

Exportation and Big Data: An Analysis of Kansas Trade Trends 1995 – 2025

Abstract:

The exportation of goods and services plays an essential part in the growth of an economy, exposing producers of goods and services to an external market(s) that fosters collaboration within and outside nations of the world. Some states rely more on exporting goods than others in the United States, and different products are exported at higher rates between states. The specialization of exports can benefit a state since those products help its economy succeed. Understanding what exported goods are essential to the economy allows people to decide what should be produced and exported. Kansas has its own set of goods that it exports across the world. By observing their exporting habits, policymakers in Kansas will know where they stand and how they can move forward. This information can help all stakeholders in Kansas improve the economy for everyone in the state. The study focuses on the 2000 – 2025 period, and its primary contribution is to identify what products (goods and services) the State of Kansas has a comparative advantage in production and what nation of the world Kansas has both a comparative and absolute advantage in exportation over the other 49 States and the District of Columbia.

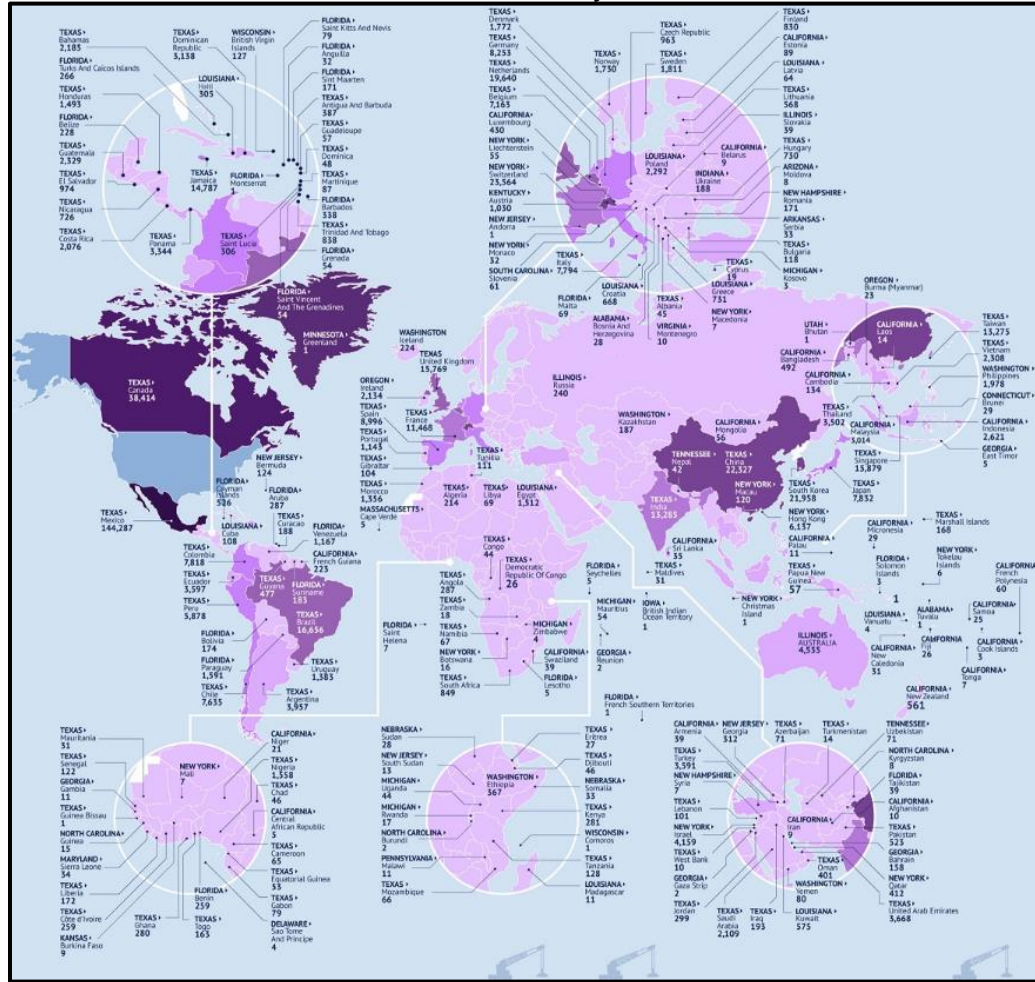
Keywords:

Export, Trade, Trade Destination, Trade Volume

Introduction:

For decades, the status quo of a nation has been measured in Real Gross Domestic Product (RGDP), which is a function of consumption, investment, government expenditure, and net export (Export minus Import) (Tena-Junguito & Restrepo-Estrada, 2023). This study's primary focus and contribution to the field of trade amongst nations is to identify the State of Kansas' (located in the mid-western region of the United States (U.S.) most significant export destinations, productions of absolute and comparative advantages, and nation's absolute and comparative advantages (that is, what country does the State of Kansas have the most economic influence in terms of net export). In this paper, exports would be defined as goods and services that are sold to other countries[15-18]. It is an activity that is very important to the U.S. economic activity, as the U.S. is the second-largest exporter in the world (Osiobe et al., 2024). Figure 1 shows the 50 states of the U.S. plus the District of Columbia (D.C.) top destinations on the world map with comparative and absolute advantages on export distribution. The map also shows each country's total export value by the represented state. Texas showed up the most on the map as the leading exporter of 94 countries. Other states, such as Florida and California, were the leading exporters for several countries. In comparison, the State of Kansas is the leading exporter to Burkina Faso. Given the trade relationship between the State of Kansas and the nation of Burkina Faso, more trade opportunities should be fostered between them.

Figure 1
The U.S. State that Each Country Trades With the Most



Source: (Vendittie, 2024)

On the local side, a lot can be learned from understanding the export activities of a state, such as what industries to prioritize; assessing the exports of Kansas will provide both residents and policymakers with information about where the state stands in terms of its export activities (Osiobe & Dobson, A Comparative Industry Analysis of Rural America A Case Study of Baldwin City, Douglas County, and Kansas, 2023) (Osiobe, et al. 2024). Understanding the trends and changes within Kansas' export activity will allow for recommendations to be made based on the analysis (Abdullah, et al 2024). These recommendations will enable policymakers to make decisions in the state's and its residents' best interest (Osiobe & Dobson, 2023; Osiobe & Joseph, 2023; Osiobe & Quillen, 2023; Osiobe & Straight, 2023; Osiobe et al. 2024; Osiobe & Ruiz, 2023).

Literature Review:

According to (Adkisson et al., 2017), who observed the trends and changes in the State of New Mexico's exports from 2000 – 2016, the authors achieved this by analyzing the state's volume of exports, the direction of exports, and composition of exports. Their study provided policymakers in the State of New Mexico with information that would allow them to make decisions for the benefit of the state. The study found that New Mexico's volume and composition of exports are constantly evolving, so any proposed policies should prioritize the long-term trends (Adkisson et al., 2017, p. 11). The primary benefits of analyzing export overviews of a state can help shine a light on the state's strengths, threats, opportunities, and weaknesses, allowing for academics and policymakers to collaborate for proper planning that would foster growth and development within the region. According to Coughlin (2004), proximity has become an

