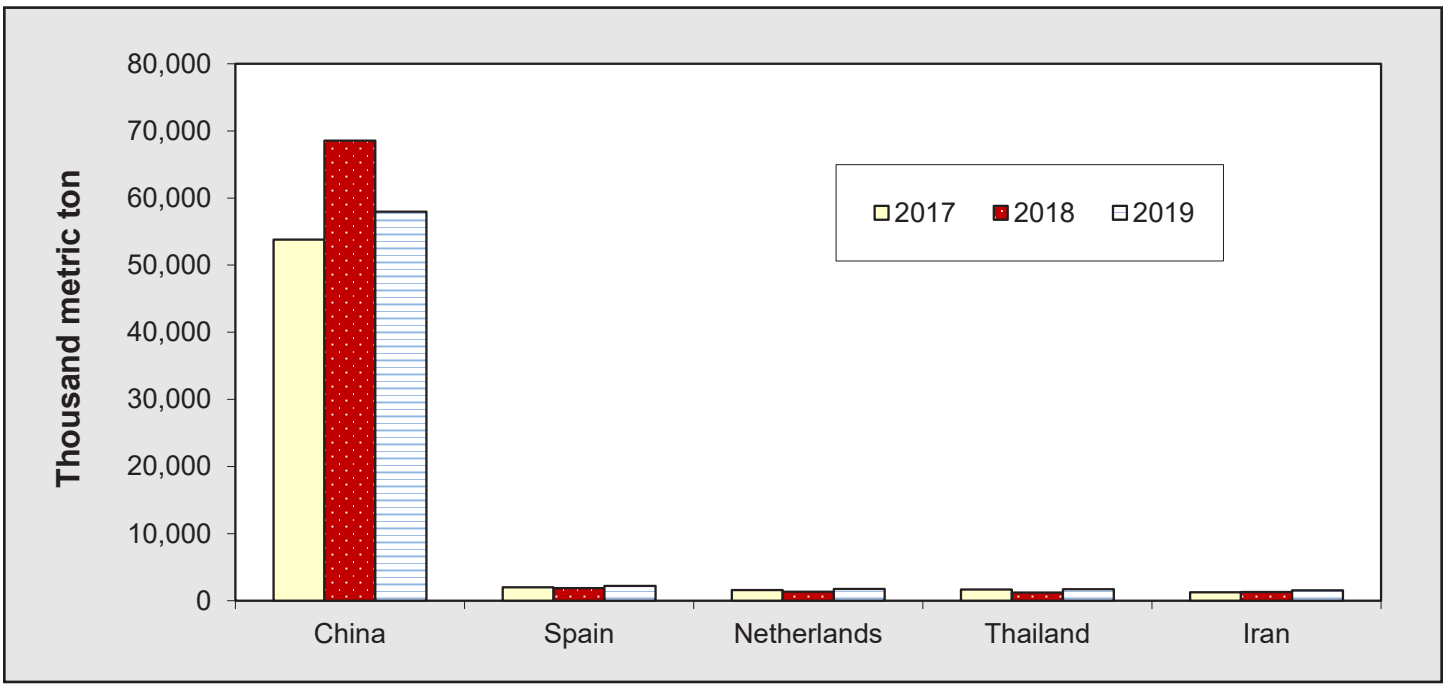
Source: USDA/Agricultural Marketing Service (AMS) and USDA/Foreign Agricultural Service (FAS).

World export routes for Brazilian soybeans



Source:USDA/Agricultural Marketing Service and USDA/Foreign Agricultural Service.

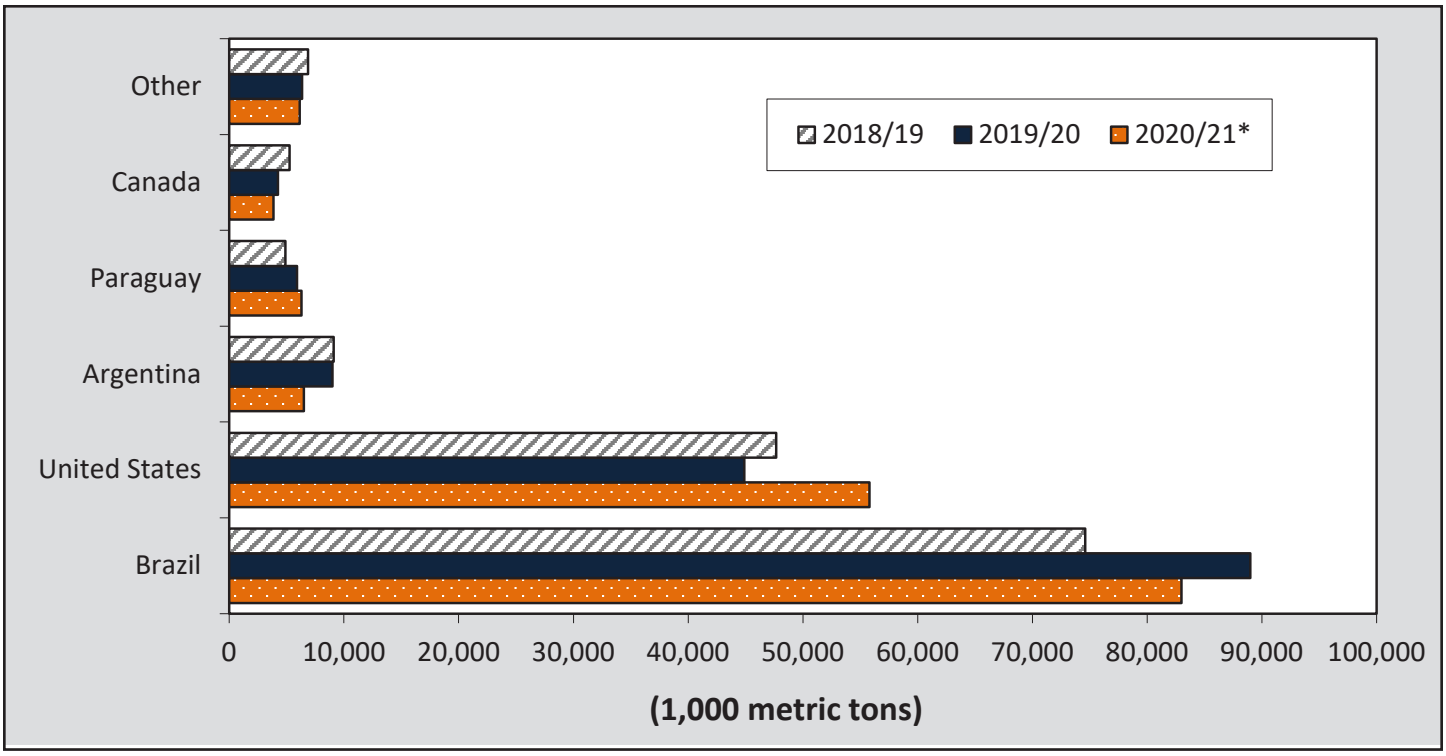
Top five Brazilian soybean-export destinations, 2017-19



Source: Comex Stat, Ministério da Economia.

In 2019, Brazil was the leading soybean exporter, followed by the United States, Argentina, Paraguay, and Canada. USDA forecasts that Brazil will sustain its leadership position in 2020.

Top five world soybean-exporting countries, 2018/19-2020/21*

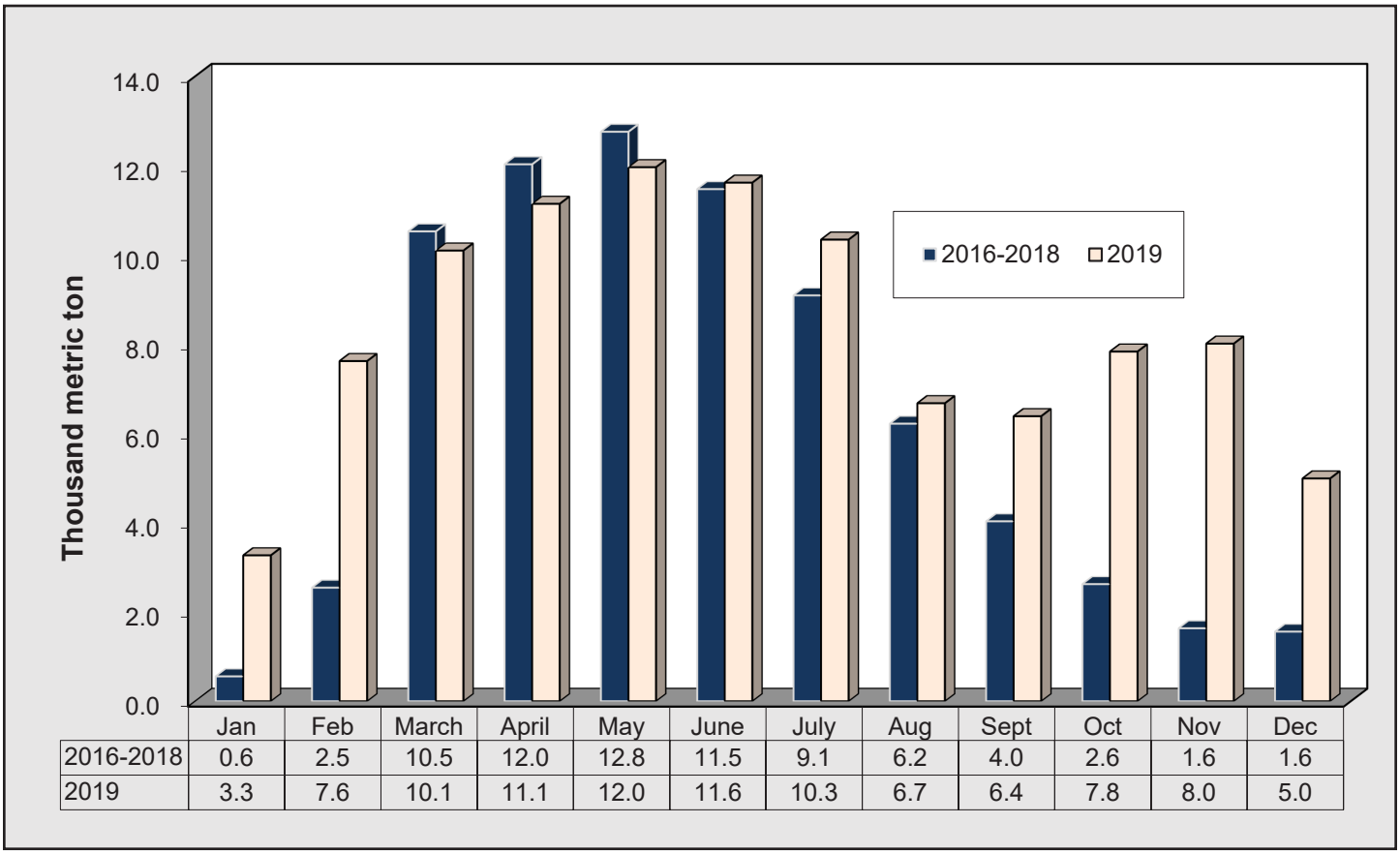


*Forecast July 10, 2020.
Source:USDA/Foreign Agricultural Service/Market and Trade/Reports/PSD Reports/Oilseeds.

