

Port KC

Kansas City Container Market Analysis and Intermodal Trade Forecast

Prepared for:

Port KC 110 Berkley Plaza Kansas City, MO, 64120



CONFIDENTIAL Draft Report Intended only for use of client

June 2021



This report has been prepared by KPMG and its subconsultants and submit this report for the confidential, exclusive, and private use of Port KC (the Client) for the purposes of the Client only in connection with the project reported upon herein. This report may not be suitable for any other purpose. Any party who obtains access to, makes any changes to, and/or chooses to rely on this report (or any part of it) will do so at its own risk. KPMG and its sub-consultants (or any other firm of KPMG International) do not accept any responsibility or liability for any use of this report by third parties. For the avoidance of doubt, the report recipient receives and uses the report entirely at its own risk and no responsibility is taken or accepted by KPMG or its sub-consultants and all liability is expressly excluded by KPMG and its sub-consultants for any losses which may result therefrom. Anyone other than the Client reviewing this report is cautioned not to reproduce its contents without prior written consent of KPMG and its sub-consultants.

KPMG's and its sub-consultants' analysis of future market expectations and trade projections contained in this report are contingent upon factors over which they have no control, and the forecasts are by their nature uncertain. While KPMG and its sub-consultants have prepared this report in good faith, no warranty express or implied is made in respect of the accuracy, completeness or appropriateness of its data, assumptions, calculations or that actual events will not vary from their projections. All users of this report are accordingly advised to undertake their own review of its assumptions, calculations and results before making any decision or entering into any commitment based on the information herein. The recipient of the report should make (and will be deemed to have made) its own review of the report to ensure it satisfies its objectives and is accurate. The reproduction or manipulation of the report without the expressed consent of KPMG and its sub-consultants is prohibited. The report recipient acknowledges that all intellectual property rights whatsoever and howsoever arising in this report as between the Client, KPMG and its sub-consultants are, and shall remain, the exclusive property of KPMG and its subconsultants. No reliance may be placed upon this report by any party.

Contents

I.	Executive Summary	1
II.	Report Background	3
III.	Analysis Focus	4
IV.	Current Market Perspective	5
	Imports	5
	Exports and Outbound Empty Containers	.11
	Domestic Transloads of International Cargo	.16
V.	Trade Forecast Assumptions	18
VI.	Trade Projections 2021-2070	21
VII.	Opportunities for Further Export Containerization of Agricultural Products	23
VIII.	Summary: Market Findings and Opportunity for Port KC's MRT	27
Appe	endices	28
	Appendix I: References for Container-on-Barge studies	.29
	Appendix II: Listing of Large Industrial Property Leases in the Kansas City MSA, 2018-2020	.31
	Appendix III: Selected Crop Production by County and DDG plants by location (2020)	.3 <u>3</u>
	Appendix IV: Container Trade Forecast for Kansas City, 2021-2070	.35

List of Figures and Charts

Figure 1 Selected Kansas City Container Importers, 2019	1
Figure 2 Kansas City Import Volume Forecast	2
Figure 3 Port KC Proposed Missouri River Terminal	3
Figure 4 Kansas City Area Intermodal Rail Ramps	5
Figure 5 Leading Midwest Rail Ramps for Intact Containerized Imports, 2020	6
Figure 6 Comparative Performance of U.S. Intact Container Imports by Destination, % change yearly	7
Figure 7 Kansas City Intact Container Imports by Origin Region, in TEU	7
Figure 8 Kansas City's Intact Container Imports by Top Countries, 2020	8
Figure 9 Kansas City's Top-15 Intact Container Import Commodities, 2020 in TEUs	9
Figure 10 Selected Kansas City Leading Importers, 2019	10
Figure 11 U.S. Port of Arrival for Intact Container Imports Headed to Kansas City, in TEUs	11
Figure 12 Kansas City's Intact Container Trade Balance, 2015-2020	12
Figure 13 Midwest Intact Container Exports by Rail Gateway, 2020	12
Figure 14 Kansas City's Intact Container Exports by Destination Region, in TEUs	13
Figure 15 Kansas City's Leading Intact Container Export Commodities to China, 2015 versus 2020	13
Figure 16 Kansas City's Top-15 Intact Container Export Commodities, 2020 in TEUs	14
Figure 17 U.S. Port of Departure for Intact Container Exports Leaving Kansas City, in TEUs	15
Figure 18 Leading Container Exporters Using Kansas City Rail Ramps	16
Figure 19 Example of Various Container Sizes Used in Intermodal Rail	17
Figure 20 Total Container Lifts for Kansas City, 2020 in TEUs	17
Figure 21 Colliers International Top Industrial Leases in Kansas City, 2020	19
Figure 22 Forecast of Kansas City Regional GDP and Industrial Space Expansion, as annual % changes	20
Figure 23 2021-2070 Forecast for Kansas City's Import Intermodal Containers, all sizes expressed in TEUs	22
Figure 24 Corn for Grain Production by County, 2019	23
Figure 25 Increase in Containerization of Agricultural Products between 2015 and 2020	24
Figure 26 Regional and Product Composition of Possible Added Container Exports from Bulk Conversion, (using 2020 data)) 25
Figure 27 Potential Container Volumes Converted from Bulk Shipment, 2020	26
Figure 28 Forecast New Trade in Containers Lifts, Averaged by Decade	27
Figure 29 Kansas City Metro Industrial Space Leases, 2018-2020	31
Figure 30 Sorghum for Grain 2019 Production by County for Selected States	33
Figure 31 Soybeans 2019 Production by County for Selected States	33
Figure 32 Ethanol Plants with Capacity to Produce Distillers Dried Grains (DDG) as a Byproduct	34
Figure 33 Kansas City Container Forecast	3 5

I. Executive Summary

Kansas City appears primed for growth in trade and metrics indicate the metropolitan area is an attractive commercial and residential location in America's Heartland with a rising population, high ranking in affordability and household income, and thriving industrial and manufacturing developments. The region's economic strength is enhanced by an expansive transportation network supporting further opportunities for growth. This successful portfolio is drawing in international containerized imports of consumer merchandise, commercial machinery and equipment, and farming materials for local users as well as customers throughout neighboring areas of Missouri, Kansas, Iowa, and Nebraska.

Kansas City has five Class I railroads operating at four different inland intermodal terminals offering service with all major U.S. container ports including the important San Pedro Bay gateways in southern California. In the Midwest, only Chicago has a broader selection of intermodal options with seven Class I railroads. Kansas City is ranked 2nd in the Midwest and 4th in the nation for containerized imports having achieved inbound volume of nearly 500,000 Twenty-foot Equivalent Units ("TEU") in 2020. A TEU is generally the industry standard for measuring container carrying capacity given the different sizes including international 20-footers (container length), 40-footers, 45-footers, and domestic 53-footers.

Kansas City's market desirability is evidenced by statistics showing more than 355 area firms imported at least 50 TEU in 2019. Six of the area's businesses that imported 500 or more TEU are included in the Journal of Commerce's list of "U.S. Top 100 Container Importers for 2019". Figure 1 below shows a breakdown of Kansas City container importers based on volumes imported in 2019.



Figure 1 Selected Kansas City Container Importers, 2019

Source: Datamyne



International trade depends on the 2-way transit of containers and Kansas City has much to offer in loaded exports of regional products such as animal feeds, grains, and meats. Last year's outbound rail volume is estimated at 240,000 TEU. Given that the U.S. typically imports more than it exports, and the need to balance rail car movements, Kansas City's outbound intermodal trains handle a considerable number of empty containers in addition to export cargoes.