essential factor in exports from the U.S. All 50 plus D.C. have focused more on decreasing the distance traveled between themselves and other countries regarding trading. This change results in Canada, Mexico, and Central America receiving more exports from U.S. states while Europe and Asia are beginning to receive fewer exports. There has also been a massive decrease in sea exports and miles traveled for exports (Coughlin, 2004, p. 3). The benefit of prioritizing proximity is that states are cutting transportation costs, which benefits the United States-Mexico-Canada Agreement (USMCA) member nations and their close trading partners. Smith (1989) observed the distribution and characteristics of regional export activity of manufactured products in the United States. The author aimed to use regional export data to inform policymakers and businesspeople about export activity throughout the country. Nine regions were created based on their proximity to major ports and similar manufacturing activities. The author analyzed all nine regions using export data. The study found that the West Coast and Great Lakes were the most active regions, while the Plains and Rocky Mountains were among the least active (Smith, 1989, p. 29). The study also found that common export destinations featured Canada, Japan, and Mexico. Sticking to the topic of regions, Wilkerson & Williams (2010) assessed the export potential of the Tenth Federal Reserve District following the Great Recession. The Tenth District comprises seven states: Kansas, Missouri, Nebraska, Oklahoma, Wyoming, Colorado, and New Mexico. Predictions were made about where growth could occur by observing the trends seen in each state's exports. One of the main themes found in the study was that Kansas had seen a lot of growth in exports as they were the only state in the district to have a more significant export sector than the national average (Wilkerson & Williams,

2010, pp. 95-96). The study also found that Kansas relied heavily on aircraft and agricultural exports. Due to Kansas being a Plains state and the increased presence of the aircraft sector in Wichita, these two industries are the most common exports in the state (Wilkerson & Williams, 2010, p. 102). The study also pointed out that the Tenth District has limited export growth and no international borders or ocean ports, so they are further from their trading partners than other sectors (Wilkerson & Williams, 2010, p. 96). Despite the growth in states like Kansas and Nebraska, there are restrictions to how much the district can grow compared to others. Tena-Junguito & Restrepo-Estrada (2023) studied U.S. imperialism's effect on export expansion from 1879 – 1935. During this period, the U.S. began enforcing its imperial policies throughout Latin America and Asia. This resulted in more international exports to those nations. A gravity model was used to determine if political power was essential to U.S. export growth. The study found that due to U.S. imperialism, exports to their new territories increased exports to the rest of the world.

Data Collection:

The study focuses on the 1995-2025 period. The U.S. Census, Origin of Movement Series data consists of export volume data from 1995-2023. The data from the U.S. Department of Commerce, International Trade Division, consists of export data from 2009-2023 that features exports by country and exports by item for Kansas. For 2024 and 2025, a time trend model was used to forecast the trend.