EXPORTS TO CHINA

Soybean exports to China in 2019 declined nearly 16 percent to 58 mmt (valued at $20.5 billion) from 68.6 mmt in 2018, because of an epidemic of African swine fever that reduced the country's hog herd. In 2019, China received 78 percent of Brazil's total soybean exports (74 mmt). Over 90 percent of Brazilian soybean exports to China in 2019 originated from Mato Grosso, Paraná, Rio Grande do Sul, Goiás, Mato Grosso do Sul, Bahia, São Paulo, Minas Gerais, Santa Catarina, and Maranhão.

Brazil average monthly soybean exports to China, 2016-19



	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
2016-2018	0.6	2.5	10.5	12.0	12.8	11.5	9.1	6.2	4.0	2.6	1.6	1.6
2019	3.3	7.6	10.1	11.1	12.0	11.6	10.3	6.7	6.4	7.8	8.0	5.0

Source: Comex Stat, Ministério da Economia.

Soybean exports to China in 2019 declined nearly 16 percent to 58 mmt (valued at $20.5 billion) from 68.6 mmt in 2018, because of an epidemic of African swine fever that reduced the country's hog herd. Mato Grosso was the top soybean-exporting state to China, followed by Rio Grande do Sul, Paraná, Goiás, and São Paulo.

Top 15 Brazilian soybean exporting states to China, 2017-19

State	2017	2018	2019	Rank
	metric ton			
Mato Grosso	11,777,815	12,743,316	12,487,191	1
Rio Grande do Sul	11,683,177	12,900,417	11,177,365	2
Paraná	9,677,753	12,252,933	8,553,610	3
Goiás	4,144,828	5,387,269	3,910,109	4
São Paulo	2,926,939	3,793,637	3,282,430	5
Bahia	2,472,074	3,817,777	2,698,728	6
Minas Gerais	2,337,977	3,271,399	2,568,900	7
Mato Grosso do Sul	2,971,048	4,315,265	2,490,965	8
Maranhão	1,307,617	2,067,352	1,746,621	9
Tocantins	1,450,727	2,040,447	1,691,598	10
Santa Catarina	1,472,302	2,226,527	1,636,180	11
Piauí	580,826	1,411,692	995,313	13
Pará	567,784	806,366	777,540	12
Distrito Federal	209,552	296,401	130,524	14
Rondônia	140,063	141,332	121,827	15
Others	76,502	1,084,496	3,694,577	
Brazil exports to China	**53,796,980**	**68,556,624**	**57,963,479**	**78.3**
Brazil total exports	**68,147,705**	**83,246,813**	**74,063,633**	

Source: Comex Stat, Ministério da Economia.

Top 15 Mato Grosso soybean exports destinations, 2017-19

State	2017	2018	2019	% share	Rank
	metric ton				
China	11,777,815	12,743,316	12,487,191	61.7	1
Spain	1,177,825	1,208,445	1,146,825	5.7	2
Netherlands	838,675	840,285	1,010,715	5.0	3
Turkey	189,895	884,021	875,285	4.3	4
Iran	490,405	503,935	747,222	3.7	5
Russia	610,694	161,164	595,929	2.9	6
Thailand	803,644	495,137	551,291	2.7	7
Mexico	132,914	272,165	497,229	2.5	8
Norway	240,625	270,688	346,394	1.7	9
Taiwan	237,731	184,008	255,734	1.3	10
Pakistan	136,075	187,837	224,425	1.1	11
Saudi Arabia	113,046	144,832	209,890	1.0	12
Italy	130,625	150,244	185,594	0.9	13
Tunisia	9,138	139,760	173,451	0.9	14
Portugal	101,394	227,797	160,391	0.8	15
Others	1,026,956	1,540,408	760,814	3.8	
Mato Grosso total	**18,017,456**	**19,954,041**	**20,228,381**	**100.0**	

	2017	2018	2019
MT % share of Brazil exports to China	21.9	18.6	21.5
Brazil exports to China	53,796,980	68,556,624	57,963,479
Brazil total exports	68,147,705	83,246,813	74,063,633
China % share of Brazil total exports	78.9	75.2	78.3

Source: Comex Stat, Ministério da Economia.

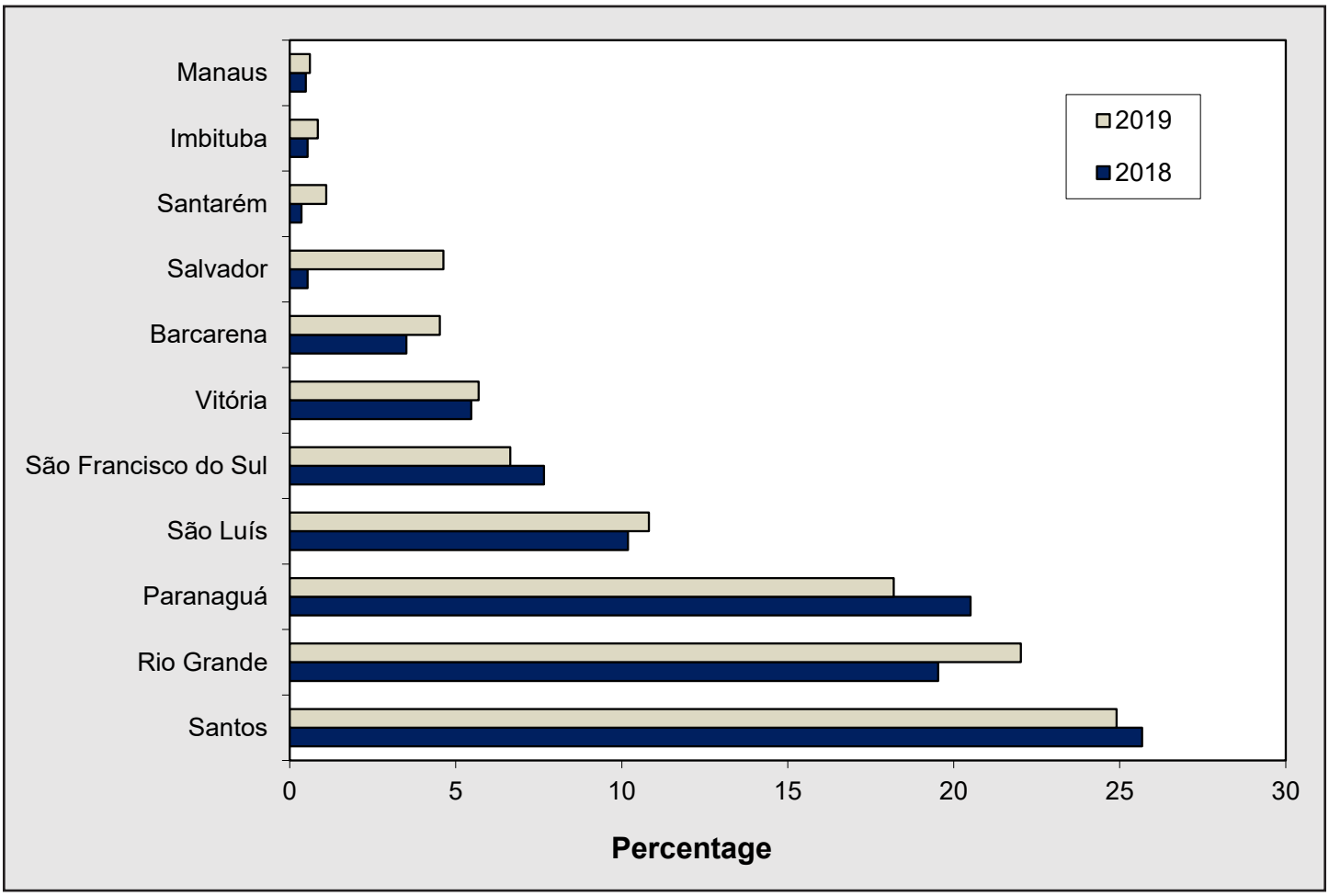
Soybean trade to China is dominated by the southern ports of Santos, Rio Grande, Paranaguá, and São Francisco do Sul, which account for about 72 percent of Brazil's soybean exports to China. Meanwhile, the northeastern ports of São Luís, Vitória, Salvador, and Barcarena accounted for nearly 26 percent of exports to China. The Amazon River ports of Manaus and Santarém exported nearly 2 percent to China.

Total Brazilian soybean exports by port to China, 2017-19

Ports	2017	2018	2019
	metric ton		
Santos	14,183,986	17,601,053	14,433,778
Rio Grande	11,901,538	13,391,122	12,764,079
Paranaguá	10,026,648	14,056,377	10,542,591
São Luís	4,246,740	6,982,873	6,271,719
São Francisco do Sul	3,984,947	5,252,417	3,852,101
Subtotal	**44,343,859**	**57,283,842**	**47,864,269**
Others	9,453,121	11,272,781	10,099,211
Total exports to China	**53,796,980**	**68,556,624**	**57,963,479**
Brazil total exports	**68,147,705**	**83,246,813**	**74,063,633**
Ports	2017	2018	2019
	% share of exports to China		
Santos	26.4	25.7	24.9
Rio Grande	22.1	19.5	22.0
Paranaguá	18.6	20.5	18.2
São Luís	7.9	10.2	10.8
São Francisco do Sul	7.4	7.7	6.6
Subtotal	**82.4**	**83.6**	**82.6**
Others	17.6	16.4	17.4
Total exports to China	**100**	**100**	**100**
Ports	2017	2018	2019
	% share of Brazil total exports		
Santos	20.8	21.1	19.5
Rio Grande	17.5	16.1	17.2
Paranaguá	14.7	16.9	14.2
São Luís	6.2	8.4	8.5
São Francisco do Sul	5.8	6.3	5.2
Subtotal	**65.1**	**68.8**	**64.6**
Others	13.9	13.5	13.6
Total exports to China	**78.9**	**82.4**	**78.3**

Source: Comex Stat, Ministério da Economia.

Brazil soybean exports to China by port, 2018-19



Source: Comex Stat, Ministério da Economia.