Looking ahead, Kansas City's, demographics and the expectation for continued economic gains is attracting industrial development of buildings and logistics parks for retail distribution, ecommerce, agricultural product transloading, and general manufacturing. These commercial expansions, and the consumer spending that fuels them, portents sustained growth in container imports. The forecast calls for an estimated compound annual average volume growth rate (CAGR) of 6.4% through 2030. This builds on the 5.2% CAGR achieved between 2015-2020 despite the depressing economic impact caused by the pandemic. The 2030-2040 outlook anticipates import gains averaging 4.1%. Longer term, this report's authors believe conservative planning is more useful than reasoned projections acknowledging how recent unprecedented external shocks to the global economy and its trade activity certainly lowers forecasting confidence. For 30 or more years forward, we recommend a CAGR of 1% to 2% for Kansas City's economic performance and its parallel trade volume expectation. Figure 2 below depicts forecasted Kansas City import volumes in 20-year increments.

Figure 2 Kansas City Import Volume Forecast



Data Source: Forecast data prepared by the authors



II. Report Background

Port KC owns the former AK Steel mill greenfield property within Kansas City which is adjacent to the Missouri River and is being designed for development as the Missouri River Terminal (MRT). This 416-acre site and facility is planned as an intermodal container rail terminal with potential transport logistics functions on-site or proximate including retail distribution, warehousing, freight transloading, e-commerce, and light manufacturing. As indicated in Figure 3 below, MRT's location provides unique inner-city access to five Class I railroads, nearby interstate highways, and the potential for handling containerized marine commerce on the Missouri River.



Figure 3 Port KC Proposed Missouri River Terminal

Source: Port KC, KPMG

Port KC looks to partner with industrial property investor(s), developers, freight operators to accommodate each freight mode and commercial business(es) to advance development and operation of MRT.

To gain an understanding of the size, composition, and growth potential of the Kansas City market for international containerized trade, Port KC engaged the authors of this report to conduct an independent market analysis and to forecast annual trade volume for 2021-2070.



III. Analysis Focus

In 2020, U.S. ports handled 26 million TEU import containers from over 200 countries¹. While ocean-going vessels called at more than 35 coastal ports to unload these containers, the consumers of the imported merchandise, known as beneficial cargo owners (BCOs), were spread across the country. The Kansas City Metropolitan Statistical Area's (MSA) 2.1 million consumers has an estimated per capita income of \$55,000² and a growing number of retailers find Kansas City's location beneficial as a Midwest distribution hub as do manufacturers as a production or assembly site.

This analysis examines important aspects of the Kansas City MSA's container import trade including volumes for the leading commodities, top buyers, overseas origins, and major ports of arrival. While less voluminous, container exports are profiled in the same manner in this study to reflect the importance of two-way trade flows to the inland transportation supply chain.

A trade forecast is included in this analysis building upon published projections for the regional economy from reputable sources such as the Federal Reserve Bank, commercial bank economists, and private forecasting firms.

MRT's riverside site offers the opportunity to construct a berth capable of handling containeron-barge (COB) traffic. Several studies (see Appendix I) have evaluated the competitiveness of a COB transport option connecting inland terminals on the Missouri and Mississippi Rivers with Gulf Coast container ports.

Not specific to COB, but potentially presenting additional export cargo prospects, research is included in this report on further conversion of the international transport of bulk commodities into containers.

² U.S. Census statistics



¹ Data Source: www.datamyne.com

IV. Current Market Perspective

Imports

Important drivers of import demand include population, economic activity, and consumer and business income; all of which contribute to spending. As noted above, the Kansas City MSA economic profile comprises a large consumer base with respectable earnings. In 2019, the Kansas City MSA Gross Domestic Product (real GDP, in \$2012) totaled \$123 billion, ranking the region 31st in the nation and 6th in the Midwest³. Kansas City's western location within the Midwest geography is also a positive for trade. As will be discussed further, China is the dominant source for most U.S. container imports. Pacific Rim trade predominantly enters the U.S. at West Coast ports positioning Kansas City as the first inbound rail hub in the Midwest with direct intermodal service from Southern California ports.

As depicted in Figure 4, Kansas City currently is served by four intermodal rail hubs operated by Burlington Northern Railroad (BNSF), Kansas City Southern Railroad (KCS), Union Pacific Railroad (UP) and Norfolk Southern Railroad (NS). The fifth Class I railroad, CSX, has intermodal access via the KCS facility.



Figure 4 Kansas City Area Intermodal Rail Ramps

Image Source: Mapdeveloper.com

³ U.S. Bureau of Economic Analysis, with the Midwest inclusive of Illinois, Indiana, Iowa, Kansas, Kentucky, Michigan, Missouri, Nebraska, Ohio



Kansas City's inbound intermodal rail volume of intact international containers totaled 225,000 TEU in 2020 based on Datamyne statistics⁴. As depicted in Figure 5 below, the KC-market is the 4th largest inbound inland gateway in the U.S. and 2nd largest in the Midwest.





Data Source: Datamyne

Image Source: Google Maps

Kansas City's recent import performance has been robust - a total volume increase of 50,000 TEU from 2015's volume of 175,000 TEU. This is a compounded annual average growth of 5% (CAGR). Kansas City's inbound annual trade growth rate exceeded that of the other leading Midwest trade gateways between 2017-2020. Kansas City is one of only four of the top-10 inland markets in the nation that experienced an increase in TEU volume in 2020. This is due in part to the significant expansion of industrial distribution and warehousing within the Kansas City MSA. The importance to trade of industrial space buildout for new or expanding tenants is discussed in more detail in the Trade Forecast Assumptions section of this report.

Early indications point to a continued advance in imports this year. Data through mid-March shows inbound volume up a strong 20%. As shown in Figure 6 below, Kansas City's import pace is moderately less than what is being achieved throughout most of the Midwest and the overall country, which is likely a catch-up from their weaker 2020 activity.

⁴ Datamyne statistics are sourced from U.S. Customs vessel manifests and are referenced throughout this report. Springfield MO delivered imports are included with Kansas City as most ocean carriers contract for container yard delivery at a Kansas City rail ramp. Only BNSF has rail service in Springfield, and it is predominantly for domestic freight. As explained later in the report, details on shipments moving to inland rail ramps are only available for intact ocean-going containers that are predominantly sized in 20-foot and 40-foot lengths. Once a container arrives at a U.S. port it is possible to transload its contents into a domestic-sized container that is predominantly 53-feet in length.





Figure 6 Comparative Performance of U.S. Intact Container Imports by Destination, % change yearly

Source: Datamyne

As noted in Figure 7 below, China is the source for about 56% of Kansas City's waterborne container imports. This share exceeds the country's overall 38% dependence on China for inbound container merchandise. Despite China's command of trade, Kansas City imports at least 100 TEU annually from 54 countries. Refer to Figure 8 for these statistics.

Figure	7	Kansas	Citv	Intact	Container	Imports	bv	Origin	Region.	in	TEU
iguio		Ranous	Ulty	muuuu	oontamor	mporto	~	ongin	nogion,		

Origin Region	2015	2016	2017	2018	2019	2020	2020 of to
NE ASIA	131,709	132,551	146,541	164,381	152,593	160,004	719
of which: China	107,932	108,362	118,870	133,860	122,123	127,037	56%
EUROPE	24,171	23,987	26,932	30,805	31,271	32,914	15%
SE ASIA	8,211	8,139	8,477	9,516	12,809	15,647	7%
INDIA & SUBCONTINENT	6,736	7,609	7,942	8,895	10,106	10,585	5%
SOUTH AMERICA	2,422	2,874	2,363	2,637	3,016	3,390	2%
AUSTRALIA & NEW ZEALAND	690	926	586	819	1,033	1,112	0.5%
CENTRAL AM & CARIBBEAN	297	359	311	327	323	365	0.2%
AFRICA	244	240	425	356	340	287	0.1%
Others	338	424	524	790	917	1,151	1%
Total	174,817	177,109	194,100	218,527	212,408	225,455	100
Annual % change		1.3%	9.6%	12.6%	-2.8%	6.1%	

Source: Datamyne



U.S. regional reliance on any specific country can be explained by several factors including the type of commodities being supplied, retailers' geographic preference for import distribution center sites, manufacturers' plant locations, and government trade policy. As examples, two of the region's largest importers – Grainger and Spectrum Brands – source 75% of their imports from China. Ford and GM purchase parts for their Kansas City assembly plants worldwide including Europe and South America. Over 90% of Kubota Tractor's imports at its Edgerton, KS distribution center originated in Japan where the company was established in 1890.