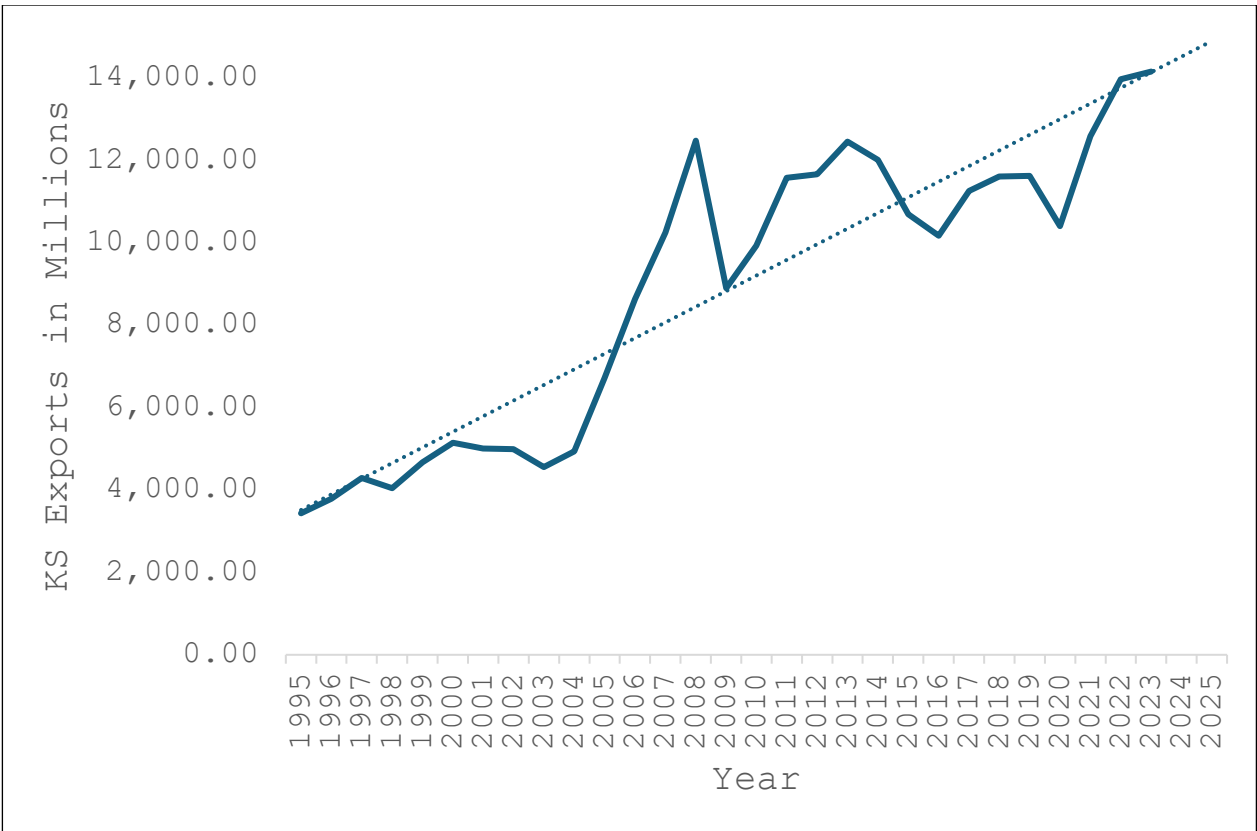
Methodology:

For the study, three aspects of exports will be observed. The first one is export volume. Exports volume refers to how active Kansas is in exporting and how much money the state receives from exports. There will also be a forecast for the future based on the trends observed in this part of Kansas' export activity. The second aspect is the composition of exports. The composition of exports refers to the goods being exported to other countries. This will provide information about what goods Kansas relies on for exports and what they could focus on in the future. The final aspect of the study is the direction of exports. This refers to which countries are receiving exports from Kansas.

Exports Volume:

This section will explore the evolution of Kansas' exports over time. Figure 2 displays total exports from Kansas to the rest of the world in millions of current U.S. dollars. Throughout the period, Kansas has seen massive growth in its export volumes. From 2004-2008, Kansas saw a considerable spike in export activity. Afterward, the state saw a sharp decline from 2008-2009 because of the Great Recession. Kansas would then see export activity increase over the rest of the period. There has been a considerable increase in export activity for Kansas, and the trendline forecast suggests there will be more in the following years.