Distance from selected Brazilian ports to Shanghai, China and Hamburg, Germany

Brazilian port	Region	Route through	Destination	Nautical miles	Days at sea*
Santos, SP	South	Good Hope	Shanghai, China	11,056	32.22
Santos, SP	South		Hamburg, Germany	5,683	16.22
Rio Grande, RS	South	Good Hope	Shanghai, China	11,129	33.03
Rio Grande, RS	South	Panama Canal	Shanghai, China	13,564	40.09
Rio Grande, RS	South	Cape Horn	Shanghai, China	11,397	33.22
Rio Grande, RS	South		Hamburg, Germany	6,204	18.11
Paranaguá, PR	South	Good Hope	Shanghai, China	11,111	33.02
Paranaguá, PR	South	Panama Canal	Shanghai, China	13,165	39.04
Paranaguá, PR	South		Hamburg, Germany	5,805	17.07
São Francisco do Sul, SC	South	Good Hope	Shanghai, China	11,111	33.4
São Francisco do Sul, SC	South		Hamburg, Germany	5,805	17.1
Vitória, ES	Southeast	Good Hope	Shanghai, China	10,857	32.08
Vitória, ES	Southeast	Panama Canal	Shanghai, China	12,587	37.11
Vitória, ES	Southeast		Hamburg, Germany	5,227	15.13
Salvador, BA	Northeast	Good Hope	Shanghai, China	10,997	32.18
Salvador, BA	Northeast	Panama Canal	Shanghai, China	12,170	36.05
Salvador, BA	Northeast		Hamburg, Germany	4,811	14.08
Aratu, BA	Northeast	Good Hope	Shanghai, China	10,997	32.18
Aratu, BA	Northeast	Panama Canal	Shanghai, China	12,170	36.05
Aratu, BA	Northeast		Hamburg, Germany	4,811	14.08
Itaquí/São Luís - Ponta de Madeira (MA)	Northeast	Good Hope	Shanghai, China	11,708	34.2
Itaquí/São Luís - Ponta de Madeira (MA)	Northeast	Panama Canal	Shanghai, China	11,087	33
Itaquí/São Luís - Ponta de Madeira (MA)	Northeast		Hamburg, Germany	4,361	13
Santarém, (PA)** Reference point for Itaituba/Miritituba	North	Good Hope	Shanghai, China	12,305	37.8
Santarém, (PA)** Reference point for Itaituba/Miritituba	North	Panama Canal	Shanghai, China	11,200	33.1
Santarém, (PA)** Reference point for Itaituba/Miritituba	North		Hamburg, Germany	4,750	14.18
Manaus, (AM)	North	Good Hope	Shanghai, China	12,880	38.04
Manaus, (AM)	North	Panama Canal	Shanghai, China	10,926	32.12
Manaus, (AM)	North		Hamburg, Germany	5,283	15.17
Barcarena, (PA)**	North	Good Hope	Shanghai, China	11,905	35.6
Barcarena, (PA)**	North	Panama Canal	Shanghai, Chin	10,950	32.6
Barcarena, (PA)**	North		Hamburg, Germany	4,510	13.6

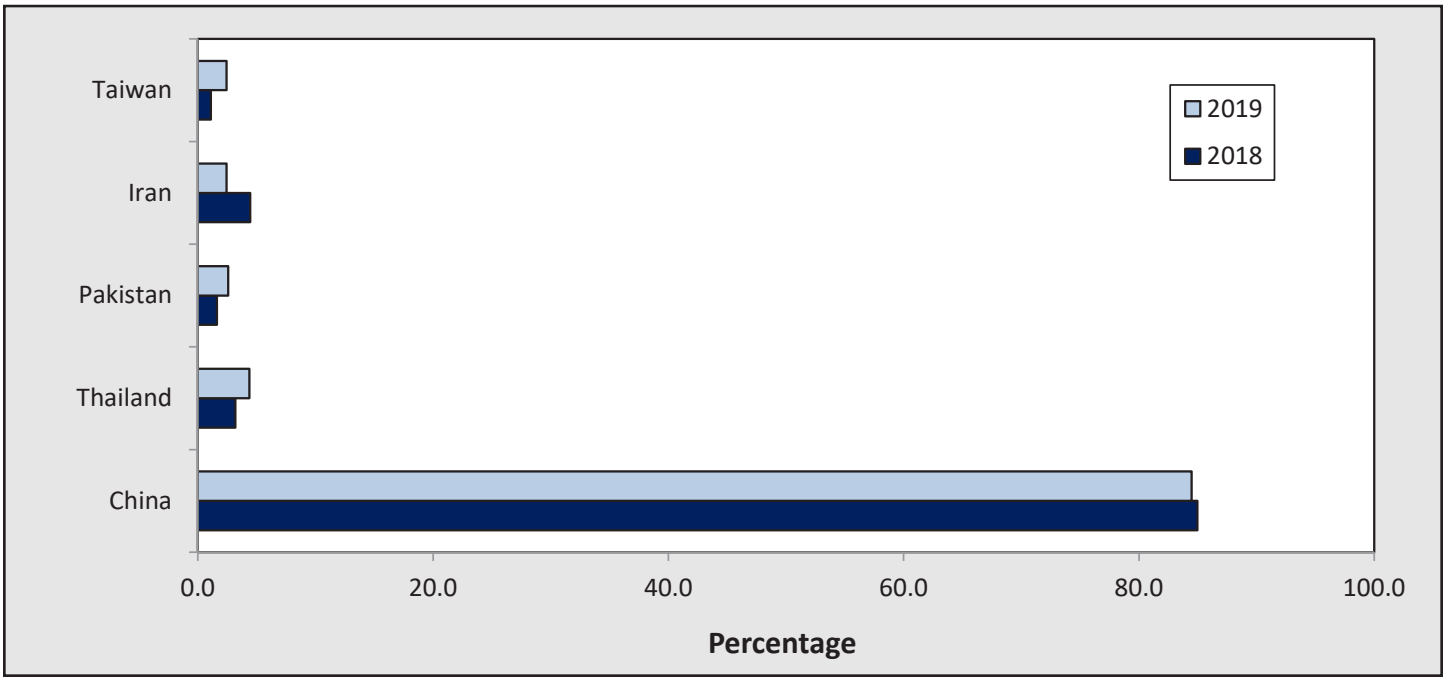
*Vessel speed: 14 knots.

**Barcarena is located 49 nautical miles from Belém; Itaituba is located 140 nautical miles from Santarém.

Source: http://sea-distances.com/ and 1Ports.com.

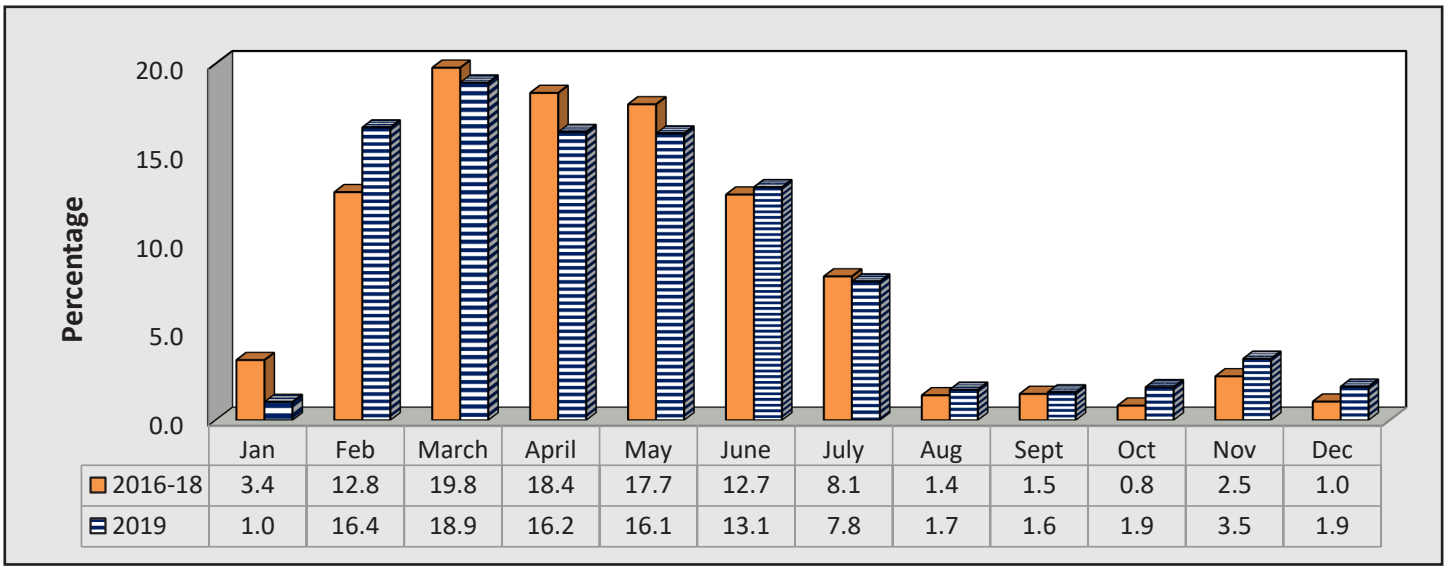
In 2019, China was the major destination for Brazilian soybeans through the port of Santos, Brazil's largest soybean-exporting port. The next-largest destinations (in descending order) were Thailand, Pakistan, Iran, and Taiwan. The peak of soybean shipments to China from Santos usually occurs from March to May. About half of the soybean exports, through Santos, originated from Mato Grosso, followed (in descending order) by São Paulo, Goiás, Minas Gerais, Mato Grosso do Sul, and Paraná.

Port of Santos soybean exports by country, 2018-19



Source: Comex Stat, Ministério da Economia.