Europe accounts for about 15% of Kansas City's inbound trade led by Germany's industrial products including engines, auto parts, chemicals, and packaging materials. Southeast Asian nations are a growing source of import products. Businesses have migrated factories to this region seeking lower labor costs and its natural resources. Many of the imports are the same products as sourced in Northeast Asia with the exception being manufactures of natural rubber including medical gloves, tires, and industrial belts.

South America is a relatively small source of imported merchandise. Brazil accounts for 73% of volume and is comprised of agricultural chemicals, granite, and animal feed ingredients.

While Vietnam is the 2nd largest supplier of container goods to America, it currently places 7th in Kansas City but likely to climb in the rankings. Vietnam is a significant manufacturer of footwear and furniture for companies such as New Balance, Adidas, Living Spaces and Standard Furniture. Adidas and New Balance have their Midwest distribution centers in Indianapolis and St. Louis, respectively. However, they do import smaller volumes via Kansas City.



Figure 8 Kansas City's Intact Container Imports by Top Countries, 2020

Source: Datamyne



Government trade policy has been a wildcard for trade sourcing. In late 2018, the President imposed a 10% tariff on numerous Chinese products, including furniture. That rate jumped to 25% a year later. Many home furnishing companies acknowledged that the higher Chinese tariffs forced more production to Vietnam. For example, Flexsteel's Edgerton KS distribution center saw Vietnamese-sourced furniture increase six-fold between 2018-2020.

As further detailed in Figure 9 below, the overall import commodity mix for Kansas City is diverse and includes finished consumer goods as well as parts and equipment for local manufacturers and farmers. The top-4 import commodities for Kansas City mirror the nation's profile in terms of the commodity groups and their combined 39% of total inbound trade. Of course, there are multiple products in these broad 2-digit harmonized codes. For example, machinery for Kansas City is farm tractors and agricultural equipment, while nationally it is white goods such as refrigerators, washers, dryers, and air conditioners.

Figure 9 Kansas City's Top-15 Intact Container Import Commodities, 2020 in TEUs

HS-2 ¹	TEU	% of trade	HS General Category Description	Examples
84	29,025	13%	Machinery & equipment, including parts	Farm tractors, sprayers, milking equipment
85	25,447	11%	Electrical equipment & electronics	Solar panels, slow cookers, coffee makers, home goods
39	17,115	8%	Plastics & articles thereof	POF shrink filf, plastic bottles, sprayers, gloves, decorations
94	15,592	7%	Household furnishings	Cabinets & parts, sofas, chairs, lamps
95	13,953	6%	Toys, games & sports equipment	Playground sets & components, fishing equipment
87	12,547	6%	Vehicles, parts & accessories	Tractor & auto parts, wheel assemblies, doors
73	11,882	5%	Articles of iron or steel	Metal furniture, tool boxes, fittings, springs
40	6,591	3%	Rubber and articles thereof	Tires, hoses, gloves
83	7,059	3%	Misc. base metal products	Door components, locksets, casters, hardware, faucets
63	5,841	3%	Textile articles	Tents, towels, gazebos, canopies
29	5,756	3%	Organic chemicals	Herbicides, insecticides
44	4,914	2%	Wood & articles thereof	Lumber, plywood, cedar, boards
48	4,476	2%	Paper & paperboard	Egg trays, cartons, cups, boxes
11	3,518	2%	Products of the milling industry	Wheat gluten, starches
49	3,401	2%	Printed materials	Greeting cards, books
Others	58,340	26%		
Total	225.455	100%	1	

Source: Datamyne

¹Indicates the first two digits of a good's classification under the Harmonized Commodity Description and Coding System

As noted earlier, a region's success in attracting select retail distribution centers impacts commodity mix. Kansas City companies such as Pure Fishing and Leisure Time Products (Backyard Discovery) are specialists in their product offerings. Both companies have distribution activities within the Kansas City MSA and were regional top-10 importers in 2019.



Using available statistics that include company names, there were 355 firms in the KC-market that imported at least 50 TEU in 2019⁵. It is worth noting that 6 of the region's BCOs that imported 500 or more TEU are included in the Journal of Commerce's "Top 100 Importers" national listing⁶. Just over 20 companies with individual volume of at least 1,000 TEU accounted for 35% of Kansas City's total imports. The next tier of 20+ firms with 500-999 TEU is responsible for 7% of trade. A visual representation of these statistics can be found in Figure 10 below.



Figure 10 Selected Kansas City Leading Importers, 2019

Source: Datamyne

As shown in Figure 11 below, the San Pedro Bay California ports of Los Angeles and Long Beach handle three-fourths of all container imports destined by intermodal rail for Kansas City. BNSF and UP railroads provide direct service from these ocean gateways with an average rail transit time of 4-5 days⁷. This is not surprising given the importance of Asian trade to Kansas City and the propensity of container carriers to make San Pedro Bay ports their first inbound vessel call. BlueWater Reporting Service statistics show there are 25 weekly container strings calling at San Pedro Bay from the Far East with 22 of these being the 1st-in U.S. port⁸.

⁸ www.bluewaterreporting.com



⁵ U.S. Customs permits companies to have their names restricted from publicly available vessel manifest data. Many well-known businesses including Wal-Mart, Home Depot, Target and Amazon are not detailed by name in Datamyne's database. However, all other shipment details for these companies are available including commodity descriptions, and port and country locations.

⁶ www.joc.com/maritime-news/top-100-us-importer-and-exporter-rankings-2019_20200525.html

⁷ Based on samples of carrier bills of lading, and only includes the rail transit time not the port or rail ramp unload/load time.

Figure	11 U	.S. Port	of Arrival	for Intact	Container	Imports	Headed t	o Kansas	City, in	TEUs
--------	------	----------	------------	------------	-----------	---------	----------	----------	----------	------

U.S. Port of Arrival	2015	2016	2017	2018	2019	2020	2020 % of total
SAN PEDRO BAY, CA	135,391	136,534	149,096	166,764	160,479	171,832	76%
Los Angeles	66,533	69,981	74,825	84,066	85,276	92,606	41%
Long Beach	68,858	66,552	74,271	82,697	75,203	79,226	35%
NEW YORK/ NEW JERSEY	24,146	22,417	26,546	32,239	30,468	34,829	15%
NORFOLK,VA	9,422	12,279	11,007	10,904	14,313	12,726	6%
SEATTLE/TACOMA,WA	5,077	5,412	6,801	7,901	6,768	5,568	2%
Others	780	466	649	719	380	501	0.2%
Total	174,817	177,109	194,100	218,527	212,408	225,455	100%
% change		1.3%	9.6%	12.6%	-2.8%	6.1%	

Source: Datamyne

The Pacific Northwest ports of Tacoma and Seattle are not active in the trade to Kansas City. Rail transit times from these ports is competitive with Los Angeles and Long Beach, however the number of Asian carrier services (13) is half that of Southern California and only 5 are 1st-in port calls. Only two carriers moved imports into Kansas City from the Pacific Northwest ports in 2020. A sampling of these carriers' bills of lading show both companies used UP intermodal service.

New York and Norfolk, with rail service by NS, are the predominant ports for European, Indian subcontinent, and South American trade. The transatlantic trade naturally calls at U.S. East Coast ports. The continued growth in manufacturing in Southeast Asia and the Indian subcontinent has fostered more cargo shipments via the Suez Canal. For example, New York has nine weekly services that can carry Indian cargo either direct or transshipped via the Suez Canal route. Slightly more than 90% of Kansas City imports from India were discharged at New York or Norfolk. Container carriers rarely use Gulf Coast ports for serving Kansas City as the volume from Central America and the Caribbean is minimal.