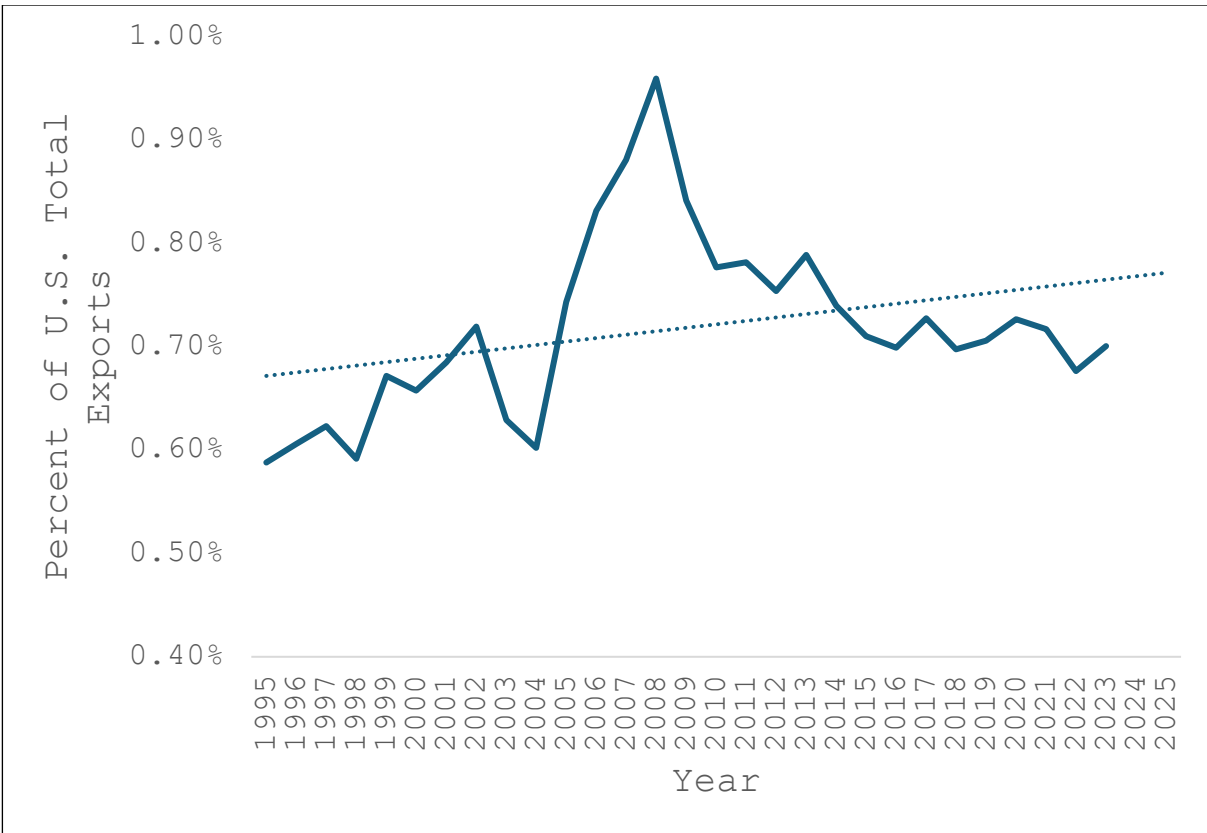
Figure 2
Kansas' Exports to the World 1995-2025
In Millions of Current U.S. Dollars



Source: U.S. Census

Figure 3 shows Kansas's export volume as a percentage of the U.S. total exports. Unlike Figure 2, the growth in Kansas isn't as significant. Once again, Kansas saw the most growth between 2004 and 2008 but a decline in their percentage for the rest of the period. With Kansas being in a region that isn't close to international borders or ocean ports, it's unlikely that Kansas will hold a large percentage of the U.S. exports (Wilkerson & Williams, 2010, p. 96). Despite that, Kansas can expect to see more growth while policymakers foster growth and development in sectors where the State of Kansas has a competitive advantage over other states.