Port of Santos soybean average monthly exports to China, 2016-19

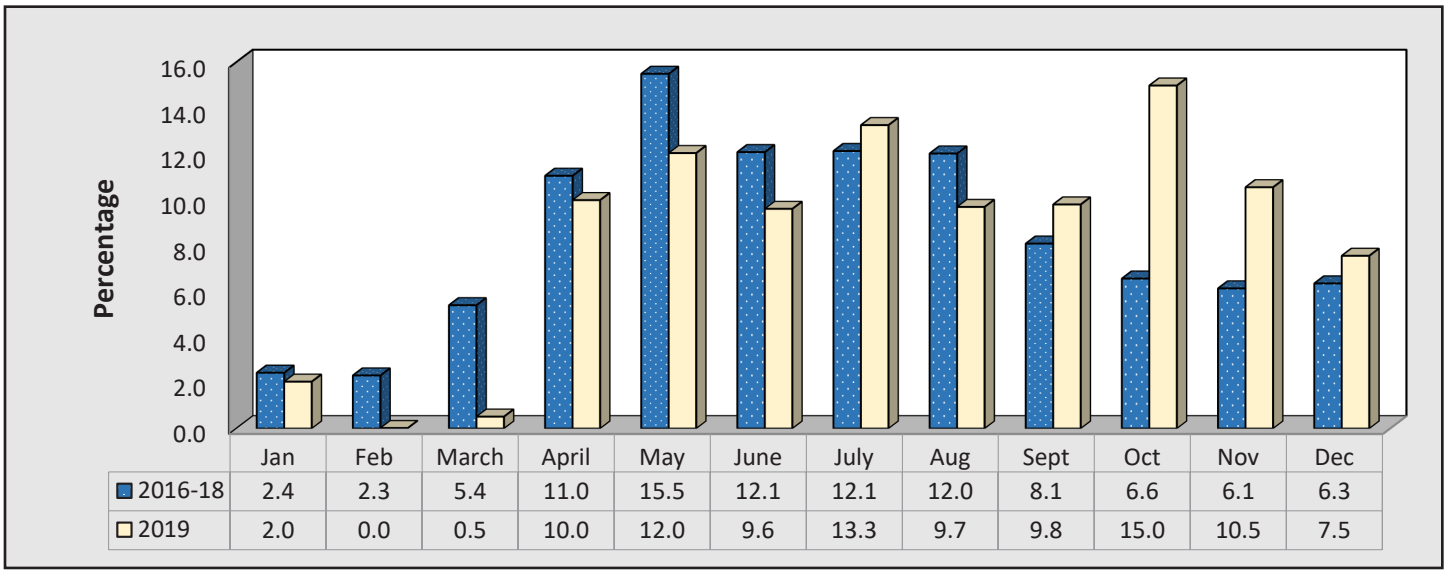


	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
2016-18	3.4	12.8	19.8	18.4	17.7	12.7	8.1	1.4	1.5	0.8	2.5	1.0
2019	1.0	16.4	18.9	16.2	16.1	13.1	7.8	1.7	1.6	1.9	3.5	1.9

Source: Comex Stat, Ministério da Economia.

China was the major destination for Brazilian soybeans via the port of Rio Grande, accounting for nearly 97 percent, followed by Iran, Russia, Taiwan, Indonesia, and Turks and Caicos. Typically, soybean shipments to China through the port of Rio Grande peak from April to August. However, in 2019, significant shipments occurred throughout the end of the year. About 86 percent of the soybean exports through the Port of Rio Grande originated from Rio Grande do Sul. The next-highest levels of exports originated (in descending order) from the following ports: Paraná, Minas Gerais, Santa Catarina, São Paulo, and Mato Grosso.

Port of Rio Grande soybean average monthly exports to China, 2016-19

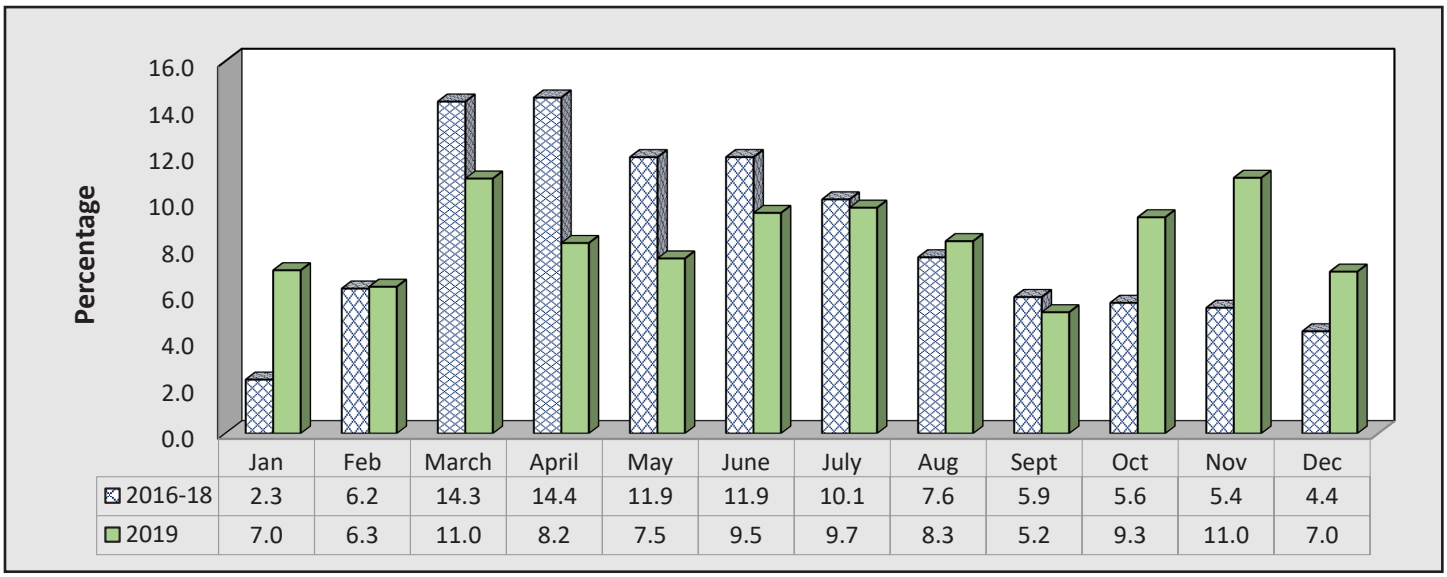


	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
2016-18	2.4	2.3	5.4	11.0	15.5	12.1	12.1	12.0	8.1	6.6	6.1	6.3
2019	2.0	0.0	0.5	10.0	12.0	9.6	13.3	9.7	9.8	15.0	10.5	7.5

Source: Comex Stat, Ministério da Economia.

China was the top Brazilian soybean export destination through the Port of Paranaguá. The next-largest export destinations (in descending order) were the Netherlands, Pakistan, Bangladesh, and Vietnam. Typically, soybean shipments to China from Paranaguá peak from March to June. Sixty percent of Paranaguá exports originated from Paraná. The next-highest levels of Paranaguá exports (in descending order) originated from Mato Grosso do Sul, Mato Grosso, Santa Catarina, and São Paulo.

Port of Paranaguá soybean average monthly exports to China, 2016-19

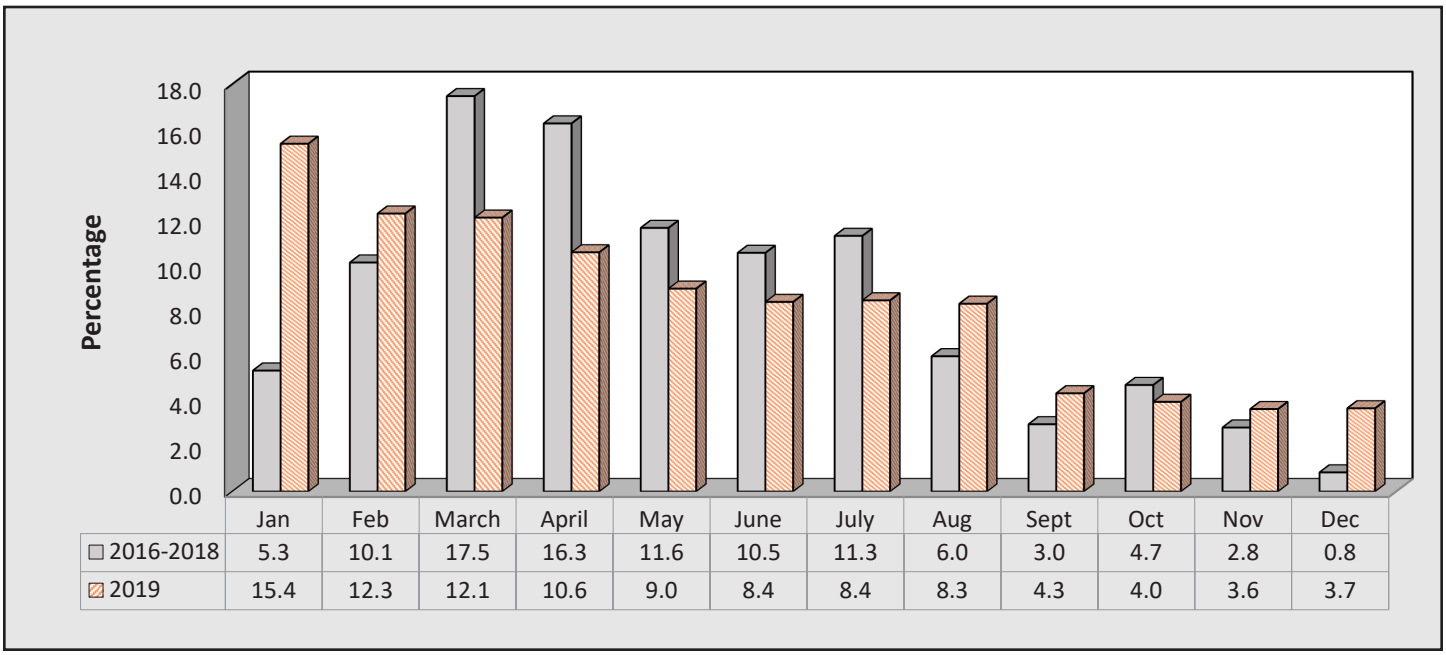


	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
2016-18	2.3	6.2	14.3	14.4	11.9	11.9	10.1	7.6	5.9	5.6	5.4	4.4
2019	7.0	6.3	11.0	8.2	7.5	9.5	9.7	8.3	5.2	9.3	11.0	7.0

Source: Comex Stat, Ministério da Economia.

China was top Brazilian soybean export destination through the Port of São Luís. The next-largest export destinations (in descending order) were Spain, Thailand, Japan, Vietnam, and Saudi Arabia. Typically, soybean shipments to China from the Port of São Luís peak from March to June, but in 2019, the peak occurred in January. São Luís is Brazil's top soybean-exporting port in the northeast, accounting for nearly 11 percent of Brazilian total soybean exports and exports to China. The next-highest levels of exports (in descending order) in the northeast were from the following ports: Vitória, Barcarena, Salvador, Santarém, and Manaus. These 4 ports accounted for nearly 26 percent of the total exports to China. About 89 percent of exports of the port of São Luís originated from Maranhão, Tocantins, Mato Grosso, and Piauí.

Port of São Luís average monthly soybean exports to China, 2016-19



	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
2016-2018	5.3	10.1	17.5	16.3	11.6	10.5	11.3	6.0	3.0	4.7	2.8	0.8
2019	15.4	12.3	12.1	10.6	9.0	8.4	8.4	8.3	4.3	4.0	3.6	3.7

Source: Comex Stat, Ministério da Economia.

TRANSPORTATION MODES

Brazilian ports

Sources: Companhia Nacional de Abastecimento (CONAB) and Ministério dos Transportes, Brazil.

Major rivers of the Amazonian Basin

Source: National Agency for Waterway Transportation (ANTAQ).