Exports and Outbound Empty Containers

The U.S. is a wealthy nation of consumers which results in more buying than selling with most of our trade partners. This is especially true for oceangoing goods transported in containers. Datamyne reported that total U.S. export loaded container counts in 2020 were only 45% of the import totals. Owing to the two-way nature of trade, this forces ocean carriers to load out a significant number of empty containers for eventual reuse overseas.

Kansas City's container balance tracks slightly better than the national average reflecting a strong export cargo base. This better than average outbound performance has been maintained since 2015. The authors' research shows that the Kansas City export loaded volume may be undercounted by as much as 15% (further explanation below). Regardless, this underreporting does not significantly change the region's imbalance exhibiting a greater volume of imports compared to exports.





Figure 12 Kansas City's Intact Container Trade Balance, 2015-2020

As shown in Figure 12 at right, In 2020, the Kansas City region's reported loaded exports totaled approximately 108,000 TEU compared to import volume of 225,000 TEU. This implies that about 117,000 TEU of empty containers had to be repositioned overseas. Assuming outbound loads and empties match back to the number of loaded imports,

Source: Datamyne (Imports, Exports); Empties based on authors' estimates

Kansas City rail ramps handled a total of approximately 450,000 TEU in 2020 of intact international containers.

Within the Midwest, Kansas City is the 2nd largest container export load center with a 14% share. As is the case with imports, Chicago leads the Midwest container export market with over 400,000 loaded TEU annually. Refer to Figure 13 below for additional detail on Midwest container exports.



Figure 13 Midwest Intact Container Exports by Rail Gateway, 2020

Export performance since 2015 has been inconsistent. Explanations are many, however a few factors are key: the current trade situation with China; container transport share of select commodities; and the pandemic's effect on global economies. In the aggregate, Kansas City's export volume increased every year except 2020. This masks the fact that container exports to China, the largest buyer, declined every year except 2020 as shown in Figure 14 below. In 2015, China accounted for 40% of Kansas City container exports. It plummeted to a low of 8% in 2019 and finished last year with a 19% market share of outbound trade.



Destination Region	2015	2016	2017	2018	2019	2020	2020 % of total
NE ASIA	46,054	41,772	46,416	37,353	30,349	38,327	36%
of which: China	34,876	26,347	26,297	15,570	9,594	20,987	19%
SOUTHEAST ASIA	12,379	23,297	24,208	33,170	34,799	32,810	30%
EUROPE	11,925	13,293	14,661	16,425	16,548	14,314	13%
SOUTH AMERICA	5,931	5,564	7,179	9,503	10,435	8,333	8%
INDIAN & SUBCONTINENT	2,967	8,578	6,697	6,381	7,607	5,124	5%
AUSTRALIA & NEW ZEALAND	1,150	1,268	1,320	2,459	1,794	2,185	2%
MIDDLE EAST	1,676	1,599	1,897	2,183	2,715	2,011	2%
AFRICA	1,041	873	1,327	1,334	1,566	1,950	2%
CENTRAL AM & CARIBBEAN	1,034	1,327	1,191	1,905	1,316	1,035	1%
UNIDENTIFIED & MISC.	1,914	3,097	1,490	1,905	7,101	1,557	1%
Total	174,817	177,109	194,100	218,527	212,408	225,455	100%
% change		17.0%	5.7%	5.9%	1.4%	-5.8%	

Figure 14 Kansas City's Intact Container Exports by Destination Region, in TEUs

Source: Datamyne

In 2016, China imposed anti-dumping and anti-subsidy tariffs totaling almost 65% on U.S. exports of distillers dried grains (DDGs) citing potential damage to domestic producers. At that time DDGs and other animal feeds accounted for 40% of Kansas City's exports to China. By 2019, any of this region's DDG exports to China only moved via bulk vessels. Last year a small percentage increase in DDG trade reemerged including transport in containers. This did not move the needle on total TEU exports to China. That uptick resulted from the 2020 "Phase One" trade deal between the U.S. and China by which they agreed to purchase an additional \$200 billion of American goods and services between 2020-2021 (over their 2017 level). For Kansas City, this is appearing as increased export volumes of soybeans, beef, and hides, as shown in Figure 15 below.





Source: Datamyne



Outside of China, Kansas City containerized exports have performed well; excepting the 2020 slowdown that can generally be accounted for by economies weakened by the global pandemic. The leading buyers include most countries in Southeast Asia. According to U.S. Census data, one in every three metric tons of U.S. export DDGs goes to Vietnam, Indonesia, Thailand, and the Philippines. This is the same profile shares for Kansas City. Containerization has gained favor in transport owing to smaller-scale ports in these countries and the ability to direct deliver containers to more moderate sized farms.

It is interesting to note that two of Kansas City's trade partner regions are stronger in export volume than imports. Besides Southeast Asia, South America's significant farm base consumes American made chemicals, fertilizers, DDGs, and agricultural equipment.

As shown in Figure 16 below, livestock products, grains, and related byproducts account for just over 60% of container exports at Kansas City rail ramps. This is not surprising as the adjacent 4 states that primarily export container goods via Kansas City rail ramps rank highly based on U.S. Department of Agriculture statistics on total cash receipts for all farm commodities: Iowa is 2nd; Nebraska is 3rd; Kansas 7th; and Missouri is 11th.

HS-2 ¹	TEU	% of trade	HS General Category Description	Examples
23	22,861	21%	Food residuals & animal feeds	DDGs, animal feeds
12	22,233	21%	Oil seeds & grains	Soybeans
2	11,639	11%	Meats, fresh & frozen	Frozen pork & beef
41	6,868	6%	Hides & skins	Cow hides
84	5,480	5%	Machinery & equipment	Irrigation, agriculture & construction equip
44	4,249	4%	Wood & articles	Hardwood lumber
39	3,400	3%	Plastics & articles	Bio-based plastics
38	2,290	2%	Chemicals, miscellaneous	Herbicides
4	2,133	2%	Dairy products	Milk powder
72	1,507	1%	Iron & steel	Mixed metal scrap, waste motors
21	1,467	1%	Edible preparations	Foodstuffs, glutens, spices
10	1,430	1%	Cereals	Sorghums
76	1,183	1%	Aluminum & articles	Aluminum waste & scrap
87	1,171	1%	Vehicles & parts	Storage tanks, tractor parts
11	1,101	1%	Milling industry products	Glutens & starches
Others	18,632	17%		
Total	107,645	100%	1	

Figure 16 Kansas City's Top-15 Intact Container Export Commodities, 2020 in TEUs

Source: Datamyne

¹Indicates the first two digits of a good's classification under the Harmonized Commodity Description and Coding System

As noted in Figure 17 below, the port profile for Kansas City's container exports is similar to its inbound trade with slightly higher participation for New York and Norfolk versus San Pedro



ports. Here again, the Suez Canal route and Southeast Asia's larger export market explain the shift. As noted above, there are 9 weekly services to New York that transit roundtrip with South Asia countries via the Suez Canal. However, four of these weekly strings turn in India and do not extend into Southeast Asian ports. There are an additional three services that route eastbound from Asia to the U.S. East Coast via the Panama Canal and return to the Far East via the Suez Canal. This provides additional outbound ocean transport capacity at the U.S. East Coast.

As a result, 20% of Kansas City's Southeast Asia exports exit through New York/Norfolk versus 3% for imports. Since exports headed to Southeast Asia are primarily lower-valued, less time-sensitive agricultural goods, they can tolerate the longer transit time via the Suez Canal.