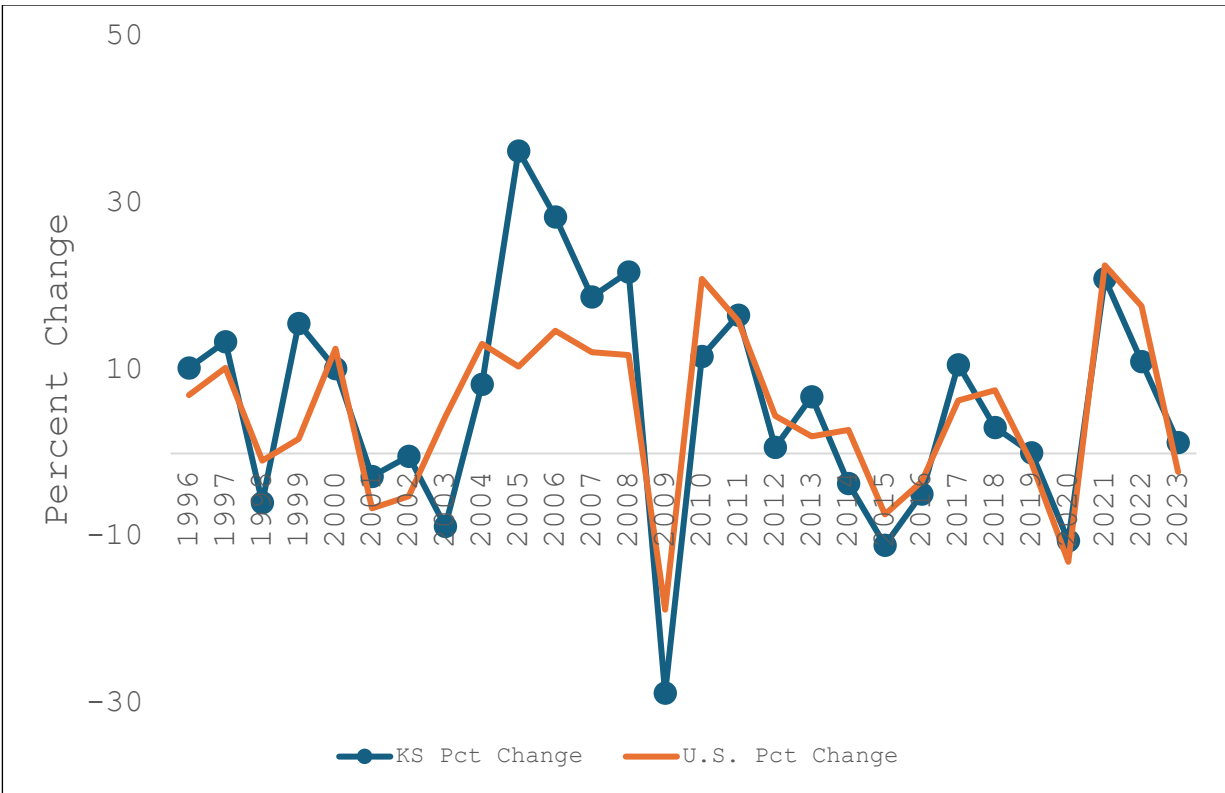
Figure 3
 Kansas Total Exports as a Percent of U.S. Total Exports, 1995-2025



Source: U.S. Census

Figure 4 shows the percent change in export volume from the previous year in Kansas and the United States. There has been a lot of similarity between the two lines, but Kansas had percentage changes higher than the U.S. from 2004-2008. Kansas had the most growth in overall export activity during that time. Kansas and the U.S. saw its sharpest decline in 2008 during the Great Recession. The impact that it had on the country's economy can be seen through the graph. Overall, Kansas and the U.S. have shown similar trend changes.

Figure 4
 A Comparison of the Percent Change in Export Volume
 U.S. and Kansas, 1996-2023



Source: U.S. Census

Composition of Exports:

This section will discuss the evolution of Kansas' composition of exports from 2009-2023. Table 1 shows the evolution of the fifteen most exported items in 2023 by percent of total exports. Three sample years were selected for this table: 2009, 2016, and 2023. One clear takeaway from this table is that transportation equipment and processed foods were the two biggest exports in Kansas. Wilkerson & Williams (2010) mentioned that the increase in the aircraft sector in Wichita was the main reason for Kansas exporting a lot of aircraft equipment, and it provides some context as to why Kansas relied on transportation equipment as its main export. While the top two stayed the same, their percentages saw different changes. Transportation equipment went from 35.9% in 2009 to 23.21% in 2023, while processed foods went from 15.52% to 22.41% in that period. The main takeaway is that Kansas has been becoming less reliant on

transportation equipment as its primary export, allowing it to diversify its composition of exports. Process foods have become an integral part of Kansas's economy, and it's at a point where it could overtake transportation equipment in the future. Another area that has seen growth is computer & electronic products. From 2016 to 2023, their percentage of total exports increased from 6.63% to 10.11%. There were also a few other items that weren't among the top exports, but they helped to diversify the composition further.