Brazil has 39,146 miles of river-lake surface water and 27,340 miles of navigable rivers, but only 12,094 miles are commercially navigated.

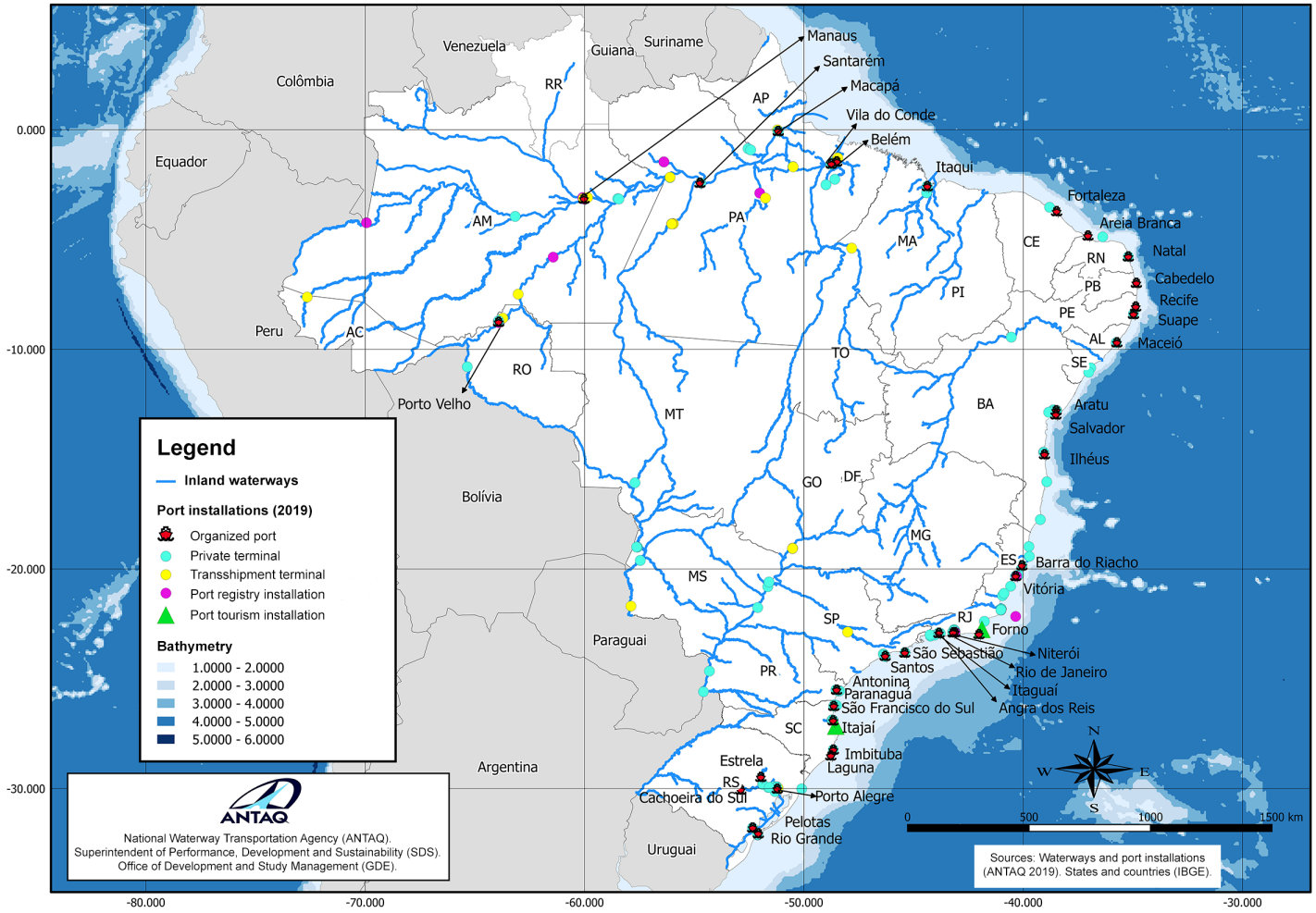
Brazil waterway system

Extension	Miles
River-lake surface water	39,146
National river network	27,340
Naturally navigable waterways	25,970 (100%)
Commercial navigations	12,094 (47%)

Sources: Confederação Nacional do Transporte (CNT 2019) and National Agency for Waterway Transporation (ANTAQ 2016).

Brazilian port installations

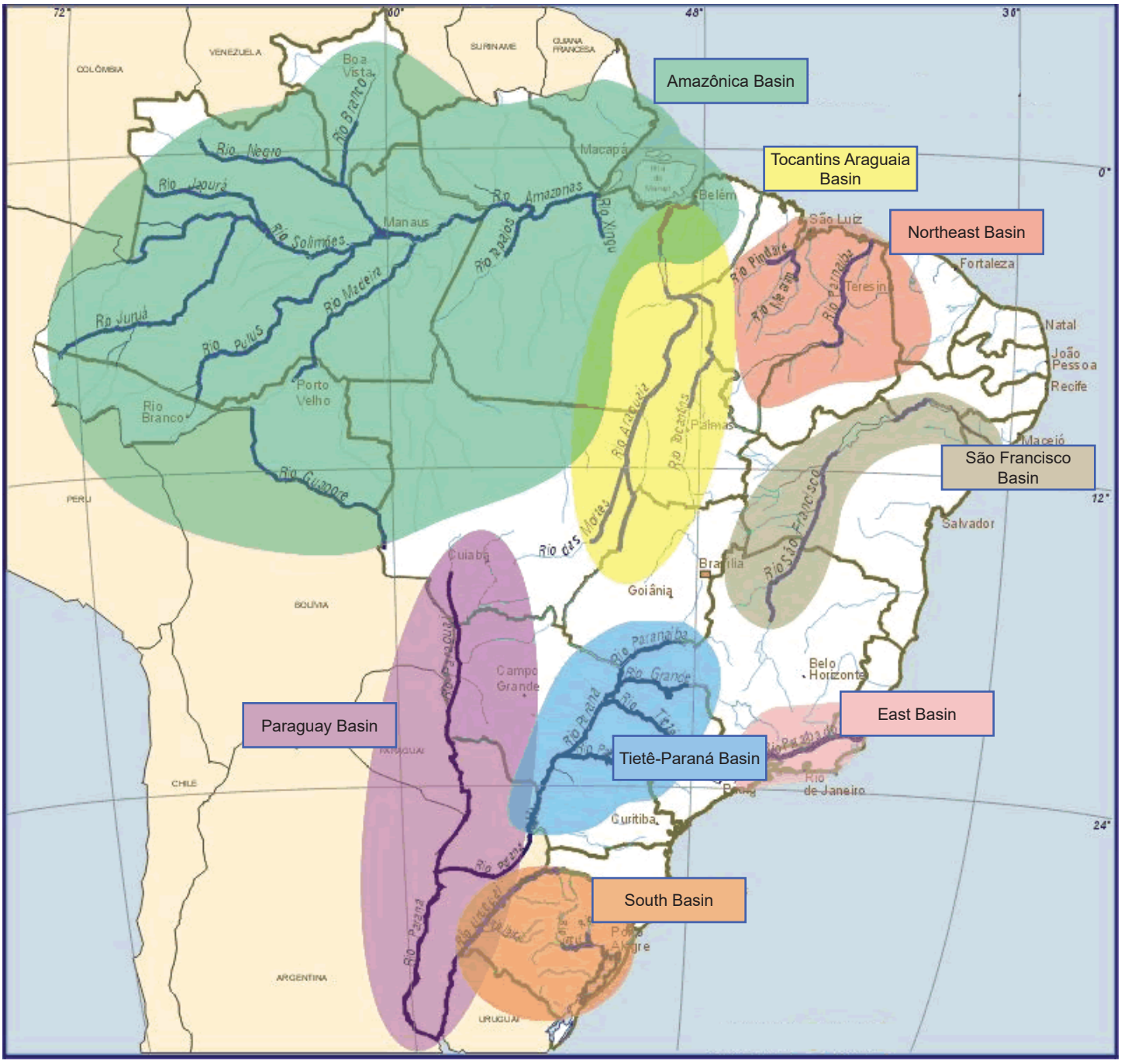
The Port of Manaus access channel is 1,640 ft wide and 114.8 ft deep. Porto Velho's access channel depth varies from 8.2 to 57.4 ft. The Port of Santarém's access channel is 5,904 ft wide and 49.2 ft deep.



Sources: Agência Nacional de Transportes Aquaviários (ANTAQ).