U.S. Port of Departure		2015	2016	2017	2018	2019	2020	2020 % of total
SAN PEDRO BAY, CA		57,475	67,901	74,477	66,352	63,827	65,330	61%
	Los Angeles	22,726	34,290	34,777	30,565	36,940	39,425	37%
	Long Beach	34,749	33,611	39,700	35,787	26,887	25,905	24%
NEW YORK/ N	EW JERSEY	14,517	10,813	19,208	23,739	28,131	24,386	23%
NORFOLK,VA		10,760	14,336	11,767	16,126	18,179	15,984	15%
SEATTLE/TACO	DMA,WA	20	301	52	735	2,101	960	1%
Others		3,299	7,318	882	5,666	1,993	985	1%
Total	<u>.</u>	86,071	100,668	106,386	112,617	114,229	107,645	100%
<u>.</u>	% change		17.0%	5.7%	5.9%	1.4%	-5.8%	

Figure 17 U.S. Port of Departure for Intact Container Exports Leaving Kansas City, in TEUs

Source: Datamyne

U.S. Customs public export data does not include a complete and accurate account of trade by the cargo owner name and the cargo place of receipt. Two issues are present in the statistics. Firstly, export shipping documents (the bill of lading contract between the shipping line and the BCO) may not name the inland rail ramp where the cargo originates. For example, Datamyne's statistics from shipping documents for the Delong Company, the largest identified exporter for Kansas City, do not identify 30% of the company's total national TEUs as to "place of receipt". Other exporters' unidentified shipment origins make up a smaller percentage of volume.

As an estimate, it is reasonable to assume 15% of Kansas City's total exports are underreported. As noted above, this shortfall is insufficient to impact the trade imbalance favoring imports, and not likely to affect the region's commodity mix or shares of outbound trade by port or overseas buying pattern. Additionally, the overall Kansas City container trade forecast is unaffected as to the combined volume of imports, export loads, and empty exports.

The second issue for exports is the use of third-party names as BCOs. For example, the transport may be listed under the account of the exporter's logistics provider, cooperative, trading company, or distributor; or U.S. Customs may not publish the name due to privacy.



Given the incomplete source document information this report will not show volumes or rankings of exporters. Figure 18 identifies some of the more significant export rail users. It is recommended that further information can be obtained on key participants in the export supply chain through commodity associations such as the U.S. Grains Council and the National Cattlemen's Beef Association.



Figure 18 Leading Container Exporters Using Kansas City Rail Ramps

The Delong Co. Inc Gavilon Poet Biorefining Hills NatureWorks Swift Scoular Dairy Farmers of America Cargill National Beef New Holland Construction

Image Source: KPMG

Domestic Transloads of International Cargo

This market analysis and trade forecast are directed at Kansas City's involvement in international container trade with overseas partners. As explained previously, the source for market intelligence is Datamyne's statistics compiled from U.S. Customs ship documents showing imports and exports of intact ocean containers. Throughout the U.S. port network and especially at the San Pedro ocean gateway, transloading of cargoes from 20-foot and 40-foot international containers into domestic 53-foot containers for inland routing is a process commonly utilized by shippers and carriers. Carriers benefit by having import containers remain local thereby hastening their return overseas. BCOs potentially benefit by reducing inland rail costs. In general, imported goods in 3 40-foot containers can be transloaded into 2 53-footers, based on typical weight and cubic measurement. Refer to Figure 19 below for a visualization of container sizes.



Figure 19 Example of Various Container Sizes Used in Intermodal Rail



Source: Google Images

Details on the volume and intermodal rail destinations of 53-foot transloaded containers throughout the country are not publicly available. However, research by a University of California at Berkley professor estimated that at the ports of Los Angeles and Long Beach 21% of all imports remain local to fulfill home-grown demand; 37% are railed or trucked inland as intact ocean containers; and 42% of international boxes are transloaded to 53-foot domestic containers⁹. Given there are numerous BCOs and ocean carrier transport providers, it is reasonable to assume that transloading does not skew the participation mix profile for importers or commodities. To account for U.S. port transloading and for Canadian port traffic with Kansas City, the authors have assessed these components at a combined 20% higher level than intact containers. All inclusive, the Kansas City volume of internationally traded containers is estimated to have totaled 997,000 TEU in 2020 as illustrated in Figure 20 below.

Figure 20 Total Container Lifts for Kansas City, 2020 in TEUs



Import intact loads
Import 53s
Export intact
Export 53s
Empty intact
Empty 53s

Source: Datamyne (Intact Imports & Exports); 53's and Empties based on authors' estimates

⁹ https://ieor.berkeley.edu/wp-content/uploads/2019/10/RCL-LA-Basin-Initiatives-Jan_13_2017.pdf



V. Trade Forecast Assumptions

As this market analysis demonstrates, the demand for inbound international and domestic containerized goods arriving in Kansas City by intermodal rail is driven by the growth in the region's consumption of retail merchandise, manufacturing materials and agricultural supplies. Examples include imports of Sunbeam appliances; Ford and Kubota auto and tractor parts; and Grainer industrial equipment.

An aggregate measure of this consumer and business demand is the region's total economic performance in terms of real (inflation-adjusted) gross domestic product (GDP). This statistic is calculated by the U.S. Bureau of Economic Analysis (BEA). The region's economy advances through population growth, expanded business activity, job creation and the ensuing increase in wages, business investment and consumer spending. Cumulatively, such improvements will be reflected in the rise in regional GDP.

Clearly the pandemic's impact on the economy in 2020 and 2021 is unprecedented and is requiring significant government intervention to prevent a prolonged recession. It is estimated that the Kansas City regional GDP fell -2% last year and will advance 5% this year before resuming a more moderate trend. Last year's performance beat the overall U.S. decline of -3.5%; however, 2021's anticipated growth may fall short of the national expected gain in GDP. 2021's national economic growth is likely to exceed 6% as forecast by several institutions and commercial banks including the International Monetary Fund and Wells Fargo Bank.

The Federal Reserve, in its March 2021 "Beige Book"¹⁰, cited several current conditions for the Kansas City District both positive and negative that arise in their most recent survey. Farm income is climbing as is business capital spending. Commercial space (industrial and office) vacancy rates are down, absorption and construction of buildings is up. The concerns for the regional economy are a labor shortage and a tightening of bank credit access.

This trade forecast is built upon a conservative expectation that long-term GDP growth in the Kansas City MSA will average between 1.2% and 2.4% annually in 2022-2070. This appears reasonable as real GDP growth averaged 1.4%, compounded annually for 20 years through 2019. Additionally, put into perspective, the Congressional Budget Office's Long-Term Outlook for the nation (published March 2021) bases its projections on real GDP growth averaging between 2.2% (in the 2020s) to a low of 1.5% (2040s)¹¹.

To ascertain the relationship between the Kansas City regional economic performance and demand for inbound container goods an intermediate step is required to determine the physical locations where merchandise is warehoused before distribution to consumers through retail channels; or the locations where manufacturers directly use purchased materials. A reliable gauge of the storage supply and expansion requirements is the region's industrial building inventory. This includes manufacturing sites, as well. Real estate service companies and regional government economic development organizations report on such properties including

¹¹ https://www.cbo.gov/publication/56977



¹⁰ https://www.federalreserve.gov/monetarypolicy/files/BeigeBook_20210303.pdf

location, ownership, leasing, current inventory (in square footage) and new additions, vacancy rates and rents. Colliers International statistics on total industrial square footage and building counts by sizes form the basis for this analysis¹².

Simply put, the forecast quantifies how the increase in the volume of inbound intermodal containers can be attributed to the growth in regional economic activity as explained by the expansion in square footage of occupied industrial buildings. For example, in 2016 Spectrum Brands a consumer products company announced the future occupancy of a nine hundred thousand square-foot distribution center at the Logistics Park next to BNSF's rail ramp in Edgerton, KS just outside of Kansas City. This site was to replace multiple warehouses the company operated in other states. Spectrum's Kansas City import volume jumped from zero in 2016 to nearly 7,000 TEU in 2020.

Colliers International summarized the impact of industrial property growth on the trade outlook for Kansas City in their "2021 Commercial Real Estate Forecast Report":

The Kansas City market continues to be a thriving industrial market based on its ideal centralized location. A growing reliance on e-commerce retailers for basic goods throughout the pandemic, continues to fuel demand for industrial big box product as supply chains continue to become right-sized, shifting away from "lean" inventory strategies that proved sound in the past. As growing needs continue to materialize for warehouse and distribution space, markets such as Kansas City, with established infrastructure, allows occupiers the ability to streamline their supply chain operations, which lowers costs, and more importantly, delivers goods to the end user in a faster and more efficient way throughout the country. – Colliers International

According to Colliers, over the past three years, there were 60 leases (new, renewed, or expanded) of industrial sites of at least 100,000 square feet spread across 5 counties throughout the Kansas City MSA. The full list of the industrial buildout of space in Kansas City since 2018 are shown in Appendix II. The table in Figure 21below provides a listing of industrial leases in Kansas City in 2020.