Items	2009 Rank	2009 PCT	2016 Rank	2016 PCT	2023 Rank	2023 PCT
336--Transportation Equipment	1	35.90%	1	23.77%	1	23.21 %
311--Processed Foods	2	15.52%	2	19.53%	2	22.41 %
334--Computer & Electronic Products	6	7.06%	6	6.63%	3	10.11 %
111--Agricultural Products	5	8.50%	3	15.68%	4	9.37%
325--Chemicals	3	9.24%	5	7.83%	5	9.36%
333--Machinery, Except Electrical	4	9.04%	4	9.35%	6	9.32%
326--Plastics & Rubber Products	7	2.27%	9	2.51%	7	2.80%
335--Electrical Equipment, Appliances & Components	9	2.03%	10	2.50%	8	2.71%
990--Other Special Classification Provisions	8	2.10%	7	3.30%	9	2.20%
332--Fabricated Metal Products	10	1.60%	8	2.75%	10	2.14%
331--Primary Metal Manufactures	14	0.79%	11	1.60%	11	1.55%
339--Miscellaneous Manufactures	11	1.16%	13	0.79%	12	0.80%
910--Waste And Scrap	16	0.54%	15	0.35%	13	0.73%
211--Oil & Gas	15	0.76%	21	0.12%	14	0.67%
312--Beverages & Tobacco Products	20	0.17%	14	0.57%	15	0.52%

Source: U.S. Department of Commerce

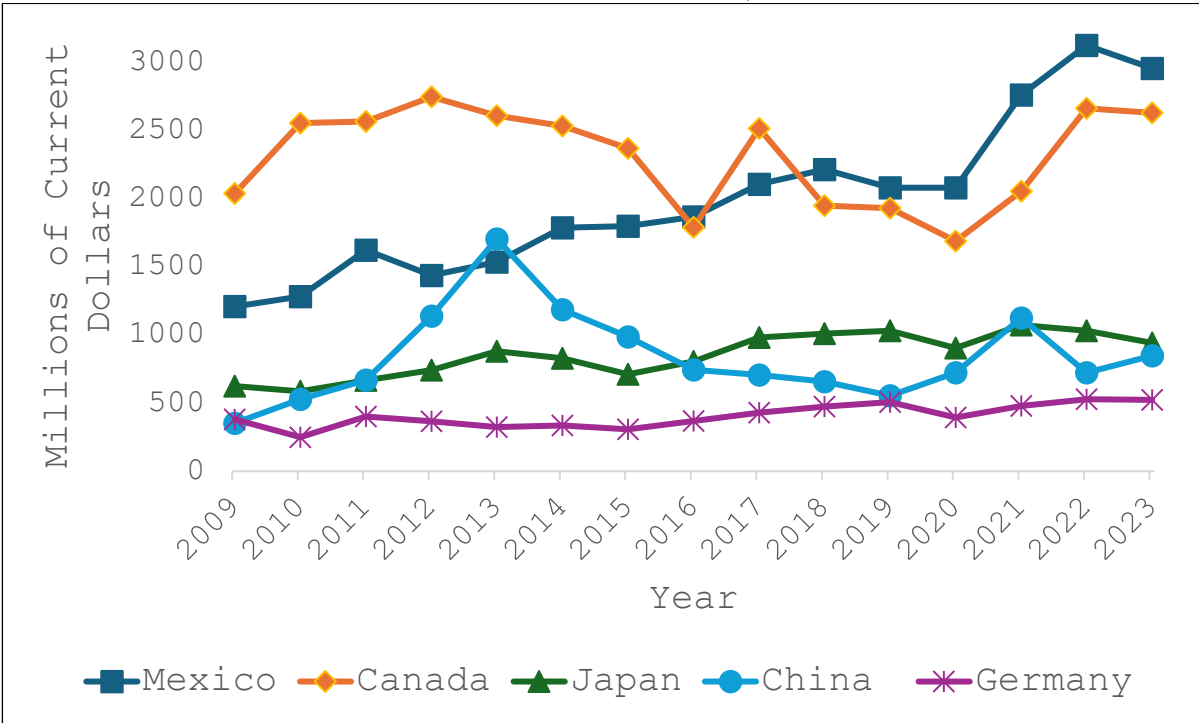
Direction of Exports:

Table 2 shows the top five destinations for 2009, 2016, and 2023. This table shows that Kansas' central receiving countries are Mexico and Canada. In all three years, both countries had significantly higher percentages than those on the list, including Burkina Faso, where the State of Kansas is their top exporter when compared to the other 49 states and D.C. Coughlin (2004) stated that the United States prioritized exporting with countries closer to itself than overseas, and the table reflects that. Canada started off as the main receiving export between the two countries, but Mexico eventually overtook them. Japan also made the list in all three years despite receiving significantly fewer exports. Germany, the United Kingdom (U.K.), and China each appeared on the table in two of the three years.

Rank	2009	%	2016	%	2023	%
1	Canada	23	Mexico	18	Mexico	21
2	Mexico	14	Canada	18	Canada	19
3	Japan	7	Japan	8	Japan	7
4	Germany	4	China	7	China	6
5	U.K.	4	U.K.	4	Germany	4
	Top 5 Total	52	Top 5 Total	55	Top 5 Total	57
Source: U.S. Department of Commerce						

Figure 5 shows the evolution of exports to the top five destinations from 2009 to 2023 on a year-to-year basis. Throughout the period, Mexico has seen the most growth as it has surpassed Canada as the leading destination for Kansas. Even though Canada is the second largest destination, they're still far beyond the other countries. On the other hand, China saw a lot of growth from 2009 to 2013 but a significant decrease throughout the rest of the period. Germany and Japan have been relatively constant as they didn't see significant improvement or decline.

Figure 5
 Volume of Kansas Exports to 2023 Top Five Destinations
 Millions of Current U.S. Dollars, 2009-2023



Source: U.S. Department of Commerce

Discussion:

One of the goals of this study was to provide recommendations to policymakers in Kansas based on the data presented. An area that Kansas can improve on is its composition of exports. The state has seen less reliance on transportation equipment, allowing other items to be exported more frequently. Moving forward, Kansas should continue diversifying its export composition by prioritizing different industries. Based on the data, two items have seen a lot of growth since 2009, and it is one of the main items that make up Kansas' composition. Another item good that should be prioritized is computer & electronic products. Computer & electronic products have seen a lot of growth between 2016 and 2023, being one of the most exported items in the state. With

technology being essential in today's world, Kansas has an opportunity to promote the computer & electronic industry and encourage growth in the exports of these products. With Kansas's reliance on a few destinations for exports, it must maintain positive relations with these countries. Mexico and Canada make up most of the export destinations, meaning that a lot of money comes from both countries. Being on good terms with those two countries is integral for export growth. Since Kansas is the primary exporter to Burkina Faso; it needs to make sure that their relations are positive so that they can continue trading.

Conclusion:

This study aims to analyze the evolution of exports in Kansas. The data shows that Kansas has seen exponential growth in its volume of exports, and they have potential for more growth. Even after the Great Recession, Kansas has been able to increase its export activity. Their composition of exports has experienced a lot of change, and Kansas can take advantage of this evolution by prioritizing growing industries. For destinations, Kansas mainly relies on its neighboring countries, Mexico and Canada, but they have seen a steady presence from some other countries. Despite not being a large exporter, Kansas has been able to establish good international trade partners. Overall, exports in Kansas have evolved, and they will continue to do so. Policymakers and academics can use the information provided in this research to account for that evolution.

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