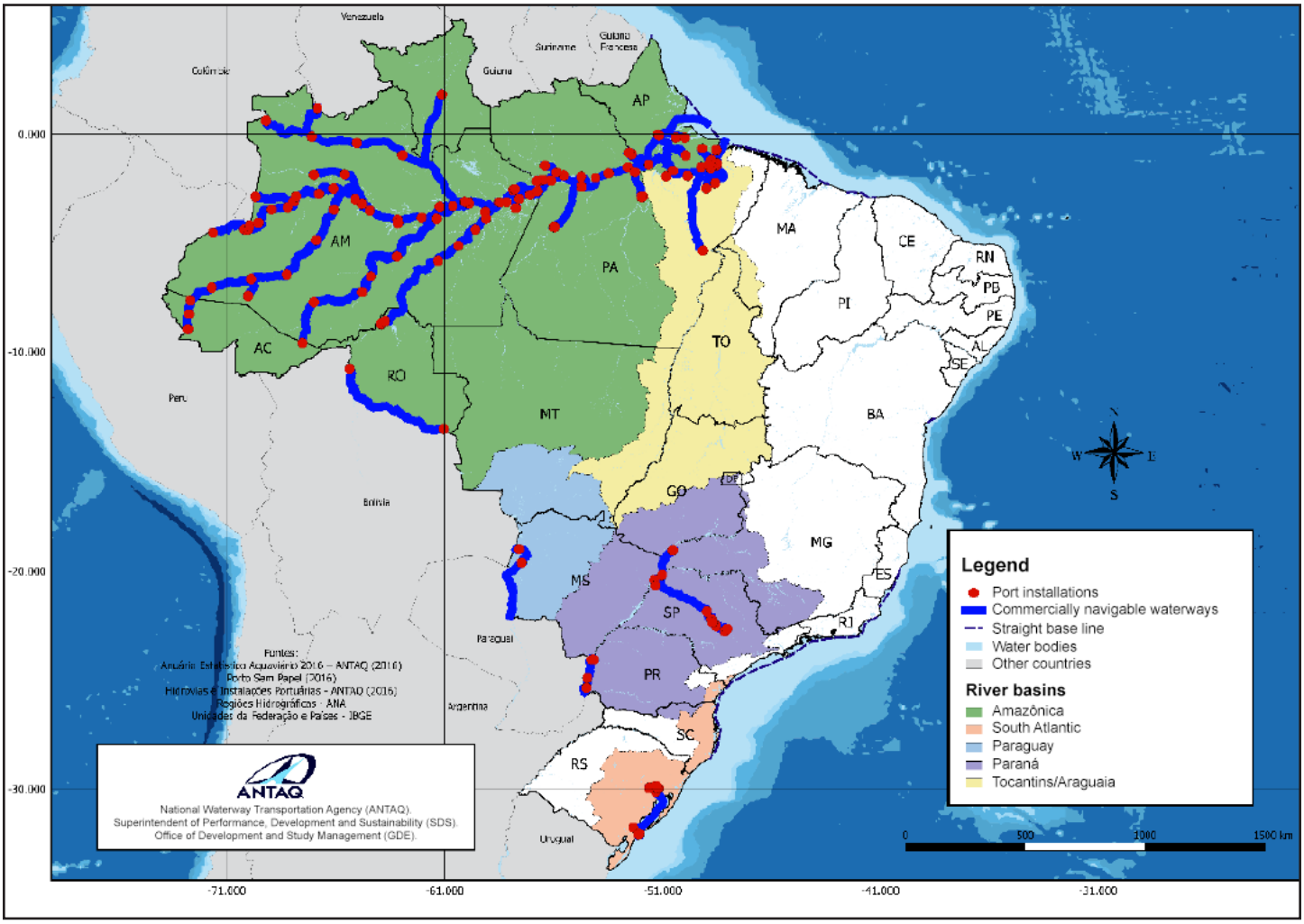
Brazilian river basins

Brazil's river system comprises eight basins: Amazônica, Northeast, Tocantins Araguaia, São Francisco, East, Tietê-Paraná, Paraguay, and South. The Amazônica and Paraguay Basin account for 72 percent of the total area of the Brazilian basins. The Paraguay Basin serves Argentina, Brazil, Bolivia, Paraguay, and Uruguay. Its navigable portion is comparable with the Mississippi River in the United States and the Rhine River in Europe.



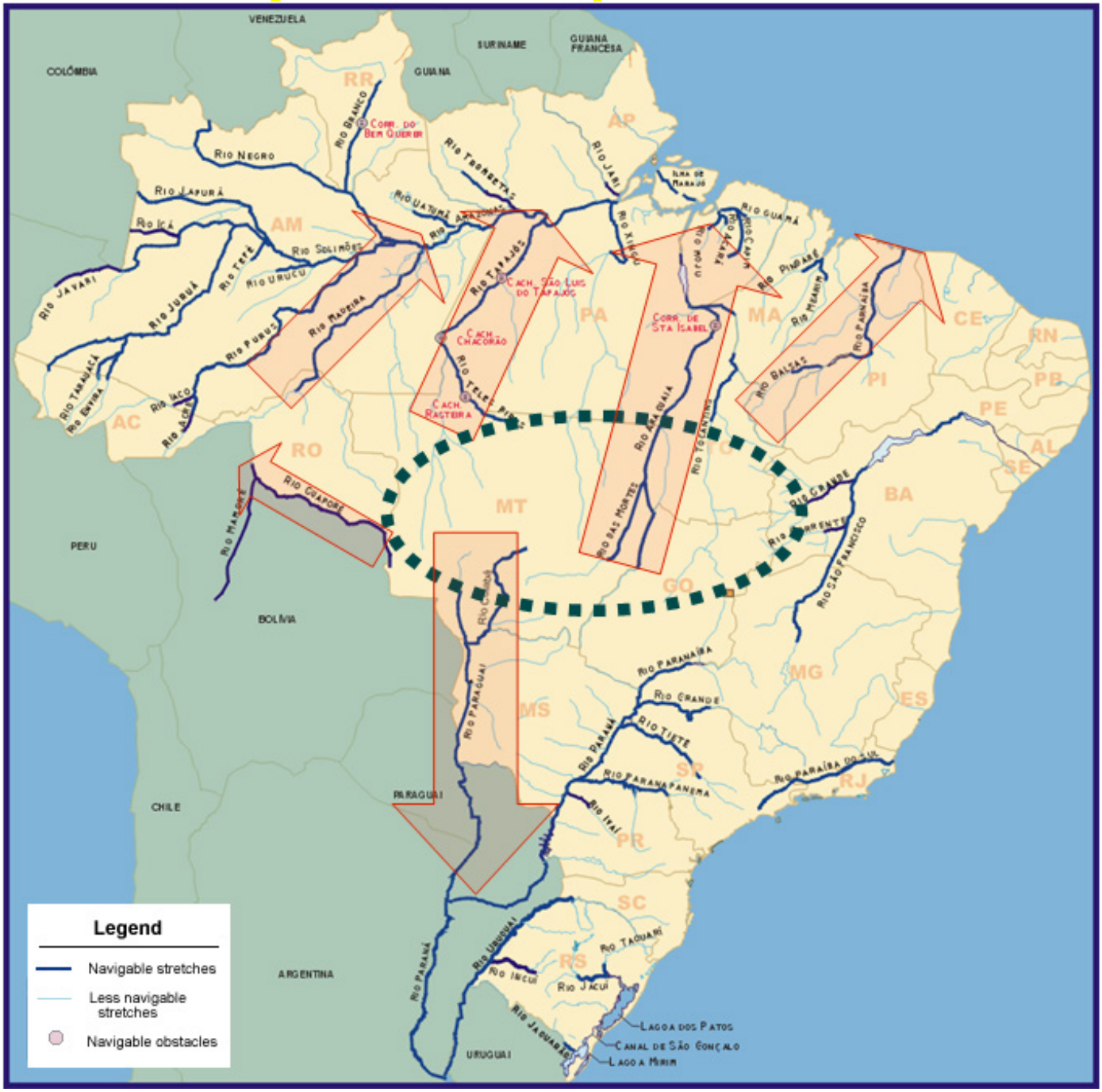
Source: Ministério dos Transportes, Brazil.

Brazilian commercial inland waterways



Source: Agência Nacional de Transportes Aquaviários.

Major river export routes



Source: National Agency for Waterway Transportation (ANTAQ).

Major Brazilian highways

Source: Confederação Nacional do Transporte.

The Brazilian highway system extends 968,863 miles (1,562,682 kilometers), with nearly 14 percent paved. The U.S. highway system consists of 4,160,800 miles (6,696,142 kilometers), with 68 percent paved.

Brazil highway system, 2019

	Miles	% Paved	% Unpaved
Federal	46,961	86	14
State and county	921,902	10	90
Total (federal + state and county)	**968,863**		
All roads		**14**	**86**

Source: Confederação Nacional do Transporte (CNT).

U.S. highway system, 2018

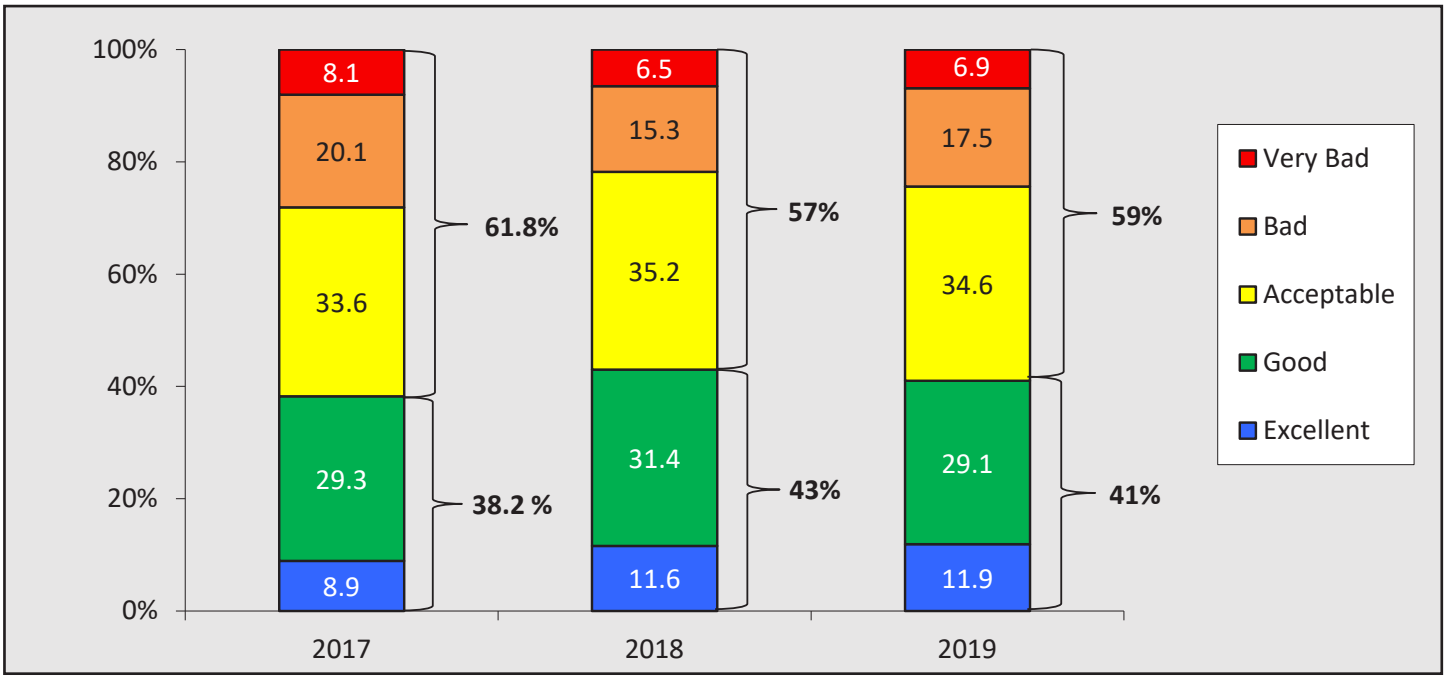
	Extension[1] (in miles)	% Paved[2]	% Unpaved[2]
Rural	2,844,126	58	42
Urban	1,316,675	96	4
Total	**4,160,800**	**68**	**32**

[1]Includes the 50 States, Puerto Rico (data may be incomplete), and the District of Columbia. Some differences from other tables may be noted because these are estimated from sample and summary data; some States may have missing/incomplete data.
[2]Paved includes the following categories: Bituminous (bituminous asphalt-concrete (AC) overlaid on existing AC pavement); Concrete (jointed plain concrete pavement (JPCP), jointed reinforced concrete pavement (JRCP), continuously reinforced concrete pavement (CRCP); unbonded jointed concrete overlaid on PCC pavement, bonded PCC overlaid on PCC pavement, other (includes "whitetopping")); and Composite (AC overlaid on jointed concrete pavement, AC (bituminous overlaid on existing CRCP).
Source: Highway Statistics 2018. U.S. Department of Transportation, Federal Highway Administration, Highway Statistics (Washington, DC: Annual Issues).