Figure 21 Top Industrial Leases in Kansas City MSA, 2020

	Leases									
1	Property	Submarket	Tenant	Landlord	Size SF					
1	The Woodlands	Wyandotte County	Amazon	Scannell Properties / Build-to- Suit	1,080,000					
2	Inland Port VII	Johnson County	PepsiCo/Gatorade	NorthPoint Development	953,000					
3	Urban Outfitters Distribution	Wyandotte County	Urban Outfitters	Build-to-Suit	880,000					
4	Southview Commerce Building III	Cass County	Chewy.com	NorthPoint Development	796,000					
5	Southview Commerce Building II	Cass County	BoxyCharm	NorthPoint Development	575,000					
6	Northland Park Building VI	Executive Park/Northeast	FedEx Ground	NorthPoint Development	548,560					
7	KCI Logistics Building	Platte County/NKC	Pure Fishing	TrammellCrow	542,000					
8	Bennett Packaging	Jackson County	Bennett Packaging	Build-to-Suit	524,000					
9	Lone Elm 716	Johnson County	American News Group	Exeter Property Group	455,000					

¹² https://www.colliers.com/en/research/kansas-city/



	Leases									
	Property	Submarket	Tenant	Landlord	Size SF					
10	Midwest Gateway 1	Johnson County	Bayer/DHL	Copaken Brooks	300,000					
11	Turner Logistics Park	Wyandotte County	Harte Hanks	NorthPoint Development	298,000					
12	I-49 Logistics Park	Jackson County	Home Depot	Platform Ventures	297,000					
13	Liberty Logistics	Executive Park/ Northeast	Kenco Logistics	Liberty Industrial Holding	295,000					
14	2119 E Kansas City Road*	Johnson County	Schlage Lock Company	DRA	253,000					
15	doorLink Manufacturing	Platte County/NKC	doorLink Manufacturing	Build-to-Suit	240,000					
16	10707 N Airworld Drive	Platte County/NKC	DHL	Link Industrial	200,000					

* Lease Renewal / Extension

Source: Colliers International

As shown in Figure 22 below, Kansas City MSA industrial space square footage is projected to continue its upturn with a total gain of 40% through 2030 owing to the accelerated expansion in e-commerce. Thereafter, as e-commerce distribution center needs begin to level out, overall industrial space buildout is forecasted to be moderately in line with real GDP gains averaging 1.2% to 4%. The expectation is that occupied industrial space will double by the early 2040s reaching over 500 million square feet: a good indicator of future gains in container trade.

Figure 22 Forecast of Kansas City Regional GDP and Industrial Space Expansion, as annual % changes



Source: Datamyne (historical data); forecast data prepared by authors



VI. Trade Projections 2021-2070

Kansas City's recent trade success in such difficult economic conditions looks to be sustainable this year with a full 2021 import volume advance projected at 10%. This uptick builds on the 6% gain achieved in 2020. The economy's rebound and a buoyed market interest in more industrial warehousing are fueling demand for imported goods.

It is anticipated that inbound trade momentum will carry forward over the next couple of years exhibiting annual volume gains in the mid to high single digits. Such elevated growth rates are not justifiable once the economy has fully reopened and rebalanced post-vaccinations. The expectation is a return to a more normal equilibrium in spending between goods and services, as well as an economic growth rate at a more moderate, albeit sustainable level.

By the 2nd half of this decade, the annual import growth rate is forecast to average 5% to 5.5%. Import volume in 2030 is projected at 922,000 TEU (inclusive of all inbound box sizes including intact ocean containers and 53-foot domestic transloads); an 85% volume advance compared to 2020's 498,000 TEU. Adding in the continued match back of exports and empties to import volumes positions Kansas City rail ramps to handle 1.8 million TEU entering the next decade.

As we have witnessed the past few years, many external factors can influence global economics and trade performance rather quickly. Predicting events 20, 30 or more years ahead is more of a conjecture than a reasoned forecast. Additionally, it is a safe bet that the economy and trade will be impacted by cyclical events, which are difficult to calculate but should be considered as part of a forecast. Therefore, this trade forecast "flattens out" long term growth rates, essentially averaging in the likelihood of future cyclical performance without attempting to pinpoint when it will happen. The long-term trade forecast calls for import growth to average about 4% in the 2030s; 2.5% in 2040s-2050s; and 1% thereafter. These assumptions are illustrated in Figure 23 below.

A few aggregate trade (imports+exports+empties) milestones to note for Kanas City: 2 million total TEU is expected by 2032; 3 million TEU reached in 2043; and 4 million TEU possibly handled by area intermodal rail ramps by 2062.

The complete trade forecast volumes are included in the Appendix IV.



Figure 23 2021-2070 Forecast for Kansas City's Import Intermodal Containers, all sizes expressed in TEUs



Source: Datamyne (historical data); forecast data prepared by KPMG subconsultants



VII. Opportunities for Further Export Containerization of Agricultural Products

U.S. Census statistics show that America's exports of corn, soybeans, sorghum and DDGs topped 117 million metric tons in 2020. For these 4 key commodities, only 10% of outbound volume was shipped in containers which could present an opportunity for further containerization at Kansas City given the importance of these commodities in the export mix.

As shown in Figure 24 below, Kansas City's transport location is conducive for handling corn produced in western lowa, eastern Nebraska, and northeastern Kansas. Corn could be transloaded into international containers and either railed or barged to coastal ports for export. Similar maps showing Kansas City's beneficial location near production of soybeans, sorghum and DDGs are included in Appendix III.

Figure 24 Corn for Grain Production by County, 2019



Source: USDA, U.S. Department of Agriculture, National Agricultural Statistics Service

There has been little shift in transport mode since 2015 when the container share was 8%. However, to reach new overseas markets, grain merchandisers and trade associations are increasing their marketing outreach emphasizing the use of containers. CHS, a grain merchandiser, explained the value to its Asian importers of containers¹³:

¹³ https://www.chsinc.com/about-chs/news/news/2021/03/09/containers-deliver-on-global-specialty-grain-demand



CHS is a top container exporter and handler of sorghum. We are part of the entire supply chain from Kansas to China, which is appealing to buyers. Grain loaded via container better preserves crop identity during transit overseas. And containers can be easily transported inland by smaller vessels, rail or trucks, reaching more customers and markets. Buyers are willing to pay a premium for identity-preserved grain and shipping flexibility. From Lincoln, Neb., we truck sorghum 200 miles to western lowa, where it is loaded into containers and transported to Los Angeles by rail for export. – Yuxi Weng, CHS Global Grain & Processing

The U.S. Soy Organization has identified similar containerization benefits for its products depending on the overseas buyer's requirements¹⁴:

For many countries, containers are preferred to bulk vessels. On a per metric ton basis, it is cheaper to ship a vessel of soybeans than an equivalent number of containers. If a country has a smaller animal population, the supply chain has an easier time handling a stream of 25 metric ton loads than a Panamax vessel shipping 60,000 metric tons or a fully loaded capesize vessel shipping 120,000 metric tons. By receiving containers versus bulk, the buyers can avoid infrastructure requirements that are necessary to unload, receive, and store the extra volume of soybeans. As the animal population increases, due to economies of scale cost savings, some container customers will shift shipments to bulk vessels. – Alan Barrett, Director of Research and Consulting, Higby Barrett LLC

Nationally outbound cereals' transport remains primarily a bulk business. DDG export in containers has advanced transport share from 34% to 48% since 2015. For the 4-state market nearest to Kansas City (Kansas, Iowa, Missouri, Nebraska), containerization has gained transport share at a faster pace for soybeans and DDGs.