Brazilian highways

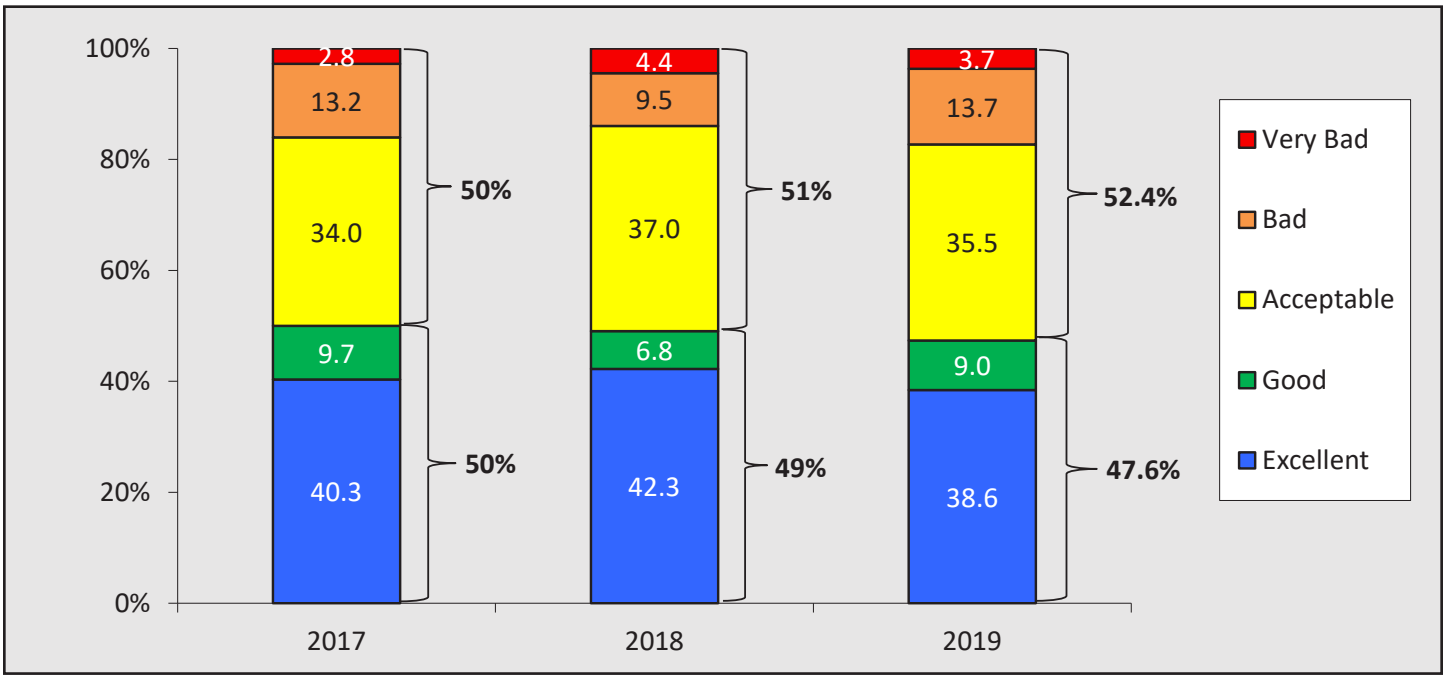
The 2019 Confederação Nacional do Transporte (CNT) survey of the overall highway conditions in Brazil shows that 41 percent of the roads ranged from good to excellent in 2019 (compared to 43 percent in 2018). Still, 59 percent ranged from acceptable to very bad. The survey also shows that 49 percent of the paved roads were in good to excellent condition; 48.1 percent of traffic road signs had problems; and 85.4 percent of the paved roads had only two lanes. The survey sample of paved roads increased 1.6 percent, from 66,440 miles in 2018 to 67,495 miles in 2019.

Brazilian highway conditions, 2017-19



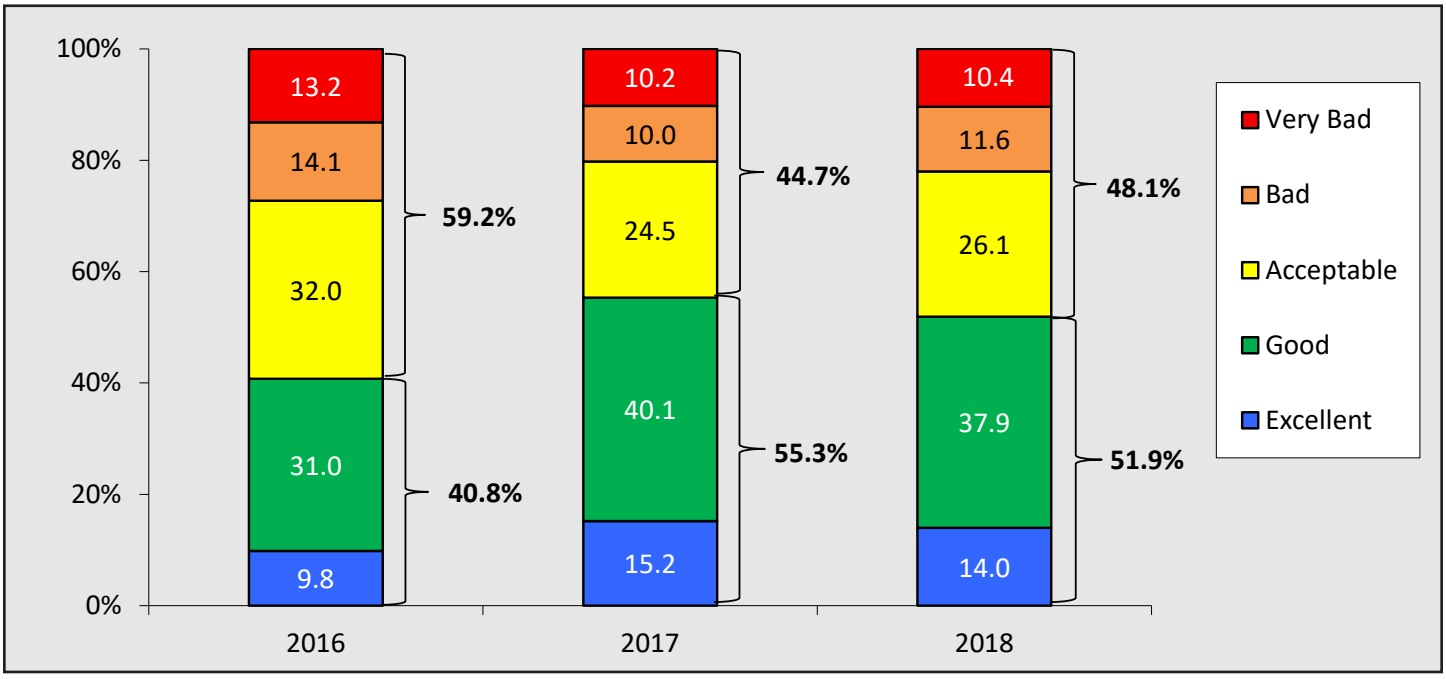
Source: Confederação Nacional do Transporte (CNT).

Brazilian paved highway conditions, 2017-19



Source: Confederação Nacional do Transporte (CNT).

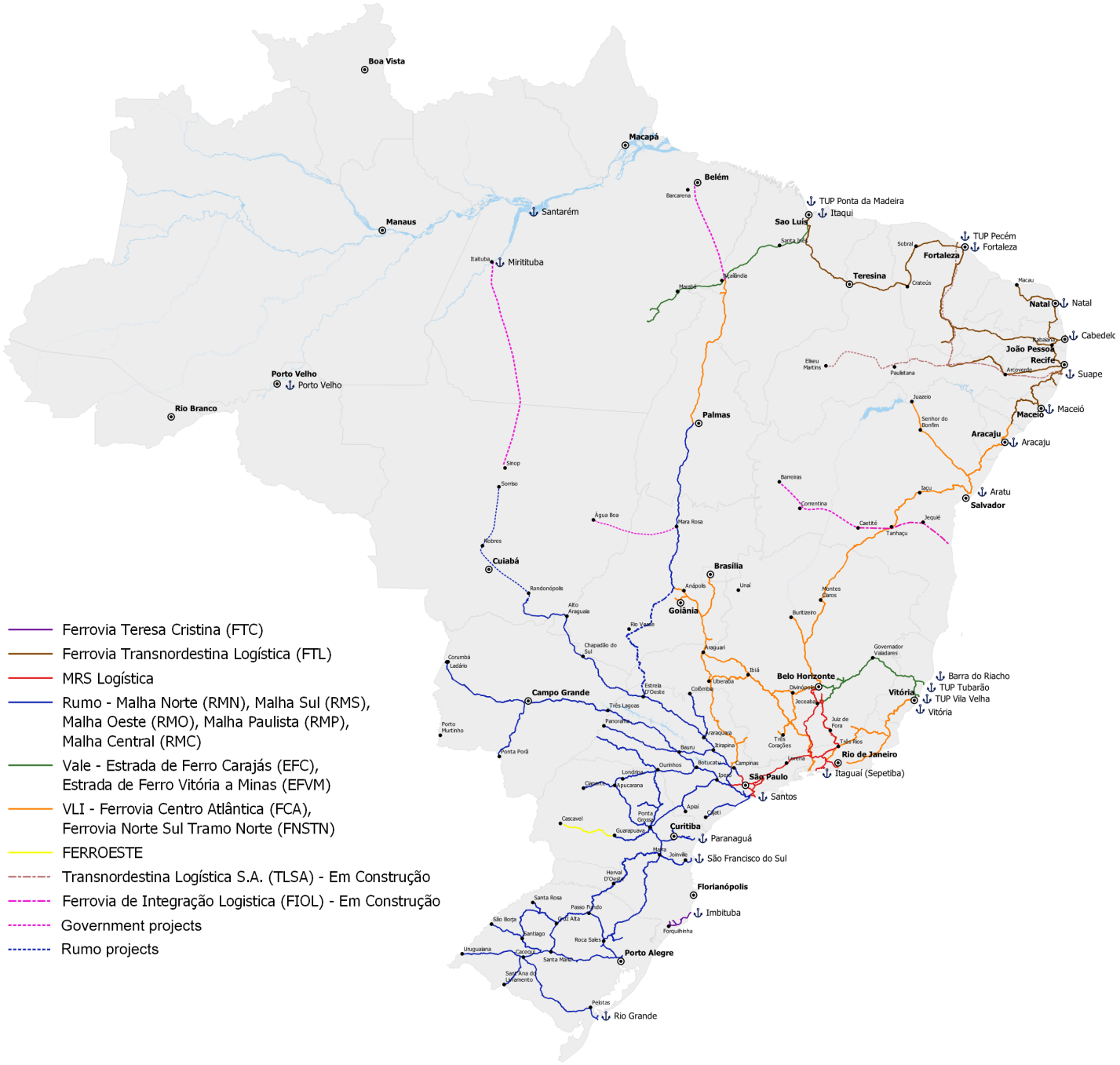
Brazilian road sign conditions, 2017-19



Source: Confederação Nacional do Transporte (CNT).