Figure 25 Increase in Containerization of Agricultural Products between 2015 and 2020

Source: US Census, USATRADE Online

¹⁴ https://ussoy.org/u-s-soybean-container-exports-increasing/



As noted by the U.S. Soy Organization, a key to estimating the potential for further containerization is to evaluate exports from Kansas City's 4-state agricultural market to identify countries where total annual shipment size is small to moderate, and containerized export share is low. To define this market potential, this analysis focused on annual tonnage per country less than or equal to 150,000 tons; and a current containerization rate no higher than 75%. Conversion to containers was set at 22 metric tons per 40-footer¹⁵.

This calculation yields a potential, at full conversion, of nearly 50,000 40-footers annually. The volume for conversion of Chinese soybeans and sorghum and Japanese corn are shown in the tables because of their low container shares, however they are excluded from this 50,000-box count. The volume for these commodities appears sufficient to continue shipping by bulk vessel. If included as potential for transition to container shipments, the market possibilities increase to 120,000 40-footers. Both estimates are calculated at full conversion, which is not being implied in this research example as a matter of course.

Of the 50,000 containers, corn and DDGs offer the largest potential for containerization. Regarding global reach, Latin America (Caribbean, Central and South America) account for 55% of possible conversion. Interestingly, these southbound trades currently comprise only 9% of Kansas City's container exports. Additional trade to Latin America might generate attention to COB transport via the Missouri/Mississippi River system to Gulf Coast ports. Refer to Figure 26 below for a visualization of these statistics and the table in Figure 27 for containerization potential.



Figure 26 Regional and Product Composition of Possible Added Container Exports from Bulk Conversion, (using 2020 data)

Source: US Census, USATRADE Online

¹⁵ Datamyne data show that 90% of the 4 commodities research were exported in 40-foot containers



Figure 27 Potential Container Volumes Converted from Bulk Shipment, 2020

Soybeans									
Country	2020 Total tons	% Containerized	Potential Conversion to 40-foot containers						
Morocco	27,010	0%	1,228						
Costa Rica	15,978	0%	726						
Venezuela	5,206	0%	237						
Japan	66,204	29%	2,124						
China	585,458	41%	15,800						
	Total Potentia	II, in containers	20,114						
		Without China	4,314						

Sorghum								
Country	2020 Total tons	% Containerized	Potential Conversion to 40-foot containers					
Japan	25,149	0%	1,141					
China	886,998	2%	39,602					
	Total Potentia	l, in containers	40,743					
		Without China	1,141					

DDGs									
Country	2020 Total tons	% Containerized	Potential Conversion to 40-foot containers	Co					
Turkey	55,000	0%	2,500	Do					
Ireland	37,915	0%	1,723	Isr					
Israel	26,654	0%	1,212	Jai					
New Zealand	25,000	0%	1,136	Ve					
Morocco	21,000	0%	955	Ne					
Costa Rica	2,704	4%	119	Ho					
Chile	77,076	4%	3,364	Alç					
Japan	55,436	15%	2,136	St					
Vietnam	77,132	71%	1,000	Со					
Тс	otal potentia	II, in containers	14,145	Tri					

Corn										
Country	2020 Total tons	% Containerized	Potential Conversion to 40-foot containers							
Dominican Rep.	123,865	0%	5,630							
Israel	123,849	0%	5,630							
Jamaica	105,738	0%	4,806							
Venezuela	68,539	0%	3,115							
New Zealand	31,000	0%	1,409							
Honduras	21,000	0%	955							
Algeria	19,687	0%	895							
St Vincent/Gren.	6,390	0%	290							
Costa Rica	29,995	0%	1,363							
Trinidad & Tob.	39,078	0%	1,772							
Colombia	126,244	0%	5,721							
Japan	353,485	1%	15,919							
Tota	al Potentia	l, in containers	47,505							
		Without Japan	31,586							

Source: US Census, USATRADE Online; Container conversion based on authors' container conversion rates

A 100% switch from bulk to container transport is not likely for most trades excepting perhaps where volumes make containerization effective for a country's small-scale farmers. This conversion analysis and estimated container potential provides a simplified snapshot of market aspects only. Many factors influence the choice of transportation including pricing, aggregation and blending of multiple product sources before ocean shipment, equipment and storage availability, and the merchandisers' role, to name a few.



VIII. Summary: Market Findings and Opportunity for Port KC's MRT

Kansas City is projected to continue as a preferred metro area for container trade. A strong regional economy tops its list of attributes. Another feature is its mid-America location with five Class I intermodal railroads. The foundation for trade growth is solidly built on the region's demographics fueling spending and commercial interests establishing an expanded base for merchandise distribution, warehousing, and related logistics.

This report and research did not address the current capacity and expansion required at the existing intermodal rail ramps to meet future import demand. MRT would be the 5th regional rail ramp, and operating at full planned buildout, would be within the same size profile as others. Therefore, MRT would have the design potential to handle 20% (one-fifth) of the region's intermodal rail business.

One barometer to consider when evaluating a match of rail supply to demand is the container volume increase created on the margin each year. Normally rail terminals price their service and plan required equipment and facility space based on a container "lift" regardless of the container size (20s, 40s, or 53s). To better reflect container lifts, the TEU trade forecast was converted to the number of container moves. For example, last year's volume of 996,000 TEU was equivalent to 569,000 container lifts.

The chart in Figure 28 below shows the incremental container lifts that are forecast annually. Put into perspective, the average yearly increase in container lifts for 2015-2020 was 25,000, which included the market setback in 2019. A logical approach to determining future market share is to assume a 5th rail terminal participates in the market growth attracting some percentage of the new volume.



Figure 28 Forecast New Trade in Containers Lifts, Averaged by Decade

Source: Forecast data prepared by authors

To quantify a new terminal's potential, it would be prudent to assume a gradual buildup to a 20% market share (or an equal share among the five major rail ramps in the Kansas City MSA). Depending on proposed MRT operations start year, a market share percentage of the above figures can be utilized as a gauge of future incremental volume available plus new/additional customers that can be attracted to a new rail facility with adequate capacity in the Kansas City MSA.



Appendices



Appendix I: References for Container-on-Barge studies

1) Innovation: Global Trade and Inland Waterways A New Paradigm in International & Domestic Freight Movement

American Patriot Holdings, 2019

https://www.luc.edu/media/lucedu/quinlan-businesshub/sal_and_sandy_room1001.pdf

From the introduction: as presented by the authors at a Loyola University Chicago Business Leadership session

American Patriot Holdings will be presenting a new vertically integrated transportation alternative that will add value to the supply chain. The expansion of the Panama Canal opened the door to an all-water route into the Midwest. The widened canal can accommodate larger vessels, from 5,000 twenty foot equivalent units (TEU) to (18,000 TEU), whereas previously 60 percent of ocean going vessels could not fit through the canal. With the additional travel time to the Gulf Coast offset by congestion-related delays and longer dwell times at the West Coast ports, shippers now have a viable and efficient alternate route. That provides economies of scale which permits deeper market penetration into the United States from the Gulf Coast, eroding cost advantages previously associated with the East and West Coast.

2) Central Missouri Multimodal Port Feasibility Study

Cambridge Systematics, 2018

https://www.jcchamber.org/clientuploads/Economic_Development/Port%20Authority/Centra I_Missouri_Multimodal_Port_Feasibility_Study.pdf

From the report introduction:

The Jefferson City Area Chamber of Commerce, Callaway County, and Cole County
funded this study to assess the feasibility of a multimodal port facility in central Missouri.
The port would potentially have one or more barge terminals on the Missouri River to
help spur economic development in central Missouri region. The purpose of the current
study is to assess potential market demand for a river port in the region.

3) Containerized Exports via the Inland Waterway System: An Opportunity for Agriculture?

Agribusiness Consulting (Informa), 2018

https://www.soytransportation.org/newsroom/ContainerizedShippingOnInlandWaterways_F ullReport.pdf



From the report introduction:

This study produced for the Soy Transportation Coalition and the Illinois Soybean Association provides clarity on the potential for soybeans, soybean meal and other agricultural products to benefit from a new and innovative approach moving containers for the hauling of global trade via the nation's inland waterway system.