Brazilian railway expansion: ongoing projects

The Brazilian railroad system consists of 12 railroads, with an extension of 18,943 miles, mostly concentrated in the South, Southeast, and Northeast.



Source: Agência Nacional de Transportes Terrestres (ANTT).

Brazilian rail system: gauge sizes

The gauge system (distance between two rails) varies by region, creating difficulties in integrating the system in regions like North America, which uses a standard gauge. There are three types of gauges: metric (39”), broad (63”), and mixed (39”- 63”). The metric gauge accounts for 76 percent of total Brazilian rail miles and predominates in the Southern region. The broad gauge accounts for 22 percent of total railroads and prevails in the Southeast region, leaving about 2 percent as mixed gauge.

Source: Grupo de Pesquisa e Extensão em Logística Agroindustrial (ESALQ-LOG)/University of São Paulo, Brazil, based on data from the Agência Nacional de Transportes Terrestres (ANTT) 2018.

Quarterly costs of transporting U.S. soybeans to Hamburg, Germany, via U.S. Gulf, 2019

	Minneapolis, Minnesota (US$/mt)				
	2019 1st qtr	2019 2nd qtr	2019 3rd qtr	2019 4th qtr	2019 Average
Truck	8.78	10.98	9.18	11.46	10.10
Rail[1]	47.98	47.93	-	-	47.96
Barge[2]	16.98	13.06	31.39	26.54	21.99
Ocean[3]	16.73	16.62	20.21	19.02	18.15
Total transportation	90.47	88.59	60.78	57.02	74.22
Farm price[4]	310.24	298.97	303.87	309.50	305.65
Landed cost[5]	400.71	387.56	364.65	366.52	379.86
Transport % of landed cost	22.6	22.9	16.7	15.6	19.4
	Davenport, Iowa (US$/mt)				
	2019 1st qtr	2019 2nd qtr	2019 3rd qtr	2019 4th qtr	2019 Average
Truck	8.78	10.98	9.18	11.46	10.10
Rail[1]	32.13	32.11	-	-	32.13
Barge[2]	16.98	13.06	28.74	22.93	20.43
Ocean[3]	16.73	16.62	20.21	19.02	18.15
Total transportation	74.62	72.77	58.13	53.41	64.73
Farm price[4]	311.59	299.09	303.75	314.65	307.27
Landed cost[5]	386.21	371.86	361.88	368.06	372.00
Transport % of landed cost	19.3	19.6	16.1	14.5	17.4

[1]Rail rates include fuel surcharges, but do not include the cost of purchasing empty rail cars in the secondary rail markets, which could exceed the rail tariff rate plus fuel surcharge shown in the table.

[2]The Mississippi River closes from Minneapolis to just north of St. Louis during mid-December to late March.

[3]Source for the U.S. ocean freight rates: O'Neil Commodity Consulting.

[4]Source for the U.S. farm prices: USDA, National Agricultural Statistics Service.

[5]Landed cost is transportation cost plus farm price.

Note: qtr. = quarter; yr. = year; mt = metric ton; total may not add exactly due to rounding.

Source: Compiled by the USDA, Agricultural Marketing Service.

Quarterly costs of transporting U.S. soybeans to Shanghai, China, via U.S. Gulf, 2019

	Minneapolis, Minnesota (US$/mt)				
	2019 1st qtr	2019 2nd qtr	2019 3rd qtr	2019 4th qtr	2019 Average
Truck	8.78	10.98	9.18	11.46	10.10
Rail[1]	47.98	47.93	-	-	47.96
Barge[2]	16.98	13.06	31.39	26.54	21.99
Ocean[3]	39.61	42.20	49.35	47.05	44.55
Total transportation	113.35	114.17	89.92	85.05	100.62
Farm price[4]	310.24	298.97	303.87	309.50	305.65
Landed cost[5]	423.59	413.14	393.79	394.55	406.27
Transport % of landed cost	26.8	27.6	22.8	21.6	24.7
	Davenport, Iowa (US$/mt)				
	2019 1st qtr	2019 2nd qtr	2019 3rd qtr	2019 4th qtr	2019 Average
Truck	8.78	10.98	9.18	11.46	10.10
Rail[1]	32.12	32.11	-	-	32.12
Barge[2]	16.98	13.06	28.74	22.93	20.43
Ocean[3]	39.61	42.20	49.35	47.05	44.55
Total transportation	97.49	98.35	87.27	81.44	91.14
Farm price[4]	311.59	299.09	303.75	314.65	307.27
Landed cost[5]	409.08	397.44	391.02	396.09	398.41
Transport % of landed cost	23.8	24.7	22.3	20.6	22.9

[1]Rail rates include fuel surcharges, but do not include the cost of purchasing empty rail cars in the secondary rail markets, which could exceed the rail tariff rate plus fuel surcharge shown in the table.

[2]The Mississippi River closes from Minneapolis to just north of St. Louis during mid-December to late March.

[3]Source for the U.S. ocean freight rates: O'Neil Commodity Consulting.

[4]Source for the U.S. farm prices: USDA, National Agricultural Statistics Service.

[5]Landed cost is transportation cost plus farm price.

Note: qtr. = quarter; yr. = year; mt = metric ton; total may not add exactly due to rounding.

Source: Compiled by the USDA, Agricultural Marketing Service.

Quarterly costs of transporting U.S. soybeans to Shanghai, China, via PNW, 2019

	Fargo, North Dakota (US$/mt)				
	2019 1st qtr	2019 2nd qtr	2019 3rd qtr	2019 4th qtr	2019 Average
Truck	8.78	10.98	9.18	11.46	10.10
Rail[1]	56.11	56.11	56.11	57.10	56.36
Ocean[2]	22.44	22.93	27.28	25.71	24.59
Total transportation	87.33	90.02	92.57	94.27	91.05
Farm price[3]	290.28	277.90	281.33	293.09	285.65
Landed cost[4]	377.61	367.92	373.90	387.36	376.70
Transport % of landed cost	23.1	24.5	24.8	24.3	24.2
	Sioux Falls, South Dakota (US$/mt)				
	2019 1st qtr	2019 2nd qtr	2019 3rd qtr	2019 4th qtr	2019 Average
Truck	8.78	10.98	9.18	11.46	10.10
Rail[1]	57.10	57.10	57.10	58.09	57.35
Ocean[2]	22.44	22.93	27.28	25.71	24.59
Total transportation	88.32	91.01	93.56	95.26	92.04
Farm price[3]	296.64	284.15	288.44	306.69	293.98
Landed cost[4]	384.96	375.16	382.00	401.95	386.02
Transport % of landed cost	22.9	24.3	24.5	23.7	23.8

[1]Rail rates include fuel surcharges, but do not include the cost of purchasing empty rail cars in the secondary rail markets, which could exceed the rail tariff rate plus fuel surcharge shown in the table.
[2]Source for the U.S. ocean freight rates: O'Neil Commodity Consulting.
[3]Source for the U.S. farm prices: USDA, National Agricultural Statistics Service.
[4]Landed cost is transportation cost plus farm price.
Note: qtr. = quarter; yr. = year; mt = metric ton; total may not add exactly due to rounding.
Source: Compiled by the USDA, Agricultural Marketing Service.

Average quarterly exchange rate, 2013-19

Quarter	Real per US$
1st	1.9977
2nd	2.0673
3rd	2.2880
4th	2.2735
2013 Average	**2.1566**
1st	2.2735
2nd	2.2296
3rd	2.2745
4th	2.5437
2014 Average	**2.3303**
1st	2.8637
2nd	3.0722
3rd	3.5480
4th	3.8426
2015 Average	**3.3316**
1st	3.8999
2nd	3.5076
3rd	3.2912
4th	3.2953
2016 Average	**3.4985**
1st	3.1429
2nd	3.2137
3rd	3.1639
4th	3.2506
2017 Average	**3.1928**
1st	3.2425
2nd	3.7732
3rd	3.9505
4th	3.8084
2018 Average	**3.6936**
1st	3.7684
2nd	3.9221
3rd	3.9736
4th	4.1144
2019 Average	**3.9446**

Source:Banco Central do Brasil

Selected quarterly Brazilian farm prices, 2016-19
(US$/metric ton)

Quarter	Rio Grande do Sul	Mato Grosso	Goiás	Paraná	Piauí	Pará	Maranhão
1st	308.73	268.28	278.59	298.84	281.05	264.90	310.69
2nd	358.57	347.59	337.86	353.78	342.05	329.13	378.45
3rd	373.12	367.25	359.07	362.80	378.98	384.42	447.42
4th	352.69	344.51	341.08	347.53	377.05	355.82	370.99
2016 Avg	**348.28**	**331.91**	**329.15**	**340.74**	**344.78**	**333.57**	**376.89**
1st	347.99	314.10	332.40	344.08	210.49	362.30	356.01
2nd	302.06	275.60	281.73	304.50	304.16	313.78	327.17
3rd	317.17	288.62	291.58	313.53	306.34	324.84	340.58
4th	321.99	296.10	302.26	324.03	311.19	339.05	349.81

Quarter	Rio Grande do Sul	Mato Grosso	Goiás	Paraná	Piauí	Pará	Maranhão
2017 Avg	**322.30**	**293.60**	**301.99**	**321.54**	**283.05**	**334.99**	**343.39**
1st	334.43	305.85	318.87	338.61	321.69	344.84	357.97
2nd	343.90	323.46	313.65	347.41	320.70	343.23	342.78
3rd	326.13	301.39	302.33	330.85	290.62	323.15	305.07
4th	328.39	293.43	314.40	319.39	292.04	344.82	326.30
2018 Avg	**333.21**	**306.03**	**312.31**	**334.06**	**306.26**	**339.01**	**333.03**
1st	308.52	275.38	296.01	304.16	292.96	317.97	298.43
2nd	294.72	271.70	281.40	292.33	285.28	294.15	278.70
3rd	304.20	286.87	286.67	300.23	288.35	303.50	300.20
4th	314.81	307.47	301.77	313.72	316.88	316.00	310.87
2019 Avg	**305.56**	**285.35**	**291.46**	**302.61**	**295.87**	**307.90**	**297.05**

Source: Companhia Nacional de Abastecimento (CONAB) www.conab.gov.br

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