4) M-55 Illinois-Gulf Marine Highway Initiative

The RNO Group, 2013

https://idot.illinois.gov/Assets/uploads/files/Transportation-System/Pamphlets-&-Brochures/Freight-Council/M-55%20Marine%20Highway%20Initiative%20Study%20-%20Final%20Report%202013.pdf

From the report introduction:

The Heart of Illinois Regional Port District and Missouri Department of Transportation jointly sponsored the M-55 Marine Highway Corridor Initiative in order to develop marine intermodal transportation services on the United States' Mississippi and Illinois Rivers. As a part of that Initiative, a study was commissioned to identify regionally significant industries in the Peoria, Illinois area that would consider shifting their freight transportation providers from trucks to container or roll-on roll-off (Ro/Ro) marine vessels.



Appendix II: Listing of Large Industrial Property Leases in the Kansas City MSA, 2018-2020

Figure 29 Kansas City Metro Industrial Space Leases, 2018-2020

(includes new, renewed & expanded leases of at lease 150,000 ft.2)

Company	County	Square footage
Coleman Company	Johnson	1,100,000
Amazon	Wyandotte	1,080,000
PepsiCo/Gatorade	Johnson	953,000
Urban Outfitters	Wyandotte	880,000
Chewy.com	Cass	796,000
Hostess Brands	Johnson	765,000
BoxyCharm	Cass	575,000
FedEx Ground	Exec Park/NE	548,560
Pure Fishing	Platte	542,000
Bennett Packaging	Jackson	524,000
Overstock.com	Wyandotte	513,000
PAE	Johnson	507,000
Matheson Companies	Johnson	460,000
American News Group	Johnson	455,000
Progress Rail	Cass	454,489
Niagara Bottling	Jackson	425,000
Turn5, Inc.	Johnson	363,000
Invenergy	Johnson	330,000
ITRenew	Johnson	315,000
Hanes	Johnson	311,000
Advanced Logistics & Fulfillment	Exec Park/NE	310,000
Ford	Exec Park/NE	303,000
Bayer/DHL	Johnson	300,000
Harte Hanks	Wyandotte	298,000
Home Depot	Jackson	297,000
Kenco Logistics	Exec Park/NE	295,000
Honeywell	Jackson	275,000
Faurecia	Jackson	262,000
Schlage Lock Company	Johnson	253,000
Professional Packaging Systems	Johnson	248,000
Vangaurd Packaging	Exec Park/NE	248,000
doorLink Manufacturing	Platte	240,000
Doorlink	Platte	220,000
PBI Gordon Corporation	Platte	211,588
Metrie Industries Inc	Platte	211,000
Ply Gem	Exec Park/NE	207,000
XPO Logistics	Exec Park/NE	203,000



Company	County	Square footage
Rogers Sporting Goods	Platte	202,800
DHL	Platte	200,000
E-Shipping	Platte	198,500
Remel, Inc	Johnson	164,500
Sportsman Cap & Bag	Johnson	160,000
Mechanix	Platte	160,000
Belger	Johnson	156,289
Husqvarna	Johnson	153,000
Long Motor Corporation	Johnson	153,000
Tool Source Warehouse	Johnson	153,000
Cardinal Health	Exec Park/NE	151,000

Source: www.colliers.com/en/research/kansas-city



Appendix III: Selected Crop Production by County and DDG plants by location (2020)

Figure 30 Sorghum for Grain 2019 Production by County for Selected States



Figure 31 Soybeans 2019 Production by County for Selected States



Source (above images): USDA, U.S. Department of Agriculture, National Agricultural Statistics Service



Figure 32 Ethanol Plants with Capacity to Produce Distillers Dried Grains (DDG) as a Byproduct



Source: USDA.gov



Appendix IV: Container Trade Forecast for Kansas City, 2021-2070

Figure 33 Kansas City Container Forecast

	Actual Estimate					Forecast										
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Volume in thousand TEUs*:																
Imports	386.9	391.7	429.1	483.0	469.5	498.3	548.5	588.9	630.2	672.6	712.3	752.9	794.4	836.9	880.2	922.5
Export loads	190.2	222.5	235.1	248.0	252.4	237.9		Та	tal ovno	rte are fr	vrocast a	e a mate	h hack te	import		
Export empties	196.7	169.2	193.9	235.0	217.0	260.4			nai expo	nts are it	necasi a	s a mate		mport	•	
Total exports	386.9	391.7	429.1	483.0	469.5	498.3	548.5	588.9	630.2	672.6	712.3	752.9	794.4	836.9	880.2	922.5
Total 2-way trade (000 TEU)	773.7	783.4	858.1	966.0	938.9	996.6	1,097.0	1,177.7	1,260.4	1,345.1	1,424.6	1,505.9	1,588.9	1,673.7	1,760.5	1,845.1
% change		1.2%	9.5%	12.6%	-2.8%	6.1%	10.1%	7.4%	7.0%	6.7%	5.9%	5.7%	5.5%	5.3%	5.2%	4.8%
Volume in thousand lifts**:																
Total 2-way trade (000 lifts)	442	448	490	552	537	569	627	673	720	769	814	860	908	956	1,006	1,054
% change		1.2%	9.5%	12.6%	-2.8%	6.1%	10.1%	7.4%	7.0%	6.7%	5.9%	5.7%	5.5%	5.3%	5.2%	4.8%
Annual increase/decrease in lifts		5	43	62	(15)	33	57	46	47	48	45	46	47	48	50	48
Cumulative increase in lifts from 2021				<u> </u>			57	104	151	199	245	291	338	387	436	485

* Conversion to TEUs for all container sizes

** each container counts as one lift regardless of box size



	Forecast												
	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2050	2060	2070
Volume in thousand TEUs*:													
Imports	965.7	1,009.8	1,054.8	1,100.8	1,145.5	1,191.1	1,237.6	1,285.0	1,333.4	1,375.4	1,750.3	1,972.0	2,221.8
Export loads							Total	exports are	forecast as	a match bac	k to imports	5	
Export empties													
Total exports	965.7	1,009.8	1,054.8	1,100.8	1,145.5	1,191.1	1,237.6	1,285.0	1,333.4	1,375.4	1,750.3	1,972.0	2,221.8
Total 2-way trade (000 TEU)	1,931.4	2,019.6	2,109.7	2,201.6	2,291.0	2,382.2	2,475.2	2,570.1	2,666.8	2,750.7	3,500.5	3,944.0	4,443.7
% change	4.7%	4.6%	4.5%	4.4%	4.1%	4.0%	3.9%	3.8%	3.8%	3.1%	1.2%	1.2%	1.2%
Volume in thousand lifts**:													
Total 2-way trade (000 lifts)	1,104	1,154	1,206	1,258	1,309	1,361	1,414	1,469	1,524	1,572	2,000	2,254	2,539
% change	4.7%	4.6%	4.5%	4.4%	4.1%	4.0%	3.9%	3.8%	3.8%	3.1%	1.2%	1.2%	1.2%
Annual increase/decrease in lifts	49	50	51	53	51	52	53	54	55	48	24	27	30
Cumulative increase in lifts from 2021	534	585	636	689	740	792	845	899	954	1,002	1,431	1,684	1,970

* Conversion to TEUs for all container sizes

** each container counts as one lift regardless of box size

Source: Datamyne (historical data); Forecast prepared by authors



kpmg.com/socialmedia



The information contained herein is of a general nature and is not intended to address the circumstances of any particular individual or entity. Although we endeavor to provide accurate and timely information, there can be no guarantee that such information is accurate as of the date it is received or that it will continue to be accurate in the future. No one should act on such information without appropriate professional advice after a thorough examination of the particular situation.

© 2021 KPMG LLP, a Delaware limited liability partnership and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

The KPMG name and logo are trademarks used under license by the independent member firms of the KPMG global organization. DAS-2021-4608